DUARTE

ENERGY ACTION PLAN

NOVEMBER 2012

City of Duarte

San Gabriel Valley Council of Governments

Southern California Edison
An Edison International Company

Energy Leader Partnership

San Gabriel Valley Energy Wise

KEMA DNV

Fehr & Peers
Transportation Consultants

PREPARED BY

PMC

CITY OF DUARTE

ENERGY ACTION PLAN

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CITY OF DUARTE

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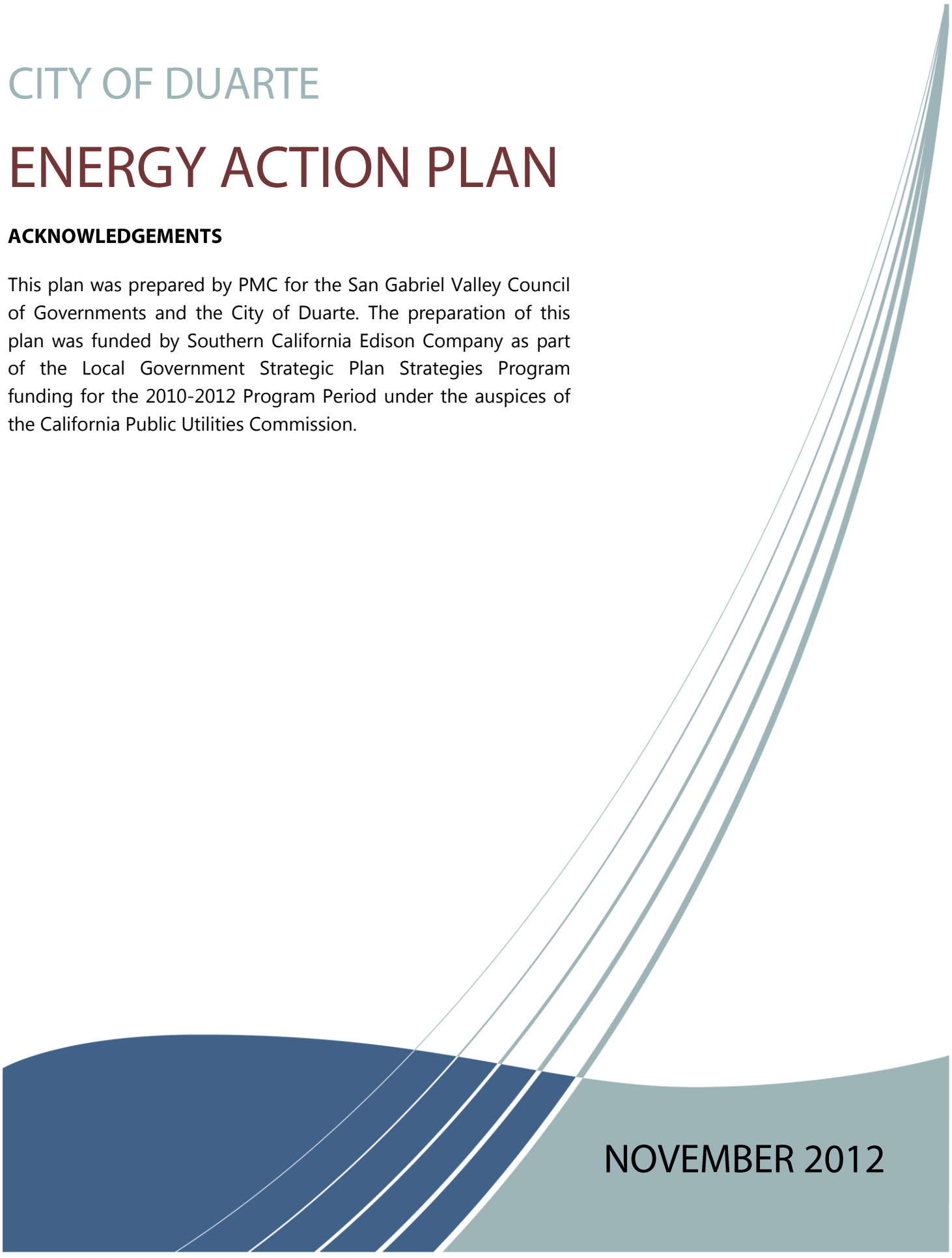


TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

TABLE OF CONTENTS

LIST OF FIGURES

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
EAP	Energy Action Plan
EE	energy efficiency
EECBG	Energy Efficiency and Conservation Block Grant
EECS	Energy Efficiency and Conservation Strategy

ABBREVIATIONS

Abbreviation	Definition
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
PACE	Property Assessed Clean Energy
PEAS	Personal Energy Action Survey
PFC	perfluorocarbons
PSC	Project Steering Committee
PV	photovoltaic

ABBREVIATIONS

Abbreviation	Definition
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
USGBC	United States Green Building Council
VMT	vehicle miles traveled
VSD	variable speed drives

EXECUTIVE SUMMARY

This Energy Action Plan (EAP) demonstrates the City's commitment to pursue energy efficiency and reduce greenhouse gas (GHG) emissions. The purpose of this EAP is to identify the City of Duarte's long-term vision and commitment to achieve energy efficiency in the community and in municipal operations. Specifically, this EAP includes the following chapters:

Chapter 1: Introduction – Provides an overview of the purpose and scope of the project, as well as the process and outreach efforts involved in developing this EAP.

Chapter 2: GHG Inventory and Forecast – Summarizes the GHG-generating activities occurring within the community and through municipal operations.

Chapter 3: Electricity Profile – Highlights the factors that influence electricity use within the community by comparing energy uses to regional averages and identifies top electricity uses within municipal accounts.

Chapter 4: Energy Efficiency Strategy – Identifies a comprehensive set of electricity-related energy efficiency targets, goals, policies, and actions to help the community and the city become more energy efficient.

Chapter 5: Implementation – Provides policies and actions to assist with the implementation of the energy efficiency strategy, and summarizes the policies, benefits, implementation time frame, and responsible departments for implementing the components of the energy efficiency strategy.

Chapter 6: Conclusion – Reaffirms the City's commitment to implementing energy efficiency projects, programs, and policies to support the goals of the California Long Term Energy Efficiency Strategic Plan and foster energy efficiency throughout the community.

To support the content found throughout the EAP, several technical appendices have been prepared to provide additional detail and information regarding GHG reductions and sources. This Plan includes the following appendices:

- **Glossary** – Defines the key terms used throughout the document.
- **References** – Provides a list of citations and sources used throughout the EAP.
- **Appendix A: Personal Energy Action Survey** – Includes a copy of the survey used to evaluate resident energy efficiency priorities and activities to inform the EAP regarding feasible community actions.
- **Appendix B: Greenhouse Gas Emissions Inventory Report** – Technical memorandum about GHG emissions inventory results and methodologies.
- **Appendix C: GHG Technical Methods and Assumptions Report** – Provides a list of the emissions factors utilized in calculation of GHG emissions as well as a summary of the sources and assumptions used to estimate the potential range of kilowatt-hours (kWh) and GHG savings for each policy.

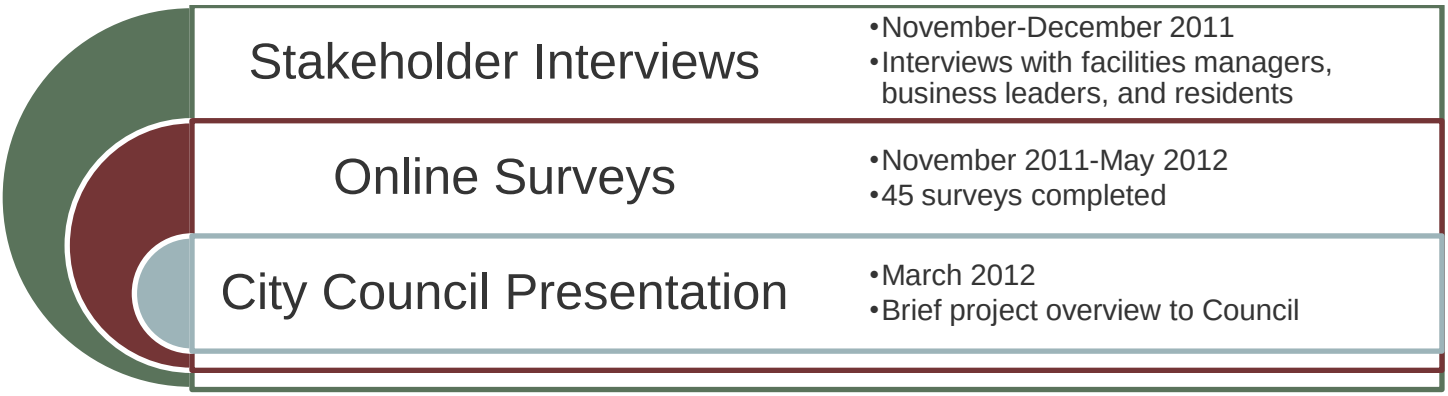
CHAPTER 1: INTRODUCTION

Chapter 1 provides a brief overview of the purpose and scope of this EAP 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 the EAP.

In addition to describing the funding source and collaboration involved in creating this Plan, the introduction chapter describes the community outreach conducted to provide input on this plan. Through the efforts of City staff, SGVCOG, and the consultant team, a variety of events were completed and summarized in **Figure ES-1**.

Figure ES-1: Summary of Community Outreach Events



CHAPTER 2: GREENHOUSE GAS INVENTORY AND FORECAST

The baseline GHG inventory and forecast assess existing and future GHG emissions to the City of Duarte based on activities and energy consumption from community and municipal activities (see **Figure ES-2**). A baseline year of 2005 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 EAP process.

Figure ES-2: Community and Municipal GHG 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 energy providers other than Southern California Edison.

Street and Traffic Lighting – Electricity used by street and traffic lights within 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 and 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.

Inventories of GHG emissions from community-wide and municipal operations are described in Chapter 2 and are summarized in **Figure ES-3** and **Figure ES-4,** below. In 2005, community activities generated approximately 176,440 $MTCO_2e$, while approximately 1,190 $MTCO_2e$ were attributed to municipal operations. While municipal GHG emissions are typically considered a subset of community sources and represent less than 1% of total

community GHG emissions, they are included in this analysis as the City has a greater ability to influence municipal GHG emissions through changes to City facilities, purchasing policies, or other City-led efforts to reduce GHG emissions within City operations.

Figure ES-3: Community-Wide GHG Emissions by Sector, 2005 ($MTCO_2e$)

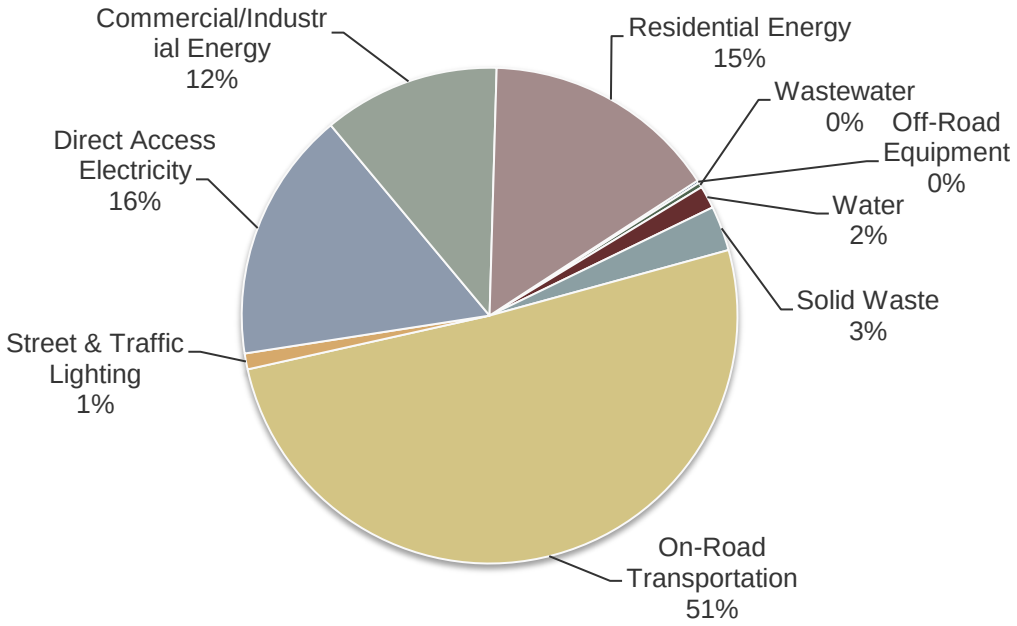
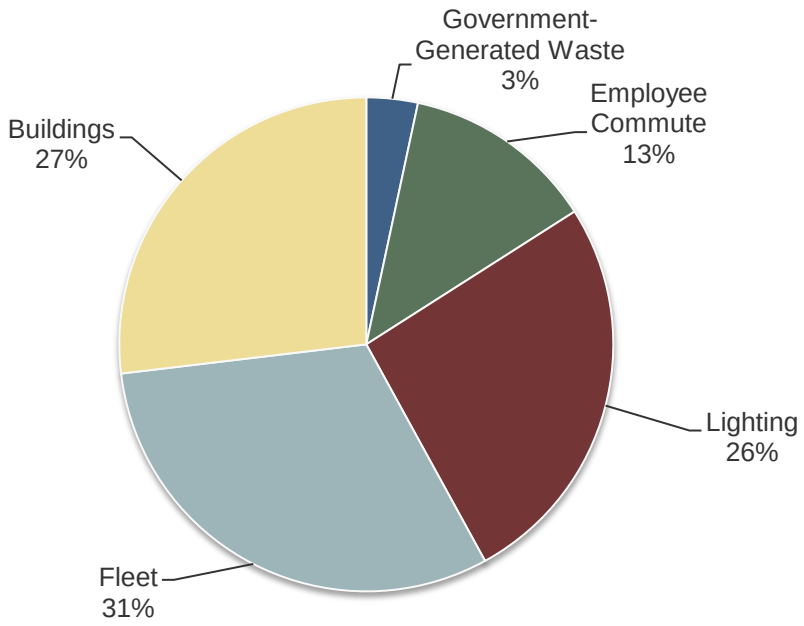
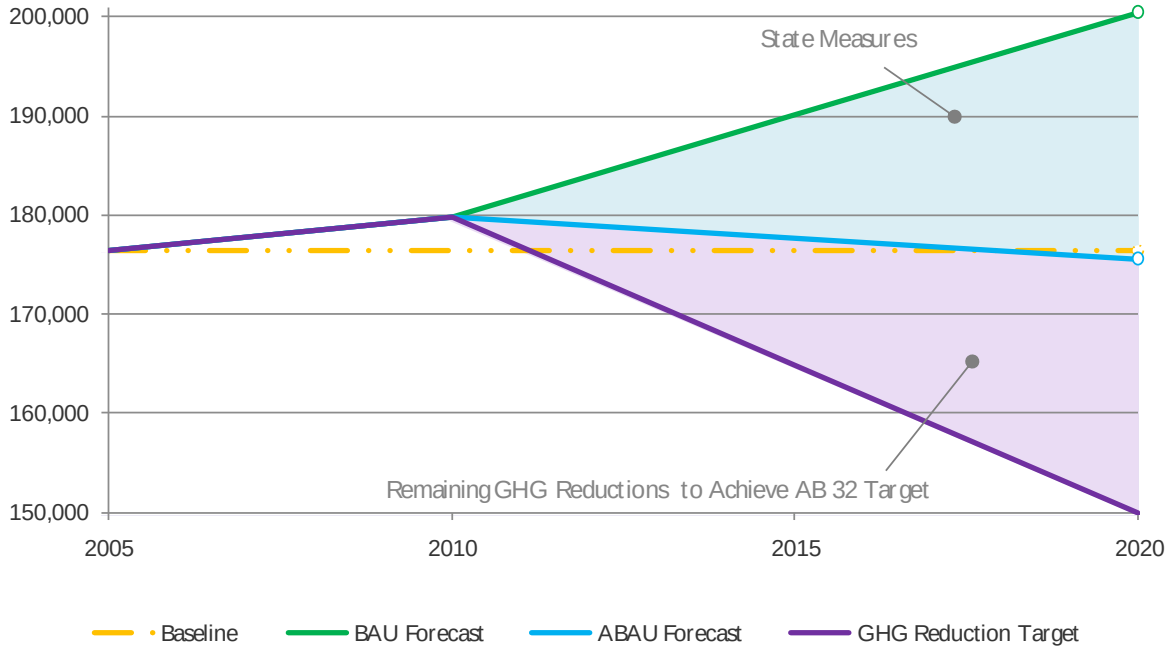


Figure ES-4: Municipal GHG emissions by Sector, 2005 ($MTCO_2e$)



Following the development of a baseline GHG emissions inventory, GHG emissions are forecasted to 2020 under a business-as-usual (BAU) scenario based on anticipated growth in the number of residents, jobs, and vehicle travel and the effect that growth will have on GHG emissions without political, technical, or social intervention to reduce GHG emissions. Additionally, the impact that state policies or legislation will have on local GHG emissions are included in an adjusted business-as-usual (ABAU) scenario and the recommended GHG reduction target to comply with Assembly Bill 32 are identified and described in **Figure ES-5** below and in more detail in Chapter 2.

Figure ES-5: Comparison of BAU Forecast and Reduction Target, 2005-2020

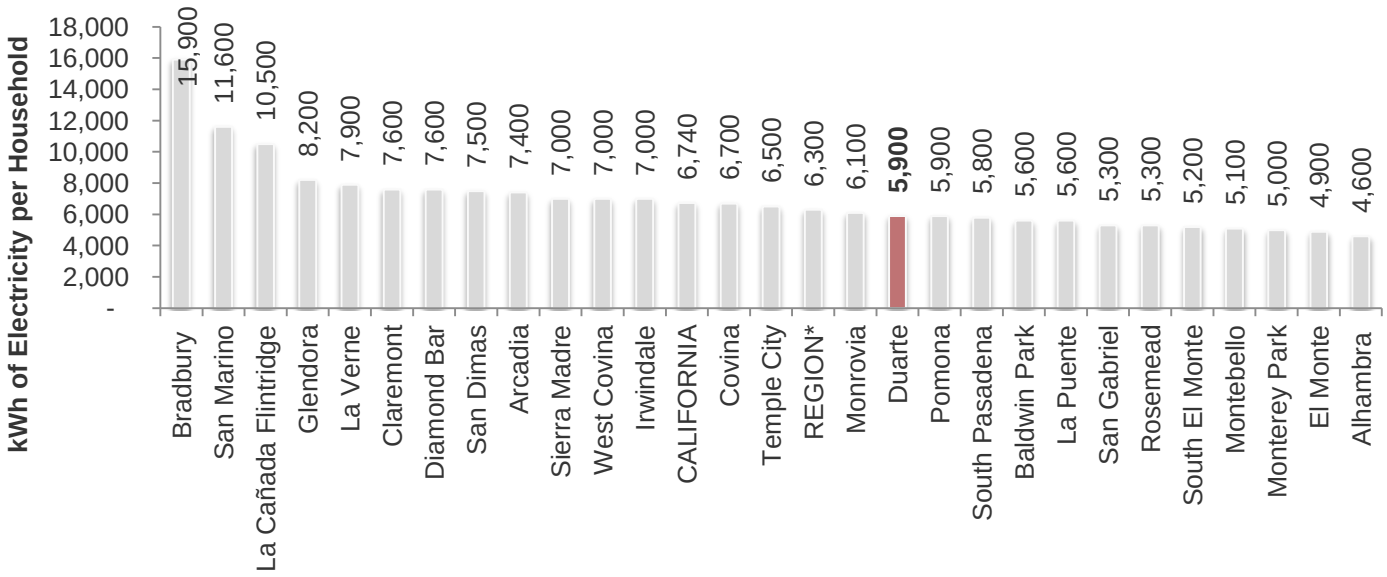


CHAPTER 3: ELECTRICITY PROFILE

The electricity profile describes the residential and nonresidential as well as municipal electricity use in the City of Duarte. Electricity used in Duarte's homes and businesses is provided by 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.

Duarte's electricity uses are tied to the built environment, which is predominantly characterized by residential uses and a large health and social services sector. As shown in **Figure ES-6**, each Duarte household used an average of 5,900 kWh in 2010. This amount is less than the California average of 6,740 kWh and less than the SGVCOG project average of 6,300 kWh.

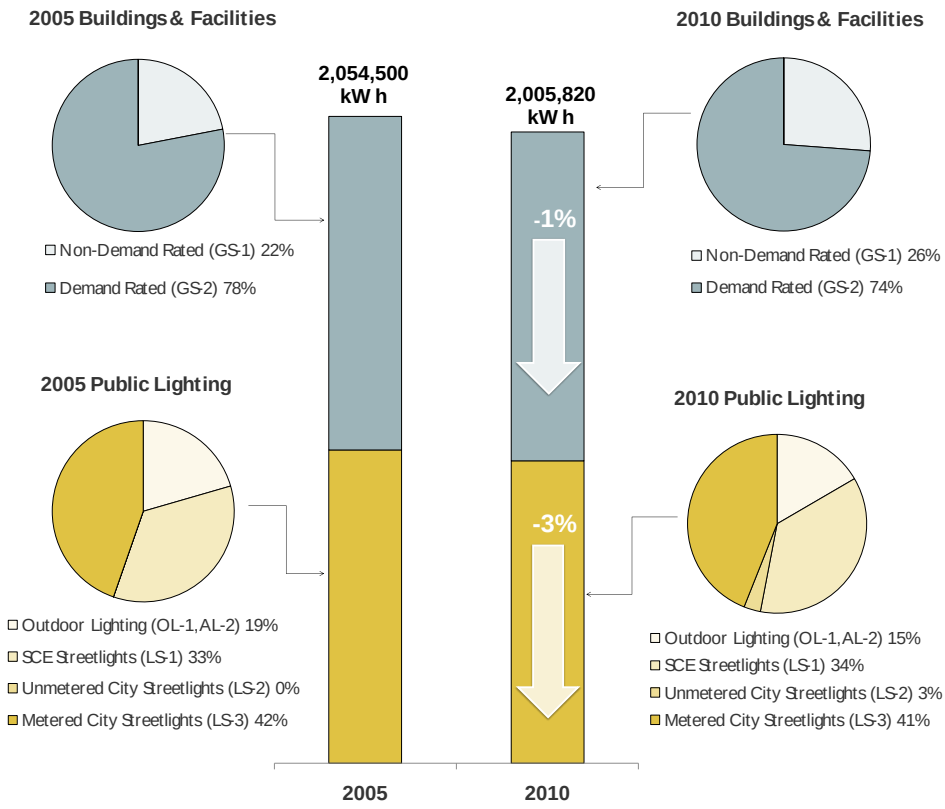
Figure ES-6: Annual Average kWh of Electricity Use per Household, 2010



*Regional electricity numbers represent the San Gabriel Valley average for all 27 cities participating in the EAP project.
Source: Southern California Edison, 2012.

Municipal electricity use is also described in detail in **Chapter 3** by depicting the changes in electricity use between the baseline year and 2010 (see **Figure ES-7**), and identifying the largest electricity uses by account to highlight the energy efficiency actions already completed or underway at City facilities and identify the largest opportunities for reducing electricity use.

Figure ES-7: Municipal Electricity Use by Account Type, 2005-2010

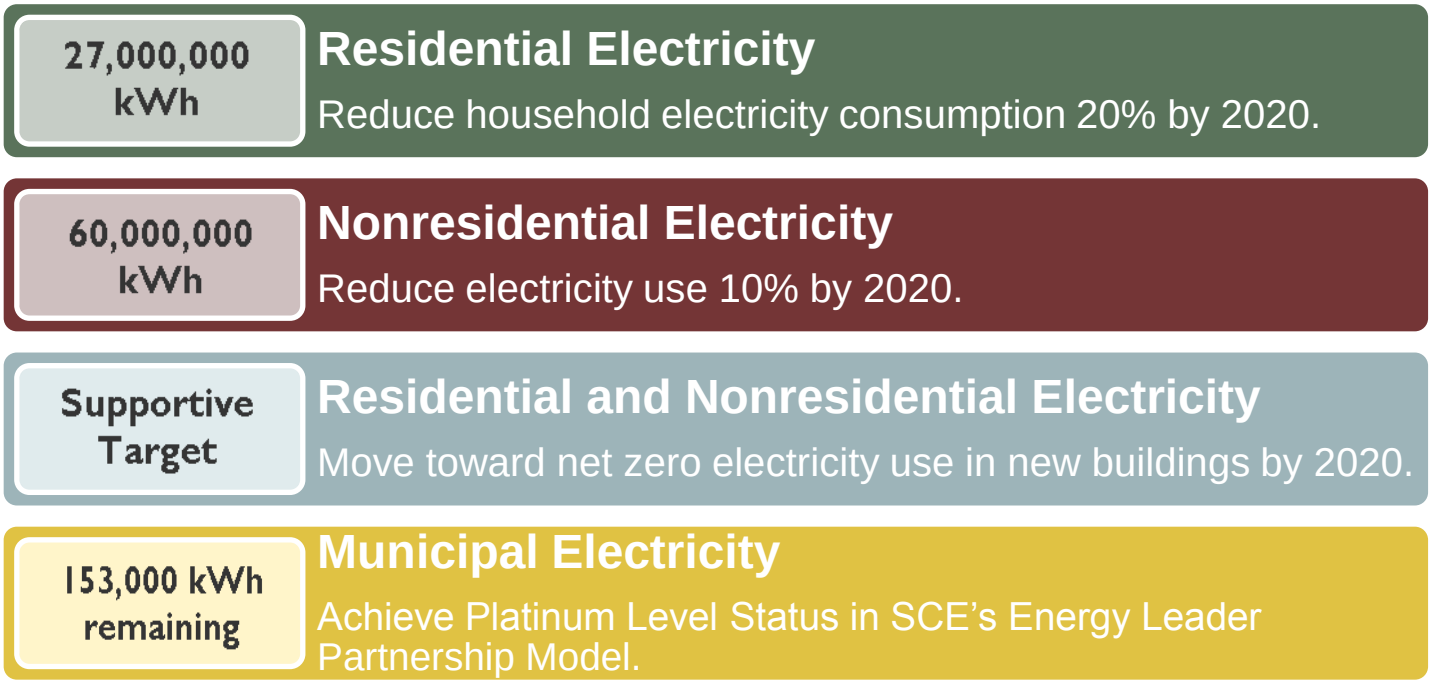


Source: Southern California Edison, 2012.

