
City of Inglewood



Municipal Greenhouse Gas Emissions Inventory Report

Prepared by:

South Bay Cities Council of Governments

5033 Rockvalley Road
Rancho Palos Verdes, CA 90275

January 2010

City of Inglewood GHG Emissions Inventory Report

Table of Contents

I.	Executive Summary	4
	A. Project Background	
	B. Purpose of Conducting a GHG Emissions Inventory	
	C. Scope of GHG Emissions Inventory	
	D. Inventory Methodology	
	E. Key Highlights and Findings	
	F. Future Steps	
II.	Local Government Profile Information	8
	A. Local Government Description	
III.	Municipal Emissions Inventory Results	10
	A. Inventory Introduction and Results	
	B. Emissions Trends	
	C. Forecasting and Setting GHG Emissions Reduction Targets	
IV.	Summary of Measures and Policies	19
	A. Energy Efficiency	
	B. Solid Waste and Recycling	
	C. Sustainable Development	
	D. Vehicle Fleet	
	E. Community Involvement	
	F. Education and Outreach	
	Appendices	
	Appendix A – Greenhouse Gas Municipal Inventory Details.....	21
	Appendix B – Activity Data Disclosure.....	26
	Appendix C – Methodology/Emissions Factors Disclosure	28
	Appendix D – Emissions Data.....	30
	Appendix E – Climate Change Action.....	41
	Appendix F – Abbreviations and Acronyms	43
	Appendix G – Glossary of Terms	43

List of Tables

Table 1 Municipal Inventory Summary 2005.....	11
Table 2 Municipal Inventory Summary 2007.....	14
Table 3 Municipal Inventory Summary 1990.....	16
Table 4 Emissions Trends 1990-2005 and 2005-2007.....	17

List of Figures

Figure 1 Emissions by Source 2005.....	12
Figure 2 Emissions by Sector, 2005 (scopes 1, 2, and 3).....	13
Figure 3 Emissions by Sector, 2005 (scopes 1 and 2).....	13
Figure 4 Emissions by Source 2007.....	15
Figure 5 Emissions by Sector, 2007 (scopes 1, 2, and 3).....	15
Figure 6 Emissions by Sector, 2007 (scopes 1 and 2).....	15
Figure 7 Business-as-Usual Forecast.....	18

How to read this report:

The following emissions inventory report includes data for the years 1990, 2005, and 2007. It is organized however starting with the year 2005 because it is the baseline year that will be used to set emission goals. The next year discussed is 2007, an interim year that shows progress made since the baseline year. Lastly, 1990 data is included to review historical GHG levels. Emissions data located in the appendix D is organized in the same way to maintain consistency.

I. Executive Summary

A. Project Background

There are a number of actions taking place in the State of California with respect to climate change and the reduction of greenhouse gas emissions (GHG). With the passage of the California Global Warming Solutions Act of 2006 Assembly Bill (AB) 32 the State of California established a 'first-in-the-world' comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, cost-effective reductions of GHG emissions. The legislation directs the California Air Resources Board (CARB) to oversee its implementation, requiring California to reduce its GHG emissions to 1990 levels by 2020. Local governments in the State of California have an important role to play in helping the State reach its reduction goals.

Since the passage of AB 32 the framework of emissions reduction strategies have been adopted in the AB 32 Scoping Plan. The Scoping Plan includes a range of actions both mandated and voluntary, providing the main strategies for California to meet its reduction goal. The plan encourages local governments to set a GHG reduction target and develop a plan of action for government and community-wide emissions. More recently, Senate Bill (SB) 375 provides a path to achieve AB 32 through transportation (one of the largest sources of GHG emissions) and land use strategies.¹ The bill takes a regional approach to achieving results and establishes a process for CARB to develop GHG emissions reduction targets for each region. While there is no specific number that a local government must reduce its emissions to, it is still crucial that local governments develop strategies to reduce their emissions and comply with regional targets as they develop.

The increasing interest in climate change has engendered South Bay communities to form active, involved citizen groups that have advocated that their cities begin the process of creating Climate Action Plans.² A number of South Bay cities signed the "Cool Cities" pledge.³ By committing to reduce global warming emissions cities will be implementing solutions to make themselves more sustainable and energy efficient. In the spring of 2008 the South Bay Cities Council of Governments (SBCCOG) coordinated efforts to respond to AB 32 by assisting South Bay cities with the process of conducting a GHG emissions inventory. In this way, South Bay cities will be in a better position to respond to the challenges and impact legislation related to climate change. Additionally, GHG inventories will be a useful tool to help South Bay cities measure their progress to meet regional reduction goals.

South Bay cities began the process of assessing their GHG emissions by joining ICLEI—Local Governments for Sustainability, an international association of city and county governments that have made a commitment to sustainable development.⁴ Through ICLEI, South Bay cities gained access to tools and resources such as the Clean Air Climate Protection (CACP) software, which enables cities to quantify their emissions. By joining ICLEI and adopting a resolution, South Bay cities have committed to ICLEI's Five Milestone Climate Protection Methodology, which includes: conducting a baseline emissions inventory and forecast, adopting an emissions reduction target for the forecast year, developing a local Climate Action Plan, implementing the local Climate Action Plan, and monitoring and verifying results. These milestones are the five steps the City of Inglewood will take to reduce its impact on the environment and promote change within the community.

1 See appendix F for more information on Climate Change legislation.

2 ICLEI-Local Governments for Sustainability was formerly known as the International Council for Local Environmental Initiatives, defines a Climate Action Plan (CAP) as a set of policies and measures designed to meet emissions reduction targets by a designated target year. A CAP must include a timeline, breakdown of actions and estimated benefits of each action compared to the baseline, a description of financing mechanisms, and an assignment of responsibility to departments and staff, and should incorporate public awareness and education efforts.

3 The Cool Cities Pledge was developed to encourage cities to endorse the U.S. Mayors Climate Protection Agreement and create their own greenhouse gas reduction activities.

4 Visit the ICLEI website to learn more about the organization at http://www.icleiusa.org/about-iclei/iclei-by_region/california-region

Another resource utilized to conduct the municipal inventory was the Local Government Operations Protocol (LGOP).⁵ The protocol was developed in partnership by ICLEI, the California Air Resources Board (CARB), the California Climate Action Registry (CCAR), and The Climate Registry (TCR) to enable local governments to measure and report emissions in a consistent and transparent way. The protocol is a program neutral guide that was developed so that cities can follow internationally recognized GHG accounting and reporting principles.

B. Purpose of Conducting a GHG Emissions Inventory

One of the first steps a city takes towards protecting the environment from global warming and promoting environmental stewardship is to identify and account for the sources of emissions in its own backyard including municipal and community-wide emissions. Conducting an emissions inventory creates a pathway for cities to develop emissions documentation to better manage foreseeable regulatory programs at the Federal, State or regional levels. By being proactive and creating this documentation cities can begin to refine the collection and management of emissions data thereby improving the quality of future inventories. A municipal inventory allows a city to quantify the emissions it is responsible for from individual buildings and facilities, vehicle fleet, transit, waste, etc., giving the City insight into the relationship between improving efficiency and reducing emissions. Once a municipal inventory has been completed a city can identify and evaluate specific areas within municipal operations that are inefficient to then target. Utilizing the inventory to document and formulate a plan of action to address these inefficiencies gives the City an opportunity to lead by example, and promote education and outreach within the community.

C. Scope of the GHG Emissions Inventory

To create an inventory, data was gathered for the years 1990, 2005, and 2007. The year 2005 was selected as the baseline year and will serve as a reference year to measure future progress and establish short-term and long-term reduction target years. Although an estimate of 1990 data is shown to capture historical GHG emissions, and where possible, to be used for the purpose of comparing data between years, a reduction target should be set from the baseline year. The year 2005 was chosen because it allowed the City to gather the earliest, most accurate and reliable data. Data was also collected for the year 2007. This year is considered an interim year to monitor energy use changes that may have occurred since the baseline year 2005. It is useful to review data from this year because it shows progress made that will count towards any reduction goal set. Additionally and where available, data was also collected from the year 1990 to estimate the City's historical GHG emissions. The year 1990 is significant in that it represents a reference year for several key pieces of climate change legislation such as the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol agreement, and the U.S. Mayors' Climate Protection Agreement.⁶ However, it was difficult to find accurate data going back as far as 1990 and so comparisons have been made in areas where data is reliable. The precise emissions emitted in 1990 were unable to be determined, thus the decision was made to use the baseline year 2005 data as the benchmark for setting targets.

Following the LGOP guidance for local governments, the City selected an operational control approach to define its organizational boundaries. What this means is that the City identified what emissions it should account for in its municipal inventory based on what facilities and operations it owns or controls. The City's operational boundaries are used to establish and organize its emissions by "scopes."⁷ In this way, a city can separately account for its direct and indirect emissions in a tiered fashion. It also establishes a foundation for following reporting standards in the LGOP.

The City gathered information from a variety of sources, including consumption data from utility companies, fuel data

⁵The Local Government Operations Protocol can be viewed with this link http://www.climateregistry.org/resources/docs/protocols/industry/local-gov/lgo_protocol_september2008.pdf

⁶ See appendix F for descriptions on climate change legislation.

⁷ See section 3, Inventory Results Introductions for more information on scopes of emissions.

from internal city records, data on waste and other services from contract service providers. A characterization study from the California Integrated Waste Management Board was utilized to capture waste composition and employee commute surveys were administered to capture emissions data from vehicle miles traveled⁸ where no records were available. This data was then utilized to quantify GHG emissions. Following ICLEI program-specific requirements, this report is considered to be a Quick Action Report⁹ which entails reporting on three of the six internationally-recognized GHGs regulated under the Kyoto Protocol.¹⁰ The benefit of this reporting option is that it allows a city to capture the majority of its emissions while familiarizing staff with the process of conducting an inventory so that in the future a more detailed level of reporting can be accomplished. The more comprehensive report entails accounting for all six Kyoto Protocol Gases. When the City conducts its re-inventory to ensure that it is inline with its emission reduction goals, the City will be able to consider producing a comprehensive report by adding data on the additional gases.

D. Inventory Methodology

This Quick Action report includes municipal results for the three years inventoried; including detailed reports, located in appendix A, for each year, which shows the GHGs separately as prescribed by ICLEI in the LGOP. As a framework for this report, the LGOP was utilized as a resource as was the Local Government Operations Standard Inventory Report Template. ICLEI provided the technical assistance and the software to accomplish the municipal inventory. The CACP 2009 software is consistent with LGOP standards with respect to the emission coefficients¹¹ and methodology employed by the software to calculate the equivalent GHGs. It is important to note that GHG emissions with different global warming potential are shown as one roll-up number known as a carbon dioxide equivalent unit (CO₂e).¹² It helps to simplify by looking at just one number for climate action planning; however, ICLEI believes that the most accurate description of emissions requires separate accounting by scope,¹³ which can be found in appendix A of this report.

The inventory results should be thought of as an approximation of the GHG emissions emitted in the years inventoried. The results should be used as a policy and planning tool rather than a precise measurement of GHGs. All the data sources used to capture the equivalent emissions emitted, also referred to as activity data, have been noted in the appendix B. This shows transparency when accounting for emissions. Similarly, appendix C discloses the formulas and emissions factors used to arrive at the equivalent GHG emissions. To the extent possible, recommended data and methods in the LGOP were used, but in some cases the suggested alternative methods were necessary to use when recommended data could not be found, appendices B and C give a description of the data and methodologies used.

E. Key Highlights and Findings

- The City of Inglewood generated approximately 11,108 metric tons of CO₂e in the baseline year, 2005; this amount is equivalent to the GHG emissions generated from the electricity use of 1,443 homes for one year.¹⁴
- There was an overall 11.2% increase in GHG emissions between the baseline year 2005 and the interim year 2007. This was largely due to scope 1 natural gas and scopes 1 and 3 vehicle related sources.

⁸ See Appendices B and C for a description of data sources and methodologies used.

⁹ To read more about ICLEI's Quick Action Report see Appendix C in the Local Government Operations Protocol. The Quick Action Report entails reporting only on Carbon dioxide (CO₂); Methane (CH₄); Nitrous oxide (N₂O).

¹⁰ The internationally-recognized greenhouse gases regulated under the Kyoto Protocol are Carbon dioxide (CO₂); Methane (CH₄); Nitrous oxide (N₂O); Hydrofluorocarbons (HFCs); Perfluorocarbons (PFCs); and Sulfur hexafluoride (SF₆), Local Government Operations Protocol, page 11.

¹¹ Coefficients or emissions factors as they are known are multiplied by the data in order to arrive at an equivalent GHG emissions number.

¹² Equivalent Carbon Dioxide (CO₂e) the universal unit for comparing emissions of different GHGs expressed in terms of the GWP of one unit of carbon dioxide, Local Government Operation Protocol, Glossary.

¹³ See ICLEI Reporting Requirements, Appendix C, Local Government Operations Protocol.

¹⁴ The EPA Greenhouse Gas Equivalencies Calculator was utilized to help visualize and understand GHG emission results.

- Emissions resulting from electricity use decreased 17.7%, while emissions resulting from natural gas consumption increased 157.7% between the years 2005 and 2007.
- Emissions resulting from City fleet vehicles increased 151% between the years 2005 and 2007.
- Under a business-as-usual scenario, the City can expect emissions to rise to 12,721 metric tons of CO₂e by 2012 that is equivalent to the annual GHG emissions from 2,432 passenger vehicles; and 12,962 metric tons of CO₂e by 2015, equivalent to the annual GHG emissions from 2,478 passenger vehicles if the City does nothing to reduce its emissions.

