Appendix E: San Carlos Municipal Greenhouse Gas Emissions Inventory, 2005

Prepared by ICLEI – Local Governments for Sustainability, September 2009

City of San Carlos
2005 Government Operations
Greenhouse Gas Emissions Inventory

Prepared by ICLEI - Local Governments for Sustainability USA.

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Joint Venture: Silicon Valley Network

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Established in 1993, Joint Venture provides analysis and action on issues affecting the Silicon Valley economy and quality of life. The organization brings together established and emerging leaders—from business, government, academia, labor, and the broader community—to spotlight issues, launch projects, and work toward innovative solutions.

Joint Venture has convened representatives from the 42 cities and counties in Silicon Valley as a Climate Protection Task Force to develop strategies for reducing greenhouse gas emissions from city, county, and other agencies' operations. The program includes conducting inventories of emissions from publicly owned buildings, vehicles, waste treatment plants and other facilities. Then goals for reducing emissions can be set and targets of opportunity developed. The Task Force will explore forming purchasing pools to get the best prices on capital equipment, such as hybrid vehicles and solar panels, to help achieve emissions reduction goals.

The City of San Carlos is a Charter Member of the Climate Protection Task Force. The Assistant City Manager in San Carlos sits on the Executive Committee of the Climate Protection Task Force.

http://www.jointventure.org

Sustainable Silicon Valley

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Sustainable Silicon Valley (SSV) is a collaboration of businesses, governments, and non-governmental organizations that are identifying and addressing environmental and resource pressures in the Valley. As its first initiative, SSV is engaging prominent Valley organizations to work toward self-imposed goals of reducing regional carbon dioxide (CO_2) emissions. The SSV approach is to facilitate strategies to reduce CO_2 emissions through increased energy and fuel efficiency and through the use of renewable sources of energy. SSV envisions a thriving Silicon Valley with a healthy environment, a vibrant economy, and a socially equitable community. Sustainable Silicon Valley's mission is to lead the Silicon Valley community to create a more sustainable future by engaging and collaborating with local government agencies, businesses, and community organizations to identify and help address the highest priority environmental issues in the Valley.

http://www.sustainablesiliconvalley.org

ICLEI-Local Governments for Sustainability USA

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ICLEI-Local Governments for Sustainability is a membership association of more than 1,000 local governments worldwide—more than 500 in the United States—committed to advancing climate protection and sustainability. Through technical expertise, direct network engagement, and the innovation and evolution of tools, ICLEI strives to empower local governments to set and achieve their emissions reduction and sustainability goals.

http://www.icleiusa.org

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Executive Summary

The City of San Carlos has recognized that climate change is a reality, with potentially disruptive effects to the City's residents and businesses. San Carlos also recognizes that local governments play a leading role in both reducing greenhouse gas emissions and mitigating the potential impacts of climate change. Local governments can dramatically reduce the emissions from their government operations by such measures as increasing energy efficiency in facilities and vehicle fleets, utilizing renewable energy sources, sustainable purchasing, waste reduction, and supporting alternative modes of transportation for employees. The co-benefits of these measures may include lower energy bills, improved air quality, and more efficient government operations.

San Carlos has begun its efforts to address the causes and effects of climate change with the assistance of the partners in the Silicon Valley Climate Protection Partnership. These partners include Joint Venture: Silicon Valley Network; Sustainable Silicon Valley; local governments in San Mateo, Santa Clara, and Santa Cruz counties; and ICLEI-Local Governments for Sustainability USA.

This greenhouse gas emissions inventory represents completion of an important first step in the City's climate protection initiative. As advised by ICLEI, it is essential to first quantify emissions to establish:

- A baseline emissions inventory, against which to measure future progress.
- An understanding of the scale of emissions from the various sources within government operations.