CHAPTER 4: ELECTRICITY ENERGY EFFICIENCY STRATEGY

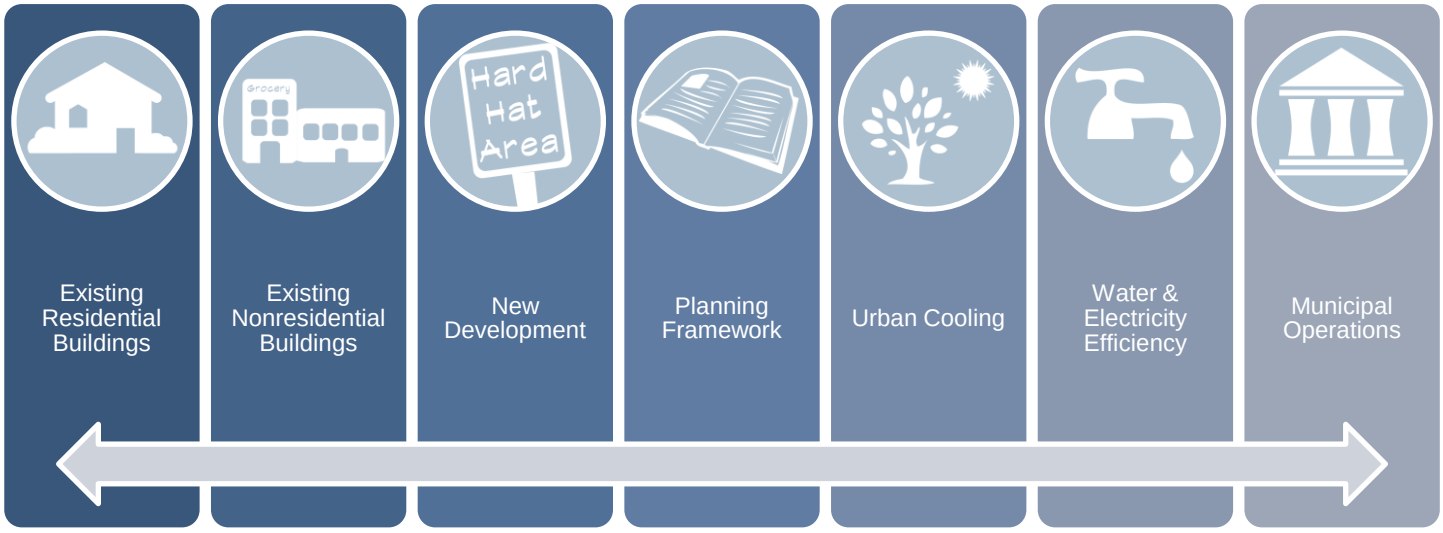
The City of Duarte has identified key electricity efficiency targets, shown in **Figure ES-8**, to support the goals of the Energy Leader Partnership and local planning priorities. To achieve the electricity reduction targets for each electricity sector, the City has identified a set of goals, policies, actions, and projects to be implemented, which are listed in Chapter 4.

Figure ES-8: Duarte's Energy Efficiency Targets



The City's EAP is focused around seven strategy topics or goals, as shown in **Figure ES-9,** to support electricity reductions and energy efficiency within the community and municipal facilities**.**

Figure ES-9: Energy Efficiency Strategy Topics



The actions included in this Plan build upon the City's previous efforts and are a diverse mix of programs for both new and existing development. The final topic area of the energy efficiency strategy focuses on municipal electricity use by identifying the completed, near-term, and long-term projects or policies to achieve energy efficiency in municipal facilities. **Table ES-1** summarizes the near-term municipal projects to be implemented by the City. In addition to the municipal projects, this EAP identifies a clear path for Duarte to achieve the

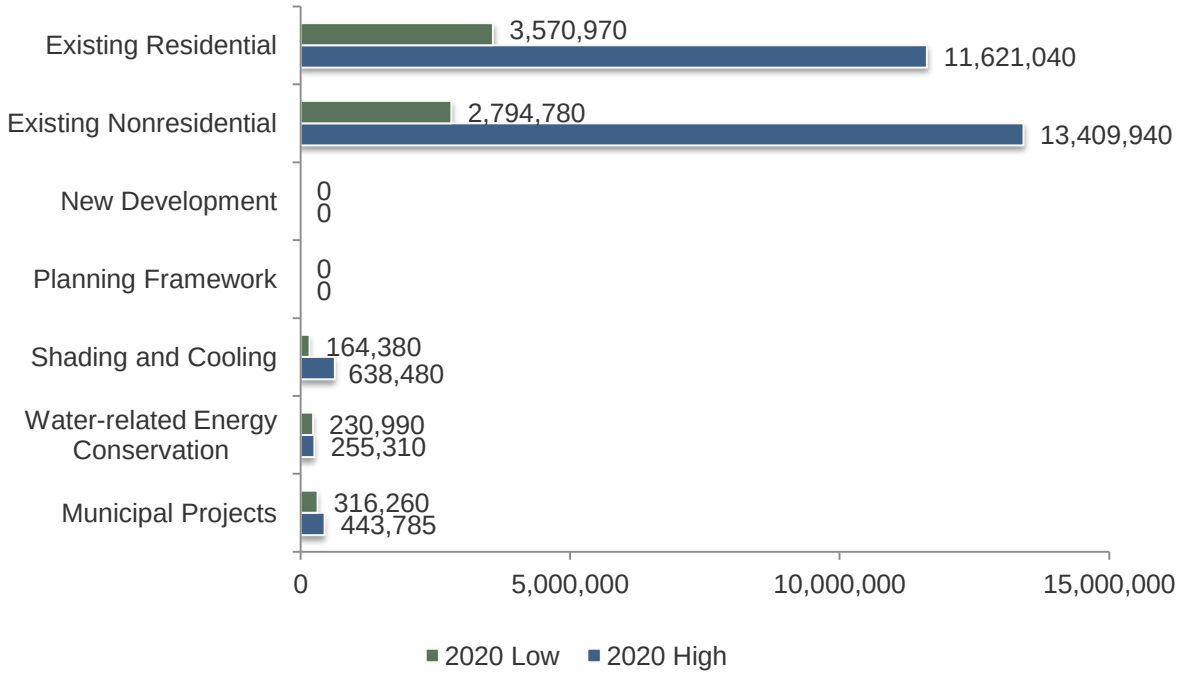
community-wide electricity reduction targets for both residential and nonresidential uses. **Figures ES-10** identifies the potential range of electricity savings (kWh) that may occur by 2020 through the implementation of this strategy.

Table ES-1: Near-Term Municipal Projects

Location	Project	Project Cost	SCE Incentive	Annual Energy Savings (kWh/year)	Annual Utility Savings ($/yr)	Completion Date	Funding Source
Community Center – 1600 Huntington Dr.	Install variable speed drive pumps, exterior lighting, and pool-lighting project	$27,325	$11,243	150,710	$23,600	Fall 2012	General Fund, SCE Incentive

Source: Willdan Energy Solutions 2012.

Figure ES-10: Estimates 2020 kWh Savings by Goal



CHAPTER 5: IMPLEMENTATION

To ensure successful implementation of the EAP, 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 reductions that can be achieved, the estimated costs to the city, the department responsible for implementation, and the implementation time frame. The implementation matrix will be a critical tool in monitoring the City's progress toward implementing the EAP.

CHAPTER 6: CONCLUSION

This EAP is an opportunity for the City to create and achieve a long-term vision for energy efficiency. The City of Duarte has developed this EAP 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.

CHAPTER 1

INTRODUCTION

This Energy Action Plan (EAP) identifies an overarching vision 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 EAP is to present the City of Duarte's long-term vision and commitment to achieve energy efficiency in the community and government operations. The rationale for Duarte's energy efficiency efforts includes demonstrating leadership in implementing cost-effective energy efficiency improvements, minimizing costs associated with energy and utilities, and protecting limited energy resources. Local governments play an important role in leading by example. This EAP shows the benefits of efficiency that will be achieved in government operations, providing a foundation for more comprehensive community-wide efficiency strategies. Strategies in this EAP provide a path toward optimizing energy use in the city, increasing the quality and comfort of homes and businesses, reducing utility costs, and maximizing the operations of local businesses.

The EAP is a stand-alone document that meets multiple objectives of the City and Southern California Edison (SCE). The EAP supports the City's status in the Energy Leader Partnership with SCE. In addition, the EAP serves as the equivalent of an electricity efficiency chapter of a climate action plan (EECAP). It is designed to be integrated into a comprehensive climate action plan when the City's resources support the preparation of a 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 SCE, this EAP 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 EAP are as follows:

- Create a long-term vision for energy efficiency.
- Provide and assess information related to energy use and greenhouse gas 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.

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

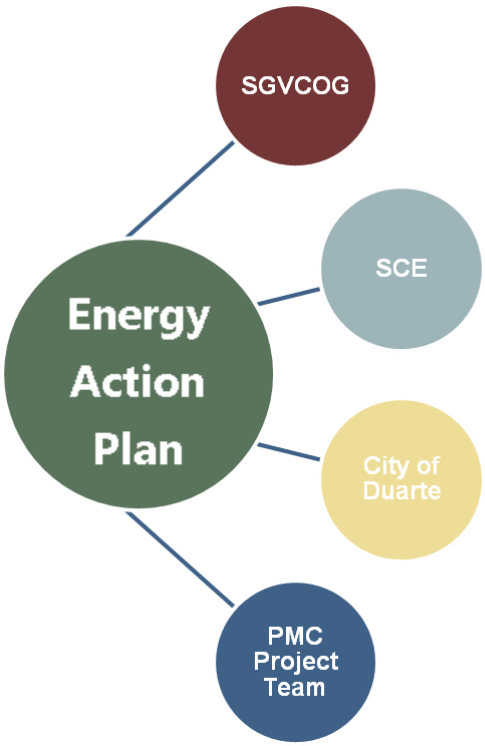
California's Long Term Energy Efficiency Strategic Plan (CEESP) is the State's roadmap for achieving energy efficiency between 2009 and 2020, and beyond. The California Public Utilities Commission (CPUC) adopted the CEESP in 2008 following a collaborative planning effort of the CPUC, the state's investor-owned utilities, the governor's office, the California Energy Commission, the California Air Resources Board, 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 **Figure 1**.

Figure 1: "Big Bold" Strategies of the CEESP

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

- CEESP Section 12.4 Goal 3: Local governments lead by example with their own facilities and energy usage practices.
- CEESP Section 12.4 Goal 4: Local governments lead their communities with innovative programs for energy efficiency, sustainability, and climate change.

Figure 2: Partners in the EAP Planning Process



The EAP 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, as well as 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 EAP through the technical assistance program of the CEESP, which aims to provide local governments with the technical expertise and financial resources to achieve energy efficiency at municipal facilities and throughout the community. In 2009, as part of CEESP implementation, the CPUC 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. Through this process, SCE awarded funding to the SGVCOG and participating cities to provide funding and technical support for preparation of a regional framework and tailored, city-specific EAPs through a regional planning process.

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

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 ELP, 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 needs to achieve the pre-determined energy savings and requirements for city facilities and community-wide as shown in **Figure 3.** As of October 2012, the City has achieved Silver level status in the ELP model.

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

ROLE OF THE EAP

The role of this EAP 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 a leader through its own operations. Strategies in the EAP will shape the City's planning framework, prioritize ongoing outreach responsibilities, and guide government operations.

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

Assembly Bill 32

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

The EAP 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 EAP 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. The local responsibility was identified in the Assembly Bill (AB) 32 Scoping Plan, which clarified the 1990 target is equivalent to a 15% reduction below baseline emissions by 2020. The Scoping Plan also 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 GHG inventory in this EAP allows the City to identify the local equivalent of the State-recommended reduction target. The EAP also allows the City understand the GHG mitigation potential of the strategies outlined in this Plan.

Based on the funding opportunity provided through the CEESP, the EAP's primary focus is electricity efficiency. While this EAP presents a comprehensive GHG emissions inventory and forecast, unlike more comprehensive climate action plans or GHG reduction strategies, mitigation strategies in the EAP focus only on electricity efficiency. Nonetheless, this plan lays out the City's role in achieving State-recommended GHG reduction targets.

CITY PROFILE

SETTING

Duarte is located in the northern portion of the San Gabriel Valley, about 20 miles northeast of the City of Los Angeles, in the County of Los Angeles. Duarte is a relatively small city, with 6,940 households and 23,910 residents, making up 0.2% of the county's population. The city is situated at the base of the San Gabriel Mountains and is bordered by the City of Irwindale to the south, the City of Monrovia to the west, the City of Azusa to the east, and the City of Bradbury and the Angeles National Forest to the north.

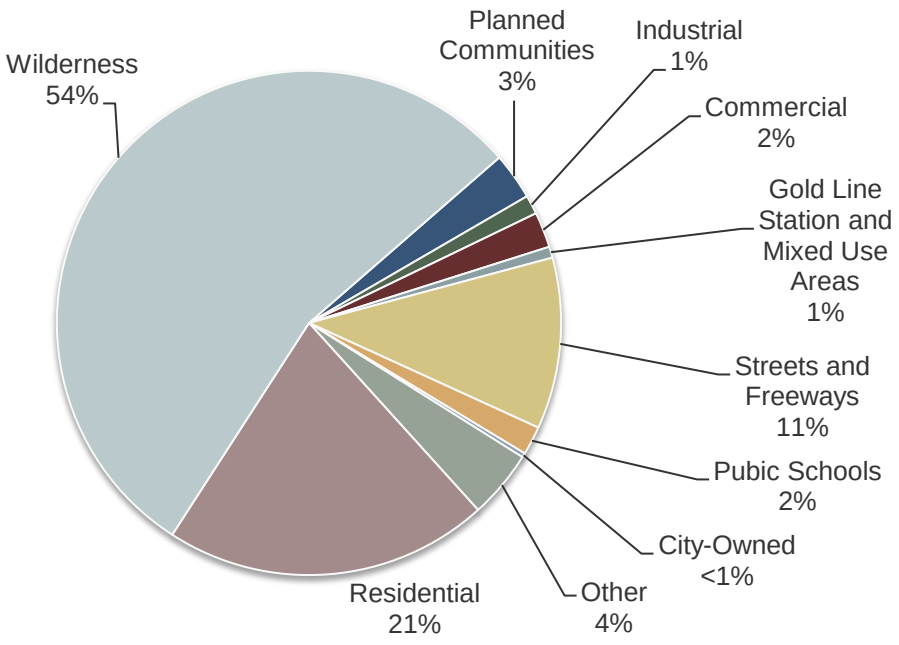
Open space makes up more than 50% (53.6%) of the city land area, which provides access to nature and recreation and is an important aspect of Duarte's identity (see **Table 1** and **Figure 4**). The open space is mostly wilderness, which accords the highest protections against human development. The City's open space includes 1,909 acres of Angeles National Forest wilderness and 422 acres wilderness owned by the City. In addition, the city has over 39 acres of parks that provide designated open space for recreational purposes.

Table 1: Duarte City Existing Land Uses, 2010

Land Use Characteristics	Acres	Percentage
Planned Communities	131	3%
Industrial	53	1%
Commercial	99	2%
Gold Line Station and Mixed-Use Areas	31	1%
Streets and Freeways	478	11%
Public Schools	80	2%
City-Owned	12	<1%
Other	190	4%
Residential	906	21%
Wilderness	2,370	54%
Total	**4,350**	**100%**

Source: City of Duarte 2012.

Figure 4: Duarte City Existing Land Uses, 2010



History

Duarte is named after a Mexican corporal, Andres Duarte, who received a land grant in 1841 from the Governor of Alto-California to make use of the area's fertile soil and mild climate. Many of the City's earliest pioneer residents came to Duarte in the mid-1800s for their health, the pleasant climate, and the fertile soil. English settlers, Americans from the Midwest and the deep South, Latinos who remained from the rancho and Japanese immigrants enabled Duarte to grow into a thriving agricultural community specializing in citrus production. Two medical institutions were started in Duarte in the early part of the 20th century. In 1913, the Jewish Relief Association started a tuberculosis sanitarium on 40 acres of land south of Duarte Road. This later evolved into the world-renowned City of Hope Medical Center, now a leading independent research and teaching institution that specializes in fighting cancer, diabetes, and HIV/AIDS. In 1930, a group of Carmelite Sisters established the Santa Teresita Rest Home, known today as Rose Gardens at Santa Teresita Campus

Duarte City Hall

Duarte Today

In 2010, there were 620 businesses in Duarte across a variety of industry sectors, providing 9,387 jobs. The healthcare industry, associated with the City of Hope and its related healthcare industry (such as surgery centers, ambulatory care, etc.), accounted for most jobs, with 37.8% of all the jobs in the city. Retail trade employed 1,139, or 12.1% of the total, and there were 1,117 manufacturing jobs. The City's other primary industries are in wholesale trade, product manufacturing, educational services, accommodation and food services, and other services (see **Table 2**). Along with the hospitals and public school system, Walmart and GE Aviation are the largest single-company employers in town.

Table 2: Duarte Industries with More than 500 In-Town Employees, 2010

Industry	Number of Jobs	Percent of Jobs
Healthcare and social assistance	3,551	37.8%
Retail trade	1,139	12.1%
Manufacturing	1,117	11.9%
Accommodation and food services	544	5.8%
Wholesale trade	520	5.5%
Educational services	519	5.5%
Other services (except public administration)	515	5.5%
Total	7,905	84.1%

Source: The City of Duarte Economic Development Strategy 2010.

In general, the City has enjoyed relative economic stability. Duarte has had a lower than average percent of residents living below the poverty line (10%) over the last five years of recession compared to the county (16%) and state (14%) as a whole. The average household income in 2010 was just over $72,000 a year.

In the last 20 years, Duarte has seen modest population increases--its developable land area mostly built out. But, like many cities in California and across the nation, it has undergone significant demographic shifts. The City's population today is almost half Hispanic (48%) with accompanying shifts in language, culture, and living styles (see **Table 3**).

Table 3: Duarte Racial and Ethnic Makeup, 2010

Race/Ethnicity	Percent
Hispanic	48%
White	27%
Asian	14%
Black	9%
Other	2%

Source: U.S. Census Bureau, 2010.

DUARTE'S RECENT SUSTAINABILITY EFFORTS

Prior to embarking on the development of an EAP, Duarte has taken steps to improve the energy efficiency of the built environment in the community and to reduce its own operational energy use in the last several years.

In 2010, the City adopted and integrated Sustainable Development Practices into its municipal code. The City's Sustainable Development Practices aim to integrate sustainable design practices related to waste reduction, energy efficiency, water conservation, environmental quality, and transportation demand management into the community's built environment. The Sustainable Design Practices include mandatory and voluntary standards that are applicable to new and renovated residential and nonresidential buildings depending on their size.

Duarte Recognized by the California Energy Commission

With the dual financing, the city upgraded standard equipment and controls to more energy-efficient models in several city-owned facilities.

"Duarte is bent on cutting energy spending to the minimum," said California Energy Commission Chair Robert Weisenmiller. "It is among the growing number of cities aiming for reduced electricity usage while making the environment healthier."

Altogether, the city installed seven new, more energy-efficient heating, ventilation and air-conditioning (HVAC) units, 924 light bulbs, 22 thermostats and two vending machine controls. The improvements were done at the City Hall, Community Center, Fitness Center, the Duarte Park Recreation Building, North Yard, Old City Hall, and Royal Oaks Park Recreation Building, Senior Center, South Yard and Teen Center.

The City made improvements to 10 municipally operated buildings including the City Hall, community center, fitness center, the Duarte Park Recreation Building, north yard, Old City Hall, and Royal Oaks Park Recreation Building, senior center, South Yard and teen center. In all, the improvements included installing more energy efficiency heating, ventilation and air-conditioning, more efficient lighting, better thermostats and even the installation of vending machine controls.

The improvements were made with a project budget of $340,963 from two sources. The City received a block grant from the US Department of Energy under the American Recovery Assistance Act (ARRA) and a low-interest ARRA-funded loan from the California Energy Commission's Energy Conservation Assistant Account to complete the work (City of Duarte, 2011).

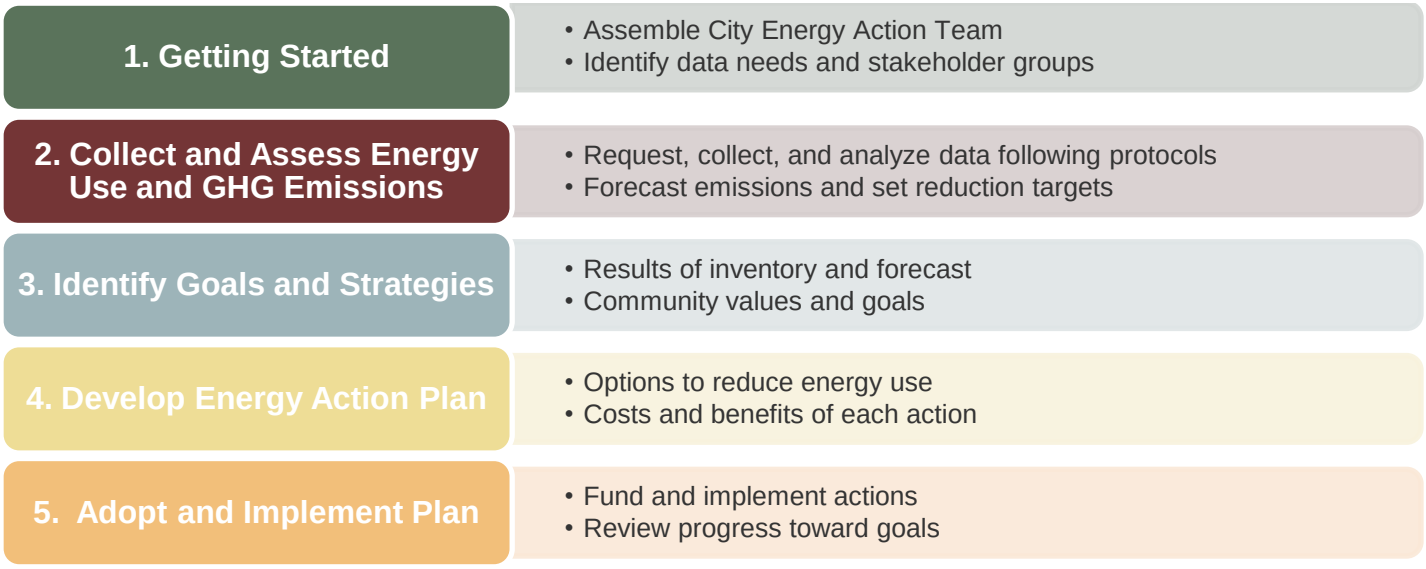
THE EAP PLANNING PROCESS

The City of Duarte worked through a five-step planning process, as depicted in **Figure 5**, to develop and implement the EAP. 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 EAP'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 EAP relied on a multipronged outreach strategy involving City staff, public stakeholders (residents, employees, and business owners), and guidance from a Project Steering Committee.

Figure 5: EAP Development Process



PROJECT STEERING COMMITTEE

Along with staff representing other San Gabriel Valley cities taking part in the regional EAP project, City staff participated in a regional PSC. The committee included representatives from all 27 cities participating in the project. The purpose of the PSC is to confirm a regional approach to EAP development, guide the project, share best practices among jurisdictions, and support tailored, local EAPs. The PSC convened approximately once a month from June 2011 through September 2012. During PSC meetings, representatives from SGVCOG staff and the technical consultant project team facilitated discussions and presentations to review options to achieve electricity efficiency.

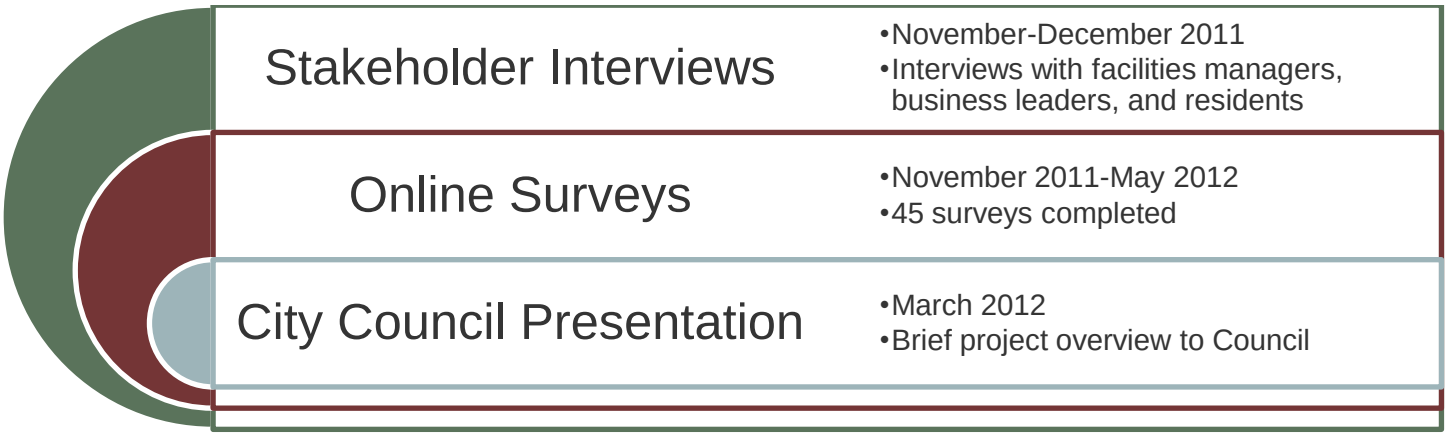
PSC members regularly voted on topics through an instant polling tool, TurningPoint, to provide input on a variety of topics including the regional framework, GHG data collection process, GHG scopes and sources, reduction policies and programs, and engagement options for the EAPs. The polling tool collected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

WORKSHOPS AND 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 for public participation, the Project Team worked with City staff to develop a customized outreach strategy. Outreach efforts allowed the City to share ideas, collect input, and assess community and stakeholder preferences. Outreach also builds local capacity for project implementation, helping to build consensus and momentum for implementation. A summary of the City's outreach events appears in **Figure 6**.