E. Future Steps

The next step will be to conduct a community-scale inventory to assess GHG emissions related to residential, commercial, industrial, transportation, and waste sectors. Once completed, these inventories provide the basis for the creation of a Climate Action Plan, which will include measures and policies to reduce emissions in both municipal operations and through community actions.

Climate action work is important and with the municipal inventory complete, the City can select a short and long-term reduction target for municipal operations. Before deciding on a target, the City should review the business-as-usual forecast graph, located in section three, to see what its emissions will look like in the years 2012 and 2015. The City will also want to think about measures and policies that might be included in the climate action plan to reach an adopted goal. Located in section four, is a summary of the City's existing and planned efforts to get the process started. It is important to anticipate and leave enough time to achieve whatever goal is set. An example of a short-term reduction target might be 20% below 2005 baseline levels by the year 2012. In general, ICLEI recommends the further away a target year the more emissions the City will want to reduce. A good example of an end date of a long-term target that is in-line with the State's AB 32 target would be 2020. How the City goes about adopting a reduction target depends on what works best for the City.

Being proactive is the best way to curb GHG emissions and positively influence change within the community. The Climate Action Plan development requires several steps and may include creating a review committee, defining current measures, developing new measures, developing an implementation plan, community outreach strategies, and developing ongoing tracking. Now is a good time to consider what municipal measures and policies planned or existing should be included in the climate action plan. It is important to consider time, resources, cost, and the possible GHGs reduction scenario of each individual measure, as they will all be factors in the decision-making process for the City to reach its goals. The Environmental Advisory Committee is a good place to get the development of this process started.

Now that the first step has been taken, it is vital to continue to develop inventory reporting skills. It is up to the City how often they re-inventory GHG emissions, but ICLEI recommends doing so every few years to make sure the City stays on target to reach short and long-term goals. Refining the gathering and management of data for the next inventory should start with good internal communication between departments working together to ensure that the appropriate records are set aside or entered into the ICLEI data collection forms. Working together is the best way to fine tune reporting skills and work towards creating a comprehensive report as outlined in the LGOP under ICLEI program requirements.

II. Local Government Profile Information

Local Government Description

The City of Inglewood is located in the South Bay area of Los Angeles County and covers approximately 9.1 square miles. The City is committed to community beautification and economic development and operates under the Council/Administrator form of government. This system combines the policy leadership of elected officials in the form of a City Council, with the managerial expertise of a City Administrator. There are four elected Council Members representing each Council district, and a Mayor elected at-large. All members serve staggered four year terms. The Council is the legislative body that represents the community and is empowered by State law to formulate city-wide policy. The City Administrator is appointed by the Council, and in turn recommends to Council the appointment of City department heads for Personnel, Police, Public Works, Library, Community Development, Administrative Services (Finance and Information Technology) and Recreation, Parks and Community Services. The City Administrator also serves as executive Director for the City's Redevelopment Agency. The City Attorney, also appointed by the Council, advises and represents the City and Council in all legal matters.

Local Government History

During the 1960s and '70s, Inglewood continued to grow and develop, taking on a "metropolitan" look. The City became racially integrated in both its residential and business communities; it was now the home of two major hospitals-Centinel and Daniel Freeman; the "City of Champions" was now the site of Hollywood Park Racetrack, recently celebrating 50 years of championship horseracing, and the Forum, constructed in the late '60s to become the home of the World Champion Lakers basketball team and the Kings hockey team, as well as featuring World Class Tennis played by the Strings, plus championship boxing.

It was during this time Inglewood's sky-line changed to include the high-rise buildings you see today. The first of those high-rise buildings was the modern City Hall and Civic Center complex, constructed as a joint effort by the City and County of Los Angeles and dedicated in 1973.

The City's reputation and its accessibility to major freeways and Los Angeles International Airport made it an attractive business investment and an ideal location for the rapidly expanding air freight business. High-rise office buildings began to go up, with the newest being the 14-story, \$50 million Trizec building on La Cienega near Century Boulevard.

Inglewood is no longer a sleepy little settlement in the country. With a population of more than 100,000, it is alive, thriving and in the center of an ever-changing Centinela Valley where the old Machado adobe blends with the new landmarks to remind residents of the rich heritage of the City.

Primary Services

Department	Primary Services
Administration	The Mission of the City Administrator's Office is to provide leadership, guidance and support to the City organization through the efficient and effective management of human, financial and material resources; and to implement policies, annual goals and objectives as established by the City Council.
Community Development	Provides professional redevelopment services, administers the City's subsidized housing program, and offers a number of commercial and residential assistance programs.
Fire Services	Contracted with Los Angeles County Fire Department.
Finance/Purchasing	The Finance Department is responsible for providing executive direction, policy determination and general management support for Accounts Payable, Budget, Cashiering, Custodial Services, Financial Reporting, Payroll, Purchasing and Revenue. The Budget & Purchasing Administration is a division of Finance. The Budget division prepares and administers the City's Annual Budget. The Purchasing division is responsible for procuring all services, supplies, and equipment for all departments of the City, and to auction any surplus items no longer needed.
Police Department	The Police Department provides safety and security within the community.
Information Technology & Communication	Leads and supports the City of Inglewood in the appropriate application of existing and emerging information technologies.
Parks, Recreations, and Community Services	The Parks, Recreations, and Community Services Department is charged with enhancing the quality of life for Inglewood residents, businesses and visitors through the provision of comprehensive recreational, social and community beautification services and programs. The Department consists of four Divisions – Parks, Recreation and Cultural, Human Services and Community Beautification Services.
Planning and Building	The Planning and Building Department supports community beautification and economic development by providing regulatory assistance for the use and development of land within the City of Inglewood. The services provided by the department are guided by land use, property development and building construction processes, which are intended to ensure that the built environment and land use considerations within the City are safe and attractive and foster an enhanced quality of life for all sectors of the Inglewood community.
Public Works	The mission of the Public Works Department is to sustainably plan, design, construct and manage public infrastructure; provide services for development and improvement of private property; maintain precise, accurate, readily accessible records for the City of Inglewood.
Residential Sound Mitigation	The mission of the Residential Sound Insulation Department is to provide an improved quality of life for those residents impacted by aircraft noise within designated noise contours. This is achieved through the attainment, coordination and management of grant funds provided by the Federal Aviation Administration and Los Angeles World Airports.

III. Municipal Emissions Inventory Results

A. Inventory Introduction and Results

Depicted in this section are tables and graphs that represent and illustrate an approximation of the GHG emissions levels for the three years of data collected. As mentioned in the executive summary, the data findings are expressed in CO₂-equivalent, which is an estimated sum or roll-up number for GHGs with different global warming potential,¹⁵ to make it easier to review, plan, and set targets. Appendix A gives a detailed account of individual GHGs separately, by scope, for the purpose of establishing good reporting habits. Based on LGOP reporting standards, GHG emissions are organized according to their scope.¹⁶ Scopes are determined based on what control approach¹⁷ a local government chooses to define its boundaries. The LGOP recommends an operational approach for local governments wherein a city defines its scopes by what they own and operate. In this way, the City can account for direct and indirect emissions separately.

Direct emissions are associated with scope 1 and are deemed within the City's control. They are generated by fixed equipment used to produce heat or power from the stationary combustion process and mobile combustion of fuels from city fleet vehicles.

Cities also have a level of control over activities that are associated with indirect emissions, known as scope 2. These emissions are associated with the consumption of purchased electricity, steam, heating, or cooling.¹⁸ The difference between the scopes is that these sources are owned or controlled by another entity. Still, a city will want to develop measures to reduce emissions within this scope. Indirect emissions are also associated with scope 3, however scope 3 emissions are related to activities that the City does not own or operate, such as emissions from contracted services, employee commuting, or waste disposal. As an ICLEI member, scope 3 reporting is considered optional, but good to include as it may be policy relevant. City staff decided what data to include for contract providers (Scope 3 emissions) based on whether the information was obtainable, reliable, and relevant.

Tables 1 through 3 are organized by scope, sector, and source of emissions. The data is shown in metric tons of CO₂-equivalent, adjacent is the percentage represented by each sector, source of emissions, energy and fuel use, the equivalent one million British thermal units, and the cost where data was available. This information is shown for the purpose of targeting, planning, and then tracking energy and cost-saving measures. To learn where specific data was obtained and how it was computed, refer to the appendices sections B and C.

2005

Baseline Year

Results from the 2005 municipal inventory represent the year chosen as a baseline year, which will serve as a foundation for setting short and long-term emissions reduction targets. For this year, there was sufficient data available to conduct an accurate inventory. It is important to keep in mind that scope 3 emissions included in the baseline year are estimates based upon information provided by contract service providers and from surveying employees and should not be thought of as a precise measurement of GHGs, but rather as policy relevant information that the City may want to consider when developing or evaluating measures or policies.

¹⁵ Each greenhouse gas has a different global warming potential based on its ability to trap heat in the atmosphere, CO₂e is the universal unit for comparing emissions of different GHGs global warming potential, see LGOP appendix E, page 166 for more details.

¹⁶ The Local Government Operations Protocol follows categorization standards developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD).

¹⁷ Definitions of inventory approaches are discussed in the LGOP, page 14.

¹⁸ See Local Government Operations Protocol for details, page 22.

In 2005, the City of Inglewood GHG emissions totaled 11,108 metric tons of CO₂e. This number includes both direct and indirect sources of emissions, as shown in Table 1. This total is equivalent to the GHG emissions emitted from the electricity use of 1,443 homes for one year. Looking at the scopes within the table, the smallest portion 10.2% (scope 1 total) were emissions generated from a combination of natural gas use for buildings and facilities, generators, and fuels for the City Fleet vehicles. Emissions emitted from electricity use accounted for 57.4% (scope 2 total) of the total emissions. The second largest portion 32.4% (scope 3 total) were emissions due to a combination of employee commuting, contract service vehicles, and waste (refuse collected from City bins).

Energy/Fuel use and cost information has been listed for the purpose of planning and tracking energy measures' cost effectiveness. During 2005, the City of Inglewood used 20,695,100 kWh of electricity at a cost of \$2,423,185. In this same year, the City consumed 74,121 therms of natural gas costing \$75,281.

Table 1. Municipal Inventory Summary 2005¹⁹

Inglewood Municipal GHG Emissions 2005						
Sector	MT CO ₂ e	Percent CO ₂ e (% CO ₂ e)	Source	Energy/Fuel Use	Energy/Fuel Use Cost	Energy Equivalent (MMBtu)
Scope 1 Emissions						
Buildings & Facilities						
Buildings & Facilities	384	3.5%	Natural gas	72,038 therms	\$72,997	72,868
City Vehicle Fleet						
City Vehicle Fleet ²⁰	730	6.6%	-	-	\$203,941	10,069
	660		Gasoline	74,665.5 gal	\$189,801	9,074
	62		Diesel	6,161 gal	\$13,656	854
	7		CNG	998 gal equiv.	-	123
	1		LPG	197 gal	\$484	18
Water Delivery Facilities						
Water Treatment Facilities	11	0.1%	Natural gas	2,083 therms	\$2,284	208
Total Scope 1 Emissions	1,125	10.2%	-	-	\$279,222	83,145
Scope 2 Emissions						
Buildings & Facilities²¹						
Buildings & Facilities	2,326	20.9%	Electricity	7,412,756 kWh	\$838,074	26,136
Streetlights & Traffic Signals						
Traffic Signals/Controllers	363	3.3%	Electricity	1,165,797 kWh	\$124,045	4,079
Streetlights ²²	1,618	14.6%	Electricity	5,326,884 kWh	\$688,607	18,181
Water Delivery Facilities						
Sprinkler/Irrigation Control	129	1.2%	Electricity	423,605 kWh	\$54,774	1,446
Water Treatment Facilities/Pumping	1,934	17.4%	Electricity	6,366,058 kWh	\$717,685	21,727
Total Scope 2 Emissions	6,370	57.4%	-	20,695,100 kWh	\$2,423,185	71,569
Scope 3 Emissions						
Employee Commute						
Employee Commute	1722	15.5%	-	3,571,984 VMT	-	23,731

¹⁹ For each inventory summary see appendix D, Emissions Data, to review individual energy use and cost per item.

²⁰ See appendix D, Emissions Data, to review fuel emissions per department.

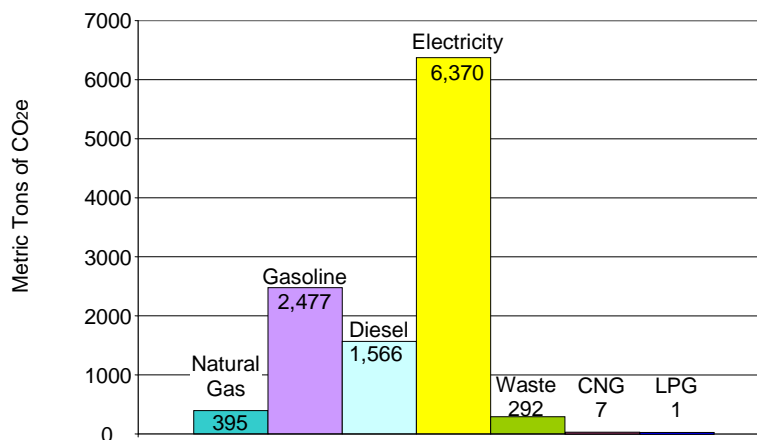
²¹ In some cases, building & facility accounts include lights and water delivery devices located on the same metered account.