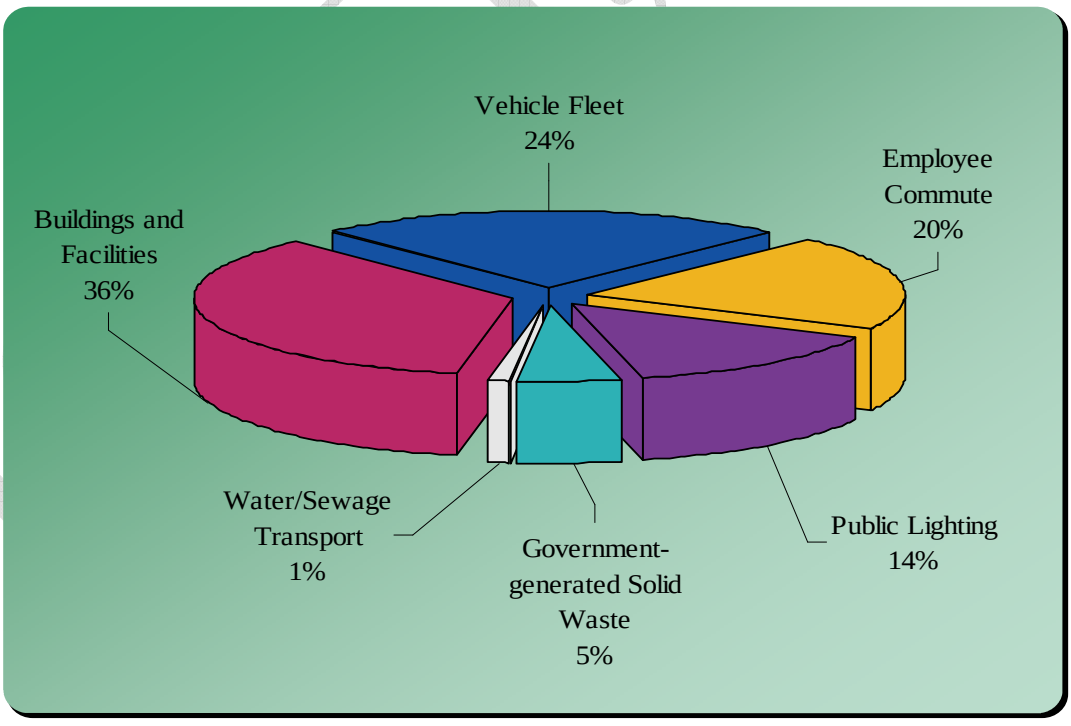
Presented here are estimates of greenhouse gas emissions in 2005 resulting from San Carlos' government operations. With one exception,[1] all emissions estimates in this report refer to emissions generated from sources

1 The exception is emissions from employee-owned vehicles that are used by employees during commuting.

over which the City has direct operational control, exclusive of physical location.[2] This includes all government-operated facilities, streetlights, and other stationary sources; vehicle fleet and off-road equipment; and waste generated by government operations. The inventory *does not* estimate emissions from the larger community—these will be addressed in the community-scale greenhouse gas emissions inventory. Therefore, this inventory should be considered to be an independent analysis relevant only to San Carlos' internal operations.

This inventory is one of the first inventories to use a new national standard developed and adopted by the California Air Resources Board (ARB) in conjunction with ICLEI, the California Climate Action Registry, and The Climate Registry. This standard, called the Local Government Operations Protocol (LGOP), provides standard accounting principles, boundaries, quantification methods, and procedures for reporting greenhouse gas emissions from local government operations. To that end, LGOP represents a strong step forward in standardizing how inventories are conducted and reported, providing a common national framework for all local governments to establish their emissions baseline. This and all emissions inventories represent an estimate of emissions using the best available data and calculation methodologies. Emissions estimates are subject to change as better data and calculation methodologies become available in the future. Regardless, the findings of this inventory analysis provide a solid base against which San Carlos can begin planning and taking action to reduce its greenhouse gas emissions.

Figure ES.1 2005 Government Operations Emissions by Sector



2 Facilities, vehicles, or other operations wholly or partially owned by, but not operated by, the City of San Carlos are not included in this inventory. See Appendix A for more details on the boundaries of the inventory.

Inventory Results

In 2005, San Carlos' direct emissions, emissions from electricity consumption, and select indirect sources totaled 1,743 metric tons of CO_2e.[3] Of the total emissions accounted for in this inventory, emissions from buildings and facilities were the largest (36 percent as shown in Figure ES.1 and Table ES.1). The remaining emissions reported in this inventory came from the City's vehicle fleet (24 percent), employee commute (20 percent), public lighting (14 percent), government-generated solid waste (5 percent), and water transport (1 percent).