In addition to supporting development of the EAP, outreach also helped the City educate the community about electricity use and efficiency opportunities and to think about strategies to reduce electricity use and improve the efficiency of homes and businesses in the community.

Figure 6: Summary of Community-Wide Events



STAKEHOLDER INTERVIEWS

As part of the EAP development, a broad cross section of key stakeholders in the City of Duarte were interviewed in November and December 2011. Stakeholders were interviewed by phone and in-person to better understand energy consumption and energy efficiency efforts at organizations within the City. Those interviewed included the facilities manager from the City of Hope, an employee from Santa Teresita Campus, a representative from the Duarte Chamber of Commerce, and a business owner and economic development commissioner in Duarte.

Overall, there was support from stakeholders in four primary areas:

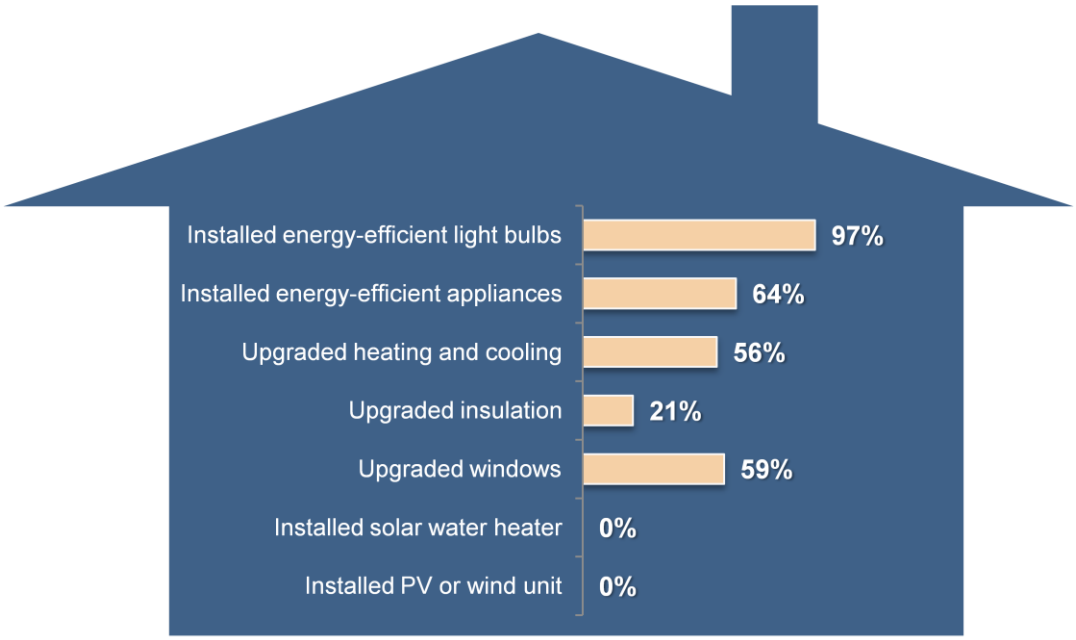
1) Providing voluntary incentives for community members to implement energy efficiency improvements;
2) Requiring energy efficiency measures in the City's building standards;
3) Educating community members about the benefits of energy efficiency and program opportunities; and
4) Working with energy providers and community members to streamline the process.

PERSONAL ENERGY ACTION SURVEY

As part of the regional partnership with the SGVCOG, the City distributed the Personal Energy Action Survey on energy efficiency through the City's website and at events. The purpose of the survey was to get feedback from people who live and work in Duarte and gain a better understanding of their priorities on energy and efficiency in the city. A blank version of the survey is provided in **Appendix A**. Survey results help to provide a useful snapshot of energy related opinion and behavior; however, the results should not be interpreted as statistically valid. Approximately 45 people completed the survey in two languages (English and Spanish), providing feedback on improvements completed to their home or business, interest in completing additional improvements, and support for strategies to achieve electricity efficiency throughout the community. Residents were the majority of respondents, completing 39 (89%) of the surveys. Other respondents included people who work in the city (five surveys).

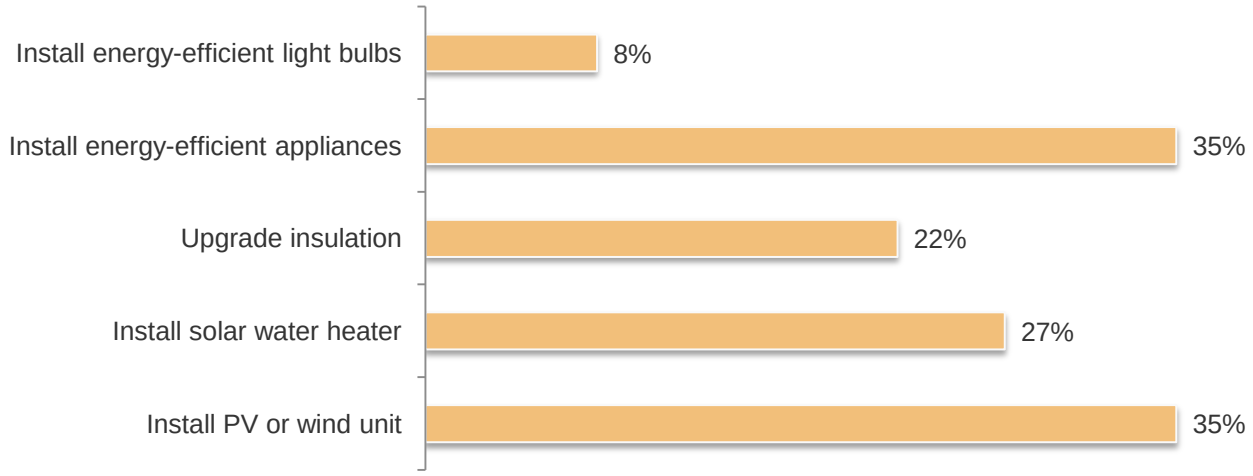
Figure 7 reports the energy upgrades that had been completed by respondents. The results suggest that most people have already installed energy-efficient light bulbs. The remaining results indicate that many households could benefit from more energy-efficient appliances, upgraded heating and cooling systems, new insulation, and renewable energy technologies. The results also indicated that most people are attempting some form of energy efficiency upgrade.

Figure 7: Completed Energy Efficiency Upgrades



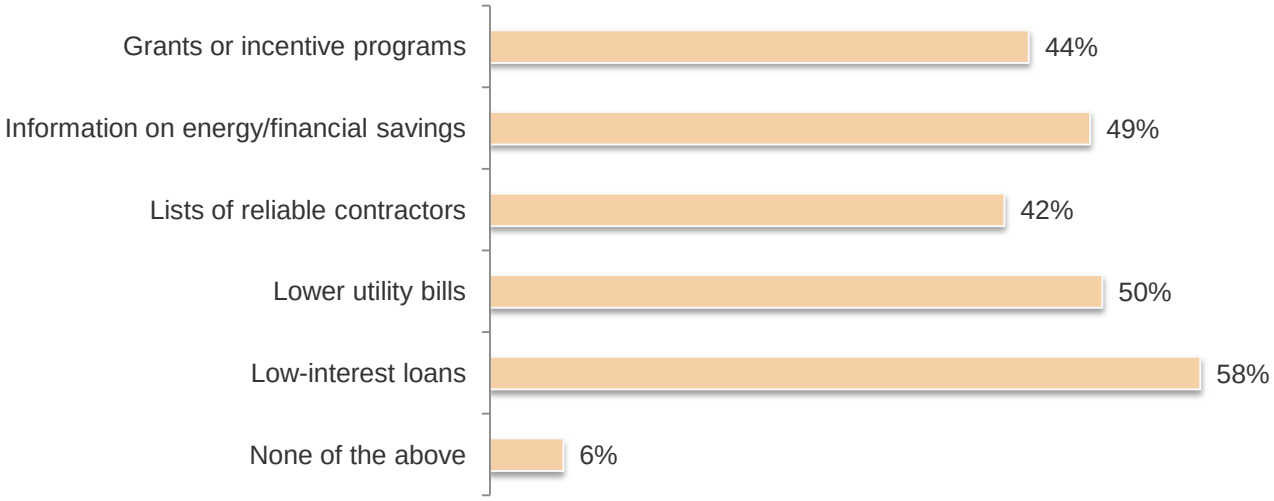
The survey asked participants which of the above energy efficiency opportunities they would consider in the next five years. As **Figure 8** reports, each option will be considered by about one-quarter to one-third of the participants (with the exception of more energy-efficient light bulbs, which likely had a low response rate because most people already have them). The consistent response rates in **Figure 8** indicate that all of the energy-saving technologies in the survey could be appropriate for Duarte.

Figure 8: Energy Efficiency Upgrades That Would be Considered in the Next 5 Years



Finally, the survey queried participants about incentives or motivators to install any of the technologies mentioned above. As **Figure 9** illustrates, there is little difference between reported impacts of educational campaigns and financial incentives. Both types of incentives will be considered for this EAP.

Figure 9: Incentives or Motivators for Energy Efficiency Upgrades



CHAPTER 2

GHG INVENTORY & FORECAST

This greenhouse gas (GHG) emissions inventory and forecast (Inventory) provides a detailed summary of community-wide and municipal GHG emissions. This information is used to create reduction strategies for this Energy Action Plan (EAP). 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 2005;
- Forecasts how community-wide total emissions and electricity specific emissions will increase by 2020 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 EAP and to 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 10**. 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 10: Community and Municipal GHG Emissions Sources, 2005

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 (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 and 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 Duarte emitted approximately 176,440 $MTCO_2e$ in the baseline year 2005. As shown in **Figure 11** and **Table 4**, the transportation sector was the largest contributor to emissions (51%), producing approximately 89,590 $MTCO_2e$ in 2005. Direct access electricity use was the next largest sector with 28,900 $MTCO_2e$, or 16% of total emissions. Residential energy use (27,130 $MTCO_2e$ or 15% of total emissions) and commercial/industrial energy use (20,330 $MTCO_2e$, or 12% of total emissions) were the third and fourth largest emitters. The solid waste sector comprised 3% of the total emissions (5,170 $MTCO_2e$). The remaining 3% of emissions consisted of street and traffic lighting, water and wastewater electricity use, and off-road sources such as construction equipment. Combined, these remaining sectors contributed 5,320 $MTCO_2e$. For a detailed description of activity data, such as the breakdown of residential electricity and natural gas uses, refer to **Appendix B.**

There are three different waste categories identified in the City's GHG inventory depending on the disposal methods: landfilled waste, alternative daily cover, and transformed waste. All three categories contribute to

GHG emissions be generating methane from the decomposition of waste, in the cases of landfilled waste or alternative daily cover, or the use of incinerators in the case of transformed waste.

Figure 11: Community-Wide GHG Emissions by Sector, 2005

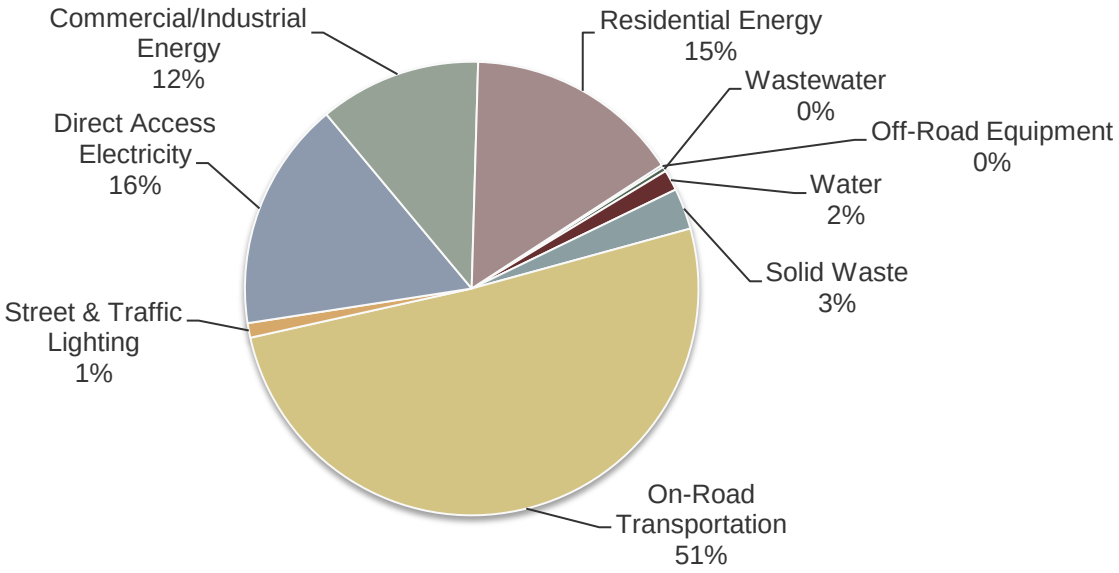


Table 4: Community-Wide GHG Emissions by Sector, 2005

Sector	$MTCO_2e$	Percent of Total
Residential Energy	27,130	15%
Commercial/Industrial Energy	20,330	12%
Direct Access Electricity	28,900	16%
Street & Traffic Lighting	1,830	1%
On-Road Transportation	89,590	51%
Solid Waste	5,170	3%
Off-Road Equipment	310	<1%
Water	2,610	1%
Wastewater	570	<1%
Total*	**176,440**	**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 the

City. **Table 5** details changes for each sector between 2005 and 2010. There are a variety of factors and influences that may explain the changes that have occurred within the activity data and GHG emissions between the 2005 baseline year and 2010. For example, economic decline, decrease in construction waste, improvements in the source of energy used, or new regulations may explain some of the increases or decreases observed. In some electricity and transportation sectors, the percent change in activity data is different than the percent change in GHG emissions. This discrepancy in changes between activity and emissions data can be explained by changes in the emissions factors used to convert activity data into GHG emissions.

A few sectors, including direct access electricity and waste, report a higher than 10% change in use and emissions between 2005 and 2010. Direct access electricity use in Duarte increased by a notable 20% from baseline. The cause has not been determined although it may partially correspond to the increase in facilities at the City of Hope's Duarte campus. A 33% decrease in solid waste disposed was also observed, but cannot be directly linked to any specific policy or activity, though it is common for communities to see significant decreases in waste disposal trends through the implementation of additional waste diversion programs.

Table 5: Community GHG Emissions Comparison, 2005 and 2010

Sector	2005 Activity Data	2010 Activity Data	Percent Change	Unit	2005 $MTCO_2e$	2010 $MTCO_2e$	Percent Change
Residential Electricity	42,474,550	41,295,440	-3%	kWh	12,900	11,890	-8%
Residential Natural Gas	2,674,390	2,518,300	-6%	Therms	14,230	13,400	-6%
Commercial/ Industrial Electricity	51,439,510	47,076,820	-8%	kWh	15,630	13,550	-13%
Commercial/ Industrial Natural Gas	883,300	879,250	0%	Therms	4,700	4,680	0%
Direct Access Electricity	66,907,980	80,591,750	20%	kWh	28,900	34,810	20%
Street & Traffic Lighting	6,030,780	6,235,450	3%	kWh	1,830	1,800	-2%
On-Road Transportation	170,659,600	178,539,830	5%	VMT	89,590	92,420	3%
Waste - Disposed Waste	25,480	17,050	-33%	Tons	4,690	3,150	-33%
Waste - ADC	2,890	3,410	18%	Tons	450	530	18%
Waste - Transformed	80	10	-88%	Tons	30	-	-100%
Off-Road Equipment	6,709	7,010	5%	Household	310	560	81%
Water	8,604,620	8,993,410	5%	kWh	2,610	2,590	-1%
Wastewater - Direct**	-	-	-	MTCO2e	-	-	-
Wastewater - Indirect	1,864,000	1,948,000	5%	kWh	570	370	-35%
Total					176,440	179,750	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 and produces an inaccurately low emissions total.

MUNICIPAL INVENTORY SUMMARY

The municipal inventory includes GHG emissions from the operations and activities conducted by the City of Duarte. GHG emissions were calculated from activity data collected by the City. Operations and activities by the City in 2005 resulted in approximately 1,190 $MTCO_2e$. **Figure 12** and **Table 6** depict the contribution of each activity to the total GHG emissions. Buildings and fleet produced the majority of the City's emissions with building energy use producing 320 $MTCO_2e$ and fleet fuel consumption resulting in 370 $MTCO_2e$. Public lighting made up 26% and employee commute had a 13% share of total municipal emissions. Government-generated waste made up the final 3%.

Figure 12: Municipal GHG Emissions by Sector, 2005

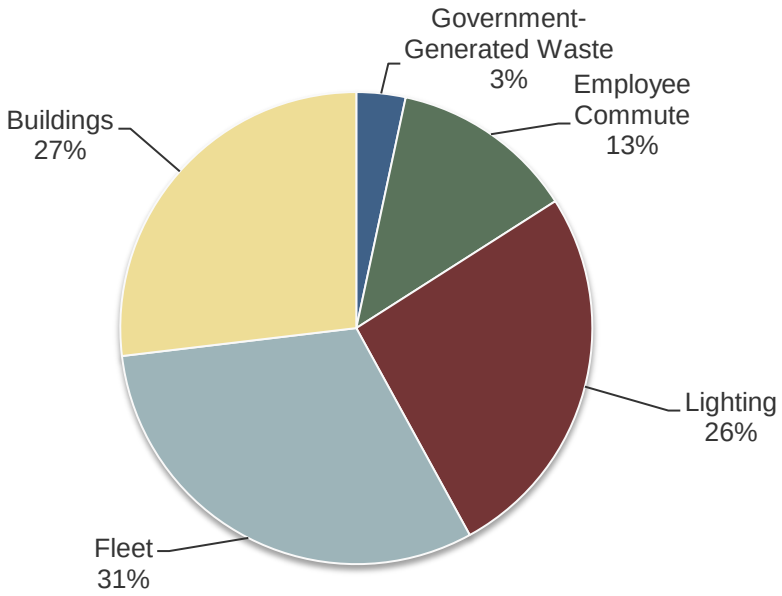


Table 6: Municipal GHG Emissions by Sector, 2005

Sector	$MTCO_2e$	Percent
Buildings	320	27%
Fleet	370	31%
Lighting	310	26%
Employee Commute	150	13%
Government-Generated Waste	40	3%
Total*	**1,190**	**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: buildings and facilities, lighting, and employee commute. This information has been used to create a snapshot of 2010 municipal GHG emissions. **Table 7** details changes for each sector between 2005 and 2010. As shown, public lighting electricity use fell between 2005 and 2010, which is likely the result of several lighting upgrade projects implemented by the City (see Chapter 4 for further discussion).

Table 7: Municipal GHG Emissions Comparison, 2005 and 2010

Sector	Subsector	2005 Activity Data	2010 Activity Data	Percent Change 2005-2010	Unit	2005 $MTCO_2e$	2010 $MTCO_2e$	Percent Change 2005-2010
Buildings	Electricity	1,059,670	1,044,470	-1%	kWh	320	300	-6%
	Natural Gas**	-	-	0%	Therms	-	-	0%
	Stationary Diesel**	80	80	0%	Gallons	<10	<10	0%
Fleet**	Gasoline	17,400	17,400	0%	Gallons	150	150	0%
	Diesel	21,300	21,300	0%	Gallons	220	220	0%
Lighting	City-Owned Streetlights	417,640	419,580	1%	kWh	130	120	-8%
	Traffic Lights	60,020	68,640	14%	kWh	20	20	0%
	SCE-Owned Streetlights	325,410	325,020	0%	kWh	100	90	-10%
	Other Public Lighting	191,760	148,110	-23%	kWh	60	40	-33%
Employee Commute		345,190	345,190	0%	VMT	150	150	0%
Government-Generated Waste**	Tons Disposed	200	200	0%	Tons	40	40	0%
			Total*			1,190	1,130	-5%

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

**Activity data for 2010 was not available. 2005 information is used as a proxy for fleet, stationary diesel and government-generated waste.

BUSINESS-AS-USUAL GHG EMISSIONS FORECAST

COMMUNITY BUSINESS-AS-USUAL (BAU) INDICATORS

Table 8 below lists the various growth indicators and sources used in the forecasting of Duarte's community-wide emissions. For a detailed explanation of indicators and forecasting methods 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: Community BAU Growth Projections

Growth Indicator	Emissions Sector	2005	2010	2020	Percent Change 2005-2020	Sources
Households	Residential Energy, Off-Road	6,710	7,010	7,400	10%	2010 Census, SCAG 2012 RTP
Jobs	Commercial/ Industrial Energy, Direct Access Electricity	6,680	6,750	7,000	5%	2010 Census, SCAG 2012 RTP, SCAG 2003 RTP
Annual VMT	Transportation	170,659,600	178,539,800	195,409,800	15%	Fehr & Peers Transportation Consultants, SCAG 2003 RTP
Service Population (Residents + Jobs)	Solid Waste, Water, Wastewater	29,360	28,070	29,100	-1%	2010 Census, SCAG 2012 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, emissions are estimated to grow 13% from 2005 levels to 200,220 $MTCO_2e$ by 2020.

Table 9: Community GHG Emissions (2005, 2010) and BAU Forecast for 2020 ($MTCO_2e$)

Sector	2005	2010	2020	Percent change 2005-2020
Residential Energy	27,130	25,290	29,930	10%
Commercial/Industrial Energy	20,330	18,230	21,290	5%
Direct Access Electricity	28,900	34,810	36,100	25%
Street and Traffic Lighting	1,830	1,800	1,830	-%
Transportation	89,590	92,420	102,580	14%
Solid Waste	5,170	3,680	5,130	-1%
Off-Road Equipment	310	560	200	48%
Water	2,610	2,590	2,590	-1%
Wastewater	570	370	570	-%
Total	**176,440**	**179,750**	**200,220**	**13**
Percent Growth	**0%**	**2%**	**13%**	

MUNICIPAL BUSINESS-AS-USUAL FORECAST

The City of Duarte's municipal forecast assumes a no-growth scenario for municipal operations in the forecast years (there are no solidified plans for expansion of services in future years). There are, however, small changes in lighting emissions from 2005 to 2020. These changes are unique to lighting due to the changes in the individual subsectors, i.e. City-owned streetlights, traffic lights, SCE-owned streetlights, and other public lighting, from 2005 to 2010. **Table 10** reports the municipal BAU forecast emissions by sector.

Table 10: Municipal GHG Emissions (2005, 2010) and BAU Forecast for 2020 ($MTCO_2e$)

Sector	2005	2010	2020
Buildings	320	300	300
Fleet	370	370	370
Lighting	310	270	270
Employee Commute & Travel	150	150	150
Government-Generated Waste	40	40	40
Total	**1,190**	**1,130**	**1,130**

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

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 the City'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 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. CalGreen offers guidelines for efficiencies beyond the required Title 24 code in two tiers: Tier 1 and Tier 2. In the 2008 CalGreen program, Tier 1 required a 15% improvement upon Title 24 and Tier 2 required a 30% improvement. This analysis looks at the minimum requirements for energy efficiency expected under each anticipated update to the Title 24 energy efficiency standards. In the next 25 years, California building code updates are expected to occur at a minimum every four years. The most recent 2013 update will go into effect by 2014.
- *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.

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 24,900 $MTCO_2e$ 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 1% below baseline 2005 levels rather than 13% above (see **Table 12)**

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

State Reductions Summary	2020
Pavley I Reductions	-15,830
RPS Reductions	-7,740
CSI Reductions	-560
CA Building Code Reductions	-770
Total State Reductions	-24,900

Table 12: Comparison of BAU and Adjusted BAU Forecast ($MTCO_2e$)

State Reductions Summary	2005	2010	2020
BAU Forecast	176,440	179,750	200,220
Total State Reductions			-24,900
Adjusted BAU Forecast (2020, 2035)	176,440	179,750	175,320
Percent Change from Baseline (2005)	-	2%	-1%

MUNICIPAL ABAU FORECAST

Only certain state reduction programs affect the municipal BAU forecast. These include the Renewables Portfolio Standard, Pavley Clean Car Standards and the Title 24 efficiency standards. The primary reductions will occur from the AB 1493 (Pavley) standards and the Renewables Portfolio Standard (see **Table 13**). The CSI is not applicable to municipalities and is not quantified. **Table 14** shows the effect of the included state reduction efforts on BAU emissions. Emissions in 2020 are expected to be reduced by 130 $MTCO_2e$ 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. 2020 ABAU emissions are 16% below baseline (1,000 $MTCO_2e$).