²² City owned streetlights and Southern California Edison owned streetlights have been combined in the total shown here. See appendix D, Emissions Data, to review individual emissions in the Streetlights and Traffic Signals category.

	1,720		Gasoline	3,570,859 VMT		23,706
	2		Diesel	1,125 VMT		25
Vehicles—Contract Service Providers						
Contract Service Vehicles	1,599	14.4%	-	-	n/a	21,852
	97		Gasoline	10,791 gal	-	20,511
	1,502		Diesel	147,903 gal	-	1,341
Solid Waste						
Waste	292	2.5%	-	5,754 tons	-	-
Total Scope 3 Emissions	3,613	32.4%				45,583
Total Emissions	11,108	100%			\$2,702,407	200,297

Figure 1 illustrates emissions by source. Electricity was the highest source of emissions followed by gasoline and diesel. Waste resulted in one of the lowest source of emissions. It was estimated that 5,754 tons of waste generated by city operated and owned facilities was sent to a landfill. A breakdown of the waste composition can be found in appendix D, based on a solid waste characterization study for public administration from the California Integrated Waste Management Board website.

Figure 1. Emissions by Source 2005
(including all direct and indirect sources)



Figures 2 and 3 illustrate a percentage breakdown of each sector from Table 1. ICLEI asks its members to report on scopes 1 and 2 where scope 3 is optional; therefore, data is organized to reflect this criteria. Figure 2 shows all scopes, where as Figure 3 concentrates only on scopes 1 and 2 – functions that a city has more influence on. Figure 2 indicates 14.4% of emissions are from contract service vehicles that work within the City’s boundaries, 2.5% from waste, and 15.5% are the result of employee commuting. While a city may not have the same degree of control over these sources, there is still an opportunity to create initiative programs or policies that will engender climate-friendly practices. Figure 3 is comprised of natural gas, fuels, and electricity generated emissions. Electricity in scope 2 accounts for 85.1% of emissions and scope 1 emissions from fuel and natural gas sources accounts for the remaining 14.9% of emissions.

Figure 2. Emissions by Sector 2005
(including all direct and indirect sources from scopes 1, 2, and 3)

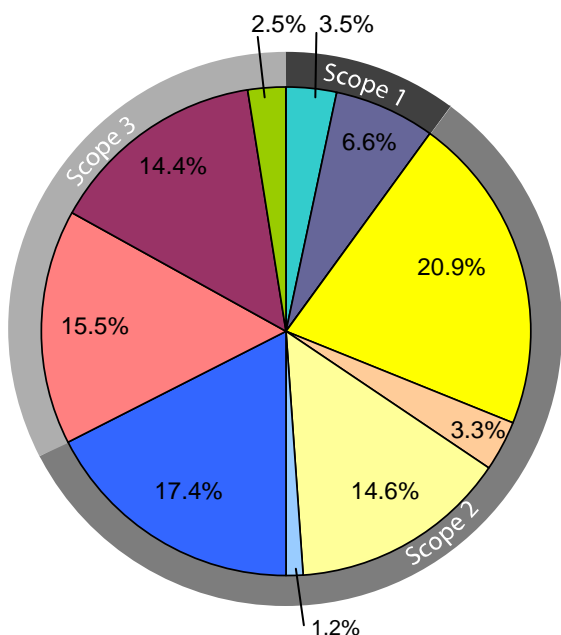
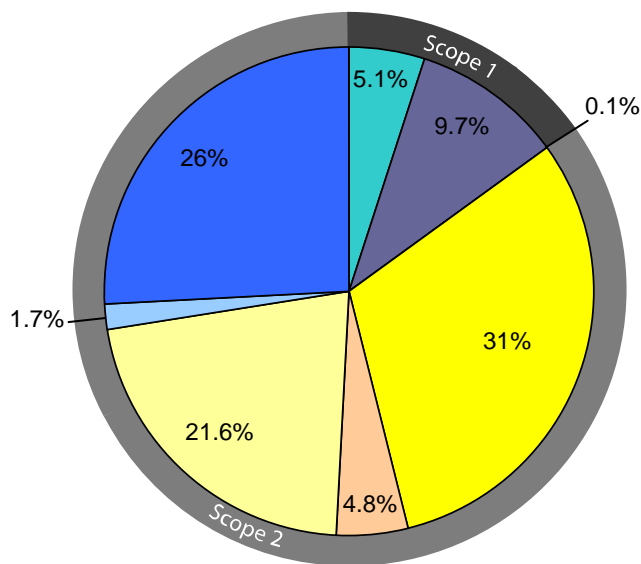


Figure 3. Emissions by Sector 2005
(including only direct and indirect sources from scopes 1 and 2)



Buildings & Facilities (natural gas)	City Vehicle Fleet	Water Delivery
Buildings & Facilities (electricity)	Traffic Signals & Controls	Streetlights
Sprinkler/Irrigation Control	Water Treatment Facilities/Pumping	Employee Commute
Contract Services	Waste	

2007

Interim Year

The year 2007 was chosen as an interim year to review any energy use changes that may have occurred since the baseline year. ICLEI recommends cities re-inventory every year or two (or as often as possible) to ensure the City is keeping on track with its target. As with the data in 2005, the table below is organized by scope, sector, source of emissions, energy and fuel use, and cost to capture a broad picture of the data.

In 2007, the City of Inglewood GHG emissions totaled 12,356 metric tons of CO₂e including both direct and indirect sources of emissions—this number is equivalent to the emissions produced from 1,389,876 gallons of gasoline consumed. The year 2007 represents a 11.2% increase in emissions from the baseline year. This was largely due to scope 1 natural gas and scopes 1 and 3 vehicle related sources. Looking at the scopes within the table, emissions generated from natural gas and fuel sources accounted for 23.2% (scope 1 total) of the emissions inventoried in 2007. Emissions from electricity use decreased from the baseline year contributing 42.5% (scope 2 total) to the total emissions. The second largest portion of emissions came from a combination of employee commuting, contract service vehicles, and waste at 34.3% (scope 3 total). In 2007, the City of Inglewood used 17,917,558 kWh of electricity costing approximately \$2,411,510. In this same year, the City used 191,308 therms of natural gas at a cost of \$90,757.

Table 2. Municipal Inventory Summary 2007

Inglewood Municipal GHG Emissions 2007						
Sector	MT CO _{2e}	Percent CO _{2e} (% CO _{2e})	Source	Energy/Fuel Use	Energy/Fuel Use Cost	Energy Equivalent (MMBtu)
Scope 1 Emissions						
Buildings & Facilities						
Buildings & Facilities	995	8.1%	Natural gas	187,016 therms	\$87,814	18,702
City Vehicle Fleet						
City Vehicle Fleet ²³	1,837	14.9%	-	-	\$552,669	25,800
	1,684		Gasoline	187,002 gal	\$514,959	23,231
	98		ULSD/B20	12,063 gal	\$32,767	1,558
	55		CNG	4,771 gal	\$4,943	1,011
Water Delivery Facilities						
Water Treatment Facilities	23	0.2%	Natural gas	4,292 therms	\$2,943	429
Total Scope 1 Emissions	2,855	23.2%	-	-	\$643,426	44,931
Scope 2 Emissions						
Buildings & Facilities²⁴						
Buildings & Facilities	2,048	16.6%	Electricity	7,036,518 kWh	\$877,934	23,880
Streetlights & Traffic Signals						
Traffic Signals/Controllers	924	7.5%	Electricity	722,672 kWh	\$95,338	10,774
Streetlights ²⁵	874	7.1%	Electricity	5,400,537 kWh	\$861,383	10,185
Water Delivery Facilities						
Sprinkler/Irrigation Control	10	0.1%	Electricity	33,452 kWh	\$15,564	114
Water Treatment Facilities/Pumping	1,383	11.2%	Electricity	4,724,379 kWh	\$561,291	16,124
Total Scope 2 Emissions	5,239	42.5%	-	17,917,558 kWh	\$2,411,510	61,077
Scope 3 Emissions						
Employee Commute						
Employee Commute	2,197	17.8%	-	3,792,341 VMT	-	24,732
	2,193		Gasoline	3,790,027 VMT		24,681
	4		Diesel	2,314 VMT		51
Vehicles—Contract Service Providers						
Contract Service Vehicles	1,839	14.7%	-	-	n/a	25,128
	92		Gasoline	10,235 gal	-	1,271
	1,747		Diesel(ULSD)	172,035 gal	-	23,857
Solid Waste						
Waste	226	1.8%	-	4,450 tons	-	-
Total Scope 3 Emissions	4,262	34.3%	-	-	-	49,860
Total Emissions	12,356	100%	-	-	\$3,054,936	155,868

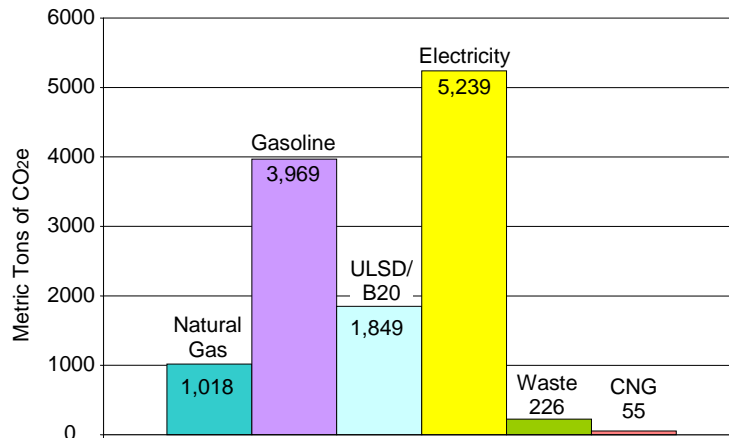
23 See appendix D, Emissions Data, to review fuel emissions per department.

24 In some cases, building & facility accounts include lights and water delivery devices located on the same metered account.

25 City owned streetlights and Southern California Edison owned streetlights have been combined in the total shown here. See appendix D, Emissions Data, to review individual emissions in the Streetlights and Traffic Signals category.

Figure 4 shows an increase in emissions from natural gas, gasoline, and ULSD fuel sources. Emissions from electricity and waste decreased. It was estimated that 4,450 tons of waste generated by city operated and owned facilities was sent to a landfill.

Figure 4. Emissions by Source 2007
(including all direct and indirect sources)



Similar to 2005, Figures 5 and 6 illustrate a percentage breakdown of each sector from Table 2. Figure 5 indicates 14.7% of emissions are from contract service vehicles that work within the City’s boundaries, 1.8% from waste, and 17.8% are the result of employee commuting. Figure 6 shows electricity in scope 2 accounts for 64.7% of emissions and fuels and natural gas from scope 1 contributed to the remaining 35.3% of emissions.

Figure 5. Emissions by Sector 2007
(including all direct and indirect sources from scopes 1, 2, and 3)

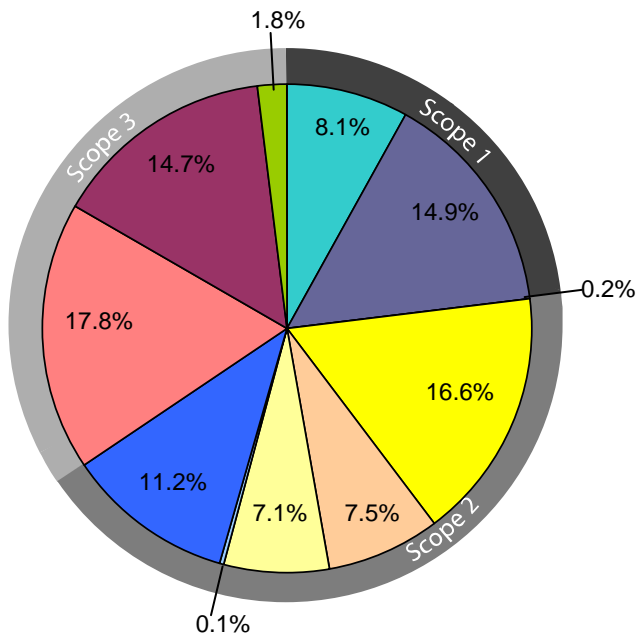
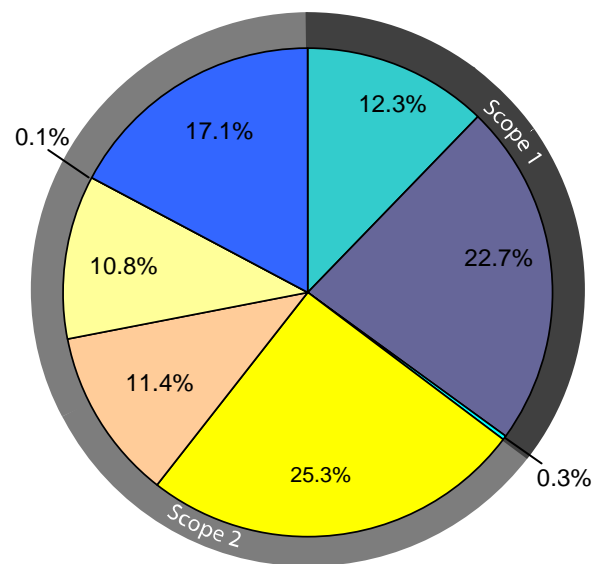


Figure 6. Emissions by Sector 2007
(including only direct and indirect sources from scopes 1 and 2)



- | | | |
|--------------------------------------|------------------------------------|------------------|
| Buildings & Facilities (natural gas) | City Vehicle Fleet | Water Delivery |
| Buildings & Facilities (electricity) | Traffic Signals & Controls | Streetlights |
| Sprinkler/Irrigation Control | Water Treatment Facilities/Pumping | Employee Commute |
| Contract Services | Waste | |

1990

Historical Year

Looking back to 1990, this year is a benchmark for several key pieces of climate change legislation, such as the Kyoto Protocol as mentioned in the executive summary. Located in appendix F are brief descriptions pertaining to some of the historical policies that have set 1990 as a benchmark for reducing GHG emissions. Data was collected for this year to review, where possible, the historical GHG levels; however, it was difficult to find accurate data, with the exception of electricity, and “back-casting” or creating a rough estimate of emissions is not recommended in the LGOP.²⁶ Therefore comparisons have been made in areas where data is reliable. As suggested in the protocol, it is better to concentrate on developing a high-quality, comprehensive inventory with reliable data rather than back-casting to 1990. As previously stated the reduction target should be set from 2005 levels, but the 1990 information has been included to make GHG level comparisons with recent years where possible.