Cumulatively, the City of San Carlos spent approximately $523,419 on energy (natural gas, electricity, diesel, and gasoline) for government operations in 2005.[4] Sixty-four percent of these energy expenses ($335,255) resulted from electricity consumption, and 11 percent ($58,036) from natural gas purchases from PG&E and ABAG Power. Fuel purchases (gasoline and diesel) for the vehicle fleet and mobile equipment totaled $130,127 or 25 percent of total costs included in this inventory. In addition to these direct costs, the City of San Carlos received waste disposal service in 2005 with an estimated value of $58,139.[5] Beyond reducing greenhouse gases, any future reductions in municipal energy consumption will have the potential to reduce these costs, enabling San Carlos to reallocate limited funds toward other municipal services or create a revolving energy loan fund to support future climate protection activities.

Table ES.1 2005 Government Operations Emissions by Sector

Sector	Greenhouse Gas Emissions (metric tons CO2e)
Buildings and Facilities	613
Vehicle Fleet	425
Employee Commute	353
Public Lighting	241
Government-generated Solid Waste	93
Water/Sewage Transport	18

3 This number represents a "roll-up" of emissions, and is not intended to represent a complete picture of emissions from San Carlos' operations. This roll-up number should not be used for comparison with other local government roll-up numbers without a detailed analysis of the basis for this total.

4 See Table 3.3 for more information on costs.

5 While, in 2005, the City did not pay directly for waste hauling services (these costs were—and are currently—bundled under the franchise agreement with Allied Waste through the SBWMA and passed on to tax-payers), the monetary value of these services has been quantified to help inform policy decisions.

Key Findings

- The greatest source of greenhouse gas emissions from government operations in 2005 was City buildings (613 metric tons of CO_2e).
- More than 70 percent of emissions from City buildings came from City Hall and the Maintenance Yard.[6]
- The second largest source of emissions from government operations in 2005 was fuel use associated with the vehicle fleet and mobile equipment (425 metric tons of CO_2e).
- Approximately 65 percent of 2005 vehicle fleet emissions came from the activities of the Police and Fire Departments (together producing approximately 279 metric tons of CO_2e).[7]
- Employee commute patterns in 2005 generated an estimated 353 metric tons of CO_2e, even when nearly 40 percent of employees live within 6miles of work.[8]
- Cumulatively, the City of San Carlos spent approximately $523,419 on energy (electricity, natural gas, gasoline, and diesel) for its buildings, streetlights, water transport infrastructure, vehicles and off-road equipment in 2005.
- Sixty-four percent of total energy costs are attributed to electricity purchased from PG&E ($335,255).

[6] See Section 3.4.1 for more information on City buildings.
[7] See Section 3.4.4 for more information on the City vehicle fleet and mobile equipment.
[8] See Section 3.4.6 for more information on employee commute.

Section One: Introduction

Introduction

Local governments play a fundamental role in addressing the causes and effects of human-caused climate change through their actions at both the community and government operations levels. While local governments cannot solve the problems of climate change by themselves, their policies can dramatically reduce greenhouse gas emissions from a range of sources and can prepare their communities for the potential impacts of climate change.

Within the context of government operations, local governments have direct control over their emissions-generating activities. They can reduce energy consumption in buildings and facilities, reduce fuel consumption by fleet vehicles and equipment, reduce the amount of government-generated solid waste that is sent to a landfill, and increase the amount of energy that is obtained through alternative energy sources. By quantifying the emissions coming from its operations, this report will enable the City of San Carlos to choose the most effective approach to reducing its contribution to climate change.

1.1 Climate Change Background

A balance of naturally occurring gases dispersed in the Earth's atmosphere determines its climate by trapping solar radiation. This phenomenon is known as the greenhouse effect. Overwhelming evidence suggests that modern human activity is artificially intensifying the greenhouse gas effect, causing global average surface temperatures to rise. This intensification is caused by activities that release carbon dioxide and other greenhouse gases into the atmosphere—most notably the burning of fossil fuels for transportation, electricity, and heat generation.

Rising temperatures affect local and global climate patterns, and these changes are forecasted to manifest themselves in a number of ways that might impact San Carlos. For example, the San Francisco Bay may experience rising sea levels and the Sacramento Delta may experience changes in salinity, affecting land uses, water sources,

and agricultural activity. Changing temperatures will also likely result in more frequent and damaging storms accompanied by flooding and landslides. Reduced snow pack in the Sierra Nevada mountains may lead to water shortages, and the disruption of ecosystems and habitats is likely to occur.