Table 13: Impact of State Policies on Community GHG Emissions, 2020 ($MTCO_2e$)

State Reductions Summary	2020
Pavley I Reductions	-80
RPS Reductions	-50
CA Building Code Reductions	-
Total State Reductions	-130

Table 14: Comparison of Municipal ABAU Forecasts by Sector, 2005 and 2010 Emissions ($MTCO_2e$)

State Reductions Summary	2005	2010	2020
BAU Forecast	1,190	1,130	1,130
Total State Reductions	-	-	-130
Adjusted BAU Forecast	1,190	1,130	1,000
Percent Change from Baseline (2005)	-	-5%	-16%

REDUCTION TARGETS

As previously mentioned, this EAP 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**.

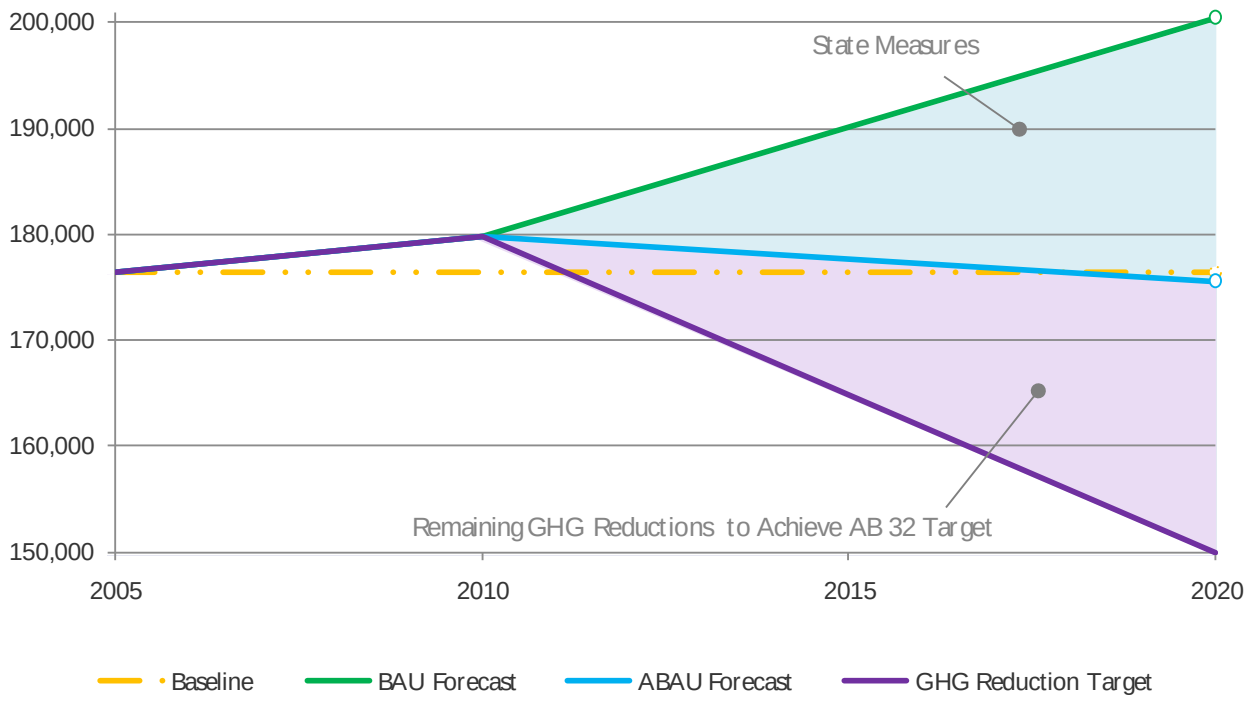
STATE-RECOMMENDED 2020 REDUCTION TARGETS

AB 32 recommends that local governments adopt a GHG reduction target of 15% below baseline levels by 2020. 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. As shown in **Table 15** and **Figure 13**, the City would need to facilitate a reduction in emissions of 25,350 $MTCO_2e$ to meet the State-recommended AB 32 Scoping Plan goal of 15% below baseline levels by 2020.

Table 15: State-Recommended GHG Reduction Target, 2020

	2020
AB 32 Target % Reduction from Baseline	15%
Community-wide Emissions Goal	149,970
Adjusted BAU Forecast with State Reductions	175,320
Local Reduction Needed from Adjusted BAU	25,350

Figure 13: Comparison of BAU Forecast and Reduction Target, 2005-2020



CHAPTER 3

ELECTRICITY PROFILE

Most of the electricity used in Duarte's homes and businesses comes from 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. Just over 15% of the city's electricity comes from direct access providers, with alternative-generating mixes.

The amount of electricity used to power homes and businesses determines how much power the utility needs to generate and the quantity of greenhouse gases (GHG) 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, the 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 14.**

Figure 14: Energy Efficiency Home Features

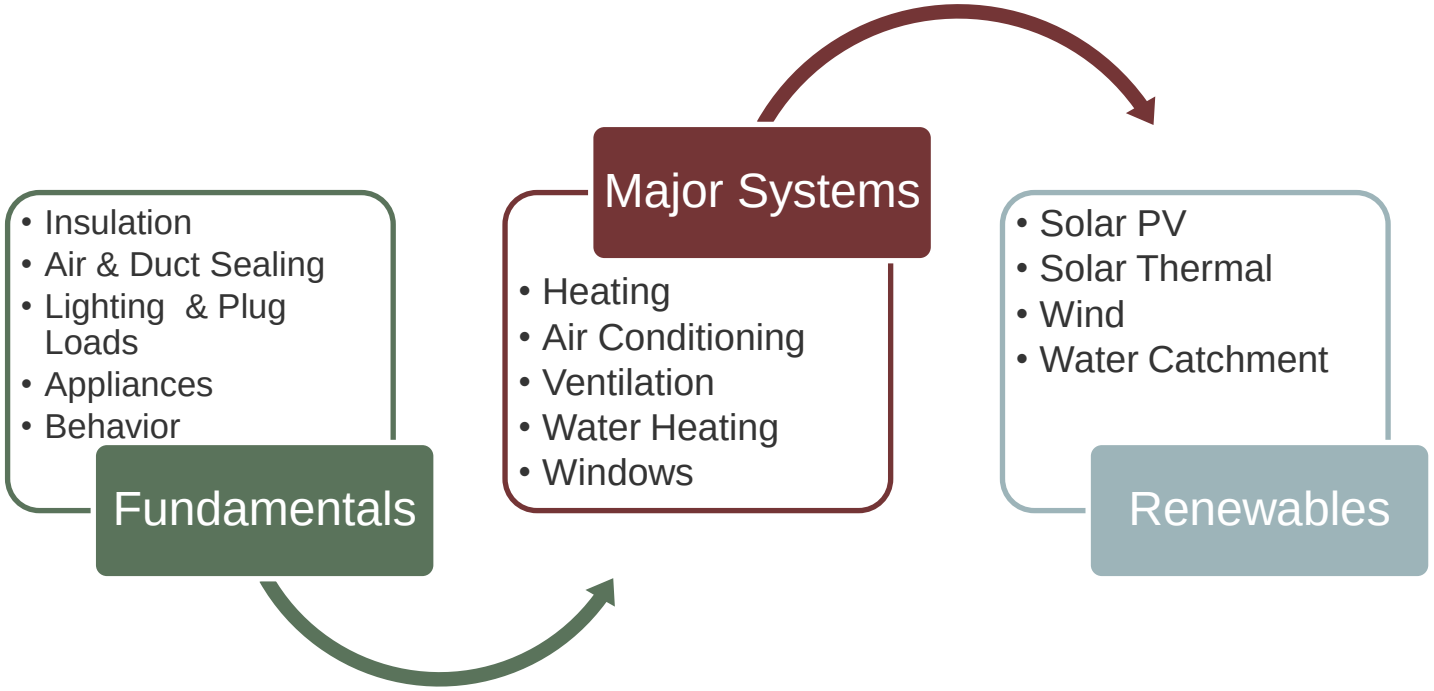
Source: PMC, 2012.

THE ELECTRICITY REDUCTION LOADING ORDER

GHGs from electricity use can be reduced, primarily through increasing conservation (i.e., avoiding using electricity) and improving efficiency (i.e., 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. These are just some examples of energy efficiency and conservation. This Energy Action Plan (EAP) 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 15** depicts the recommended loading order for undertaking energy efficiency projects and retrofits.

Figure 15: Retrofitting Loading Order



COMMUNITY ELECTRICITY DEMAND

Duarte's current energy profile and potential for savings is tied closely to its built environment. Like much of Los Angeles County, Duarte's housing stock has remained relatively unchanged over the past decade, with a higher proportion of older homes than the state as a whole. More than 75% of homes in Duarte are single-family detached homes, rather than multi-family units like apartments (see **Table 16**). Additionally, the home ownership rate in Duarte is 72%, higher than most of California.

Table 16: Duarte Housing Units by Type, 2010

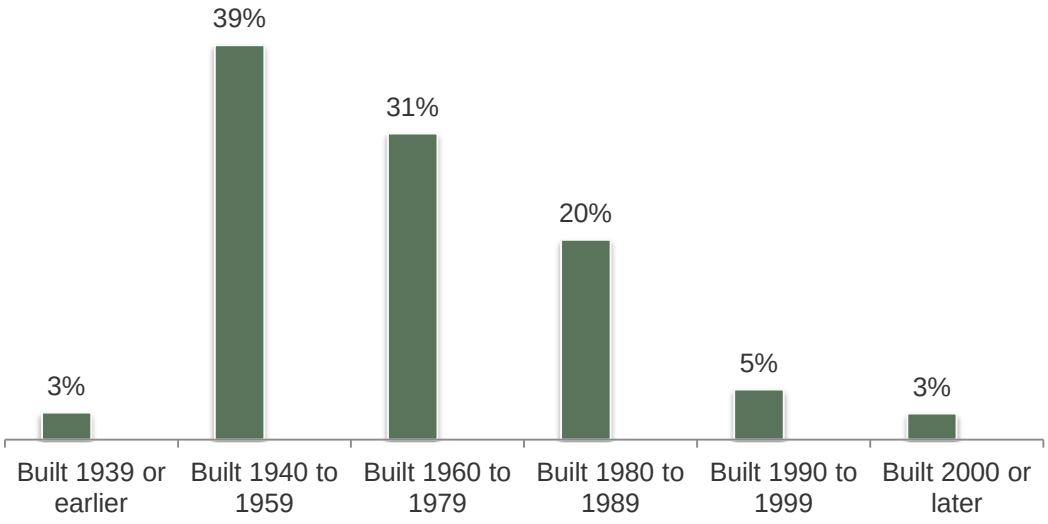
Housing Units by Type (2010)	Number of Units	Percentage of Units
Single Family (Detached)	4287	63%
Single Family (Attached)	885	13%
Duplex	476	7%
3 to 4 units	177	3%
5 to 9 units	170	3%
10-19 units	306	5%

Housing Units by Type (2010)	Number of Units	Percentage of Units
20+ units	721	11%
Mobile Homes	136	2%

Source: City of Duarte, 2006.

Further, the majority of homes in Duarte were built between 1940 and 1980 (see **Figure 16**), a period when passive heating and cooling used in previous decades were largely abandoned, as well as before most strict building efficiency codes were established.

Figure 16: Age of Housing Stock



Source: Los Angeles County Office of the Assessor, 2011.

Together, these factors ensure there is high potential for home energy efficiency upgrade programs in the city. Older homes can often see significant energy use improvements from easy, inexpensive upgrades like caulking and appliance upgrades. The high 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.

Nonresidential land use is and will continue to be dominated by The City of Hope Campus which include a hospital and a related research and development job sector (see **Table 17**). These operations account for the majority of the City's nonresidential building space. Hospitals are high-energy consumers across the United States. Therefore, it is not surprising that Duarte has the highest nonresidential energy usage per worker of any city in the San Gabriel Valley—19,100 kWh per job. The dominant role of the hospitals in energy use also provides opportunity for conservation and efficiency improvements that focus specifically on the industry. Recent studies show that hospitals can reduce energy usage by as much as 60% through improvements to architectural, mechanical and central plant systems, using strategies like heat recovery, day lighting, and vacancy air control.

Other nonresidential space in Duarte comprises a mix of office, retail, and industrial space. Opportunities to improve energy efficiency in the retail and office sector will occur through improvements in heating/ventilation/air conditioning, lighting, and appliance or equipment upgrades.

Table 17: Duarte Nonresidential Building Square Footage, 2010

Use	Sq ft	Percent of Total
Warehousing	614,670	31%
Retail Sales	591,180	30%
Light Manufacturing	368,880	19%
Other Commercial Uses	280,000	14%
Institutional Uses	99,730	5%
Other Industrial Uses	12,650	1%
Other Uses	9,230	<1%
Total	1,976,340	

Source: County of Los Angeles Office of the Assessor 2011.

FUTURE DEVELOPMENT

Although the City's developable land is near buildout, Duarte is anticipating several significant new planned developments over the next decade that will change the makeup of the City. The most significant project is the development of the City Center Complex, the creation of a focal point in the heart of the City, with Huntington Drive and Buena Vista Drive as the primary axis. The complex is envisioned as a mixed-used development that will be a gathering spot for Duarte residents and business owners to live, socialize and shop.

The City is also considering a proposal for a transit-oriented development along the planned Duarte Station on the new Gold Line of the area's light rail Metro Line. The Duarte Station is part of the future Foothill Extension from Pasadena to Azusa, which is currently under construction. The station will be located along Duarte Road, just west of Highland Avenue. A 125-space parking facility is planned directly north of the station. Bicycle parking and lockers are also planned. The City received a $400,000 METRO grant for the 20-acre planned development along the Metro Line. The development is envisioned as "a vibrant and mixed-use transit village." Once completed, it would likely include research and development facilities, small-scale retail and eateries, and a wide range of housing opportunities. The Duarte General Plan 2020 incorporates these planned developments into the anticipated land uses in the City shown in **Table 18**.

Table 18: Duarte Planned Land Uses, 2020

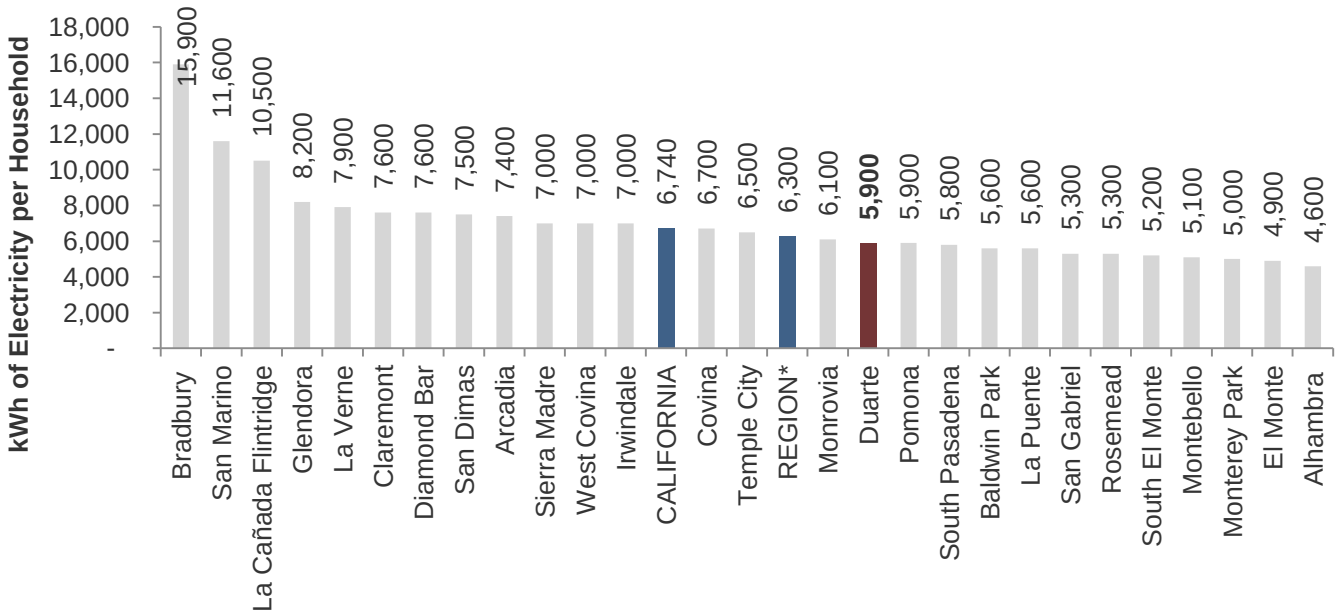
Type	Acres
County-Owned Facilities	2
Neighborhood Commercial	3
Administrative Professional	4
City Center Mixed-Use Area	11
City Owned Facilities	12
Research and Development	15
Gold Line Station Area Development	20
Parks	39
Industrial	53
Hospital	78
Public School	80
General Commercial	92
SCE, Flood Control, Railroad	95
Planned Communities	131
Medium- & High-Density Residential	141
Streets and Freeway	478
Very Low and Low-Density Residential	766
National Forest	1,909
Wilderness Areas	422
Total Acres	**4,351**

Source: City of Duarte General Plan, 2007.

COMMUNITY COMPARISON TO REGION AND COUNTY ELECTRICITY 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 Duarte's electricity use compares to regional and statewide electricity use. As shown in **Figure 17**, each Duarte household used an average of 5,900 kWh in 2010. This is less than the California household average of 6,740 kWh, and below the San Gabriel Valley project average of 6,300 kWh.

Figure 17: Annual Electricity Use Per Household, 2010 (kWh)

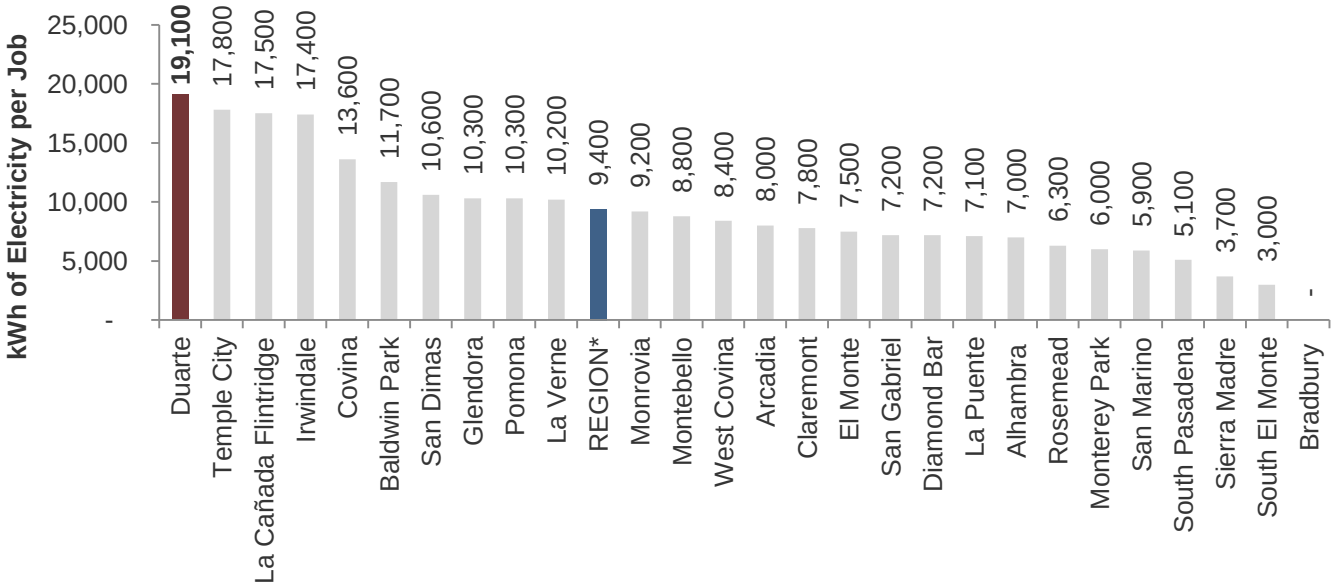


**Region electricity comparisons represent the San Gabriel Valley average for all 27 cities participating in the EAP project.*

Source: Southern California Edison, 2012.

In 2010, Duarte had the highest intensity of nonresidential electricity use (including direct access electricity) of all participating San Gabriel Valley cities, with approximately 19,100 kWh per job. As **Figure 18** illustrates, this is more than double the energy intensity of other cities in the San Gabriel Valley, which averaged 9,400 in 2010. If the City were to exclude direct access electricity use and the number of employees at the City of Hope (see **Figure 19**), Duarte's nonresidential electricity use per job would be less, approximately 13,600 kWh, which is still higher than the regional average. The above-average energy use is due to higher energy demands of medical facilities such as the City of Hope and Santa Teresita Campus.

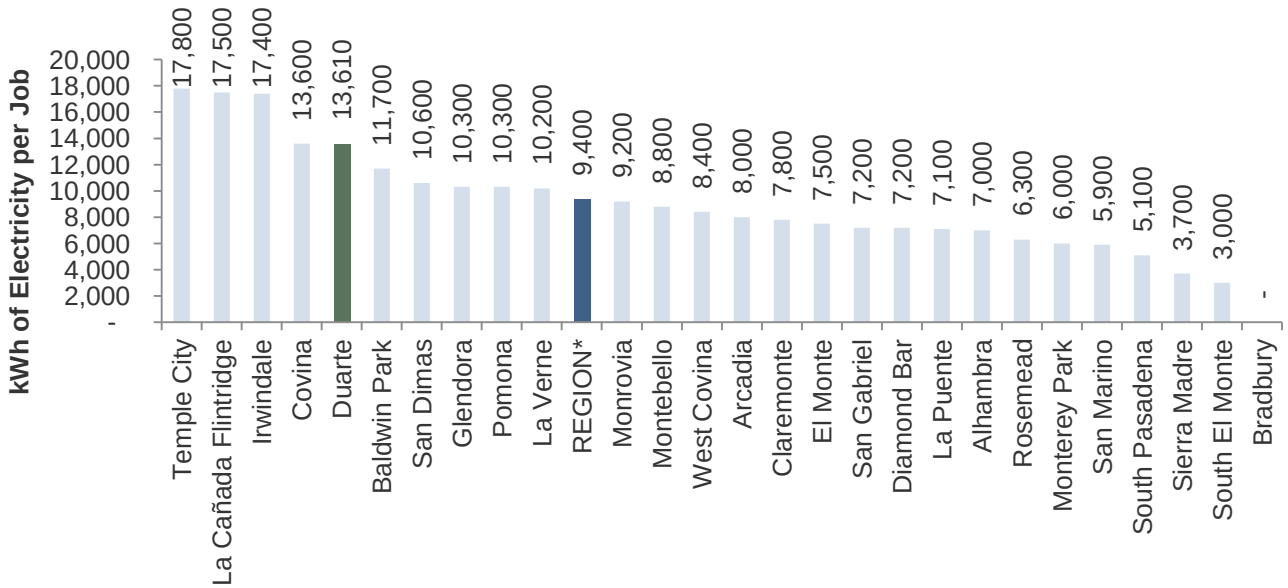
Figure 18: Annual Average kWh of Electricity Use Per Job, 2010



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

Source: Southern California Edison, 2012.

Figure 19: Annual Average kWh of Electricity Use Per Job Excluding City of Hope, 2010



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

Source: Southern California Edison, 2012.

MUNICIPAL ELECTRICITY USE

In 2005, the City of Duarte used 2,054,500 kWh from building and outdoor facilities, and lighting. **Table 19** depicts total municipal electricity use and provides detailed energy totals by rate class for 2005. There are two primary categories in which Duarte'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, there are non-demand rated (GS-1), and demand rated (GS-2). Most of the City's larger facilities and buildings such as City Hall, the senior center and the teen center fall into the GS-2 category, meaning that 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. In 2005, 826,950 kWh or 78% of the City's building- and facility-related electricity use fell into the demand rated group, with the non-demand rated accounts totaling 232,720 kWh.

In the public lighting category are five types of rate classes: outdoor lighting (OL-1, AL-2), SCE-owned streetlights (LS-1), unmetered City-owned streetlights (LS-2), metered City-owned streetlights (LS-3), and traffic signals and controllers (TC-1). Outdoor area lighting in Duarte used 191,760 kWh in 2005, and consists of lighting at city parks, parking lots, and any outdoor lighting fixture that is separately metered and not associated with lighting of street areas.