Based on the data that was available for 1990, the GHG emissions identified totaled 5,342 metric tons of CO₂e, as shown in Table 3. This number is equivalent to the annual GHG emissions from 1,021 passenger vehicles. Looking at the scopes within the table, emissions generated from natural gas contributed 0.1% (scope 1 total) to the total emissions.²⁷ Emissions emitted from electricity use accounted for 99% (scope 2 total) of the total.

Table 3. Municipal Inventory Summary 1990

Inglewood Municipal GHG Emissions 1990						
Sector	MT CO ₂ e	Percent CO ₂ e (% CO ₂ e)	Source	Energy/Fuel Use	Energy/Fuel Use Cost	Energy Equivalent (MMBtu)
Scope 1 Emissions						
Buildings & Facilities						
Buildings & Facilities	3	0.1%	Natural gas	532 therms	n/a	53
Total Scope 1 Emissions	3	0.1%		532 therms	-	53
Scope 2 Emissions						
Buildings & Facilities²⁸						
Buildings & Facilities	3,601	67.4%	Electricity	7,661,609 kWh	\$827,845	26,149
Streetlights & Traffic Signals						
Traffic Signals/Controllers	758	14.2%	Electricity	1,612,075 kWh	\$187,255	5,502
Water Delivery Facilities						
Sprinkler/Irrigation Control	261	4.8%	Electricity	554,433 kWh	\$73,603	1,892
Water Treatment Facilities/Pumping	719	13.5%	Electricity	1,528,960 kWh	\$149,782	5,218
Total Scope 2 Emissions	5,339	99%	-	11,357,077 kWh	\$1,238,485	33,548
Total Emissions²⁹	5,342	100%	-	-	\$1,238,485	33,601

²⁶ See LGOP inventory guidelines, page 12.

²⁷ Southern California Gas no longer possesses official customer records going back to 1990 due to document retention policies. SoCalGas located some records that go back to 1990 which was the basis for the gas information provided for 1990.

²⁸ In some cases, building & facility accounts include lights and water delivery devices located on the same metered account.

²⁹ The summed total shown here does not reflect the total emissions emitted in the year 1990 as not all of the data from 1990 was available.

B. Emissions Trends

Represented in Table 4 are the emissions trends from 1990 to 2005 (where reliable data existed) and emissions trends from 2005 to 2007 organized by source of emission.

Between a 15-year span from 1990 to 2005 electricity emissions have increased 19.3%. The percentage change for natural gas has not been listed since only casual records could be found for 1990 and was difficult to compare with 2005 where complete records existed.

From 2005 to 2007 overall emissions from electricity use decreased 17.7%. Emissions from natural gas use increased 157.7% (refer to appendix D, to review energy use per building). City fleet sources from gasoline and diesel increased by 155.1% and 58% respectively. Employee commute emissions from gasoline sources increased 27.5% and emissions from waste decreased 22.6%.

Table 4. Emissions Trends 1990-2005 and 2005-2007

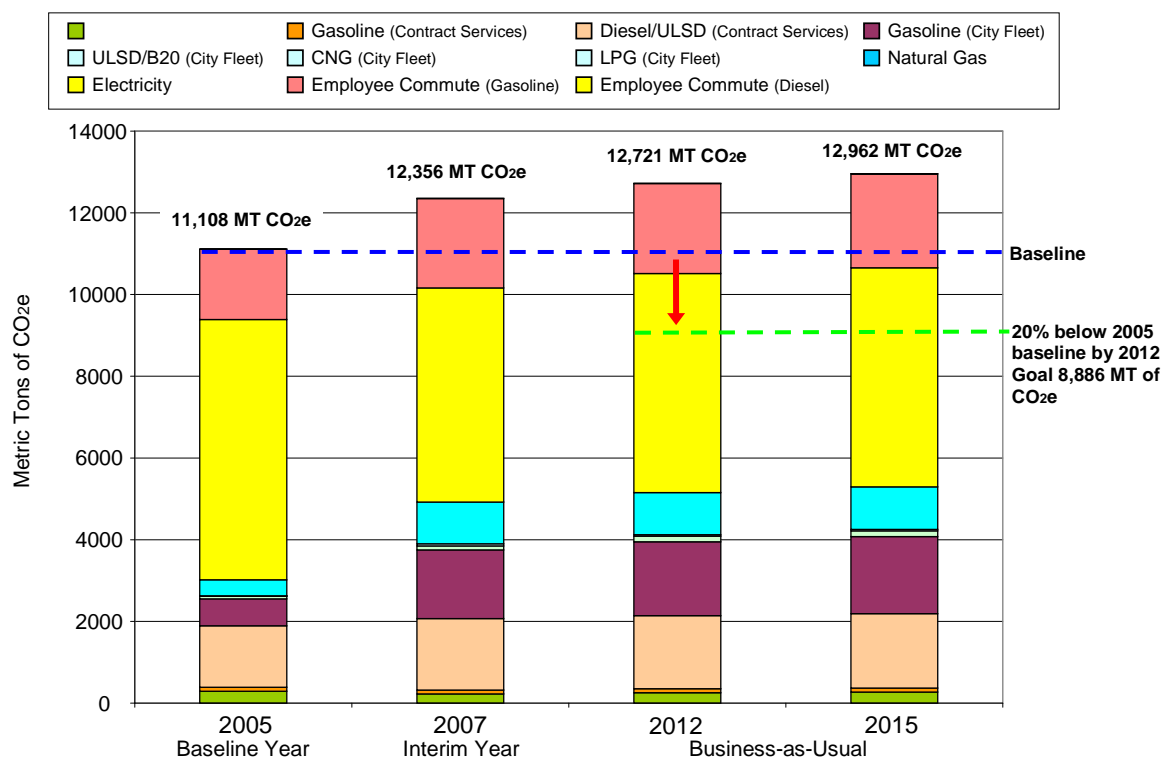
Electricity	MTCO ₂ e 1990	MT CO ₂ e 2005	Percentage Change	MT CO ₂ e 2005	MT CO ₂ e 2007	Percentage Change
Buildings & Facilities	3,601	2,326	-35%	2,326	2,048	-11.9%
Traffic Signals & Controllers	758	363	-52%	363	924	+154.5%
Streetlights	-	1,618	-	1,618	874	-45.9%
Sprinkler/Irrigation Controllers	261	129	-50%	129	10	-92.2%
Water Treatment Facilities/ Pump Stations	719	1,934	+168.9%	1,934	1,383	-28.4%
Total	5,339	6,370	+19.3%	6,370	5,239	-17.7%
Natural Gas						
Buildings & Facilities	3	384	-	384	995	+159%
Water Treatment Facilities	-	11	-	11	23	+109%
Total	-	395	-	395	1,018	+157.7%
Fuel						
Gasoline, City Vehicle Fleet	-	660	-	660	1,684	+155.1%
Diesel /ULSD/B20, City Vehicle Fleet	-	62	-	62	98	+58%
CNG, City Vehicle Fleet	-	7	-	7	55	685.7%
LPG, City Vehicle Fleet	-	1	-	1	-	-
Gasoline, Contract Service Vehicles	-	97	-	97	92	-5.1%
Diesel, Contract Service Vehicles	-	1,502	-	1,502	1,747	+16.3%
Gasoline, Employee Commute	-	1,720	-	1,720	2,193	+27.5%
Diesel, Employee Commute	-	2	-	2	4	+100%
Waste						
Waste	-	292	-	292	226	-22.6%

C. Forecasting and Setting GHG Emissions Reduction Targets

The business-as-usual forecast shown in Figure 7 is a prediction of the likely increase in GHG emissions from municipal operations and services. The emissions shown here represent the business-as-usual forecast for the years 2012 and 2015 if the City does nothing to decrease its GHG emissions. The City can expect GHG emissions levels to increase to 12,721 metric tons of CO₂e by 2012 and 12,962 metric tons of CO₂e by 2015. Several indicators are taken into consideration for predicting anticipated emissions growth, such as, energy usage trends between the baseline year and the interim year (where possible historical year data is taken into account), assumptions about future energy consumption based on the expansion of municipal facilities and operations, new programs that may increase the use of energy, and any anticipated increase in municipal staff. By developing a business-as-usual forecast of emissions, the City can identify a target year to reduce emissions and develop the appropriate measures and policies to target specific areas.

To ensure the City reaches its emission reduction goal it may be helpful to look at individual measures that are planned for implementation and quantify those measures in order to see how much of a reduction can be expected from a given measure. Figure 7 illustrates a possible reduction scenario based on a reduction goal of 20% below the 2005 baseline levels by 2012. ICLEI recommends setting a long-term target (15-20 years) from the baseline year and a short-term or interim target every 2-3 years to make certain the City continues to reduce its emissions. The further away the goal, the larger amount of reductions should be targeted. The blue line represents the baseline year 2005 calculations from which a reduction target can be determined. The green line represents a possible reduction scenario. If the City were to set an emission target 20% below 2005 levels the goal would be to reduce emissions to 8,886 metric tons of CO₂e.

Figure 7. Business-as-Usual Forecast³⁰



³⁰ The Business-as-Usual (BAU) forecast includes emissions from scopes 1, 2, and 3. A compound annual growth rate formula and the weighted averages between data sets were used to forecast municipal operation growth. Emission factors from 2007 were used to determine the equivalent CO₂e emissions. The metric tons of CO₂e totals listed here are summed totals of the estimated emissions of each gas based on their global warming potential.

IV. Summary of Measures and Policies

There are a variety of ways in which the City of Inglewood is moving towards becoming a more sustainable city. Policies, measures and plans the City is currently working on will help the City reach its adopted emissions reduction goals. Below is a summary of historic and current measures organized into categories to help with the planning of the climate action document.

A. Energy Efficiency

City Hall Lighting Retrofit: Approximately 1,000 lighting fixtures in the City Hall building will be replaced with more efficient technology. Both energy usage and GHG emissions will be reduced and significant ongoing utility cost savings will be achieved.

Parking Structure #1 Lighting Retrofit: Approximately 185 existing light fixtures in the City parking Structure will be replaced with light emitting diode (LED) fixtures. The project will reduce electricity usage by approximately 97,000 kWh per year and will reduce GHG emissions by 70 metric tons per year.

Street Light Upgrades to LED: Approximately 340 high pressure sodium streetlights will be replaced with LED fixtures on various City streets. The project will create sustained energy saving and GHG reductions by lowering electricity usage by approximately 205,000 kWh annually.

Solar Demonstration Project: The Solar Demonstration project will be combined with the Rogers Park energy efficiency retrofits to result in a set of holistic efficiency and renewable energy improvements at the park building. The project is estimated to generate approximately 34,000 kWh of clean electricity annually, and will serve as an effective vehicle to promote renewable energy actions to Inglewood citizens.

B. Solid Waste and Recycling

Residential Waste Collection: A 3-cart service wherein Waste Management provides residents with three sorting containers for trash, green waste, and recyclables. The program is designed to make recycling easier, reduce waste and control litter. This program reduces the amount of trash that is disposed in the landfill, encourages the reuse of materials made from recycled products and continues the recycling circle. In addition, the implementation of this program will help keep trash costs down, create a cleaner environment and help the City meet state-mandated waste diversion requirements.

Hazardous Waste: On its website, the City highlights locations and opportunities for residents and businesses to dispose of household hazardous waste (HHW) and electronic waste (E-waste).

C. Sustainable Development

Rogers Park Whole Building Energy Efficiency and Retro-Commissioning: This project represents a comprehensive set of energy efficiency improvements that will be combined with a solar demonstration project at a highly visible building in a major City park. A whole building approach will be taken in the implementation of the retrofits to maximize the long-term energy and GHG reductions as well as ensure a healthy and productive environment for building users. The project will serve as a case example of comprehensive building retrofit approaches for other building owners in Inglewood.

D. Vehicle Fleet

E85 Fueling Station: This project will significantly increase the use of a renewable non-fossil vehicle fuel thereby decreasing harmful air emissions. The E85 Fueling Station is projected to dispense approximately 120,000 gallons of E85 fuel annually.