In response to this threat, many communities in the United States are taking responsibility for addressing climate change at the local level. Since many of the major sources of greenhouse gas emissions are directly or indirectly controlled through local policies, local governments have a strong role to play in reducing greenhouse gas emissions within their boundaries. Through proactive measures around sustainable land use patterns, transportation demand management, energy efficiency, green building, and waste diversion, local governments can dramatically reduce emissions in their communities. In addition, local governments are primarily responsible for the provision of emergency services and the mitigation of natural disaster impacts. As the effects of climate change become more common and severe, local government adaptation policies will be fundamental in preserving the welfare of residents and businesses.

1.2 Purpose of Inventory

The objective of this greenhouse gas emissions inventory is to identify the sources and quantities of greenhouse gas emissions resulting from government operations in San Carlos in 2005. This inventory is a necessary first step in addressing greenhouse gas emissions, serving two purposes:

- It creates an emissions baseline against which the City can set emissions reductions targets and measure future progress.
- It allows local governments to understand the scale of emissions from the various sources within their operations.

While San Carlos has already begun to reduce greenhouse gas emissions through its actions (see Section 1.4 for more detail), this inventory represents the first step in a systems approach to reducing the City's emissions. This system, developed by ICLEI, is called the Five Milestones for Climate Mitigation. This Five-Milestone process involves the following steps:

Milestone One: Conduct a baseline emissions inventory and forecast

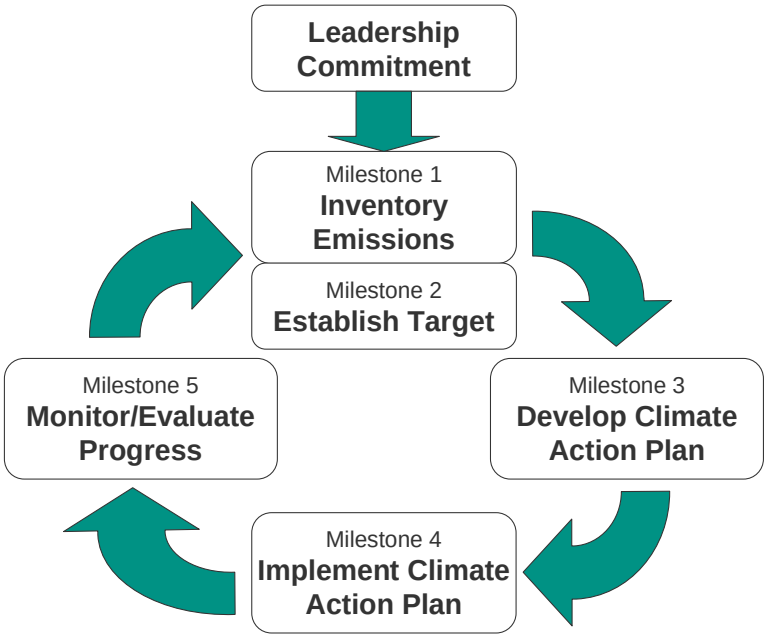
Milestone Two: Adopt an emissions reduction target for the forecast year

Milestone Three: Develop a local climate action plan

Milestone Four: Implement the climate action plan

Milestone Five: Monitor progress and report results

Figure 1.1 The Five-Milestone Process



1.3 Climate Change Mitigation Activities in California

Beginning in 2005, the State of California has responded to growing concerns over the effects of climate change by adopting a comprehensive approach to addressing emissions in the public and private sectors. This approach was officially initiated with the passage of the Global Warming Solutions Act of 2006 (AB 32), which required the state to reduce its greenhouse gas emissions to 1990 levels by 2020. It also required the California Air Resources Board (ARB) to regularly inventory emissions at the state level and to create a plan for reducing these emissions. The bill authorized ARB to adopt and enforce regulations targeted at greenhouse gas emissions reductions in the public and private sectors.