Table 19: City of Duarte Municipal Electricity Use, 2005

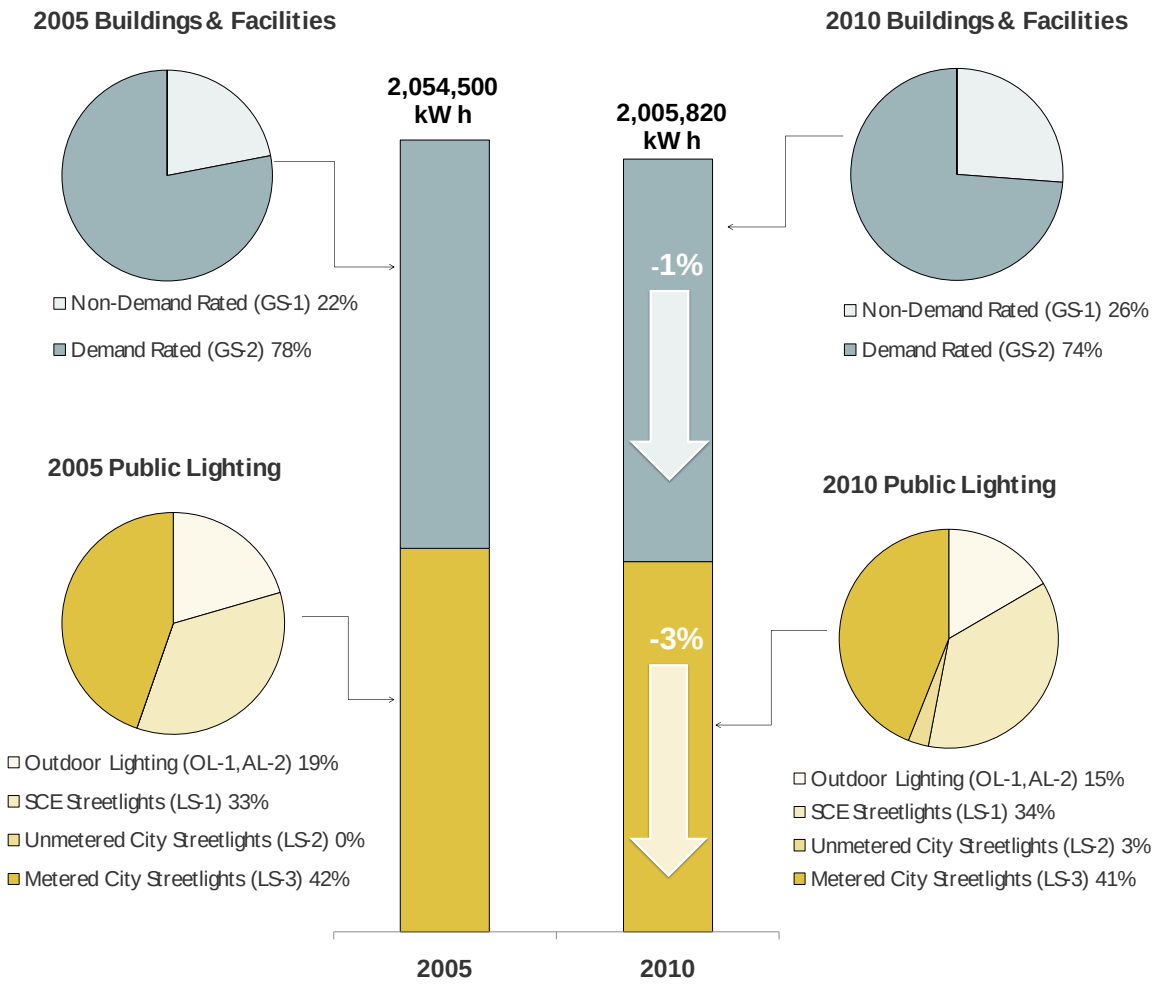
Buildings & Facilities	2005 Annual kWh	Percent of 2005 Total kWh
Non-Demand Rated (GS-1)	232,720	12%
Demand Rated (GS-2)	826,950	40%
Total Buildings & Facilities	**1,059,670**	**52%**
Lighting	2005 Annual kWh	**Percent of 2005 Total kWh**
Outdoor Area Lighting (OL-1, AL-2)	191,760	9%
SCE-Owned Streetlights (LS-1)	325,410	16%
Unmetered City-Owned Streetlights (LS-2)	389,870	19%
Metered City-Owned Streetlights (LS-3)	27,770	1%
Traffic Lights (TC-1)	60,020	3%
Total Lighting	**994,830**	**48%**
Total All Municipal Accounts	**2,054,500**	**100%**

Source: Southern California Edison, 2012.

COMPARISON OF BASELINE YEAR TO 2010

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 20** compares the city's 2005 electricity use to 2010 data, and provides a breakdown of the types of activities in which that electricity is used. Between 2005 and 2010, the City's municipal electricity use declined approximately 2%.

Figure 20: Changes in Municipal Electricity Use by Rate Class, 2005–2010



The top 10 municipal electricity users by account are provided in **Table 20** below. Between 2005 and 2010, eight out of 10 facilities had a decrease in electricity use. Several of the facilities realized electricity savings in excess of 10%. The projects and improvements completed or in progress that the City has implemented at these facilities to reduce electricity consumption are identified and described in more detail in the next chapter.

Table 20: City of Duarte Top 10 Electricity Uses by Account, 2005–2010

Rank in 2005	Facility	Address	2005 Annual kWh	2010 Annual kWh	Change in kWh 2005-2010	2005 Annual Cost	2010 Annual Cost	Change in Costs 2005-2010
1	City Hall	1600 Huntington Dr.	595,920	540,600	-9%	$72,113	$72,368	0%
2	Senior Center	1610 Huntington Dr.	105,540	104,160	-1%	$16,412	$18,398	12%
3	Sheriff Satellite Station	1042 Huntington Dr.	67,140	62,610	-7%	$9,504	$10,124	7%
4	Teen Center	1400 Buena Vista St.	58,350	63,600	9%	$10,383	$12,756	23%
5	Old City Hall	1634 3rd St.	47,880	34,420	-28%	$8,471	$7,580	-11%
6	Royal Oaks Park	2627 Royal Oaks Dr.	41,640	36,920	-11%	$5,662	$5,806	3%
7	South Yard -Transit	1850 Highland Ave.	26,000	23,250	-11%	$3,674	$3,708	1%
8	Encanto Park	751 Encanto Pkwy.	18,550	9,060	-51%	$2,780	$1,643	-41%
9	Parking Lot Lighting	1398 Huntington Dr.	16,720	17,780	6%	$2,411	$2,908	21%
10	Las Posadas Street	1520 Las Posadas	10,390	8,900	-14%	$1,554	$1,555	0%

Source: Southern California Edison, 2012

CHAPTER 4

ENERGY EFFICIENCY STRATEGY

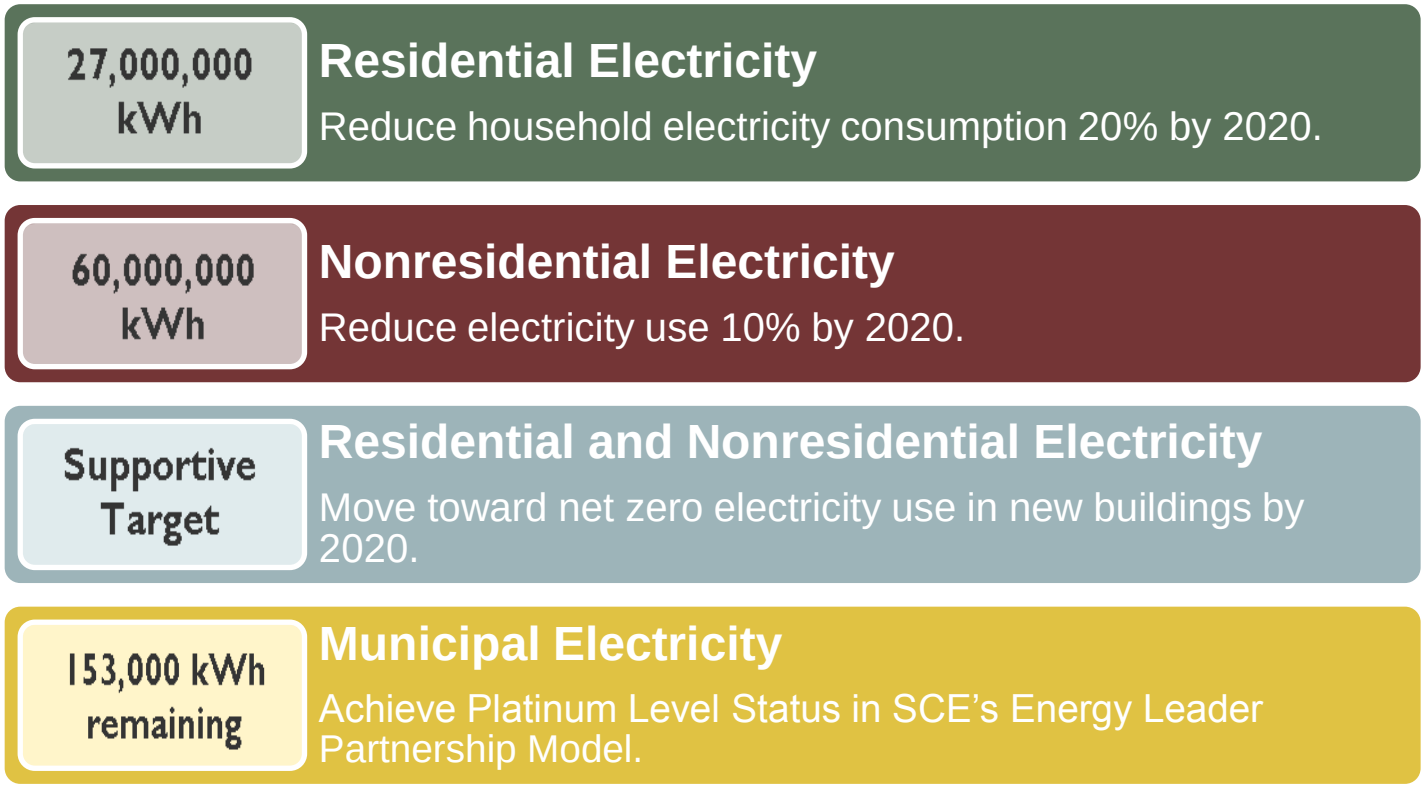
ENERGY EFFICIENCY REDUCTION TARGETS

The City of Duarte has 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 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 EAP 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 21**. Each reduction target is supported by a series of goals, policies, and actions.

Figure 21: Duarte's Energy Efficiency Targets



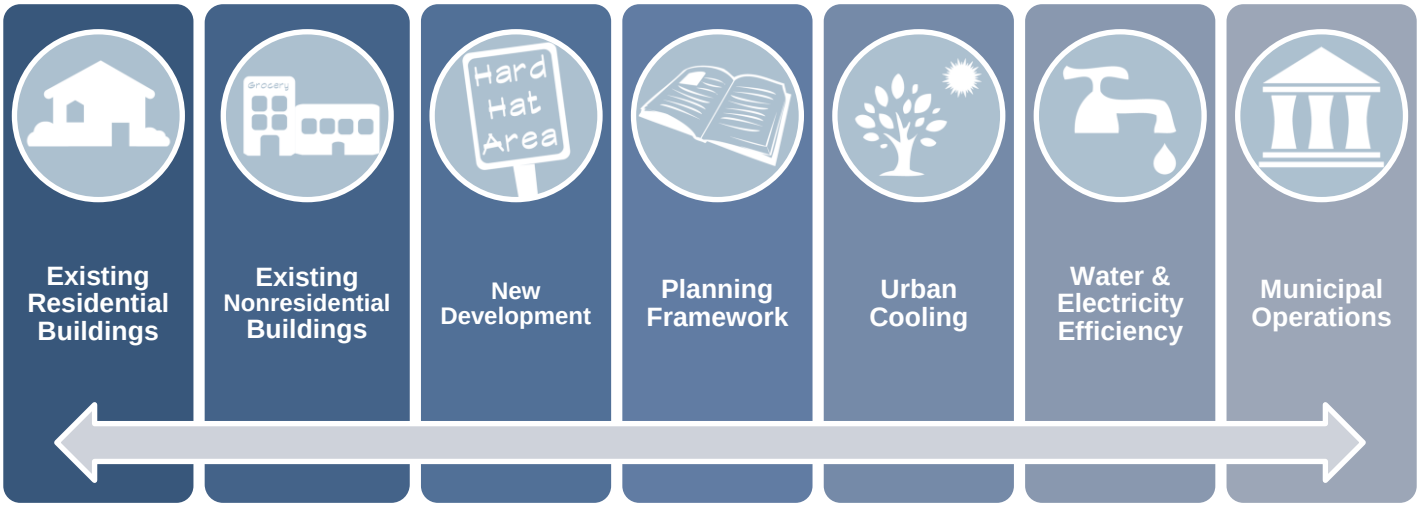
STRATEGY STRUCTURE

In order to achieve the target electricity reductions by 2020, the City of Duarte 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 22** below.

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 EAP. 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 topic areas identified.
- 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 provide interim steps or supporting strategies and the range of opportunities to increase the electricity reduction potential of a policy.

Figure 22: Energy Efficiency Strategy Topic Areas



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 EAP 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 Duarte. Not only will electricity efficiency actions reduce utility bills, but they also provide an opportunity to improve the efficiency 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 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, kWh of electricity, is combined with the performance targets and indicators identified in this EAP to calculate the range of potential reduction benefit for each policy. This approach ensures that the City's electricity reductions are tied to the baseline and anticipated uses that will occur in Duarte. Details on the assumptions, methods, and citations used in the electricity reduction quantifications are in **Appendix C**.

COMMUNITY-WIDE ELECTRICITY EFFICIENCY STRATEGIES

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

GOAL 1: REDUCE AVERAGE HOUSEHOLD ENERGY COSTS.

POLICY 1.1: PROMOTE ENERGY CONSERVATION BY RESIDENTS OF EXISTING RESIDENTIAL STRUCTURES.

Actions

- Host regular events or meet regularly with homeowner groups to promote energy conservation actions.
- Participate in or host energy-efficient lighting exchange events and programs.
- Encourage resident participation in energy monitoring programs that inform energy use decisions and reduce peak energy demand.

POLICY 1.1
2020 kWh Reduction:
2,641,670 – 6,762,670
2020 $MTCO_2e$ Reduction:
700 – 1,800
Co-Benefits:
Reduces Peak Energy Demand, Supports Community Education, Fulfills ELP Program Requirements, Reduces Monthly Utility Costs

POLICY 1.2: REDUCE ENERGY USE AND PLUG LOAD DEMAND THROUGH UPGRADES TO HOUSEHOLD APPLIANCES AND EQUIPMENT.

Actions

- Promote existing energy efficiency rebate offerings for appliances, heating, and ventilation equipment, and lighting fixtures.
- Promote the use of smart-grid-integrated appliances.
- Promote resident participation in existing appliance recycling and rebate programs.

POLICY 1.2
2020 kWh Reduction:
33,400 – 198,370
2020 $MTCO_2e$ Reduction:
10 - 50
Co-Benefits:
Permanent Energy Reduction, Reduces Peak Energy Demand, Supports Local Economy & Job Creation

POLICY 1.3: FACILITATE VOLUNTARY RESIDENTIAL ENERGY EFFICIENCY IMPROVEMENTS THROUGH ENERGY BENCHMARKING AND RETROFIT PROGRAMS.

Actions

- Host energy efficiency or renewable energy financing workshops.

POLICY 1.3
2020 kWh Reduction:
674,900 – 3,599,300
2020 $MTCO_2e$ Reduction:
–180 - 960
Co-Benefits:
Permanent Energy Reduction, Reduces Peak Energy Demand, Improves Indoor Environmental Quality, Reduces Monthly Utility Costs, Supports Local Economy & Job Creation

- Provide a website and/or 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.
- Share results of locally representative building energy efficiency audits and retrofits on the City's website and through other publications to show people the costs and benefits of energy efficiency improvements.
- Encourage residential homeowners to participate in the Energy Upgrade California program to maximize education and access to incentives to improve the energy efficiency of their homes.
- Promote development of the local workforce by supporting training programs such as those provided by the Foothill Workforce Investment Board and Build It Green which could support contractor training and certification for energy efficiency retrofits, including Building Performance Institute (BPI) training, or other electricity efficiency workforce development programs.
- Seek grant funding for a neighborhood residential retrofit pilot program, which would partially or fully fund audits for representative house types to identify common electricity efficiency opportunities that can be applied throughout the community.

POLICY 1.4

2020 kWh Reduction:

221,000 – 1,060,700

2020 $MTCO_2e$ Reduction:

60 - 280

Co-Benefits:

Permanent Energy Reduction, Improves Indoor Environmental Quality, Reduces Monthly Utility Costs, Supports Local Economy & Job Creation

POLICY 1.4: IDENTIFY OPPORTUNITIES TO IMPROVE THE ENERGY EFFICIENCY OF RENTER-OCCUPIED HOUSING UNITS.

Actions

- Encourage multi-family property owners to install sub-meters.
- Encourage multi-family property owners to participate in the Los Angeles County Property Assessed Clean Energy financing program to improve the energy efficiency of their properties.
- Support the creation of a shared landlord-tenant program to support the financing of energy efficiency retrofits to renter-occupied housing units.

GOAL 2: TRANSFORM DUARTE'S NONRESIDENTIAL BUILDINGS INTO A MODEL FOR ENERGY EFFICIENT COMMUNITIES.

POLICY 2.1

2020 kWh Reduction:

Supportive Measure

2020 $MTCO_2e$ Reduction:

Supportive Measure

Co-Benefits:

Supports Community Education, Reduces Peak Energy Demand, Fulfills ELP Program Requirements

POLICY 2.1: IDENTIFY OPPORTUNITIES TO CONSERVE ADDITIONAL ENERGY RESOURCES IN THE NONRESIDENTIAL BUILDING SECTOR.

Actions

- Partner with the Duarte Chamber of Commerce to highlight available conservation actions and energy efficiency programs to business and property owners.

- Encourage building and facility managers to participate in energy monitoring programs that inform energy use decisions and reduce peak energy demand such as SCE's Demand Response Program.
- Distribute information on energy conservation actions that can be implemented at local businesses through the City's website, Chamber of Commerce, and other avenues of communication between the City and local businesses.

POLICY 2.2: FACILITATE RETROFITS AND ENERGY EFFICIENCY IMPROVEMENTS TO EXISTING NONRESIDENTIAL BUILDINGS.

POLICY 2.2

2020 kWh Reduction:

1,679,360 – 6,717,430

2020 $MTCO_2e$ Reduction:

710 – 2,830

Co-Benefits:

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

Actions

- Create a prioritized list of energy-intense industries to target for additional education and/or financial support for retrofits.
- Partner with the Duarte Chamber of Commerce to identify local community banks and/or credit unions to promote and support low-interest energy efficiency loans or financing programs for nonresidential energy efficiency retrofits.
- 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.
- Support the development of a shared landlord-tenant program to support the financing of energy efficiency retrofits to renter-occupied buildings.
- Provide education and outreach to commercial property owners on the benefits of complying with state requirements on energy disclosure at the time of sale or lease of nonresidential property.

POLICY 2.3: MAXIMIZE ENERGY EFFICIENCY IN LARGE NONRESIDENTIAL FACILITIES GREATER THAN 25,000 SQUARE FEET.

POLICY 2.3

2020 kWh Reduction:

1,115,420 – 6,692,510

2020 $MTCO_2e$ Reduction:

470 – 2,820

Co-Benefits:

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

Actions

- Highlight energy-efficient practices employed by large facilities as case studies to the community.
- Work with large facilities to identify funding opportunities for additional energy efficiency programs and projects.
- Meet with energy program managers of industrial, commercial, medical, and large multi-family or group residential facilities to share information and identify opportunities for local collaboration and partnership to increase energy efficiency.

- Encourage businesses and facilities larger than 25,000 square feet to participate in SCE's Retrocommissioning Program to identify cost-effective ways to optimize building performance.

GOAL 3: BY 2020, NEW RESIDENTIAL CONSTRUCTION WITH FIVE UNITS OR MORE AND NEW NONRESIDENTIAL CONSTRUCTION PROJECTS OF 25,000 SQUARE FEET OR MORE IN DUARTE WILL HAVE NO NET IMPACT ON COMMUNITY-WIDE ENERGY DEMAND.

POLICY 3.1
2020 kWh Reduction:
Supportive Measure
2020 $MTCO_2e$ Reduction:
Supportive Measure
Co-Benefits:
Permanent Energy Reduction, Supports Community Education, Reduces Monthly Utility Costs

POLICY 3.1: THE CITY WILL WORK WITH PROJECT APPLICANTS TO MAXIMIZE THE ENERGY-EFFICIENT DESIGN AND ORIENTATION OF NEW BUILDINGS PURSUANT TO THE CITY'S SUSTAINABLE DEVELOPMENT PRACTICES.

Actions

- Collaborate with local green building organizations to provide training and workshops.
- Support the use of innovative and alternative building materials and designs that improve building energy efficiency.
- Work with project applicants to identify cost-effective measures to improve the energy efficiency of their project.
- Encourage project applicants to participate in SCE's "Savings by Design" program.

POLICY 3.2: REGULARLY UPDATE THE CITY'S SUSTAINABLE DEVELOPMENT PRACTICES TO INTEGRATE NEW OR REVISED BUILDING CODE STANDARDS THAT IMPROVE ENERGY EFFICIENCY.

Actions

- Continue to require project applications to comply with applicable mandatory and voluntary components of the City's Sustainable Development Practices.
- Provide contractor and architect training on green building and energy efficiency design and construction practices to demonstrate compliance with the City's Sustainable Development Practices.

Provide customized development standards for projects that voluntarily exceed the applicable minimum energy efficiency requirements of the City's Sustainable Development Practices.

POLICY 3.2
2020 kWh Reduction:
Supportive Measure
2020 $MTCO_2e$ Reduction:
Supportive Measure
Co-Benefits:
Permanent Energy Reduction, Supports Community Education, Reduces Monthly Utility Costs

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

POLICY 3.3
2020 kWh Reduction:
Supportive Measure
2020 $MTCO_2e$ Reduction:
Supportive Measure
Co-Benefits:
Reduces Peak Energy Demand, Supports Local Economy & Job Creation

Actions

- Encourage all size developments to install energy-efficient appliances within new and renovated buildings consistent with the City's Sustainable Development Practices.
- Promote existing energy efficiency rebate offerings for appliances, heating, and ventilation equipment, and lighting fixtures.
- Promote the use of smart-grid-integrated appliances in new development.

GOAL 4: GENERATE CITIZEN INTEREST AND SUPPORT FOR AN ENERGY EFFICIENT 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 Measure
2020 $MTCO_2e$ Reduction:
Supportive Measure
Co-Benefits:
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 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.
- Use grant funds or existing rehabilitation programs to fund electricity efficiency audits and/or retrofits.
- Explore the use of a revolving loan fund to finance residential building audits and/or the cost of retrofits not covered by other rebate programs.
- 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 Measure
2020 $MTCO_2e$ Reduction:
Supportive Measure
Co-Benefits:
Supports Community Education, Supports Local Economy & Job Creation

Actions

- Explore the possibility of reinstating funding for a "green home" category in a home beautification 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: INCREASE THE SHADING AND COOLING CAPACITY OF THE COMMUNITY'S URBAN FOREST THROUGH ADDITIONAL TREE PLANTING, PRESERVATION OF EXISTING TREES, AND PROPER MAINTENANCE.

POLICY 5.1
2020 kWh Reduction:
44,320 – 265,910
2020 $MTCO_2e$ Reduction:
10 - 70
Co-Benefits:
Reduces Peak Energy Demand, Reduces Urban Air Temperatures

Actions

- Host events, workshops, or community "work days" to complete voluntary, low-cost actions that facilitate urban cooling such as tree plantings.
- Work with local and/or regional partners to increase tree planting efforts.
- Require projects to install, maintain, and replace trees on streets, parkways, and parks in compliance with the City's municipal code.
- Work with project applicants to design landscaping to shade building exteriors from the summer sun.

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

POLICY 5.2
2020 kWh Reduction:
120,060 – 372,570
2020 $MTCO_2e$ Reduction:
40 - 120
Co-Benefits:
Reduces Peak Energy Demand, Reduces Urban Air Temperatures

Actions

- Projects subject to compliance with the Sustainable Development Practices will have roofing and surface pavement materials with high-reflectivity or permeable surface installed to reduce the urban heat island effect.
- Promote cost-effective opportunities to residents and business owners to install cool roofs, light-colored paved surfaces, and permeable pavement.

GOAL 6: INTEGRATE WATER CONSERVATION EFFORTS INTO NEW AND EXISTING DEVELOPMENT TO CONSERVE ENERGY USED TO PUMP, TREAT, AND CONVEY WATER.

POLICY 6.1: ENCOURAGE VOLUNTARY WATER CONSERVATION, EFFICIENT USE BEHAVIORS, AND RELATED ENERGY EFFICIENCY EFFORTS IN THE COMMUNITY.

POLICY 6.1
2020 kWh Reduction:
Supportive Measure
2020 $MTCO_2e$ Reduction:
Supportive Measure
Co-Benefits:
Conserves Water, Reduces Monthly Utility Costs

Actions

- Participate in ongoing regional efforts to promote water conservation.
- Encourage California American Water to continue to offer free water conservation kits and nonresidential water surveys to customers.
- Work with project applicants to identify water conservation opportunities in new or retrofitted buildings.

POLICY 6.2: PROMOTE WATER EFFICIENT LANDSCAPING PRACTICES.

POLICY 6.2
2020 kWh Reduction:
122,140 – 135,000
2020 $MTCO_2e$ Reduction:
30 - 40
Co-Benefits:
Supports Community Education, Conserves Water, Reduces Monthly Utility Costs

Actions

- Promote water landscaping efficiency and the use of irrigation controls.
- Install educational information or demonstration gardens on City property or encourage developers to promote water conservation landscape practices.
- Encourage installation and use of greywater and rainwater harvesting systems to reduce outdoor potable water use.
- Continue to require applicable landscaping projects to comply with the City's Water Efficient Landscape Ordinance.

POLICY 6.3: FACILITATE THE USE OF WATER-CONSERVING APPLIANCES.

POLICY 6.3
2020 kWh Reduction:
90,930 – 100,500
2020 $MTCO_2e$ Reduction:
20 - 30
Co-Benefits:
Supports Community Education, Conserves Water, Reduces Monthly Utility Costs

Actions

- Partner with California American Water to provide incentives and rebates to customers that install water-conserving appliances.
- Partner with California American Water to bulk-purchase and distribute water-conserving appliances at lower rates than available at the individual level.

POLICY 6.4: MAXIMIZE THE EFFICIENT USE OF LIMITED WATER RESOURCES THROUGH EFFICIENT BUILDING AND LANDSCAPING PRACTICES IN NEW DEVELOPMENT.