Alternate fuel vehicles: The City of Inglewood purchases alternate fuel vehicles to reduce emissions. The City currently owns and operates several CNG vehicles.

Rideshare and Van Pool Programs: To help reduce vehicle miles traveled by employees to the worksite, the City sponsors a very popular rideshare program as well as hosting several van pools for employees.

Motor Vehicle Pool: Fleet Management and Transit Services facilitate a vehicle and equipment motor pool that is available for qualified operators on a first-come, first-served basis. The pool consists of: sedans, vans (passenger & utility), pickup trucks, and other high demand or specialty equipment useful to various departments for special projects or occasional usage.

E. Community Involvement

Environmental Advisory Committee: The City has formed an “Environmental Advisory Committee” composed of key staff members from several internal departments including: Administration, Code Enforcement, Residential Sound Insulation, Planning and Building, Parks and Recreation, Community Services, and Public Works. Staff members of this committee are in a position to identify the City’s current “green” programs, assist with the emissions inventory, and create an environmental action plan for the City.

F. Education and Outreach

Vehicle and Equipment Replacement Program: The objective of this program is to provide Inglewood businesses with information and assistance necessary to facilitate their access to outside grant and loan funding that is available to replace their older, less fuel efficient and more polluting heavy-duty vehicles and equipment.

South Bay Environmental Services Center: The City works closely with the South Bay Environmental Services Center to increase the City’s energy efficiency by promoting educational outreach and introducing energy efficient technologies for businesses and residents.

Appendix A—Greenhouse Gas Municipal Inventory Details

A. Greenhouse Gas Report 2005—Baseline Year

The year 2005 represents the baseline year for the GHG inventory and will be used to set an emissions reduction target and track progress of emissions goals. Below are the GHG inventory details. This level of reporting is referred to as a quick action report wherein three of the six internationally-recognized GHGs regulated under the Kyoto Protocol (carbon dioxide, methane, and nitrous oxide) are reported separately in metric tons and aggregated with other gases not listed here to show the CO₂e summed totals of the estimated emissions of gases with different global warming potentials (see appendix E of LGOP). The control approach was utilized to define the City's scopes of emissions.

Reporting year: 2005

Protocol Used Local: Government Operation Protocol, version 1.0

Control Approach: Operational Control

GHG Emissions Summary (All Units in Metric Tons)

Buildings & Other Facilities					
Scope 1		CO ₂ e	CO ₂	CH ₄	N ₂ O
	Stationary Combustion	384	382	0.03608	0.00072
Scope 2	Purchased Electricity	2326	2312	0.10073	0.03821

Streetlights and Traffic Signals					
Scope 2		CO ₂ e	CO ₂	CH ₄	N ₂ O
	Purchased Electricity	1981	1969	0.08579	0.03254

Water Delivery Facilities					
Scope 1		CO ₂ e	CO ₂	CH ₄	N ₂ O
	Stationary Combustion	11	11	0.00104	0.00002
Scope 2	Purchased Electricity	2063	2050	0.08931	0.03388

Vehicle Fleet					
Scope 1		CO ₂ e	CO ₂	CH ₄	N ₂ O
	Mobile Combustion	730	713	0.05429	0.04883
	Contract Services				
Scope 3	Waste Management	1599	1595	0.01058	0.01140

Solid Waste					
Scope 3		CO ₂ e	CO ₂	CH ₄	N ₂ O
	Contract Services				
	Waste Management	292	292	13.89708	-

Employee Commute					
Scope 3		CO ₂ e	CO ₂	CH ₄	N ₂ O
	Employee Commute	1722	1682	0.10588	0.11890

Total Emissions					
	CO ₂ e	CO ₂	CH ₄	N ₂ O	
Scope 1	1125	1106	0.09141	0.04957	
Scope 2	6370	6331	0.27583	0.10463	
Scope 3	3613	1974	14.00296	0.11890	

B. Greenhouse Gas Report 2007— Interim Year

The year 2007 represents data collected from an interim year to review any changes in GHG emissions that may have occurred since the baseline year. The recommended operational control approach was used to define the City’s boundaries. Below are the GHG inventory details. This level of reporting is referred to as a quick action report wherein three of the six internationally-recognized GHGs regulated under the Kyoto Protocol (carbon dioxide, methane, and nitrous oxide) are reported separately in metric tons and aggregated with other gases not listed here to show the CO₂e summed totals of the estimated emissions of gases with different global warming potentials (see appendix E of LGOP). The control approach was utilized to define the City’s scopes of emissions.

Reporting year: 2007

Protocol Used Local: Government Operation Protocol, version 1.0

Control Approach: Operational Control

GHG Emissions Summary (All Units in Metric Tons)

Buildings & Other Facilities					
Scope 1		CO ₂ e	CO ₂	CH ₄	N ₂ O
	Stationary Combustion	995	992	0.09351	0.00187
Scope 2	Purchased Electricity	2048	2035	0.09204	0.03491

Streetlights and Traffic Signals					
Scope 2		CO ₂ e	CO ₂	CH ₄	N ₂ O
	Purchased Electricity	1798	1786	0.08078	0.03064

Water Delivery Facilities					
Scope 1		CO ₂ e	CO ₂	CH ₄	N ₂ O
	Stationary Combustion	23	22	0.00215	0.00004
Scope 2	Purchased Electricity	1393	1383	0.06259	0.02374

Vehicle Fleet					
Scope 1		CO ₂ e	CO ₂	CH ₄	N ₂ O
	Mobile Combustion	1837	1798	0.17683	0.11364
	Contract Services				
Scope 3	Waste Management	1839	1835	0.01077	0.01098

Solid Waste					
Scope 3		CO ₂ e	CO ₂	CH ₄	N ₂ O
	Contract Services				
	Waste Management	226	226	10.74891	-

Employee Commute					
Scope 3		CO ₂ e	CO ₂	CH ₄	N ₂ O
	Employee Commute	1839	2152	0.13176	0.13111

Total Emissions					
		CO ₂ e	CO ₂	CH ₄	N ₂ O
Scope 1		2855	2812	0.27349	0.11555
Scope 2		5239	5204	0.23541	0.08929
Scope 3		4262	2378	10.88067	0.13111

Informational Item					
	CO ₂ from Biomass Combustion	23			

C. Greenhouse Gas Report 1990—Historical Year

The year 1990 represents a reference year for several key pieces of climate change legislation such as the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol agreement, and the U.S. Mayors' Climate Protection Agreement. Where available and reliable information could be found historical GHG emissions have been recorded below. Carbon dioxide, methane, and nitrous oxide are reported separately in metric tons and aggregated with other gases not listed here to show the CO₂e summed totals of the estimated emissions of gases with different global warming potentials (see appendix E of LGOP). The control approach was utilized to define the City's scopes of emissions.

Reporting year: 1990

Protocol Used Local: Government Operation Protocol, version 1.0

Control Approach: Operational Control

GHG Emissions Summary (All Units in Metric Tons)

Buildings & Other Facilities					
Scope		CO ₂ e	CO ₂	CH ₄	N ₂ O
Scope 1	Stationary Combustion	3	3	0.00027	0.00001
Scope 2	Purchased Electricity	3601	3583	0.13901	0.04865

Streetlights and Traffic Signals					
Scope		CO ₂ e	CO ₂	CH ₄	N ₂ O
Scope 2	Purchased Electricity	758	53	0.02925	0.01024

Water Delivery Facilities					
Scope		CO ₂ e	CO ₂	CH ₄	N ₂ O
Scope 2	Purchased Electricity	980	974	0.03780	0.01323

Total Emissions					
		CO ₂ e	CO ₂	CH ₄	N ₂ O
	Scope 1	3	3	0.00027	0.00001
	Scope 2	5339	4610	0.20606	0.07212

Appendix B—Activity Data Disclosure

Listed below are the data sources. Activity data refers to consumption data such as fuel or electricity used which results in GHG emissions. In an effort to establish good reporting habits, improve the quality of future inventories, and to comply with the overarching reporting principles mentioned in the LGOP - relevance, completeness, consistency, transparency, and accuracy - this information has been recorded. This information is grouped by scope and source of emission. Descriptions of data sources and the methodology used to obtain information are listed here. Indicated in the upper right-hand corner is the methodology used and whether or not it is a recommended or alternative method as prescribed by the LGOP. In this way, the City will be able to improve its data collection process if an alternative method is listed. It is important to note that scope 3 emissions are considered optional reporting.

A. Buildings & Other Facilities

Scope 1 Stationary Combustion

<p>Description: Consumption data was obtained from Southern California Gas Company.</p> <p>Southern California Gas no longer possesses official customer records going back to 1990 due to document retention policies. SoCalGas located some casual records that go back to 1990 which was the basis for the gas information provided for 1990.</p>	<p>Recommended Method Known Natural Gas use</p>
<p>Reference: Chauncy Tou, Energy Programs Advisor Customer Programs, Southern California Gas Company, 213-244-2833, ctou@semprautilities.com.</p>	

Scope 2 Purchased Electricity

<p>Description: Consumption data was obtained from Southern California Edison.</p>	<p>Recommended Method Known electricity use</p>
<p>Reference: Larry Sutton, Account Executive, Southern California Edison, 714-973-5660 PAX 52660 Maya R. Aubrey, Analyst-Program/Project, Southern California Edison, (909) 357-6536 PAX 16036, Maya.Aubrey@sce.com.</p>	

B. Street Lighting and Traffic Signals

Scope 2 Purchased Electricity

<p>Description: Consumption data was obtained from Southern California Edison.</p> <p>Note: Accounts owned by SCE were included but recorded separately.</p>	<p>Recommended Method Known electricity use</p>
<p>Reference: Larry Sutton, Account Executive, Southern California Edison, 714-973-5660 PAX 52660 Maya R. Aubrey, Analyst-Program/Project, Southern California Edison, (909) 357-6536 PAX 16036, Maya.Aubrey@sce.com.</p>	

C. Water Delivery

Scope 2 Purchased Electricity

<p>Description: Consumption data was obtained from Southern California Edison.</p>	<p>Recommended Method Known electricity use</p>
<p>Reference: Larry Sutton, Account Executive, Southern California Edison, 714-973-5660 PAX 52660 Maya R. Aubrey, Analyst-Program/Project, Southern California Edison, (909) 357-6536 PAX 16036, Maya.Aubrey@sce.com.</p>	

D. Vehicle Fleet

Scope 1 Mobile Combustion

<p>Description: City staff provided fuel data based on known fuel use from the fuel tracking system.</p>	<p>Recommend Method Known fuel use from fuel tracking system</p>
<p>Reference: Rick Longobart, Fleet Superintendent, 310-412-5551, rlongobart@cityofinglewood.org and Steve Smith, Administrative Analyst, 310-412-5551, stevesmith@cityofinglewood.org</p>	

E. Solid Waste Facilities

Scope 3 Waste Related

<p>Description: Ms. Janetzke provided landfill information. Since 2004, El Sobrante Landfill has operated 3 gas-to-energy generators that transform landfill gas into energy. By converting waste gas into energy, El Sobrante Landfill is managing its waste in a more effective and efficient manner. The landfill gas is collected and processed in an environmentally responsible way and provides electricity, which would otherwise come from the use of fossil fuels. El Sobrante Landfill generates approximately 3.84 megawatts of electricity, which is then fed directly into the local Southern California Edison grid where it is used to meet the power demands of approximately 6,000 local homes a year.</p> <p>Solid Waste Characterization was obtain from the California Integrated Waste Management Board http://www.ciwmb.ca.gov/wastechar/BizGrpCp.asp 2007—4450 tons 2005—5754 tons No records could be found for 1990 City operated and owned facilities.</p>
<p>Reference: Crystal Janetzke, Waste Management 310-522-6593</p>

Scope 3 Employee Commute

<p>Description: Vehicle miles traveled were determined based on the South Coast Air Quality Management District's 2202 and 1990 Trip Plan Reduction, Average Vehicle Ridership (AVR) surveys.</p>
<p>Reference: Rick Longobart, Fleet Superintendent, 310-412-5551, rlongobart@cityofinglewood.org</p>

Appendix C—Methodology/Emissions Factors Disclosure

It is considered good practice to disclose all methodologies employed to calculate emissions. Listed below are the formulas used to determine the equivalent emissions. Emissions factors refer to a unique value used to determine the amount of a GHG emitted on a per unit activity basis. They are used to convert activity data, like energy usage, into the associated GHG emissions.³¹ In compliance with the LGOP and ICLEI program reporting requirements listed below and organized by scope are descriptions of computational methods and emission factors used to arrive at the equivalent GHG emissions. Indicated in the top right corner is the method used and whether it is considered to be a recommended or alternate method based on the LGOP standards. In this way, the City will be able to improve its data collection where an alternative method is listed. It is important to note that scope 3 emissions are considered optional reporting.