The resulting AB 32 Scoping Plan was adopted by ARB in December 2008. It established the following measures that the State will take to meet the greenhouse gas emissions reduction targets:

- Develop a California cap-and-trade program
- Expand energy efficiency programs
- Establish and seek to achieve reduction targets for transportation-related GHG emissions
- Support implementation of a high-speed rail system
- Expand the use of green building practices
- Increase waste diversion, composting, and commercial recycling toward zero-waste
- Continue water efficiency programs and use cleaner energy sources to move and treat water

- Implement the Million Solar Roofs Programs
- Achieve a statewide renewable energy mix of 33 percent
- Develop and adopt the low-carbon fuel standard
- Implement vehicle efficiency measures for light-, medium-, and heavy-duty vehicles
- Adopt measures to reduce high global warming potential gases
- Reduce methane emissions at landfills
- Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation
- Capture of methane through use of manure digester systems at dairies

Other measures taken by the state have included mandating stronger vehicle emissions standards (AB 1493, 2002), establishing a low-carbon fuel standard (EO # S-01-07, 2007), mandating a climate adaptation plan for the state (S-EO # 13-08, 2008), establishing a Green Collar Job Council, and establishing a renewable energy portfolio standard for power generation or purchase in the state. The state also has made a number of changes that will likely have potentially large effects on local governments:

- SB 97 (2007) required the Office of Planning and Research to create greenhouse gas planning guidelines for the California Environmental Quality Act (CEQA). In addition, ARB is tasked with creating energy-use and transportation thresholds in CEQA reviews, which may require local governments to account for greenhouse gas emissions when reviewing project applications.
- AB 811 (2007) authorized all local governments in California to establish special districts that can be used to finance solar or other renewable energy improvements to homes and businesses in their jurisdiction.
- SB 732 (2008) established a Strategic Growth Council charged with coordinating policies across state agencies to support a unified vision for land use development in the state. This vision will serve as a reference point for local land use policies.
- SB 375 (2008) mandated the creation of regional sustainable community strategies (SCS) by regional planning agencies. The SCS links regional housing and transportation planning processes in an attempt to meet regional greenhouse gas emissions targets.

1.4 Climate Change Mitigation Activities in San Carlos

The City of San Carlos has teamed up with several groups to advance climate protection and sustainability, including the San Carlos Chamber of Commerce, the South Bayside Waste Management Authority (SBWMA) and San Carlos Green (a community based program focused on green activities) to bring these programs and efforts to a city-wide audience of residents and businesses. The City Staff handles green programs at the City Government, the Chamber of Commerce works with the business community, the SBWMA offers solid waste, recycling and green

programs to San Carlos residents and businesses and San Carlos Green works with San Carlos residents. Below is a summary of City Green Programs, please also refer to Appendix F for the 2009 City of San Carlos Annual Report to Council on Green Programs and Climate Change.

City Programs

The City of San Carlos was an early leader in several green program areas including the recycling of office paper, LED traffic signal lights, re-lamping of City Hall to reduce energy usage and costs and an award winning photovoltaic installation at the City Corporation Yard on Bransten Road. In the past year, the City teamed up with the South Bayside Waste Management Authority (SBWMA) to give away compost to San Carlos residents, to conduct an eWaste event in July and October 2008 with another planned in August 2009, and to pilot a Residential Battery and Cell Phone Curbside Recycling Program that was so successful that it is now in place for residents at all 12 SBWMA member agencies. In March 2009, the City started another pilot program with the SBWMA that will provide weekly residential pickup of Food Scraps, Organics & Yard Clippings for all residential customers.

City Council Approval of Green Programs and Climate Protection Work

On May 14, 2007, the City Council considered a report from City Staff to expand the City's Green Programs and to launch an effort to work on climate change and climate protection. It included a Community Solar Discount Program in partnership with Solar City, San Carlos Green, Joint Venture: Silicon Valley Climate Protection Initiative, San Mateo County Green Business Program and other regional programs in this area. The City Council directed the City staff to move ahead with these recommendations and expanded the City's Green and Climate Programs. Since that time, the City's Assistant City Manager & Green Programs Coordinator has provided an Annual Green Programs & Climate Change report to the City Council outlining additional initiatives in these areas.

Certified Green Businesses in San Carlos

At the invitation of San Mateo County Supervisor Mark Church and the County's Recycle Works.Org Division, San Carlos became one of 6 cities in San Mateo County to pilot this County's participation in the Bay Area Green Business Program 18 months ago.