POLICY 6.4
2020 kWh Reduction:
17,920 – 19,810
2020 $MTCO_2e$ Reduction:
0 - 10
Co-Benefits:
Conserves Water, Reduces Monthly Utility Costs

Actions

- Require new development to comply with applicable water conservation measures of the City's Sustainable Development Practices and the California Green Building Code requirements for water conservation.
- Identify opportunities to integrate the public education efforts related to water efficiency identified in the City's Sustainable Development Practices into new development or renovation projects.
- Revise the City's Sustainable Development Practices as necessary to comply with State building codes and regulations regarding water efficiency and conservation.

MUNICIPAL ELECTRICITY EFFICIENCY PROJECTS AND POLICIES

Energy Efficiency Projects

A key objective of this EAP is to identify prioritized, actionable, turnkey strategies and projects. The EAP 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 completed a series of energy efficiency projects at City facilities in recent years through a variety of funding sources identified in **Table 21.**

Table 21: Recent Energy Efficiency Projects

Year Completed	Project	Project Cost	Annual Energy Savings (kWh/yr)*	Annual Utility Savings ($/yr)
2011	Outdoor Lighting Project		142,757	$ 22,410
2011	HVAC upgrades		27,368	$ 4,300
2011	Lighting Controls		6,784	$ 1,070
2011	Vending Machine Controls		3,556	$ 560
2011	Building Controls		22,508	$ 3,530
2011	Lighting Upgrades		110,999	$17,430
2012	Install 16 plug load sensors		2,288	$ 360

**Note: All yearly savings based on SCE forecasted and incentivized energy savings.*

Source: City of Duarte, 2012.

NEAR-TERM PROJECTS

The City has committed to prioritizing the implementation of projects with a payback period of four years of less, which are identified in **Table 22.** 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 22: Near-Term Energy Efficiency Projects

Location	Project	Project Cost	SCE Incentive	Annual Energy Savings (kWh/year)	Annual Utility Savings ($/yr)	Completion Date	Funding Source
Community Center – 1600 Huntington Dr.	Install variable speed drive pumps, exterior lighting, and pool-lighting project	$27,325	$11,243	150,710	$23,600	Fall 2012	General Fund, SCE Incentive

Source: Willdan Energy Solutions 2012.

LONG-TERM MUNICIPAL POLICIES

In addition to the near-term projects, the City has identified additional policies and programs to be implemented to achieve Platinum Level Status in SCE's ELP program.

GOAL 7: CONSERVE ENERGY AND LIMITED FISCAL RESOURCES THROUGH ENERGY EFFICIENCY IMPROVEMENTS TO CITY FACILITIES AND INFRASTRUCTURE.

POLICY 7.1: 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 and regional partners to reduce the costs of energy-efficient appliances and equipment through bulk purchases.
- Integrate proper energy efficiency maintenance recommendations for appliances and equipment into the energy-efficient procurement policy.

POLICY 7.2: 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 use 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 with City decision-makers, staff, and the community as a means to demonstrate cost-effective energy efficiency projects.
- Participate in LA County's regional loan program to fund energy efficiency projects.

POLICY 7.3: 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.

Actions

- Continue to support City staff participation in regional planning efforts and trainings related to energy efficiency.
- Conduct energy benchmarking through EEMIS or other programs on a regular basis.

ENERGY EFFICIENCY SUMMARY

This EAP identifies a clear path for the City to achieve the community-wide electricity reduction targets target of 20% below 2005 residential electricity levels and 10% below 2005 nonresidential levels. **Figures 23 and 24** identify the low and high estimates of kWh reductions and GHG reductions to be achieved by 2020 by Goal. For a detailed summary of savings by goal and policy, see **Appendix C**.

Figure 23: Estimated 2020 kWh Savings by Goal

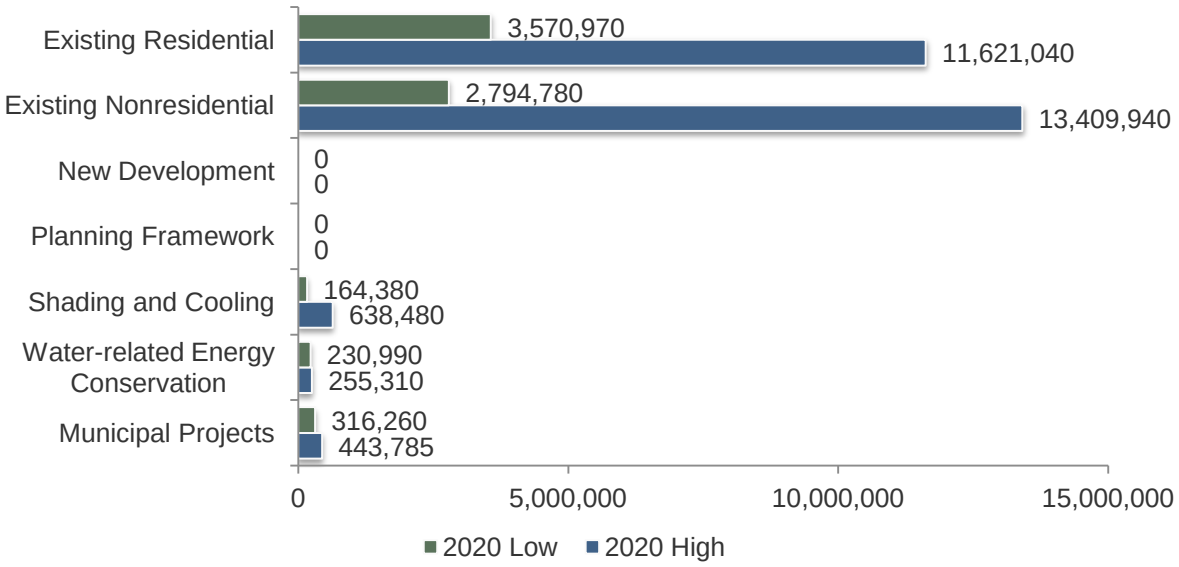
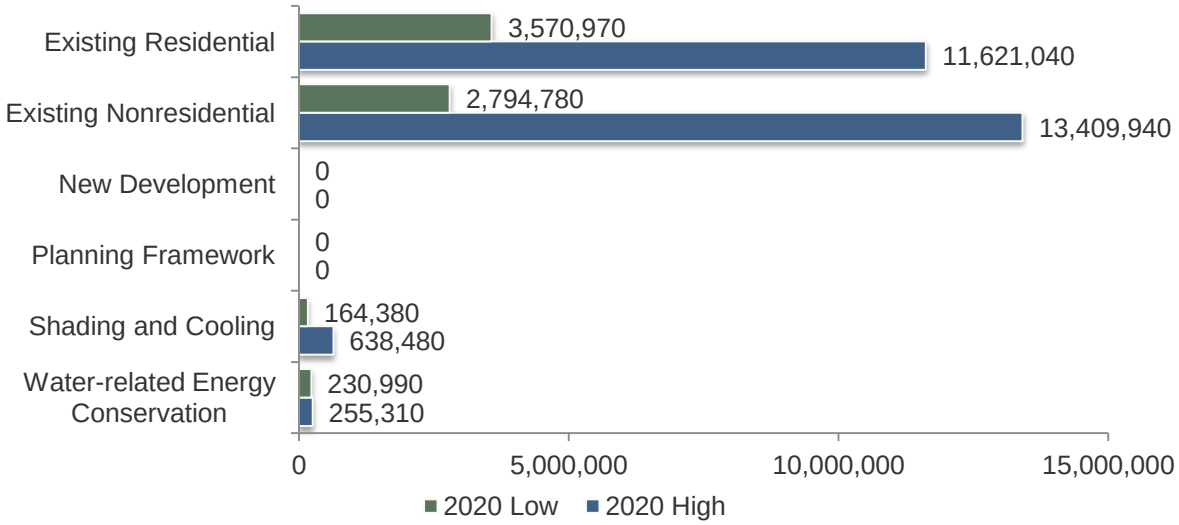


Figure 24: Estimated 2020 $MTCO_2e$ Savings by Goal



CHAPTER 5

IMPLEMENTATION

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

The EAP implementation will require City leadership to execute strategies and report on the progress of implementation. This Plan identifies the responsible department for each measure 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 EAP on an annual basis and report to the City Council on the EAP progress each year.

The City 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, and the Southern California Regional Energy Alliance, 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.

All program activity managers will be required to submit regular project updates to the City's designated EAP implementation coordinator and/or energy manager, including written reports of activities and project outcomes. The energy manager will track both short- and long-term progress toward EAP targets.

The SGVCOG is currently developing a regionally uniform method to collect, track, and report on EAP metrics and project outcomes. The City will work with the SGVCOG and the energy manager to benefit from these regional tools and standardize reporting processes.

City finance staff will maintain records of all project costs, funds, and expenditures. City staff will work closely with the energy manager to submit necessary reports to all funding agencies, including required financial reports and documentation of project outcomes. City staff or a third-party inspector will be responsible for all pre- and post- inspections of new or retrofitted work to confirm that the projects are installed, operational, and consistent with project objectives. The energy manager will be responsible for tracking all related project files and providing appropriate information to the SGVCOG and the SGVEWP.

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 timeframe, and co-benefits.

MONITORING AND UPDATING THE EAP

The City will use the implementation program to track, monitor and update the EAP. As the City reports on progress in implementing the EAP, staff will evaluate the effectiveness of each measure to ensure that the anticipated electricity and GHG reductions are occurring. In the event that GHG reductions do not occur as expected, the City will be able to modify and add further policies to the EAP to ensure the City meets its reduction target.

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

- Facilitate implementation of measures and actions related to municipal operations.
- Utilize the monitoring and reporting tool to assist with annual reports.
- Identify key staff responsible for monitoring.

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

- Conduct an annual review of electricity usage and associated GHG emissions.
- 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 EAP into a comprehensive climate action plan or greenhouse gas 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: CONTINUE TO DEVELOP COLLABORATIVE PARTNERSHIPS THAT SUPPORT IMPLEMENTATION OF THE EAP.

- Continue collaboration with the SGVCOG and participation as an active member of the SGVEWP and the Energy Environment and Natural Resource Committee.
- Participate in other SGVCOG-sponsored programs, projects, and events to help meet the goals described in this EAP.

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

- Work with the SGVCOG to identify regional funding sources to support policies in this EAP.
- Ensure implementation through the inclusion of policies and action in department budgets, the capital improvement program, and other plans as appropriate.
- Pursue local, regional, state, and federal grants as appropriate to support implementation.

IMPLEMENTATION AND MONITORING TOOLS

MONITORING CALCULATOR AND REPORTING TEMPLATE

To determine whether the City 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 measures will need to be implemented to meet the target.

The implementation and financial metrics identified in this EAP 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 EAP implementation, the workbook includes a reporting template and space for staff to enter the actual performance of each measure 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 EAP 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

As part of the SGVCOG's Strategic Plan Strategy(s) to promote long-term energy efficiency and climate action activities for local governments in the San Gabriel Valley by implementing long-term energy efficiency and climate action planning, the 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 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 and 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 store 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 23** 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 to the City to implement each policy are presented as low, medium, or high, and are defined as:

- **Low** – Minimal staff effort and no consultant assistance will be needed to complete the work. While this is a qualitative assessment by the lead department, this generally means that fewer than 100 hours of

staff work on an annual basis and no additional budget resources will be needed to implement the program.

- **Medium** – Some staff effort, consultant assistance, or supplemental funding for operations or capital projects will be needed to complete the analytical work to implement the program. Again, while this is a qualitative assessment by the lead department, this generally means between 100 to 400 hours of staff work and/or up to $10,000 for added budget resources will be needed to implement the program on an annual basis.
- **High** – Major staff effort, consultant assistance or supplemental funding for operations or capital projects will be needed to implement the program. Generally, this means that more than 400 hours of staff work and/or more than $10,000 for added budget resources will be needed to implement the program on an annual basis.

Table 23: Implementation Program Table

Policy	2020 Electricity Reductions (kWh)[1]	2020 Performance Targets	Participant Type	Average Reduction per Participant		Costs to the City	Beginning Time Frame	Implementing Department
1.1: Promote energy conservation by residents of existing residential structures.	-4,702,170	2,180	Households	2,050	kWh	Low	Near-Term	Community Development - Planning
1.2: Reduce energy use and plug load demand through upgrades to household appliances and equipment.	-115,885	670	Single-family households	130	kWh	High	Near-Term	Community Development - Planning
		120	Multi-family households	180	kWh			
1.3: Facilitate voluntary residential energy efficiency improvements through energy benchmarking and retrofit programs.	-2,137,100	900	Owner-occupied households	2,100	kWh	Medium	Near-Term	Community Development - Planning
1.4: Identify opportunities to improve the energy efficiency of renter-occupied housing units.	-640,850	280	Renter-occupied households	2,100	kWh	Medium	Mid-Term	Community Development
2.1: Identify opportunities to conserve additional energy resources in the nonresidential building sector.	Supportive - Not Estimated					Low	Near-Term	Community Development - Economic Development
2.2: Facilitate retrofits and energy efficiency improvements to existing nonresidential buildings.	-4,198,395	30	Nonresidential buildings <25,000 sq-ft	118,270	kWh	Low	Near-Term	Community Development - Economic Development
2.3: Maximize energy efficiency in large nonresidential facilities greater than 25,000 square feet.	-3,903,965	Up to 10	Nonresidential buildings >25,000 sq-ft	557,710	kWh	Low	Long-Term	Community Development - Economic Development

Policy	2020 Electricity Reductions (kWh)[1]	2020 Performance Targets	Participant Type	Average Reduction per Participant		Costs to the City	Beginning Time Frame	Implementing Department
3.1: The City will work with project applicants to maximize the energy efficient design and orientation of new buildings pursuant to the City's Sustainable Development Practices.		Supportive - Not Estimated				Low	Mid-Term	Community Development - Planning
3.2: Regularly update the City's Sustainable Development Practices to integrate new or revised building code standards that improve energy efficiency.		Supportive - Not Estimated				Medium	Long-Term	Community Development - Planning
3.3: The City will encourage the use of energy-efficient appliances and equipment in new buildings.		Supportive - Not Estimated				Low	Mid-Term	Community Development - Planning
4.1: Identify funding opportunities and financing programs to support community energy efficiency upgrades and retrofits.		Supportive - Not Estimated				Low	Near-Term	Community Development - Planning
4.2: Provide educational opportunities and recognize best practices to support energy-efficient behaviors and practices.		Supportive - Not Estimated				Low	Near-Term	Community Development - Planning
5.1: Increase the shading and cooling capacity of the community's urban forest through additional tree planting, preservation of existing trees, and proper maintenance.	-155,115	840	Households	30	kWh	Medium	Near-Term	Community Development - Public Works / Engineering
		20	Nonresidential buildings	1,290	kWh			
5.2: Maximize the use of cool roofs and surfaces to reduce building energy use.	-246,315	200	Households	1,110	kWh	Low	Mid-Term	Community Development - Planning
		10	Nonresidential buildings	1,730	kWh			

Policy	2020 Electricity Reductions (kWh)[1]	2020 Performance Targets	Participant Type	Average Reduction per Participant		Costs to the City	Beginning Time Frame	Implementing Department
6.1: Encourage voluntary water conservation and efficient use behaviors in the community.	Supportive - Not Estimated					Low	Near-Term	Community Development - Public Works / Engineering
6.2: Promote water efficient landscaping practices.	-128,570	22,680	Water users (capita)	4,730	Gallons	Low	Near-Term	Community Development - Planning
6.3: Facilitate the use of water-conserving appliances.	-95,715	22,680	Water users (capita)	3,150	Gallons	Low	Near-Term	Community Development - Planning
6.4: Maximize the efficient use of limited water resources through efficient building and landscaping practices in new development.	-18,865	780	New water users (capita)	2,770	Gallons	Low	Near-Term	Community Development - Planning
7.1: 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 Estimated	n/a	n/a	n/a	n/a	Low	Near-Term	Administrative Services
7.2: Identify additional opportunities to improve the energy efficiency of City facilities.	Not Estimated	n/a	n/a	n/a	n/a	High	On-Going	Administrative Services/Community Development - Planning
7.3: 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.	Not Estimated	n/a	n/a	n/a	n/a	Medium	Mid-Term	Community Development - Planning

CONTINUED PARTNERSHIP OPPORTUNITIES

One component to the successful implementation of the City's EAP 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. The City 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 EAP.

CHAPTER 6

CONCLUSION

This EAP is an opportunity for the City to create and achieve a long-term vision for energy efficiency. The City of Duarte has developed this EAP 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 policies and actions in this plan are meant to serve as a roadmap for reducing electricity use in the community and municipal facilities. While the primary focus of this Plan is on reducing electricity and related greenhouse gas emissions, the policies and actions in this Plan also provide the ancillary benefits of improving the quality of the local built environment, reducing household electricity costs, and stimulating the local economy through energy efficiency investments.

GLOSSARY

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 responsible for monitoring and reducing statewide greenhouse gas emissions, with a target to reduce emissions to 1990 levels by 2020.

Assembly Bill 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 comparisons 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. 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, 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, San Diego Gas & Electric, or Southern California Edison.

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 $MTCO_2e$.

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. The California Air Resources Board 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 at 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 Long Term 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 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 (SVGCOG) 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.

Greywater (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

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), hydrofluorocarbons (HFCs), and perfluorocarbons (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.

Methods

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 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.

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.

SCE (financial incentive)

Provisions issued by SCE 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

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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.

PERSONAL ENERGY ACTION SURVEY: SAN GABRIEL VALLEY COUNCIL OF GOVERNMENTS 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 (EAP) 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.

5) 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

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

- Resident
- Business Owner
- Work
- Other

7) 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

8) 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)

9) Do you rent or own your home?

- Rent house
- Rent apartment
- Own

10) How many people live in your household (including yourself)?

- 1
- 2
- 3
- 4 or more

11) 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

12) 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

13) 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

14) 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

15) 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 Duarte's Energy Action Plan (EAP) 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 EAP in response to local emissions characteristics. Specifically, the Inventory does the following:

- Presents GHGs from community-wide and municipal activities in calendar year 2005.
- 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 EAP and to establish GHG emissions reduction and energy efficiency targets, if desired.

Inventory and Forecast Purpose

This greenhouse gas (GHG) emissions inventory and forecast (Inventory) will act as a foundation for the City of Duarte's Energy Action Plan (EAP) 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 EAP in response to local emissions characteristics. Specifically, the Inventory does the following:

- Presents GHGs from community-wide and municipal activities in calendar year 2005.
- 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 EAP 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 Duarte 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 fromenergy 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 (also know 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 and 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 Solid 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 2005, 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 ($MTCO_2e$).

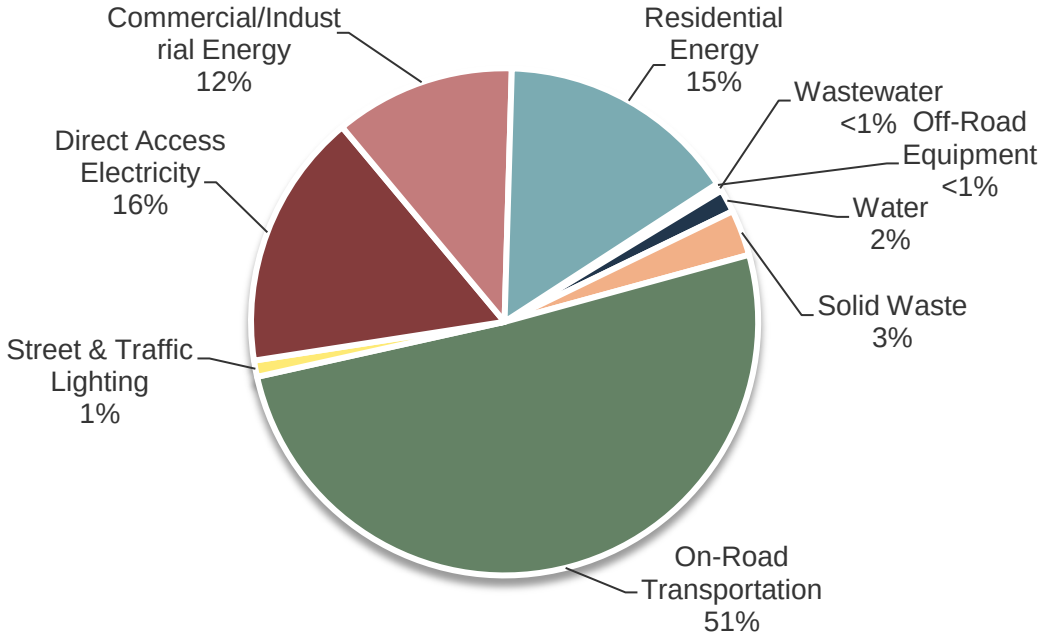
- **Sectors** – Emissions are grouped by the type of activity that generated the emissions, such as transportation, residential energy use, or commercial energy use.

COMMUNITY-WIDE INVENTORY

COMMUNITY SUMMARY

The City of Duarte emitted approximately 176,440 $MTCO_2e$ in the baseline year 2005. As shown in Figure B-1 and Table B-1, the transportation sector was the largest contributor to emissions (51%), producing approximately 89,590 $MTCO_2e$ in 2005. Direct access electricity use was the next largest sector with 28,900 $MTCO_2e$, or 16% of total emissions. Residential energy use (27,130 $MTCO_2e$ or 15% of total emissions) and commercial/industrial energy use (20,330 $MTCO_2e$, or 12% of total emissions) were the third and fourth largest emitters. The solid waste sector comprised 3% of the total emissions (5,170 $MTCO_2e$). The remaining 3% of emissions consisted of street and traffic lighting, water and wastewater electricity use, and off-road sources such as construction equipment. Combined, these remaining sectors contributed 5,320 $MTCO_2e$.

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



Community-Wide GHG Emissions by Sector

Sector	$MTCO_2e$	Percent of Total
Residential Energy	27,130	15%
Commercial/Industrial Energy	20,330	12%
Direct Access Electricity	28,900	16%
Street & Traffic Lighting	1,830	1%
On-Road Transportation	89,590	51%
Solid Waste	5,170	3%
Water	2,610	1%
Wastewater	570	<1%
Off-Road Equipment	310	<1%
Total	**176,440**	**100%**

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

DETAILED ANALYSIS BY SECTOR

Each sector in the community inventory consists of multiple subsectors that contribute to the total emissions. **Table B-2** summarizes activity data and GHG emissions for each community sector and subsector. This information shows the individual impact of each activity included in summary **Table B-1**. For example, the residential energy category in **Table B-1** consists of emissions from residential electricity and residential natural gas.

Detailed Activity Data and GHG Emissions, 2005

Sector	Activity Data		$MTCO_2e$
Residential Electricity	42,474,550	kWh	12,900
Residential Natural Gas	2,674,390	Therms	14,230
Commercial/Industrial Electricity	51,439,510	kWh	15,630
Commercial/Industrial Natural Gas	883,300	Therms	4,700
Direct Access Electricity	66,907,980	kWh	28,900
Street & Traffic Lighting	6,030,780	kWh	1,830
On-Road Transportation	170,659,600	VMT	89,590
Waste - Municipal Solid Waste	25,480	Tons of Waste	4,690
Waste - Alternative Daily Cover	2,890	Tons of ADC	450
Waste - Transformed	80	Tons Transformed	30
Off-Road Equipment	6,709	Households	310
Water	8,604,620	kWh	2,610
Wastewater - Direct**	-	$MTCO_2e$	-
Wastewater - Indirect	1,864,000	kWh	570
		Total	**176,440**

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

***Activity data was not available at the time of preparation of this report.*

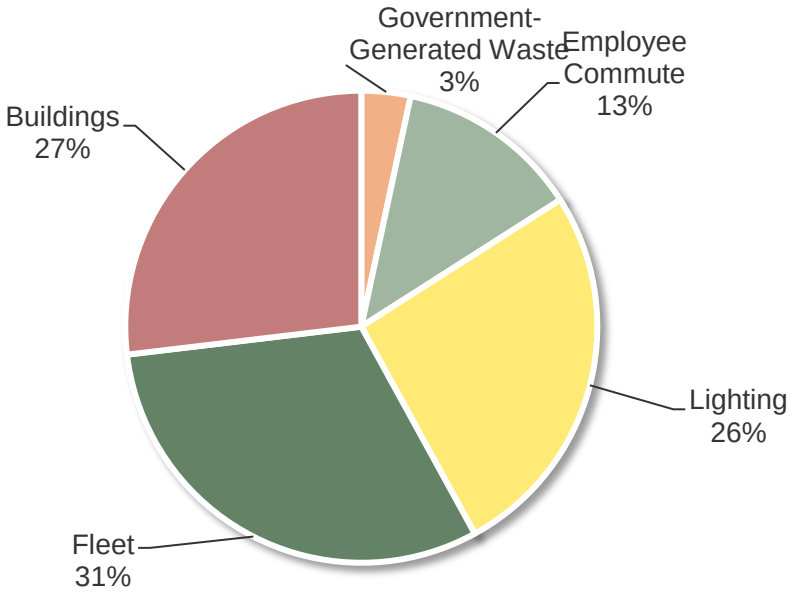
INFORMATIONAL ITEMS

Direct emissions from the Canyon Park landfill, located beneath the Rancho Duarte Golf Course, are included as informational items and are not included in the City's baseline Inventory. Landfill emissions are beyond the City's control because no efforts can be taken to reduce the emissions from this closed landfill. This Inventory is intended to guide future local policy decisions that relate to emissions the city can reduce; therefore, the discussion from this point forward excludes the direct landfill emissions. In 2005, the Canyon Park landfill emitted an estimated 18,000 $MTCO_2e$. As the biogenic material in the landfill decomposes, less and less GHGs are emitted over time until the process ceases.