A. Scope 1 Stationary Combustion

<p>Description of Computational Method: Table G.1 of the LGOP, Default factors for CO2 emissions, pg. 170 and Table G.3 of the LGOP, Default CH4 and N2O emissions factors by fuel type and sector, pg. 172.</p>	<p>Recommended Method Default emission factors, Table G.1 and Table G.3 of the LGOP</p>
<p>Criteria Air Pollutants, Table 3. NERC Western Systems Coordinating Council/CNV 1990- 2005 2007 inventory-2005 CAP emissions factors 2005 inventory-2005 CAP emissions factors 1990 inventory-1990-2003 emissions factors</p>	
<p>Reference: Data was provided by Chauncy Tou, Energy Programs Advisor Customer Programs, Southern California Gas Company, 213-244-2833, ctou@semprautilities.com.</p>	

B. Scope 1 Mobile Combustion

<p>Description of Computational Method: City staff provided fuel data based on known fuel use from fuel tracking system.</p>	<p>Alternative Method Alternative emissions factors, Table G.13 of the LGOP</p>
<p>Alternate Emissions Factors were used based on Table G.13 of the LGOP, Alternate Methodology for Highway Vehicles by Inventory Year, pg. 180.</p>	
<p>Reference: Steve Smith, Administrative Analyst, 310-412-5551, stevesmith@cityofinglewood.org</p>	

C. Scope 2 Purchased Electricity

<p>Description of Computational Method: Table G.5 Utility-Specific Verified Electricity CO2 Emissions Factors (2000-2006), LGOP pg. 174.</p>	<p>Recommended Method Utility-Specific verified emission factors used</p>
<p>For 2005 inventory Southern California Edison, 2005 emission factors were used; For 2007, inventory Southern California Edison, 2006 emissions factors were used.</p>	
<p>TableG.6 California Grid Average Electricity Emissions Factors (1990-2004) emissions factors from the year 2004 was used for both 2005 and 2007.</p>	
<p>The year 1990 emissions factors from Table G.6 were used for the 1990 inventory.</p>	

³¹ A full description of emissions factor can be found on page 27 of the Local Government Operations Protocol. Emission factors are determined by means of direct measurement, laboratory analyses or calculations based on representative heat content and carbon content.

Reference: Larry Sutton, Account Executive, Southern California Edison, 714-973-5660 PAX 52660
 Maya R. Aubrey, Analyst-Program/Project, Southern California Edison, (909) 357-6536 PAX 16036,
 Maya.Aubrey@sce.com.

D. Scope 3 Waste Related Emissions

Description of Computational Method:
 There was an estimated 95% methane recovery at the landfill where the waste was taken, LGOP page 93. Only refuse data was included in the inventory and was provided by Waste Management.

Solid Waste Characterization for public administration was obtain from the California Integrated Waste Management Board <http://www.ciwmb.ca.gov/wastechar/BizGrpCp.asp>

Reference: Data was provided by Crystal Janetzke, Waste Management 310-522-6593

E. Scope 3 Employee Commute

<p>Description of Computational Method:</p> <p>Vehicle miles traveled were determined based on the South Coast Air Quality Management District's 2202 Trip Plan Reduction, Average Vehicle Ridership (AVR) surveys.</p> <p>Utilizing AVR survey results it was estimated that on average employees worked 47.6 weeks, meaning 22 days were deducted from the possible number of working days in a year. It was assumed that these absences were due to vacation, sick, personal, and holiday.</p> <p>2007—Vehicle miles traveled (VMT) was based on the 700 surveys from employees reporting to worksite(s). Assumptions: gasoline, passenger vehicle.</p> <p>2005—VMT was based on the 684 surveys from employees reporting to worksite(s). Assumptions: gasoline, passenger vehicle.</p>	<p>Alternative Method Alternative emissions factors, Table G.13, LGOP</p>
<p>Reference: Rick Longobart, Fleet Superintendent, 310-412-5551, rlongobart@cityofinglewood.org</p>	

Appendix D—Emissions Data

The municipal inventory report was based on data collected from electricity, natural gas consumption, fuels, and other sources listed in the tables below as reference. Information is organized to be consistent with the order of the report, e.g., baseline year, interim year, and historical year. Emissions sources are organized according to source, equivalent metric tons of carbon dioxide emissions, energy equivalent in MMBtu, energy/ fuel use, and cost where known.³²

Sources of Emissions 2005	Source	Equiv CO ₂ (tonnes)	Equiv CO ₂ (%)	Energy (MMBtu)	Energy/ Fuel Use	Energy/ Fuel Use Cost
Buildings and Facilities						
Bus Transit Center	Electricity	10	0.1	110	32,331 kWh	\$4,647
	Natural Gas	0	0	0	1 Therm	\$106
City Hall/Parking Structure	Electricity	1080	11.4	12136	3,555,865 kWh	\$421,621
	Natural Gas	20	0.2	368	3,677 Therms	\$4,095
City Service Center	Electricity	231	2.4	2597	760,800 kWh	\$102,330
	Natural Gas	135	1.4	2542	25,417 Therms	\$24,517
Lockhaven Community Center	Electricity	6	0.1	62	18,263 kWh	\$3,066
	Natural Gas	1	0	22	224 Therms	\$85
Police Station Facilities	Electricity	224	2.4	2521	738,770 kWh	\$71,188
Senior Center	Electricity	77	0.8	868	254,400 kWh	\$32,871
	Natural Gas	38	0.4	723	7,231 Therms	\$7,405
Veterans Memorial Building	Electricity	10	0.1	117	34,416 kWh	\$5,791
	Natural Gas	6	0.1	104	1,036 Therms	\$1,232
Fire Stations:						
Fire Stations (includes Main Fire Station, Station 3, & Fire Station Training Building)	Electricity	38	0.4	428	125,607 kWh	\$21,573
Libraries:						
Library Branch Crenshaw / Imperial	Electricity	18	0.2	206	60,304 kWh	\$12,134
	Natural Gas	7	0.1	133	1,331 Therms	\$1,677
Library Branch Morningside	Electricity	6	0.1	69	20,098 kWh	\$3,023
	Natural Gas	1	0	26	258 Therms	\$428
Library Main	Electricity	196	2.1	2207	646,740 kWh	\$80,759
	Natural Gas	85	0.9	1604	16,043 Therms	\$15,572
Parks & Recreations Facilities:						
Ashwood Park	Electricity	1	0	17	4,860 kWh	\$856
Center Park	Electricity	88	0.9	984	6,064 kWh	\$989
	Natural Gas	5	0.1	91	910 Therms	\$1,644

³² Source of data CACP software output.

Centinela Adobe	Electricity	5	0	52	108,264 kWh	\$7583
	Natural Gas	3	0	48	483 Therms	\$673
Centinela Park	Electricity	33	0.3	370	108,264 kWh	\$7,583
Darby Park	Electricity	15	0.2	174	37,323 kWh	\$3,011
	Natural Gas	22	0.2	410	4,102 Therms	\$4,463
Edward Vincent Jr. Park	Electricity	102	1.1	1149	336,735 kWh	\$22,338
North Park	Electricity	4	0	41	11,940 kWh	\$2,390
Roger Park Community Center	Electricity	177	1.9	1992	583,560 kWh	\$33,360
	Natural Gas	61	0.6	1144	11,437 Therms	\$10,971
Siminski Park	Electricity	3	0	35	10,268 kWh	\$1,786

Streetlights & Traffic Signals

Traffic Signals/Controllers	Electricity	363	3.8	4079	1,195,191 kWh	\$126,804
Streetlights:						
Streetlight City Owned	Electricity	934	9.9	10497	3,075,492 kWh	\$232,093
Streetlight SCE Owned	Electricity	684	7.2	7684	2,251,392 kWh	\$456,514

Water Delivery

Sprinkler/Irrigation Control	Electricity	129	1.4	1446	423,605 kWh	\$54,774
Water Treatment Facilities/Pumping	Electricity	1934	20.4	21727	6,366,058 kWh	\$717,685
	Natural Gas	11	0.1	208	2,083 Therms	\$2,284

Vehicle Fleet

Administration/Purchasing & Stores	Gasoline	2	0	30	257.9 gal	\$636
	Gasoline (off Road)	0	0	2	14.49 gal	\$40
Comm. Dev/Building & Safety	Gasoline	2	0	34	273.9 gal	\$719
Comm. Dev/Housing Program	Gasoline	1	0	15	122.2 gal	\$313
El Camino Fire Academy	Gasoline	3	0	40	273.9 gal	\$721
Finance/Purchasing & Stores	CNG	0	0	4	36.1 gal equiv	-
Finance/Revenue Management	Gasoline	0	0	1	11.2 gal	\$25
Human Services/Food Service Delivery	Gasoline	11	0.1	154	1242.6 gal	\$3,233
It/Communications & Web	Gasoline	1	0	15	121 gal	\$319
Park, Recreation/Construction & Development	Gasoline	7	0.1	101	809.2 gal	\$2,161
	Gasoline (off Road)	3	0	46		\$852
Park, Recreation/Edward Vincent Jr. Park	Gasoline	1	0	18	147.3 gal	\$358

	Gasoline (off Road)	4	0	54	430.8 gal	\$1,059
Park, Recreation/SR. Transportation	Diesel	6	0.1	85	611.3 gal	\$1,441
	Gasoline	45	0.5	619	4982.2 gal	\$12,740
Park, Recreation/Street Landscaping	Gasoline	38	0.4	525	4226.6 gal	\$11,013
	LPG	1	0	18	196.9 gal	\$484
	Diesel (off Road)	14	0.2	195	1408.8 gal	\$3,230
Parks, Recreation/Community Services	Gasoline	24	0.3	329	2651.2 gal	\$6,789
	Diesel (off Road)	5	0.1	71	513.5 gal	\$1,090
	Gasoline (off Road)	1	0	15	123.3 gal	\$289
Parks/Parking & Special Enforcement	Gasoline	7	0.1	97	780.7 gal	\$2,104
PD/ Administrative Services Bureau	Gasoline	12	0.1	170	1364.8 gal	\$3,502
PD/Anti-Crime Task Force	Gasoline	26	0.3	364	2931.9 gal	\$7,208
PD/Communications	Gasoline	2	0	32	260.1 gal	\$658
PD/Community Affairs	Gasoline	7	0.1	95	767.8 gal	\$1,977
PD/Detective Bureau	Gasoline	37	0.4	507	4081.7 gal	\$10,342
PD/Forensics Services Unit	Gasoline	3	0	48	387.1 gal	\$970
PD/Jail & Custody Division	Gasoline	1	0	8	61.3 gal	\$160
PD/Leased Vehicles	Gasoline	13	0.1	183	1472.1 gal	\$3,910
PD/Narcotics Section	Gasoline	31	0.3	426	3431.1 gal	\$8,835
PD/Office of the Chief of Police	Gasoline	10	0.1	135	1086.9 gal	\$2,476
PD/Parking & Special Enforcement	CNG	2	0	31	252.1 gal equiv.	-
	Gasoline	37	0.4	509	4094.9 gal	\$10,602
PD/Police Patrol Bureau	Gasoline	145	1.5	2001	16,108 gal	\$41,145
PD/Property and Evidence	Gasoline	7	0.1	102	824.5 gal	\$1,978
PD/Real Estate Fraud	Gasoline	3	0	41	332.8 gal	\$870
PD/Traffic Division	Gasoline	17	0.2	236	1900.1 gal	\$4976
PW/Fleet Management & Transit Services	Gasoline	13	0.1	181	1456.2 gal	\$3,525
	Gasoline (off Road)	1	0	11	91.5 gal	\$235
PW/General Services	Gasoline	0	0	4	34.7 gal	\$98
PW/Maintenance Districts	Gasoline	11	0.1	153	1232.3 gal	\$3,153
PW/Operations	Gasoline	1	0	12	97.8 gal	\$264
PW/Parking	Gasoline	1	0	12	98.7 gal	\$259
PW/Project Administration	Gasoline	1	0	15	119.3 gal	\$311
PW/Public Maintenance/Asphalt	Diesel	2	0	27	191.2 gal	\$446

Sources of Emissions 2007	Source	Equip CO ₂ (tonnes)	Equip CO ₂ (%)	Energy (MMBtu)	Energy/ Fuel Use	Energy/ Fuel Use Cost
PW/Repair	Gasoline	24	0.2	325	2618.2 gal	\$6,130
PW/Signs	Gasoline	7	0.1	99	796.8 gal	\$1,981
PW/Street & Sanitation/Street Cleaning	CNG	5	0.1	84	674.9 gal equiv.	-
	Diesel	17	0.2	229	1652.5 gal	\$3,134
	Gasoline	12	0.1	169	1361.8 gal	\$3,499
	Diesel (off Road)	9	0.1	123	885.1 gal	\$2,190
PW/Street Lighting	Gasoline	7	0.1	94	758.9 gal	\$1,981
PW/Traffic Paint	Gasoline	4	0	57	459.3 gal	\$1,073
PW/Water Engineering	Gasoline	15	0.2	204	1644.9 gal	\$4,240
PW/Water Utilities/Maintenance	Gasoline	14	0.1	187	1507.4 gal	\$3,790
	Diesel (off Road)	1	0	13	95.1 gal	\$237
	Gasoline (off Road)	1	0	10	82.4 gal	\$217
PW/Water Utilities/Pumping & Treatment	Gasoline	0	0	5	40.6 gal	\$94
PW/Water Utilities/Sewer	Diesel	8	0.1	109	788.3 gal	\$1,851
	Gasoline	4	0	60	481.4 gal	\$1,232
PW/Weed & Debris Abatement	Gasoline	15	0.1	205	1652.1 gal	\$4,227
	Diesel (off Road)	0	0	2	14.8 gal	\$38
Residential Sound Insulation	CNG	0	0	4	35 gal	-
	Gasoline	1	0	10	77.5 gal	\$50
Vehicle Fleet-Contract Services						
Waste Management	Gasoline	97	0.9	1341	10,791 gal	n/a
	Diesel	1502	13.5	20511	147,903 gal	n/a
Employee Commute						
Drove Alone	Gasoline	1537	16.2	21185	3,173,639 VMT	n/a
	Gasoline (Off Road)	50	0.5	694	123,379 VMT	n/a
Carpool	Gasoline	133	1.4	1828	273,841 VMT	n/a
Public Transportation	Diesel	2	0	25	1,125 VMT	n/a
Waste						
Waste Management	Carbon Dioxide	292			5,754 Tons	n/a
Sources:	Food Waste	31				
	Paper Products	220				
	Plant Debris	30				
	Wood/Textiles	11				