The program, which started 10 years ago in Alameda County is sponsored by the Association of Bay Area Governments (ABAG) and encourages local businesses of all sizes to adopt Green Business Practices and then to

participate in a certification process. Certification involves completing an 11 page checklist, working with the City and inspections by local utilities and regulators and the County to insure compliance with Green standards. Certified Green Businesses receive a Green Business Program window sticker for their firm, Green Business artwork for their web site and a listing in a Bay Area Green Business Guide that now tops 1,000 firms. San Carlos to now has 21 Certified Green Businesses, the largest number in San Mateo County. This demonstrates the business community's commitment to taking steps to participate in the City's Green Programs.

San Carlos Businesses and the Chamber of Commerce Green Task Force

Businesses in San Carlos have been active in Green Programs in cooperation with the City. The San Carlos Chamber of Commerce is playing a leading role through their creation of a Green Business Task Force. The Task Force meets regularly and is providing information and profiles of leading businesses in San Carlos in their newsletter. The Chamber also has held two community-wide eWaste events in San Carlos. The Chamber also aids the City in identifying local firms to participate in the Bay Area Green Business Certification Program and has held two of their Pulse of Business monthly programs on adding green practices to your company as well as a recent Green Briefing and Trade Show at the San Carlos Library for businesses in San Carlos and throughout Northern San Mateo County.

Resident Programs and San Carlos Green

San Carlos residents are a key part of green programs and climate protection in San Carlos. A group of participants from the Enhancing the City of Good Living effort have formed a community based group named San Carlos Green to spearhead a number of the residential efforts in this area including the Solar City Discount Solar Program and the Yahoo Greenest City Contest. San Carlos Green is active with a number of green and climate initiatives in the community.

Countywide and Regional Efforts

Recognizing the size and scope of the challenge, the City of San Carlos was a charter member of the Joint Venture: Silicon Valley Climate Protection Initiative. Today that effort has grown to include all 42 cities and counties in Silicon Valley. The City has also joined and participated in several related efforts including work by ICLEI, the Bay Area Air Quality Management District, the Association of Bay Area Governments (ABAG), the Institute of Local Self Government (ILSG) and the League of California Cities.

Demonstrating Success

The City Staff brings reports on the City's work in the areas of green programs and climate protection to the City Council on a periodic basis including reports to the City Council, the Solar City Community Solar Discount Program (June - August 2007) and recognition of the San Carlos businesses that have earned a Green Certification

in the Bay Area Green Business Program. The most recent report to the City Council was the third in a series that celebrated the program's 1 Year Anniversary and highlighted plans for the coming year.

1.5 The Silicon Valley Climate Protection Partnership

The Silicon Valley Climate Protection Partnership is a joint effort between Joint Venture: Silicon Valley Network (JV:SVN); Sustainable Silicon Valley (SSV); local governments in San Mateo, Santa Clara and Santa Cruz counties (hereby referred to as the "Silicon Valley area"); and ICLEI. The Partnership was initiated in 2008 to provide a solid regional platform for local governments to follow ICLEI's Five-Milestone process (described in Section 1.2), as well as a shared learning experience.

In early 2008, JV:SVN contracted with ICLEI to conduct government operations emissions inventories for participating local governments, using the standards outlined in the then soon-to-be-released Local Government Operations Protocol (LGOP—see Appendix A for details). For this project, 27 local governments have signed on to this contract. SSV joined the Partnership to provide additional educational and other services to facilitate more rapid progress by participating governments through the Five Milestones. While ICLEI created these inventories concurrently using the same tools and methods, each inventory was conducted independently using data specific to each local government's operations. For this reason, inventories from different jurisdictions will involve different sources of data and emissions calculation methods.

Alongside the activities of the Partnership, JV:SVN and SSV have been facilitating regional climate dialogues to further emissions reductions goals in the Silicon Valley area. JV:SVN supports the work of the Climate Protection Task Force, a group that includes staff members from 44 jurisdictions in the Silicon Valley area, including cities, counties, and special districts. In this neutral forum, the partners learn from each other and from expert guests about climate protection programs. They then work to develop effective, collaborative programs for the reduction of greenhouse gas emissions from public agency operations. SSV holds quarterly conferences and monthly meetings that discuss specific approaches to addressing climate change, including the pros and cons of regional climate planning. SSV also puts out annual reports highlighting successes of businesses and local governments that have voluntarily pledged to set and work toward their own carbon dioxide reduction goals. JV:SVN and SSV, along with ICLEI, the San Mateo City/County Association of Governments, and the Bay Area Air Quality Management District[9], have dramatically pushed forward the pace and scale of climate actions by local governments in the Silicon Valley area.