MUNICIPAL SUMMARY

Municipal operations and activities by the City of Duarte in 2005 resulted in approximately 1,190 $MTCO_2e$. **Figure B-2** and **Table B-3** depict the contribution of each sector to total GHG emissions. The leading municipal contributor in 2005 was the fleet, followed closely by building energy use and lighting. Emissions from employee commute, 150 $MTCO_2e$, made up 13% of the total with government-generated waste making up the final 3% (40 $MTCO_2e$).

Figure B-2: Municipal GHG Emissions by Sector



Municipal GHG Emissions by Sector

Sector	$MTCO_2e$	Percent
Buildings**	320	27%
Fleet	370	31%
Lighting	310	26%
Employee Commute	150	13%
Government-Generated Waste	40	3%
Total	**1,190**	**100%**

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

***Natural gas activity data was not available at the time of this report.*

DETAILED ANALYSIS BY SECTOR

Much like the community inventory, the municipal inventory has multiple subsectors that are included in each sector reported in **Table B-3**. When these subsectors are broken out, the activity data for each, and their individual contributions to GHG emissions, can be reported as seen in **Table B-4**.

Detailed Municipal Activity Data and GHG Emissions

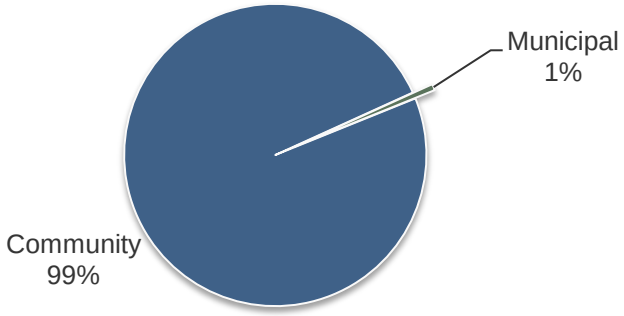
Sector	Subsector	Activity Data	Unit	$MTCO_2e$
Buildings	Electricity	1,059,670	kWh	320
	Natural Gas**	-	Therms	-
	Stationary Diesel	80	Gallons	<10
Fleet	Gasoline	17,400	Gallons	150
	Diesel	21,300	Gallons	220
Lighting	City-Owned Streetlights	417,640	kWh	130
	Traffic Lights	60,020	kWh	20
	SCE-Owned Streetlights	325,410	kWh	100
	Other Public Lighting	191,760	kWh	60
Employee Commute		345,190	VMT	150
Government-Generated Waste	Tons Disposed	200	Tons	40
			Total	**1,190**

** Due to rounding, the total may not equal the sum of component parts.*
***Activity data was not available at the time of this report and produces an inaccurately low 2005 emissions total.*

RELATION TO COMMUNITY-WIDE INVENTORY

Municipal emissions account for approximately 1% of community-wide emissions, as shown in **Figure B-3**. Municipal GHG emissions are considered a subset of community-wide GHG emissions since the majority of municipal activities occur within the boundaries of Duarte. This means that all municipal operations are included in the commercial/industrial, transportation, waste, or other categories of this community-wide inventory as applicable. For example, electricity use by City buildings is part of the community-wide commercial energy sector. Similar to the way in which businesses and factories perform their own facility-scale GHG inventories, the City municipal operations emissions inventory analyzes municipal emissions in more detail in order to help the City assess and identify its major sources of GHGs. **Figure B-3** is intended for informational purposes and to show the relative scale of municipal and community-wide emissions.

Figure B-3: Municipal & Community GHG Emissions



2010 EMISSIONS ASSESSMENT

Activity data for 2010 was available for many community and several municipal sectors including energy, transportation, waste, community off-road, indirect wastewater, and water. This information has been translated into GHG emissions for Duarte and all other participating cities. This common inventory year will serve as a shared platform that will allow activities from all participating cities in the San Gabriel Valley to be compared accurately. This 2010 interim inventory will also help cities track the GHG and energy reductions from programs implemented since the baseline year. **Table B-5** summarizes 2010 activity data and emissions and baseline emissions.

A few sectors, including off-road construction equipment, transformed waste, and direct access emissions increased 15% or more over the five-year period. Off-road construction emissions increased 81%, while the number of construction permits issued in 2005 and 2010 did not change significantly. 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 Duarte. OFFROAD2007 calculates construction emissions for all of Los Angeles County, and those emissions are assigned to Duarte 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. The cause of the 20% increase in direct access emissions does not seem linked to any particular action or policy, although it likely corresponds with the 13% drop in commercial/industrial electricity over the same period.

The cause of the decrease in solid waste emissions calculated is not known, although large fluctuations in this sector are common.

2010 Community Activity Data and Emissions, 2010

Sector	2005 Activity Data	2010 Activity Data	Percentage Change 2005-2010	Units	2005 $MTCO_2e$	2010 $MTCO_2e$	Percentage Change 2005-2010
Residential Electricity	42,474,550	41,295,435	-3%	kWh	12,900	11,890	-8%
Residential Natural Gas	2,674,390	2,518,300	-6%	Therms	14,230	13,400	-6%
Commercial/Industrial Electricity	51,439,510	47,076,821	-8%	kWh	15,630	13,550	-13%
Commercial/Industrial Natural Gas	883,300	879,250	0%	Therms	4,700	4,680	0%
Direct Access Electricity	66,907,980	80,591,752	20%	kWh	28,900	34,810	20%
Street & Traffic Lighting	6,030,780	6,235,453	3%	kWh	1,830	1,800	-2%
On-Road Transportation	170,659,600	178,539,830	5%	VMT	89,590	92,420	3%
Waste - Municipal Solid Waste	25,480	17,050	-33%	Tons of Waste	4,690	3,150	-33%
Waste - Alternative Daily Cover	2,890	3,410	18%	Tons of ADC	450	530	18%
Waste - Transformed	80	10	-88%	Tons Transformed	30	-	-
Off-Road Equipment	6,709	7,013	5%	Households	310	560	81%
Water	8,604,620	8,993,410	5%	kWh	2,610	2,590	-1%
Wastewater - Direct**	-	-	-	$MTCO_2e$	570	370	-35%
Wastewater - Indirect	1,864,000	1,948,000	5%	kWh	176,440	179,750	2%
Total					176,440	179,750	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 and produces an inaccurately low emissions total.*

Table B-6 outlines the change in municipal emissions from 2005 to 2010 along with all available 2010 activity data. Activity data for some sectors was not available at the time of this report; these sectors include building

natural gas, stationary diesel, fleet fuel use and government-generated waste. Building natural gas use is the only one of these sectors for which 2005 information is not used as a proxy; this is because baseline information was also not available at the time of this report.

Sectors with updated 2010 activity data are building electricity, all lighting electricity, and employee commute. Reductions in emissions were seen in building electricity, City-owned streetlights, SCE-owned streetlights, and other public lighting.

2010 Municipal Activity Data and Emissions

Sector	Subsector	2005 Activity Data	2010 Activity Data	Percentage Change 2005-2010	Units	2005 $MTCO_2e$	2010 $MTCO_2e$	Percentage 2005-2010
Buildings	Electricity	1,059,670	1,044,470	-1%	kWh	320	300	-6%
	Natural Gas**	-	-	-	Therms	-	-	-
	Stationary Diesel**	80	80	0%	Gallons	<10	<10	-
Fleet**	Gasoline	17,400	17,400	0%	Gallons	150	150	0%
	Diesel	21,300	21,300	0%	Gallons	220	220	0%
Lighting	City-Owned Streetlights	417,640	419,580	0%	kWh	130	120	-8%
	Traffic Lights	60,020	68,640	14%	kWh	20	20	0%
	SCE-Owned Streetlights	325,410	325,020	0%	kWh	100	90	-10%
	Other Public Lighting	191,760	148,110	-23%	kWh	60	40	-33%
Employee Commute		345,190	345,190	0%	VMT	150	150	0%
Government-Generated Waste**	Tons Disposed	200	200	0%	Tons	40	40	0%
Total						**1,190**	**1,130**	-5%

** Due to rounding, the total may not equal the sum of component parts.*
***Activity data was not available. 2005 information is used as a proxy for fleet, stationary diesel and government-generated waste.*

BUSINESS-AS-USUAL FORECAST

A BAU forecast is an estimate of how GHG emissions will grow over time without influence from state, regional, and local reduction efforts. This BAU emissions forecast assumes 2005 energy consumption, waste disposal,

and energy efficiency rates and focuses on two target years: 2020 and 2035. The 2020 target year is estimated for consistency with AB 32 targets and 2035 is studied for consistency with the Senate Bill 375 horizon.

COMMUNITY BAU INDICATORS

Table B-7 lists the various growth indicators and sources used in the forecasting of Duarte's community-wide emissions. 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 Duarte 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.

Community BAU Growth Projections

Growth Indicator	Emissions Sector	2005	2010	2020	2035	% Change 2005-2035	Sources
Households	Residential Energy, Off-Road	6,710	7,010	7,400	7,900	18%	2010 Census, SCAG 2012 RTP
Jobs	Commercial/ Industrial Energy	6,680	6,750	7,000	7,300	8%	2010 Census, SCAG 2012 RTP, SCAG 2003 RTP
Annual VMT	Transportation	170,659,600	178,539,800	195,409,800	223,753,200	31%	Fehr & Peers Transportation Consultants, SCAG 2003 RTP
Service Population (Residents + Jobs)	Solid Waste, Water, Wastewater, Landfill	29,360	28,070	29,100	30,700	5%	2010 Census, SCAG 2012 RTP

Community BAU Forecast

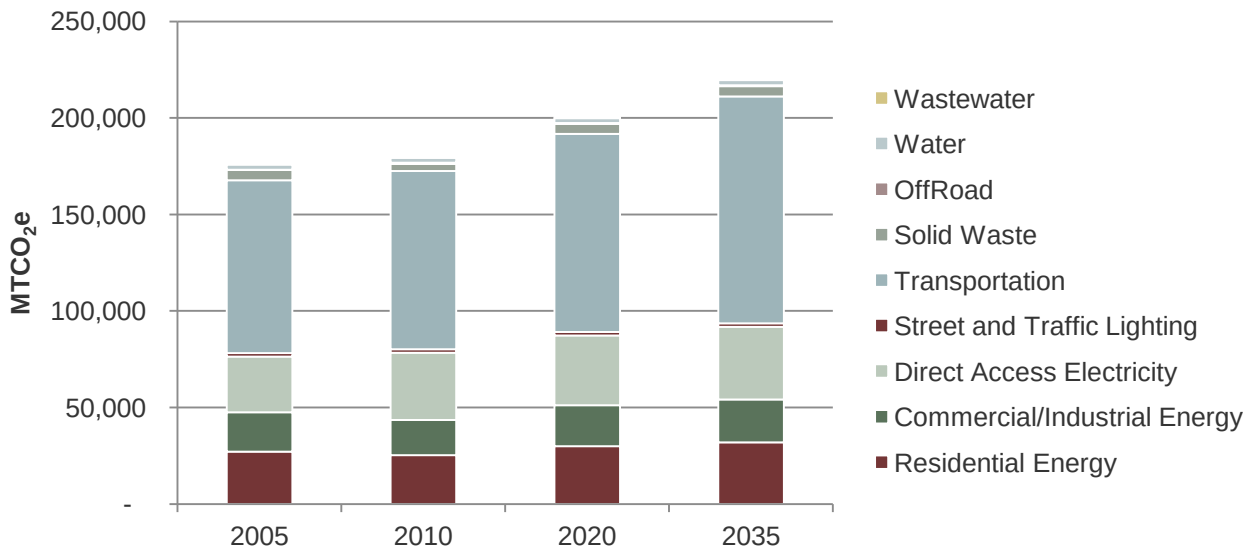
Table B-8 and **Figure B-4** summarize the growth forecast of GHG emissions by activity sector without any actions or policies in place to reduce GHG emissions. Under the BAU growth scenario, emissions are estimated to grow by 13% to 200,220 in 2020 and by 25% from baseline to 219,990 $MTCO_2e$ in 2035.

Community BAU Emissions by Sector

Sector	2005	2010	2020	2035
Residential Energy	27,130	25,290	29,930	31,950
Commercial/Industrial Energy	20,330	18,230	21,290	22,200
Direct Access Electricity	28,900	34,810	36,100	37,650
Street and Traffic Lighting	1,830	1,800	1,830	1,830
Transportation	89,590	92,420	102,580	117,460
Solid Waste	5,170	3,680	5,130	5,400
Off-Road Equipment	310	560	200	170
Water	2,610	2,590	2,590	2,730
Wastewater	570	370	570	600
Total	**176,440**	**179,750**	**200,220**	**219,990**
Percent Growth	**0%**	**2%**	**13%**	**25%**

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

Figure B-4: *– Community BAU Emissions by Sector*



MUNICIPAL BAU FORECAST

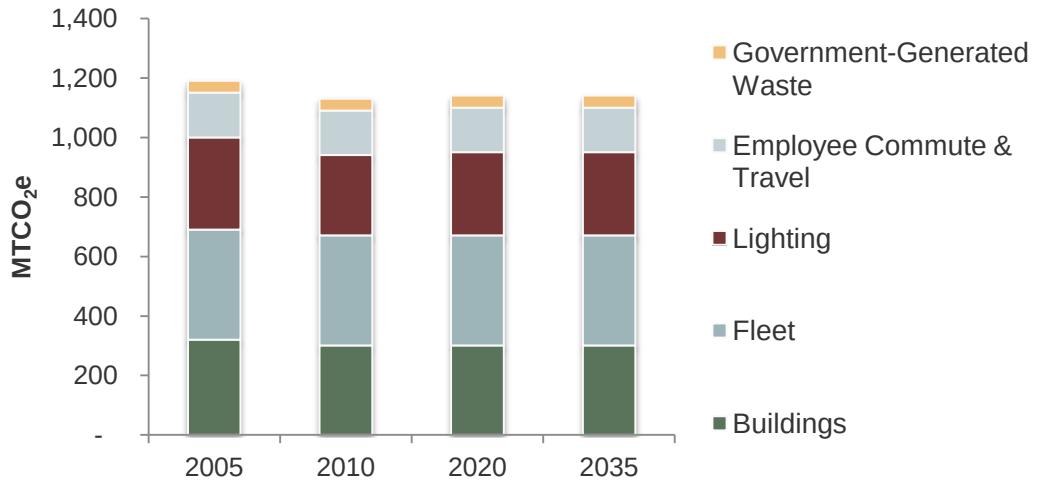
The City of Duarte's municipal forecast assumes a no-growth scenario for municipal operations in the forecast years (see **Table B-9** and **Figure B-5**). This is based upon correspondence and feedback from City staff that there are no solidified plans for expansion of services in future years. There are, however, small changes in lighting emissions from 2005 to 2020. These changes are unique to lighting due to the changes in the individual subsectors, i.e. City-owned streetlights, traffic lights, SCE-owned streetlights, and other public lighting, from 2005 to 2010. If a subsector showed a decrease in 2010, this value was used in the forecast years.

Municipal BAU Emissions by Sector ($MTCO_2e$)

Sector	2005	2010	2020	2035
Buildings	320	300	300	300
Fleet	370	370	370	370
Lighting	310	270	270	270
Employee Commute & Travel	150	150	150	150
Government-Generated Waste	40	40	40	40
Total	**1,190**	**1,130**	**1,130**	**1,130**

** Due to rounding, the total may not equal the sum of component parts.*
*** Natural gas activity data was not available at the time of this report.*

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.[1] 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.[2]

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

[1] California Air Resources Board 2010.

[2] California Public Utilities Commission 2009.

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 (LCFS). 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 highlighted above are included in the community-wide ABAU forecast. As shown in **Table B-10**, these state reduction efforts are anticipated to reduce BAU emissions by 24,900 $MTCO_2e$ in 2020 and 42,250 $MTCO_2e$ in 2035. The majority of these reductions are from the Pavley standards and the RPS. In comparison to the BAU scenario, 2020 emissions with state reduction measures are at baseline 2005 levels rather than 14% above. Similarly, 2035 emissions go from 25% above baseline 2005 levels in the BAU scenario to just 1% above baseline levels after state efforts are taken into account.

Impact of State Policies on Community GHG Emissions, 2020 and 2035 ($MTCO_2e$)

State Reductions Summary	2020	2035
Pavley I Reductions	-15,830	-27,170
RPS Reductions	-7,740	-13,360
CSI Reductions	-560	-430
CA Building Code Reductions	-770	-1,290
Total State Reductions	-24,900	-42,250

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

State reductions from baseline and 2010 were not quantified because the effects of those programs are already reflected in the activity data collected. For example, the efforts to increase the amount of clean energy in electricity through RPS are already captured in the emissions coefficients used to translate electricity use into $MTCO_2e$.

Municipal ABAU Forecast

Only certain state reduction programs affect the municipal BAU forecast. These include the RPS, the Pavley standards, and the Title 24 efficiency standards. The CSI is not applicable to municipalities and is not quantified. **Table B-11** shows the effect of the included state reduction efforts on BAU emissions. Emissions in 2020 are reduced by 130 $MTCO_2e$ in 2020 and 230 $MTCO_2e$ in 2035. The majority of the reductions came from the effect Pavley I standards will have on employee-owned vehicles and the municipal fleet. No reductions came from CalGreen because no new municipal buildings were planned at the time of this forecast. With state reductions included, municipal emissions are 13% below baseline levels in 2020 and 21% below 2035. The City has also taken major steps since 2005 to reduce energy use through energy efficiency and conservation efforts. All of these electricity reductions will be quantified and reported in the city's Energy Action Plan.

State-Adjusted Municipal BAU Forecast

State Reductions Summary	2020	2035
Pavley I Reductions	-80	-130
RPS Reductions	-50	-100
CA Building Code Reductions	-	-
Total State Reductions	-130	-230

** 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 EAP and a quantitative way of measuring the plan's success. The EAP'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.

As shown in **Table B-12**, the City would need to facilitate an additional 15% reduction in community-wide emissions to meet the AB 32 Scoping Plan GHG reduction goal for 2020 since emissions are forecasted to reach baseline levels in that year. In GHG emissions, this 15% reduction translates to a reduction of 25,610 $MTCO_2e$

below ABAU emissions in 2020. Similarly, to be on a trajectory toward the Executive Order S-3-05 target for 2050, the City would need to reduce community-wide emissions 55%, or 98,570 $MTCO_2e$, by 2035.

Community GHG Emissions and State-Recommended Reduction Targets

	2020
2005 Baseline Emissions ($MTCO_2e$)	176,440
AB 32 Target % Reduction from Baseline	15%
Emissions Goal	149,970
Adjusted BAU Forecast with State Reductions	175,320
Local Reduction Needed from Adjusted BAU	25,350

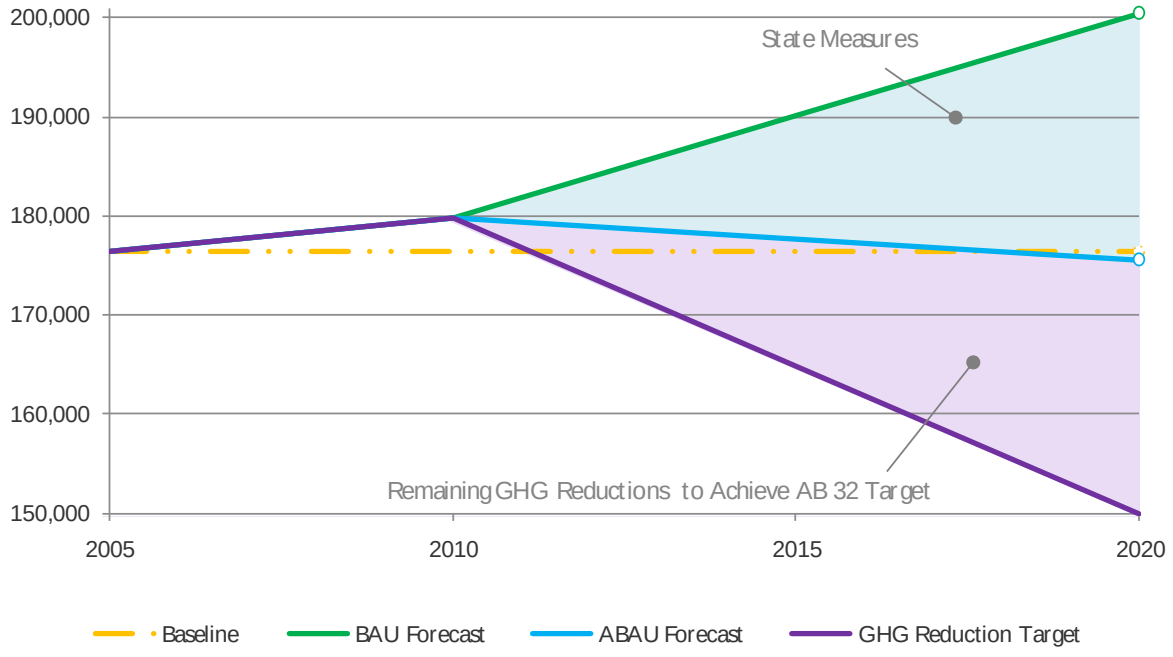
The State-recommended reduction targets for community-wide GHG emissions can also be applied to municipal operations. **Table B-13** outlines the State-recommended reduction targets and necessary reductions the City would need to facilitate in order to meet the recommended goals for 2020 and 2035. With reductions from the ABAU forecast, the State-recommended emissions reduction target for municipal operations will be met in 2020. However, in order to ensure that this target is met, additional efforts will need to be taken by the City in case reductions are not achieved in full by 2020.

Municipal GHG Emissions and State-Recommended Reduction Targets

	2020	2035
2005 Baseline Emissions ($MTCO_2e$)	1,190	1,190
State-Recommended Reduction Targets (percent below baseline)	15%	55%
State-Recommended Emissions Goal ($MTCO_2e$)	1,010	530
ABAU Forecast with State Reductions ($MTCO_2e$)	1,000	900
Local Reduction Needed from Adjusted BAU ($MTCO_2e$)	-10	470

Figure B-6 shows the City's BAU and ABAU forecasts in relation to baseline and recommended 2020 reduction targets. The gap from the top of the yellow bar to the top of the green bar represents the 25,610 $MTCO_2e$ "gap" to meet the State-recommended reduction target. The goal of the City's EAP under development is to close that gap with measures and policies to reduce the amount of electricity used in the city.

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 Duarte'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 EAP by providing a justifiable basis for the City's analysis of its impact on climate change. The next step will be for Duarte to review and confirm Inventory findings and determine how the community will achieve the desired 2020 GHG reduction target through development of the Energy Action Plan.

APPENDIX C

GHG TECHNICAL METHODS AND ASSUMPTIONS REPORT

This technical appendix provides a summary of the data sources, assumptions, and performance metrics utilized in this Energy Action Plan (EAP) 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.

The baseline GHG inventory and forecast serve as the foundation for quantifying the City's GHG reduction measures. Activity data from the inventory, e.g., vehicle miles traveled and kilowatt-hours (kWh) of electricity, is combined with the performance targets and indicators identified in this Plan to calculate the reduction benefit of each measure. This approach ensures that the City's kWh savings and GHG reductions are tied to the baseline and future activities that are actually occurring in the City.

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

Subsector	Original Emissions Factor		Source	Final Emissions Factor	
	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	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		

Subsector	Original Emissions Factor		Source	Final Emissions Factor	
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		
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

Subsector	Original Emissions Factor		Source	Final Emissions Factor	
	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.*

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

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 Waste	City records

Quantification Sources and Citations

Policy	1.1: Promote energy conservation by residents of existing residential structures.
Implementation Actions:	1. Host regular events or meet regularly with homeowner groups to promote energy conservation actions. 2. Participate in or host energy-efficient lighting exchange events and programs. 3. Encourage resident participation in energy monitoring programs that inform energy use decisions and reduce peak energy demand.
Implementation Time Frame:	Near-Term
Implementation Department(s):	Community Development - Planning
Applicable Reduction Target:	Reduce household electricity consumption 20%
kWh Reductions (2020):	-2,641,670 to -6,762,670
$MTCO_2e$ Reductions (2020):	-700 to -1,800
Assumed Reduction per Participant:	1,580 to 2,520 kWh per household
Performance Target(s) (2020):	1,680 to 2,680 households
Reduction Methods:	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 25-40% of city households.
Reduction Sources:	BPA (Bonneville Power Administration). 2011. Residential Behavior Based Energy Efficiency Program Profiles 2011. http://www.bpa.gov/Energy/n/pdf/BBEE_Res_Profiles_Dec_2011.pdf
Fiscal Impact:	Low

Policy	1.2: Reduce energy use and plug load demand through upgrades to household appliances and equipment.
Implementation Actions:	1. Promote existing energy efficiency rebate offerings for appliances, heating, and ventilation equipment, and lighting fixtures. 2. Promote the use of smart-grid-integrated appliances. 3. Promote resident participation in existing recycling and rebate programs.
Implementation Time Frame:	Near-Term
Implementation Department(s):	Community Development - Planning
Applicable Reduction Target:	Reduce household electricity consumption 20%
kWh Reductions (2020):	-33,400 to -198,370
$MTCO_2e$ Reductions (2020):	-10 to -50
Assumed Reduction per Participant:	50 to 200 single-family households and 70 to 280 multi-family households
Performance Target(s) (2020):	530 to 800 kWh per single-family household and 100 to 140 kWh per multi-family household
Reduction Methods:	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:	CAPCOA (California Air Pollution Control Officers Association). 2010. 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.
Fiscal Impact:	High

Policy	1.3: Facilitate voluntary residential energy efficiency improvements through energy benchmarking and retrofit programs.
Implementation Actions:	1. Host energy efficiency or renewable energy financing workshops. 2. Provide a website and/or 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. 3. Share results of locally representative building energy efficiency audits and retrofits on the City's website and through other publications to show people the costs and benefits of energy efficiency improvements. 4. Encourage residential homeowners to participate in the Energy Upgrade California program to maximize education and access to incentives to improve the energy efficiency of their home. 5. Promote development of the local workforce by supporting training programs such as those provided by the Foothill Workforce Investment Board and Build It Green which could support contractor training and certification for energy efficiency retrofits, including Building Institute (BPI) training, or other electricity efficiency workforce development programs. 6. Seek grant funding for a neighborhood residential retrofit pilot program, which would partially or fully fund audits for representative house types to identify common electricity efficiency opportunities that can be applied throughout the community.
Implementation Time Frame:	Near-Term
Implementation Department(s):	Community Development - Planning
Applicable Reduction Target:	Reduce household electricity consumption 20%
kWh Reductions (2020):	-674,900 to -3,599,300
$MTCO_2e$ Reductions (2020):	-180 to -960
Assumed Reduction per Participant:	1,000 to 3,200 kWh per owner-occupied household
Performance Target(s) (2020):	670 to 1,120 owner-occupied households
Reduction Methods:	Using electricity use from the Duarte Inventory and Forecast Report, the number of households reported by the California Department of Finance, and the percent of owner-occupied and renter-occupied households from the 2010 Census, an average electricity use per owner-occupied household and renter-occupied household was created for the 2005 baseline. High and low reductions from Los Angeles County Energy Upgrade California projects were multiplied by assumed participation rate ranges.