Buildings and Facilities						
Bus Transit Center	Electricity	13	0.1	149	43,683.00 kWh	\$7,341
	Natural Gas	1	0	21	206 Therms	\$284
City Hall/Parking Structure	Electricity	1007	11.6	11745	3,441,377.00 kWh	\$448,948
	Natural Gas	39	0.4	731	7,312 Therms	\$3,714
City Service Center	Electricity	242	2.8	2818	825,580.00 kWh	\$112,700
	Natural Gas	504	5.8	9473	94,725 Therms	\$43,111
Lockhaven Community Center	Electricity	6	0.1	74	21,618.00 kWh	\$3,747
	Natural Gas	4	0	71	712 Therms	\$660
Police Station Facilities	Electricity	202	2.4	2358	690,727 kWh	\$75,623
Senior Center	Natural Gas	30	0.3	560h	5,604 Therms	-
Veterans Memorial Building	Electricity	20	0.2	229	67,135.00 kWh	\$10,607
	Natural Gas	27	0.3	511	5,110 Therms	\$3,618
Fire Stations:						
Fire Stations (includes Main Fire Station, Station 3, & Fire Station Training Building)	Electricity	51	0.6	600	175,669 kWh	\$30,065
Libraries:						
Library Branch Crenshaw Imperial	Electricity	31	0.4	364	106,720.00 kWh	\$15,257
	Natural Gas	8	0.1	149	1,490 Therms	\$1,289
Library Branch Morningside	Electricity	7	0.1	81	23,759 kWh	\$4,063
	Natural Gas	5	0.1	99	988 Therms	\$964
Library Main	Electricity	177	2	2065	605,051 kWh	\$80,246
	Natural Gas	183	2.1	3449	34,493 Therms	\$14,330
Parks & Recreations:						
Ashwood Park	Electricity	1	0	16	4,824 kWh	\$983
Center Park	Natural Gas	14	0.2	254	6,714 kWh	\$1,231
Centinela Adobe	Electricity	4	0	45	13,194 kWh	\$2,242
	Natural Gas	5	0.1	89	886 Therms	\$573
Centinela Park	Electricity	40	0.5	462	135,250 kWh	\$12,101
Edward Vincent Jr. Park	Electricity	95	1.1	1104	323,513 kWh	\$28,290
Darby Park	Electricity	11	0.1	127	37,311.00 kWh	\$2,910
	Natural Gas	45	0.5	849	8,487 kWh	\$4,675
Edward Vincent Jr. Park	Electricity	95	1.1	1104	28,340 kWh	\$5,570
North Park	Electricity	5	0.1	58	17,034 kWh	\$3,027
Roger Park Community Center	Electricity	134	1.5	1557	456,120 kWh	\$34,385
	Natural Gas	130	1.5	2446	24,463 therms	\$12,963

Siminski Park	Electricity	2	0	28	8,276 kWh	\$1,649
Streetlights & Traffic Signals						
Traffic Signals/Controllers	Electricity	217	2.1	2527	740,447 kWh	\$97,397
Streetlights:						
Streetlight City Owned	Electricity	924	10.6	10774	3,156,884 kWh	\$295,144
Streetlight SCE Owned	Electricity	657	7.6	7658	2,243,653 kWh	\$565,240
Water Delivery						
Sprinkler/Irrigation Control	Electricity	10	0.1	114	33,452 kWh	\$15,564
Water Treatment Facilities/Pumping	Electricity	1383	15.9	16124	4,724,379 kWh	\$561,291
	Natural Gas	23	0.3	429	4,292 Therms	\$2,943
Vehicle Fleet						
Administration/Purchasing & Stores	Gasoline	7	0.1	92	738.7 gal	\$2,029
Comm. Dev/Building & Safety	CNG	0	0	8	64.3 gal equiv.	\$66.65
	Gasoline	10	0.1	140	1128.8	\$3,119
Comm. Dev/Housing Program	CNG	0	0	1	4.1 gal equiv.	\$4
	Gasoline	2	0	25	203.3 gal	\$565
El Camino Fire Academy	Gasoline	6	0.1	78	631.2 gal	\$1,733
Finance/Purchasing & Stores	CNG	0	0	6	47.9 gal	\$50
Finance/Revenue Management	Gasoline	0	0	5	43.8 gal	\$123
Human Services/Food Service	CNG	1	0	15	121.5 gal equiv.	\$126
	Gasoline	40	0.4	548	4408.7 gal	\$12,163
ITC/Communications & Web	Gasoline	2	0	32	260.1 gal	\$707
ITC/Network Support	Gasoline	2	0	29	234.7 gal	\$653
Library/Circulation	CNG	1	0	20	159.6 gal	\$165
Park, Recreation/SR. Transportation	CNG	2	0	43	347 gal equiv.	\$360
	Gasoline	103	1.0	1420	11,434.4 gal	\$31,566.02
Park, Recreation/Community Services/Park Maintenance	Gasoline	63	0.6	872	7016.2 gal	\$19,305
	Gasoline (Off Road)	7	0.1	98	787.8 gal	\$2,176
Park, Recreation/Construction & Development	Gasoline	30	0.3	410	3302.3 gal	\$9,070
	Gasoline (Off Road)	1	0	8	68 gal	\$187
Park, Recreation/Edward Vincent Jr. Park	Gasoline	3	0	41	332.2 gal	\$918

	Gasoline (Off Road)	1	0	18	145.1 gal	\$403
Park, Recreation/Rogers Park	Gasoline	1	0	15	119.2 gal	\$329
Park, Recreation/Street Landscaping	Gasoline	104	1	1432	11,524.4 gal	\$31,682
Parks/Parking & Special Enforcement	Gasoline	34	0.3	465	3745.4 gal	\$10,320
PD/Administrative Services Bureau	Gasoline	31	0.3	429	3449.6 gal	\$9,498
PD/Anti-Crime Task Force	Gasoline	51	0.5	708	5701.2 gal	\$15,721
PD/Communications	Gasoline	0	0	2	18 gal	\$49
PD/Community Affairs	Gasoline	4	0	51	411.9 gal	\$1,137
PD/Detective Bureau	Gasoline	55	0.5	765	6,157.8 gal	\$16,972
PD/Forensics Services Unit	Gasoline	9	0.1	120	964.9 gal	\$2,660
PD/Jail & Custody Division	Gasoline	3	0	41	333.3 gal	\$902
PD/Leased Vehicles	Gasoline	7	0.1	94	760.1 gal	\$2,059
PD/Narcotics Section	Gasoline	99	0.9	1362	10,960.9 gal	\$30,249
PD/Office of the Chief of Police	Gasoline	13	0.1	174	1400.6 gal	\$3,862
PD/Parking & Special Enforcement	CNG	31	0.3	557	1,118.6 gal equiv.	\$1,159
	Gasoline	76	0.7	1047	8426.4 gal	\$22,959
PD/Police/Patrol Bureau	Gasoline	479	4.5	6621	53,300.4 gal	\$146,945
PD/Property & Evidence	Gasoline	2	0	32	258.4 gal	\$719
PD/Real Estate Fraud	Gasoline	6	0.1	86	693.9 gal	\$1,910
PD/Traffic Division	Gasoline	17	0.2	236	1903.1 gal	\$5,238
PW/Engineering	CNG	0	0	9	71.6 gal	\$74
	Gasoline	3	0	43	343.2 gal	\$948
PW/Fleet Management, & Transit Services	Gasoline	14	0.1	194	1565.3 gal	\$4,258
PW/General Services	Gasoline	4	0	53	428.1 gal	\$1,181
PW/GIS, Permits & Maps	Gasoline	0	0	5	43.7 gal	\$123
PW/Maintenance Districts	Gasoline	18	0.2	252	2032.6 gal	\$5,621
PW/Operations	Gasoline	2	0	31	250 gal	\$689
PW/Parking	Gasoline	12	0.1	163	1311.8 gal	\$3,623
PW/Project Administration	Gasoline	3	0	37	295.5 gal	\$812
PW/Public Maintenance/Asphalt	Gasoline	66	0.6	912	7339.4 gal	\$20,185
	Gasoline (Off Road)	0	0	2	17.7 gal	\$51
PW/Refuse/Environmental Services	Gasoline	4	0	49	398.1 gal	\$1,097
PW/Repair	Gasoline	76	0.7	1046	8417 gal	\$23,144
PW/Signals	Gasoline	6	0.1	87	700.6 gal	\$1,914

PW/Signs	Gasoline	1	0	18	145.7 gal	\$396
PW/Street & Sanitation/Street Cleaning	CNG	17	0.2	291	2,346.5 gal	\$2,431
	Gasoline	26	0.2	363	2919.1 gal	\$8,076
PW/Street Lighting	Gasoline	20	0.2	279	2246.9 gal	\$6,185
PW/Traffic Paint	Gasoline	17	0.2	231	1862.1 gal	\$5,151
PW/Water Engineering	Gasoline	29	0.3	394	3172.6 gal	\$8,745
PW/Water Utilities/Maintenance	Gasoline	32	0.3	447	3596.2 gal	\$9,903
	Gasoline (Off Road)	1	0	19	153.1 gal	\$427
PW/Water Utilities/Meter	CNG	2	0	36	290 gal equiv.	\$300
	Gasoline	9	0.1	120	967.8 gal	\$2,690
PW/Water Utilities/Pumping & Treatment	Gasoline	15	0.1	202	1624.1 gal	\$4,482
PW/Weed & Debris Abatement	Gasoline	37	0.4	513	4129.3 gal	\$11,369
PW/Water Utilities/Sewer	Gasoline	8	0.1	111	892.8 gal	\$2,444
Recreation/Community Services/Park Maintenance	Gasoline	11	0.1	148	1191.5 gal	\$3,262
Residential Sound Insulation	CNG	1	0	25	200.1 gal	\$207
	Gasoline	1	0	11	92.3 gal	\$254
Bulk Diesel Purchase	ULSDI/B20 Blend	98	0.9	121	12,063 gal	\$32,777

Vehicle Fleet-Contract Services

Waste Management	Gasoline	92	0.8	1271	10,235 gal	n/a
	Diesel (ULSD)	1747	14.7	23857	172,035 gal	n/a

Employee Commute

Drove Alone	Gasoline	1593	18.4	22013	3,360,725 VMT	n/a
	Gasoline (Off Road)	63	0.7	874	155,462 VMT	n/a
Carpool	Gasoline	130	1.5	1794	273,841 VMT	n/a
Public Transportation	Gasoline	4	0	51	2,314 VMT	n/a

Waste

Waste Management	Carbon Dioxide	226			4,450 Tons	n/a
Sources:	Food Waste	24				
	Paper Products	170				
	Plant Debris	24				
	Wood/Textiles	8				

Sources of Emissions 1990	Source	Equiv CO ₂ (tonnes)	Equiv CO ₂ (%)	Energy (MMBtu)	Energy/ Fuel Use	Energy/ Fuel Use Cost
Buildings and Facilities						
City Hall/Parking Structure	Electricity	1390	26	10092	2,957,080 kWh	\$318,897
	Natural Gas	0	0	3	30.87 Therms	n/a
City Service Center	Electricity	492	9.2	3570	1,045,920 kWh	\$107,551
	Natural Gas	1	0	23	232.30 Therms	n/a
Police Station Facilities	Electricity	405	7.6	2937	860,820 kWh	\$78,826
Senior Center	Electricity	100	1.9	729	213,719 kWh	\$24,964
Veterans Memorial Building	Electricity	16	0.3	114	33,311kWh	\$4,782
	Natural Gas	0	0	2	18.56 Therms	n/a
Lockhaven Community Center	Electricity	6	0.1	43	12,543 kWh	\$1,781
	Natural Gas	0	0	1	8.21 Therms	n/a
Fire Stations:						
Fire Stations (includes Main Fire Station, Stations 2, 3 and 4, & Fire Station Training Building)	Electricity	333	6.3	2423	709,991 kWh	\$82,173
Libraries:						
Library Branch Crenshaw / Imperial	Electricity	43	0.8	310	90,940 kWh	\$11,519
	Natural Gas	0	0	6	55.06 Therms	n/a
Library Branch Morningside	Electricity	4	0.1	30	8,826kWh	\$1,040
	Natural Gas	0	0	0	1.84 Therms	n/a
Library Main	Electricity	344	6.4	2497	731,700 kWh	\$76,870
Parks & Recreations:						
Ashwood Park	Electricity	4	0.1	28	8,296 kWh	\$1,138
Center Park	Natural Gas	0	0	2	20.23 Therms	n/a
Centinela Adobe	Electricity	21	0.4	150	44,004 kWh	\$5,863
	Natural Gas	0	0	0	3.73 Therms	n/a
Centinela Park	Electricity	16	0.3	118	34,654 kWh	\$4,471
Darby Park	Electricity	11	0.2	82	24,031 kWh	\$3,196
	Natural Gas	0	0	7	69.56 Therms	n/a
Edward Vincent Jr. Park	Electricity	136	2.5	984	288,332 kWh	\$31,887
North Park	Electricity	19	0.4	139	40,800 kWh	\$4,334
Roger Park Community Center	Electricity	259	4.9	1882	551,520 kWh	\$67,797
	Natural Gas	0	0	9	91.56 Therms	n/a
Siminski Park	Electricity	2	0	17	5,122 kWh	\$759
Streetlights & Traffic Signals						

Traffic Signals/Controllers	Electricity	758	14.2	5502	1,612,075 kWh	\$187,255
-----------------------------	-------------	-----	------	------	---------------	-----------

Water Delivery

Sprinkler/Irrigation Control	Electricity	261	4.9	1892	554,433 kWh	\$73,603
Water Treatment Facilities/Pumping	Electricity	719	13.5	5218	1,528,960 kWh	\$149,782

Criteria Air Pollutants³³

³³ To review definitions and acronyms for criteria air pollutants refer to appendices sections G and H.