9 C/CAG and the Air Quality District have provided funding which have allowed a number of these inventories to occur and have been strong players in pushing forward local and regional actions on climate change.

Section Two: Methodology

Methodology

This greenhouse gas emissions inventory follows the standard methodology outlined in LGOP, which was adopted in 2008 by ARB and serves as the national standard for quantifying and reporting greenhouse emissions from local government operations. By participating in the Silicon Valley Climate Protection Partnership, jurisdiction has the opportunity to be one of the first in the nation to follow LGOP when inventorying emissions from government operations.

This chapter outlines the basic methodology utilized in the development of this inventory to provide clarity on how the inventory results were reported. Specifically, this section reviews:

- What greenhouse gases were measured in this inventory.
- What general methods were used to estimate emissions.
- How emissions estimates can be reported (the scopes framework, roll-up numbers).
- How emissions estimates were reported in this inventory.

A more detailed account of LGOP and the methodology used in this inventory can be found in Appendices A and B.

2.1 Greenhouse Gases

According to LGOP, local governments should assess emissions of all six internationally recognized greenhouse gases regulated under the Kyoto Protocol. These gases are outlined in Table 2.1, which includes the sources of these gases and their global warming potential (GWP).[10]

10 Global warming potential (GWP) is a measure of the amount of warming a greenhouse gas may cause, measured against the amount of warming caused by carbon dioxide.

Table 2.1 Greenhouse Gases

Gas	Chemical Formula	Activity	Global Warming Potential (CO_2e)
Carbon Dioxide	CO_2	Combustion	1
Methane	CH_4	Combustion, Anaerobic Decomposition of Organic Waste (Landfills, Wastewater), Fuel Handling	21
Nitrous Oxide	N_2O	Combustion, Wastewater Treatment	310
Hydrofluorocarbons	Various	Leaked Refrigerants, Fire Suppressants	12–11,700
Perfluorocarbons	Various	Aluminum Production, Semiconductor Manufacturing, HVAC Equipment Manufacturing	6,500–9,200
Sulfur Hexafluoride	SF_6	Transmission and Distribution of Power	23,900

2.2 Calculating Emissions

LGOP outlines specific methods for quantifying emissions from local government activities. What methods a local government can use to quantify emissions vary largely by how it gathers data, and therefore what data were available. In general, emissions can be quantified in two ways.

1. Measurement-based methodologies refer to the direct measurement of greenhouse gas emissions from a monitoring system. Emissions measured this way may include those emitted from a flue of a power plant, wastewater treatment plant, landfill, or industrial facility. This method is the most accurate way of inventorying emissions from a given source, but is generally available for only a few sources of emissions.

2. Calculation-based methodologies refer to an estimate of emissions calculated based upon some measurable activity data and emission factors. Table 2.2 demonstrates some examples of common emissions calculations in this report. For a detailed explanation of the methods an emissions factors used in this inventory, see Appendix B.

Table 2.2 Basic Emissions Calculations

Activity Data	Emissions Factor	Emissions
Electricity Consumption (kilowatt hours)	CO_2 emitted/kWh	CO_2 emitted
Natural Gas Consumption (therms)	CO_2 emitted/therm	CO_2 emitted
Gasoline/Diesel Consumption (gallons)	CO_2 emitted /gallon	CO_2 emitted
Waste Generated by Government Operations (tons)	CH_4 emitted/ton of waste	CH_4 emitted