Policy	1.3: Facilitate voluntary residential energy efficiency improvements through energy benchmarking and retrofit programs.
Reduction Sources:	US Census Bureau. 2006-2010 American Community Survey 5-Year Estimates. Table DP-4: Selected Housing Characteristics. US Census Bureau. 2010 Census Results. Table DP-1: Profile of General Population and Housing Characteristics California Department of Finance. Table E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2010. REAS, Inc. (Residential Energy Assessment Services), Inc. Encino CA Home Energy Assessment. Building Doctors. 2011. Los Angeles CA Home Energy Performance Assessment. REAS, Inc. (Residential Energy Assessment Services), Inc. 2011. San Fernando CA Home Energy Performance Assessment.
Fiscal Impact:	Medium

Policy	1.4: Identify opportunities to improve the energy efficiency of renter-occupied housing units.
Implementation Actions:	1. Encourage multi-family property owners to install sub-meters. 2. Encourage multi-family property owners to participate in the Los Angeles County Property Assessed Clean Energy financing program to improve the energy efficiency of their properties. 3. Support the creation of a shared landlord-tenant program to support the financing of energy efficiency retrofits to renter-occupied housing units.
Implementation Time Frame:	Mid-Term
Implementation Department(s):	Community Development
Applicable Reduction Target:	Reduce household electricity consumption 20%
kWh Reductions (2020):	-221,000 to -1,060,700
$MTCO_2e$ Reductions (2020):	-60 to -280
Assumed Reduction per Participant:	1,000 to 3,200 kWh per renter-occupied household
Performance Target(s) (2020):	220 to 330 renter-occupied households

Policy	1.4: Identify opportunities to improve the energy efficiency of renter-occupied housing units.
Reduction Methods:	Using electricity use from the Duarte Inventory and Forecast Report, the number of households reported by the California Department of Finance, and the percentage of single-family and multi-family homes from the 2010 Census, an average electricity use per household was created for the 2005 baseline. Assumed high and low reductions were then applied to assumed participation rate ranges for both owner-occupied buildings and renter-occupied households. Renter-occupied households were assumed to have lower participation rates than owner-occupied units. Reductions were only applied to non-appliance electricity use and multi-family electricity use to avoid double counting with policies 1.2 and 1.3.
Reduction Sources:	US Census Bureau. 2006-2010 American Community Survey 5-Year Estimates. Table DP-4: Selected Housing Characteristics. US Census Bureau. 2010 Census Results. Table DP-1: Profile of General Population and Housing Characteristics. California Department of Finance. Table E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2010.
Fiscal Impact:	Medium

Policy	2.1: Identify opportunities to conserve additional energy resources in the nonresidential building sector.
Implementation Actions:	1. Partner with the Duarte Chamber of Commerce to highlight available conservation actions and energy efficiency programs to business and property owners. 2. Encourage building and facility managers to participate in energy monitoring programs that inform energy use decisions and reduce peak energy demand such as SCE's Demand Response Program. 3. Distribute information on energy conservation actions that can be implemented at local businesses through the City's website, Chamber of Commerce, and other avenues of communication between the City and local businesses.
Implementation Time Frame:	Near-Term
Implementation Department(s):	Community Development - Economic Development
Applicable Reduction Target:	Reduce nonresidential electricity use 10%
kWh Reductions (2020):	Supportive - Not Estimated
$MTCO_2e$ Reductions (2020):	Supportive - Not Estimated

Policy	2.1: Identify opportunities to conserve additional energy resources in the nonresidential building sector.
Assumed Reduction per Participant:	Supportive - Not Estimated
Performance Target(s) (2020):	Supportive - Not Estimated
Reduction Methods:	Supportive - Not Applicable
Reduction Sources:	Supportive - Not Applicable
Fiscal Impact:	Low

Policy	2.2: Facilitate retrofits and energy efficiency improvements to existing nonresidential buildings.
Implementation Actions:	1. Create a prioritized list of energy-intense industries to target for additional education and/or financial support for retrofits. 2. Partner with the Duarte Chamber of Commerce to identify local community banks and/or credit unions to promote and support low-interest energy efficiency loans or financing programs for nonresidential energy efficiency retrofits. 3. 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. 4. Support the development of a shared landlord-tenant program to support the financing of energy efficiency retrofits to renter-occupied buildings. 5. Provide education and outreach to commercial property owners on the benefits of complying with state requirements on energy disclosure at the time of sale or lease of nonresidential property.
Implementation Time Frame:	Near-Term
Implementation Department(s):	Community Development - Economic Development
Applicable Reduction Target:	Reduce nonresidential electricity use 10%
kWh Reductions (2020):	-1,679,360 to -6,717,430
$MTCO_2e$ Reductions (2020):	-710 to -2,830
Assumed Reduction per Participant:	78,840 to 157,690 kWh per participating nonresidential building less than 25,000 square feet
Performance Target(s) (2020):	20 to 40 nonresidential building less than 25,000 square feet

Policy	2.2: Facilitate retrofits and energy efficiency improvements to existing nonresidential buildings.
Reduction Methods:	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 Duarte in buildings less than 25,000 square feet. 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. LA county parcel data was used to focus on facilities less than 25,000 square feet in size.
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. US 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.
Fiscal Impact:	Low

Policy	2.3: Maximize energy efficiency in large nonresidential facilities greater than 25,000 square feet.
Implementation Actions:	1. Highlight energy-efficient practices employed by large facilities as case studies to the community. 2. Work with large facilities to identify funding opportunities for additional energy efficiency programs and projects. 3. Meet with energy program managers of industrial, commercial, medical, and large multi-family or group residential facilities to share information and identify opportunities for local collaboration and partnership to increase energy efficiency. 4. Encourage businesses and facilities larger than 25,000 square feet to participate in SCE's Retrocommissioning Program to identify cost-effective ways to optimize building performance.
Implementation Time Frame:	Long-Term
Implementation Department(s):	Community Development - Economic Development
Applicable Reduction Target:	Reduce nonresidential electricity use 10%

Policy	2.3: Maximize energy efficiency in large nonresidential facilities greater than 25,000 square feet.
kWh Reductions (2020):	-1,115,420 to -6,692,510
$MTCO_2e$ Reductions (2020):	-470 to -2,820
Assumed Reduction per Participant:	278,850 to 836,560 kWh per participating large facility over 25,000 sq-ft
Performance Target(s) (2020):	4 to 8 kWh per participating large facility over 25,000 sq-ft
Reduction Methods:	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 Duarte in buildings greater than 25,000 square feet. 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. LA county parcel data was used to focus on facilities greater than 25,000 square feet in size.
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. US 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
Fiscal Impact:	Low

Policy	3.1: The City will work with project applicants to maximize the energy-efficient design and orientation of new buildings pursuant to the City's Sustainable Development Practices.
Implementation Actions:	1. Collaborate with local green building organizations to provide training and workshops. 2. Support the use of innovative and alternative building materials and designs that improve building energy efficiency. 3. Work with project applicants to identify cost-effective measures to improve the energy efficiency of their project. 4. Encourage project applicants to participate in SCE's "Savings by Design" program.

Policy	3.1: The City will work with project applicants to maximize the energy-efficient design and orientation of new buildings pursuant to the City's Sustainable Development Practices.
Implementation Time Frame:	Mid-Term
Implementation Department(s):	Community Development - Planning
Applicable Reduction Target:	Move toward net zero electricity use in new residential and nonresidential buildings by 2020.
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
Reduction Methods:	Supportive - Not Applicable
Reduction Sources:	Supportive - Not Applicable
Fiscal Impact:	Low

Policy	3.2: Regularly update the City's Sustainable Development Practices to integrate new or revised building code standards that improve energy efficiency.
Implementation Actions:	1. Continue to require project applications to comply with applicable mandatory and voluntary components of the City's Sustainable Development Practices. 2. Provide contractor and architect training on green building and energy efficiency design and construction practices to demonstrate compliance with the City's Sustainable Development Practices. 3. Provide customized development standards for projects that voluntarily exceed the applicable minimum energy efficiency requirements of the City's Sustainable Development Practices.
Implementation Time Frame:	Long-Term
Implementation Department(s):	Community Development - Planning
Applicable Reduction Target:	Move toward net zero electricity use in new residential and nonresidential buildings by 2020.

Policy	3.2: Regularly update the City's Sustainable Development Practices to integrate new or revised building code standards that improve energy efficiency.
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
Reduction Methods:	Supportive - Not Applicable
Reduction Sources:	Supportive - Not Applicable
Fiscal Impact:	Medium

Policy	3.3: The City will encourage the use of energy-efficient appliances and equipment in new buildings.
Implementation Actions:	1. Encourage all size developments to install energy-efficient appliances within new and renovated buildings consistent with the City's Sustainable Development Practices. 2. Promote existing energy efficiency rebate offerings for appliances, heating, and ventilation equipment, and lighting fixtures. 3. Promote the use of smart-grid-integrated appliances in new development.
Implementation Time Frame:	Mid-Term
Implementation Department(s):	Community Development - Planning
Applicable Reduction Target:	Move toward net zero electricity use in new residential and nonresidential buildings by 2020.
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
Reduction Methods:	Supportive - Not Applicable
Reduction Sources:	Supportive - Not Applicable
Fiscal Impact:	Low

Policy	4.1: Identify funding opportunities and financing programs to support community energy efficiency upgrades and retrofits.
Implementation Actions:	1. Work with the San Gabriel Valley Council of Governments and other cities to pursue regional funding for residential audits and/or retrofits. 2. Pursue grants or other financial sources to fund home retrofits. 3. Identify local credit unions and financial institutions to underwrite loans that support energy efficiency upgrades and investment in the local economy. 4. Use grant funds or existing rehabilitation programs to fund electricity efficiency audits and/or retrofits. 5. Explore the use of a revolving loan fund to finance residential building audits and/or the cost of retrofits not covered by other rebate programs. 6. 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.
Implementation Time Frame:	Near-Term
Implementation Department(s):	Community Development - Planning
Applicable Reduction Target:	Supportive of residential, nonresidential and new development targets.
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
Reduction Methods:	Supportive - Not Applicable
Reduction Sources:	Supportive - Not Applicable
Fiscal Impact:	Low

Policy	4.2: Provide educational opportunities and recognize best practices to support energy-efficient behaviors and practices.
Implementation Actions:	1. Explore the possibility of reinstating funding for a "green home" category in a home beautification awards program to recognize and award prizes to homeowners that have achieved energy efficiency improvements in their homes to market opportunities to the community.
Implementation Time Frame:	Near-Term
Implementation Department(s):	Community Development - Planning
Applicable Reduction Target:	Supportive of residential, nonresidential and new development targets.
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
Reduction Methods:	Supportive - Not Applicable
Reduction Sources:	Supportive - Not Applicable
Fiscal Impact:	Low

Policy	5.1: Increase the shading and cooling capacity of the community's urban forest through additional tree planting, preservation of existing trees, and proper maintenance.
Implementation Actions:	1. Host events, workshops, or community "work days" to complete voluntary, low-cost actions that facilitate urban cooling such as tree plantings. 2. Work with local and/or regional partners to increase tree planting efforts. 3. Require projects to install, maintain, and replace trees on streets, parkways, and parks in compliance with the City's municipal code. 4. Work with project applicants to design landscaping to shade building exteriors from the summer sun.
Implementation Time Frame:	Near-Term
Implementation Department(s):	Community Development - Public Works/Engineering
Applicable Reduction Target:	Supportive of residential, nonresidential and new development targets.
kWh Reductions (2020):	-44,320 to -265,910

Policy	5.1: Increase the shading and cooling capacity of the community's urban forest through additional tree planting, preservation of existing trees, and proper maintenance.
$MTCO_2e$ Reductions (2020):	-10 to -70
Assumed Reduction per Participant:	10 to 50 kWh per household and 510 to 2,060 kWh per average nonresidential building
Performance Target(s) (2020):	670 to 1,010 households and 16 to 24 average nonresidential buildings
Reduction Methods:	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 kWh reductions per shade tree, taken from ICLEI's CAPPA tool and San Diego County's online tree database, were applied to target participation rates for both residential and nonresidential buildings.
Reduction Sources:	ICLEI - Local Governments for Sustainability. 2012. Climate and Air Pollution Planning Assistant (CAPPA) Version 1.5. San Diego County. San Diego County Tree Map. 2012. http://sandiegotreemap.org/map/.
Fiscal Impact:	Medium

Policy	5.2: Maximize the use of cool roofs and surfaces to reduce building energy use.
Implementation Actions:	1. Projects subject to compliance with the Sustainable Development Practices will have roofing and surface pavement materials with high-reflectivity or permeable surface installed to reduce the urban heat island effect. 2. Promote cost-effective opportunities to residents and business owners to install cool roofs, light-colored paved surfaces, and permeable pavement.
Implementation Time Frame:	Mid-Term
Implementation Department(s):	Community Development - Planning
Applicable Reduction Target:	Supportive of residential, nonresidential and new development targets.
kWh Reductions (2020):	-120,060 to -372,570
$MTCO_2e$ Reductions (2020):	-40 to -120

Policy	5.2: Maximize the use of cool roofs and surfaces to reduce building energy use.
Assumed Reduction per Participant:	950 to 1,270 kWh per households and 1,680 to 1,770 kWh per average nonresidential building
Performance Target(s) (2020):	110 to 280 households and 9 to 11 average nonresidential buildings
Reduction Methods:	Sacramento Municipal Utility District (SMUD) case studies were used to find a range of reductions per residential cool roof. Since the case studies were not in Los Angeles County, the reductions were reduced to be more conservative. These reductions were then applied to the target residential participation rate. For nonresidential reductions, the US Department of Energy (DOE) low-slope cool roof calculator was used to identify a range of kWh reductions per square foot. This range was then applied to the nonresidential target participation rate.
Reduction Sources:	Sacramento Municipal Utilities District. 2012. "Cool Roofs." https://www.smud.org/en/residential/save-energy/rebates-incentives-financing/cool-roofs.htm. US Department of Energy. 2012. "DOE Cool Roof Calculator Version 1.2" http://www.ornl.gov/sci/roofs%2Bwalls/facts/CoolCalcEnergy.htm.
Fiscal Impact:	Low

Policy	6.1: Encourage voluntary water conservation and efficient use behaviors in the community.
Implementation Actions:	1. Participate in ongoing regional efforts to promote water conservation. 2. Encourage California American Water to continue to offer free water conservation kits and nonresidential water surveys to customers. 3. Work with project applicants to identify water conservation opportunities in new or retrofitted buildings.
Implementation Time Frame:	Near-Term
Implementation Department(s):	Community Development - Public Works/Engineering
Applicable Reduction Target:	Supportive of residential, nonresidential and new development targets.
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

Policy	6.1: Encourage voluntary water conservation and efficient use behaviors in the community.
Reduction Methods:	Supportive - Not Applicable
Reduction Sources:	Supportive - Not Applicable
Fiscal Impact:	Low

Policy	6.2: Promote water efficient landscaping practices.
Implementation Actions:	1. Promote water landscaping efficiency and the use of irrigation controls. 2. Install educational information or demonstration gardens on City property to promote water conservation landscape practices. 3. Encourage installation and use of greywater and rainwater harvesting systems to reduce outdoor potable water use. 4. Continue to require applicable landscaping projects to comply with the City's Water Efficient Landscape Ordinance.
Implementation Timeframe:	Near-Term
Implementation Department(s):	Community Development - Planning
Applicable Reduction Target:	Supportive of residential, nonresidential and new development targets.
kWh Reductions (2020):	-122,140 to -135,000
MTCO2e Reductions (2020):	-30 to -40
Assumed Reduction per Participant:	4,720 gallons of water per person
Performance Target(s) (2020):	21,540 to 23,810 water customers (capita)
Reduction Methodology:	California Senate Bill (SB) x7-7 requires cities to reduce per capita water use 20% below baseline levels. This measure assumed the city will go beyond the SB 9 requirements by up to 5%. The reduction attributed outdoor water use from existing buildings are found in this measure to avoid double counting with policy 6.3 and 6.4.

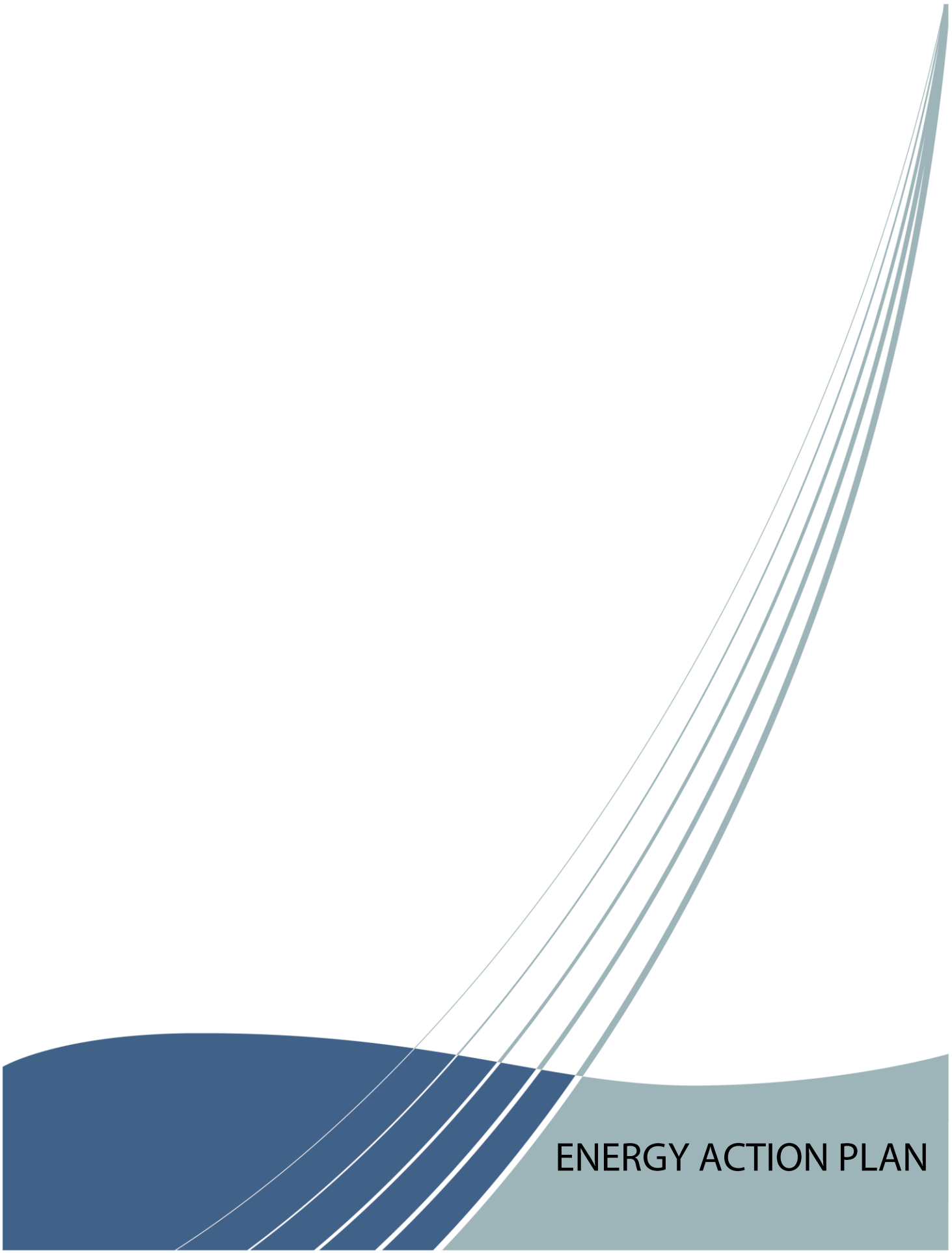
Policy	6.2: Promote water efficient landscaping practices.
Reduction Sources:	City of Duarte. GHG Inventory and Forecast Report DRAFT. (July 2012) Heaney, J.P et al. Nature of Residential Water Use and Effectiveness of Conservation Programs - Table 1. <http://bcn.boulder.co.us/basin/local/heaney.html> California Water Service Company (June 2011). California Water Service Company-2010 Urban Water Management Plan - East Los Angeles District. <http://www.calwater.com/your_district/uwmp/bk/2010 _Urban_Water_Management_Plan_(BK).pdf> Accessed October 7, 2011. Metropolitan Water District of Southern California (September 2007) Groundwater Assessment Study - Report Number 1308. <http://www.mwdh2o.com/mwdh2o/pages/yourwater/supply/groundwater/ gwas.html> Accessed October 7, 2011. California Department of Water Resources (2004). California's Groundwater Bulletin 118 - San Gabriel Valley Groundwater Basin <http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/ 4-13.pdf> Accessed September 19, 2011. Metropolitan Water District of Southern California (November 2010). The Regional Urban Water Management Plan <http://www.mwdh2o.com/mwdh2o/pages/yourwater/RUWMP/RUWMP _2010.pdf> Accessed October 6, 2011. California Energy Commission (2006). Refining Estimates of Water-Related Energy Use in California. PIER Final Project Report. Prepared by Navigant Consulting, Inc. CEC-500-2006-118.
Fiscal Impact:	Low

Policy	6.3: Facilitate the use of water-conserving appliances.
Implementation Actions:	1. Partner with California American Water to provide incentives and rebates to customers that install water conserving appliances. 2. Partner with California American Water to bulk-purchase and distribute water conserving appliances at lower rates than available at the individual level.
Implementation Timeframe:	Near-Term
Implementation Department(s):	Community Development - Planning
Applicable Reduction Target:	Supportive of residential, nonresidential and new development targets.
kWh Reductions (2020):	-90,930 to -100,500

Policy	6.3: Facilitate the use of water-conserving appliances.
MTCO2e Reductions (2020):	-20 to -30
Assumed Reduction per Participant:	3,150 gallons of water per person
Performance Target(s) (2020):	21,540 to 23,810 water customers (capita)
Reduction Methodology:	California Senate Bill (SB) x7-7 requires cities to reduce per capita water use 20% below baseline levels. This measure assumed the city will go beyond the SB 9 requirements by up to 5%. The reduction attributed indoor water use from existing buildings are found in this measure to avoid double counting with policy 6.3 and 6.4.
Reduction Sources:	City of Duarte. GHG Inventory and Forecast Report DRAFT. (July 2012) Heaney, J.P et al. Nature of Residential Water Use and Effectiveness of Conservation Programs - Table 1. <http://bcn.boulder.co.us/basin/local/heaney.html>
Fiscal Impact:	Low

Policy	6.4: Maximize the efficient use of limited water resources through efficient building and landscaping practices in new development.
Implementation Actions:	1. Require new development to comply with applicable water conservation measures of the City's Sustainable Development Practices and the California Green Building Code requirements for water conservation. 2. Identify opportunities to integrate the public education efforts related to water efficiency identified in the City's Sustainable Development Practices into new development or renovation projects. 3. Revise the City's Sustainable Development Practices as necessary to comply with State building codes and regulations regarding water efficiency and conservation.
Implementation Timeframe:	Near-Term
Implementation Department(s):	Community Development - Planning
Applicable Reduction Target:	Supportive of residential, nonresidential and new development targets.
kWh Reductions (2020):	-17,920 to -1,9810
MTCO2e Reductions (2020):	0 to -10
Assumed Reduction per Participant:	2,770 gallons of water per person
Performance Target(s) (2020):	740 to 820 new water customers (capita)

Policy	6.4: Maximize the efficient use of limited water resources through efficient building and landscaping practices in new development.
Reduction Methodology:	California Senate Bill (SB) x7-7 requires cities to reduce per capita water use 15% below baseline levels. This measure assumed the city will go beyond the SB 9 requirements by up to 5%. The reduction attributed all projected water use reductions from new buildings are found in this measure to avoid double counting with policy 6.2 and 6.3.
Reduction Sources:	City of Duarte. GHG Inventory and Forecast Report DRAFT. (July 2012) Heaney, J.P et al. Nature of Residential Water Use and Effectiveness of Conservation Programs - Table 1. <http://bcn.boulder.co.us/basin/local/heaney.html>
Fiscal Impact	Low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