Municipal operations are also responsible for emitting criteria air pollutants which have been linked to various environmental and public health problems. The CACP software generates data on these emissions as shown in the tables below.³⁴ Actions taken to reduce emissions will also reduce criteria air pollutants as well.

Criteria Air Pollutants 2005	NOx (lbs)	SOx (lbs)	CO (lbs)	VOC (lbs)	PM10 (lbs)
Building and Facilities	8,001	4,577	4,612	550	3,775
Streetlights & Traffic Signals	5,782	3,857	3,661	412	3,183
Water Delivery Facilities	6,054	4,017	3,821	430	3,315
Vehicle Fleet	30,579	1,282	69,048	7,620	1,138
Employee Commute	11,200	248	120,264	12,334	260
Total	61,616	13,981	201,406	21,346	11,671

Criteria Air Pollutants 2007	NOx (lbs)	SOx (lbs)	CO (lbs)	VOC (lbs)	PM10 (lbs)
Building and Facilities	9,345	4,263	4,739	615	3,511
Streetlights & Traffic Signals	5,444	3,632	3,448	387	2,997
Water Delivery Facilities	4,290	2,817	2,690	304	2,325
Vehicle Fleet	37,780	642	137,846	14,540	1,162
Employee Commute	13,194	696	145,743	14,641	321
Total	70,053	12,050	294,466	30,487	10,316

Criteria Air Pollutants 1990	NOx (lbs)	SOx (lbs)	CO (lbs)	VOC (lbs)	PM10 (lbs)
Building and Facilities	6,580	5,328	4,236	482	4,014
Streetlights & Traffic Signals	1,383	1,121	891	101	845
Water Delivery Facilities	1,787	1,449	1,151	131	1,091
Total	9,750	7,898	6,278	714	5,950

Appendix F—Climate Change Action

For reference, listed below are some of the key climate change policies that have been adopted at an international

³⁴ Source of data CACP software output.

level as well as at State and Regional levels.³⁵

AB 811, 2008—Gives counties and local governments authority to create benefit assessment districts which allow property owners to finance energy efficiency upgrades, such as solar panels, efficient air conditioning and ventilation systems, and tankless water heating equipment. Owners may enter a loan contract with a local government and pay it back through their property-tax bill. This legislation will help to reduce GHG emissions and stimulate energy efficiency upgrades.

SB 375 Steinberg, 2008—Advances the State's efforts to achieve the global warming goals consistent with AB 32. It aligns three critical policy areas of importance to local government: (1) regional long-range transportation plans and investments; (2) regional allocation of the obligation for cities and counties to zone for housing; and (3) a process to achieve greenhouse gas emissions reductions targets for the transportation sector.

SB 97 Dutton, 2007—States that GHGs and their effects are subject to the California Environmental Quality Act (CEQA). CEQA requires that agencies identify a given project's potentially significant effects on the environment and mitigate those significant effects whenever feasible. Public agencies such as local governments are therefore obligated to determine whether a given project's climate change-related impacts are significant and to mitigate any significant effects. CARB is responsible for recommending where the threshold of "significance" lies.

SB 107 Simitian, 2006—Requires investor-owned utilities (IOUs) to increase the share of renewable energy sources (e.g., wind, solar, geothermal) in their electricity mix to 20 percent by 2010. Known as the Renewables Portfolio Standard (RPS), the law is intended to decrease California's reliance on fossil fuel and reduce GHG emissions from the electricity sector. As of 2008, about 12 percent of California's electricity demand is met with renewable resources. Governor Schwarzenegger has since called for 33 percent of California's electricity to be provided by renewable sources by 2020.

AB 32 Nunez & Pavley, 2006—Institutes a mandatory limit on greenhouse gas emissions -- reducing emissions in California to 1990 levels by the year 2020 below forecasted levels. The bill also directs the California Air Resources Board (CARB) to establish a mandatory reporting system to track and monitor emission levels and requires CARB to develop various compliance options and enforcement mechanisms.

U.S. Mayors' Climate Protection Agreement, 2005—Creates a commitment to strive to meet or beat, by 2012, the Kyoto Protocol target of a seven percent reduction in greenhouse gas emissions below 1990 levels. The agreement was initiated by Seattle Mayor Greg Nickels.

AB 1493 Pavley, 2002—Requires the State Air Resources Board to develop and adopt regulations that achieve the maximum feasible reduction of greenhouse gases from vehicles primarily used for non-commercial transportation by January 2005.

Kyoto Protocol 1997—A protocol to the United Nations Framework Convention on Climate Change (UNFCCC) requiring industrialized nations to reduce their collective greenhouse gas emissions 5.2% below 1990 levels. As of January 2007, 162 countries have ratified the Protocol, with the United States and Australia most notably absent from

³⁵ The California Air Resources Board website was a source of information for the legislation listed above. To find more information on the legislation visit the website at <http://www.arb.ca.gov/cc/cc.htm>. For more information on the U.S. Mayors' Climate Protection Agreement visit their website at <http://usmayors.org/climateprotection/agreement.htm>. To learn more about AB 811 visit the Los Angeles County website at <http://portal.lacounty.gov/wps/portal/lac/home>.

the list.

Rio Earth Summit in 1992—Created the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC is a milestone treaty on Climate Change that provides an overall framework for international efforts to mitigate climate change.

Appendix G—Abbreviations and Acronyms³⁶

Btu	British thermal unit
CH4	methane
CO	carbon monoxide
CO2	carbon dioxide
CO2e	carbon dioxide equivalent
FE	Fuel Economy
GHG	greenhouse gas
HFC	hydrofluorocarbon
MMBtu	1 million British thermal unit
NOx	oxides of nitrogen
N2O	nitrous oxide
PFC	perfluorocarbon
PM10	particulate matter smaller than ten microns in diameter
SF6	sulfur hexafluoride
SOx	sulfur oxides
VOC	volatile organic compounds

Appendix H—Glossary of Terms³⁷

Activity data	Data on the magnitude of a human activity resulting in emissions taking place during a given period of time. Data on energy use, fuel used, miles traveled, input material flow, and product output are all examples of activity data that might be used to compute GHG emissions.
Base year	A specific year against which an entity's emissions are tracked over time.
Base year emissions	GHG emissions in the base year.
Boundaries	GHG accounting and reporting boundaries can have several dimensions, i.e., organizational, operational and geographic. These boundaries determine which emissions are accounted for and reported by the entity.
Biogenic emissions from combustion	CO2 emissions produced from combusting a variety of biofuels and biomass, such as biodiesel, ethanol, wood, wood waste and landfill gas.
Calendar year	The time period from January 1 through December 31.
Carbon dioxide (CO2)	The most common of the six primary GHGs, consisting of a single carbon atom and two oxygen atoms, and providing the reference point for the GWP of other gases. (Thus, the GWP of CO2 is equal to 1.)

³⁶ Abbreviations and acronyms are from the Local Government Operations Protocol, version 1.0

³⁷ Definition are from the Local Government Operations Protocol, version 1.0 and ICLEI's Cities for Climate Protection Milestone Guide.

CO2 equivalent (CO2e)	The universal unit for comparing emissions of different GHGs expressed in terms of the GWP of one unit of carbon dioxide.
Control approach	An emissions accounting approach for defining organizational boundaries in which an entity reports 100 percent of the GHG emissions from operations under its financial or operational control.
Criteria Air Pollutants	The term criteria air pollutants refers to pollutants that are regulated under the U.S. Clean Air Act. As with carbon dioxide, the major sources of these pollutants are fossil fuels. Most measures that reduce carbon dioxide emissions also reduce criteria air pollutants. Criteria air pollutants include nitrogen oxides (NOx), volatile organic compounds (VOCs), carbon monoxide (CO), sulfur oxides (SOx), and particulate matter smaller than ten microns in diameter (PM-10). The CACP software provides estimated emissions of CAPs as well as GHGs for emissions analyses and reduction benefits of measures.
Direct emissions	Emissions from sources within the reporting entity's organizational boundaries that are owned or controlled by the reporting entity, including stationary combustion emissions, mobile combustion emissions, process emissions, and fugitive emissions. All direct emissions are Scope 1 emissions, with the exception of biogenic CO2 emissions from biomass combustion.
Emission factor	A unique value for determining an amount of a GHG emitted on a per unit activity basis (for example, metric tons of CO2 emitted per million Btus of coal combusted, or metric tons of CO2 emitted per kWh of electricity consumed).
Facility	Any property, plant, building, structure, stationary source, stationary equipment or grouping of stationary equipment or stationary sources located on one or more contiguous or adjacent properties, in actual physical contact or separated solely by a public roadway or other public right-of way, and under common operational or financial control, that emits or may emit any greenhouse gas.
Global warming potential (GWP)	The ratio of radiative forcing (degree of warming to the atmosphere) that would result from the emission of one mass-based unit of a given G GHG compared to one equivalent unit of carbon dioxide (CO2) over a given period of time.
Greenhouse gases (GHGs)	For the purposes of this Protocol, GHGs are the six gases identified in the Kyoto Protocol: carbon dioxide (CO2), nitrous oxide (N2O), methane (CH4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6).
Indirect emissions	Emissions that are a consequence of activities that take place within the organizational boundaries of the reporting entity, but that occur at sources owned or controlled by another entity. For example, emissions of electricity used by a manufacturing entity that occur at a power plant represent the manufacturer's indirect emissions.
Inventory	A comprehensive, quantified list of an organization's GHG emissions and sources.

Inventory boundary	An imaginary line that encompasses the direct and indirect emissions included in the inventory. It results from the chosen organizational and operational boundaries.
Methane (CH ₄)	One of the six primary GHGs, consisting of a single carbon atom and four hydrogen atoms, possessing a GWP of 21, and produced through the anaerobic decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.
Metric ton (MT, tonne)	Common international measurement for the quantity of GHG emissions, equivalent to about 2,204.6 pounds or 1.1 short tons.
Mobile combustion	Emissions from the combustion of fuels in transportation sources (e.g., cars, trucks, buses, trains, airplanes, and marine vessels) and emissions from non-road equipment such as equipment used in construction, agriculture, and forestry. A piece of equipment that cannot move under its own power but that is transported from site to site (e.g., an emergency generator) is a stationary, not a mobile, combustion source.
Nitrous oxide (N ₂ O)	One of the six primary GHGs, consisting of two nitrogen atoms and a single oxygen atom, possessing a GWP of 310, and typically generated as a result of soil cultivation practices, particularly the use of commercial and organic fertilizers, fossil fuel combustion, nitric acid production, and biomass burning.
Operational boundaries	The boundaries that determine the direct and indirect emissions associated with operations within the entity's organizational boundaries.
Operational control	Full authority to introduce and implement operating policies at an operation.
Organizational boundaries	The boundaries that determine the operations owned or controlled by the reporting entity, depending on the consolidation approach taken.
Perfluorocarbons (PFCs)	One of the six primary GHGs, consisting of a group of man-made chemicals composed of one or two carbon atoms and four to six fluorine atoms, containing no chlorine. Originally introduced as alternatives to ozone depleting substances, PFCs have few commercial uses and are typically emitted as by-products of industrial and manufacturing processes. PFCs have very high GWPs and live a long time in the atmosphere.
Scope	Defines the operational boundaries in relation to indirect and direct GHG emissions.
Scope 1 emissions	All direct GHG emissions, with the exception of direct CO ₂ emissions from biogenic sources.
Scope 2 emissions	Indirect GHG emissions associated with the consumption of purchased or acquired electricity, heating, cooling, or steam.
Scope 3 emissions	All indirect emissions not covered in Scope 2. Examples include upstream

	and downstream emissions, emissions resulting from the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, use of sold products and services, outsourced activities, recycling of used products, waste disposal, etc.
Stationary	Neither portable nor self propelled, and operated at a single facility.
Stationary combustion	Emissions from the combustion of fuels to produce electricity, steam, heat, or power using equipment (boilers, furnaces, etc.) in a fixed location.
Sulfur hexafluoride (SF6)	One of the six primary GHGs, consisting of a single sulfur atom and six fluoride atoms, possessing a very high GWP of 23,900, and primarily used in electrical transmission and distribution systems.
Therm	A measure of one hundred thousand (10^5) Btu.