2.3 Reporting Emissions

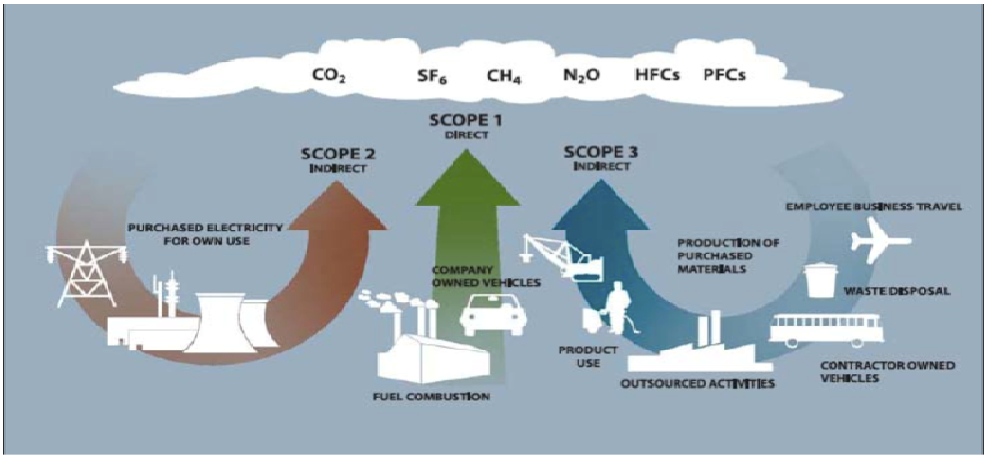
LGOP provides two reporting frameworks: reporting by scope and reporting by sector. This section defines the two reporting frameworks and discusses how they are used in this inventory. It also discusses the concept of "rolling up" emissions into a single number. This can assist local governments in communicating the results of the inventory and using the inventory to formulate emissions reductions policies.

2.3.1 The Scopes Framework

For local government operations, LGOP categorizes emissions according to what degree of control local governments have over the emissions sources. These categorizations (developed by the World Resources Institute and the World Business Council for Sustainable Development) are called *emissions scopes*. The scopes framework helps local governments to:

- Determine which emissions should be inventoried.
- Organize emissions by degree of control and therefore the potential for reduction of these emissions.
- Avoid "double counting" of emissions, i.e., summing up of different emissions sources that may result in reporting these emissions twice.

Figure 2.1 Emissions Scopes



Source: WRI/WBCSD GHG Protocol Corporate Accounting and Reporting Standard (Revised Edition), Chapter 4.

The emissions scopes are defined as follows:

Scope 1: Direct emissions from sources within a local government's operations that it owns and/or controls. This includes stationary combustion to produce electricity, steam, heat, and power equipment; mobile combustion of fuels; process emissions from physical or chemical processing; fugitive emissions that result from production, processing, transmission, storage and use of fuels; leaked refrigerants; and other sources.

Scope 2: Indirect emissions associated with the consumption of electricity or steam that is purchased from an outside utility.

Scope 3: All other emissions sources that hold policy relevance to the local government that can be measured and reported. This includes all indirect emissions not covered in Scope 2 that occur as a result of activities within the operations of the local government. Sources over which the local government does not have any financial or operational control over would be accounted for here. Scope 3 emission sources include (but are not limited to) tailpipe emissions from employee commutes, employee business travel, and emissions resulting from the decomposition of government-generated solid waste.

Table 2.3 Inventoried Emission Sources by Scope[11]

Scope 1	Scope 2	Scope 3
Fuel consumed to heat/cool facilities	Purchased electricity consumed by facilities	Solid waste generated by government operations
Fuel consumed for vehicles and mobile equipment	Purchased electricity consumed by electric vehicles	Fuel consumed for employee vehicles used for commuting
Fuel consumed to generate electricity	Purchased steam for heating or cooling facilities	
Leaked refrigerants from facilities and vehicles		
Leaked/deployed fire suppressants		
Wastewater decomposition and treatment at a municipal wastewater treatment plant		
Solid waste in government landfills		

2.3.2 Double Counting and Rolling Up Scopes

Many local governments find it useful for public awareness and policymaking to use a single number (a "roll-up" number) to represent emissions in its reports, target setting, and action plan. A roll-up number allows local governments to determine the relative proportions of emissions from various sectors (e.g., 30 percent of rolled up emissions came from the vehicle fleet). This can help policymakers and staff identify priority actions for reducing emissions from their operations.

For these reasons, this report includes a roll-up number as the basis of the emissions analysis in this inventory. This roll-up number is composed of direct emissions (Scope 1), all emissions from purchased electricity (Scope 2), and indirect emissions from employee commutes and government-generated solid waste (Scope 3).

11 This only represents a list of emissions that were inventoried for the Silicon Valley Climate Protection Partnership inventories. This is not meant to be a complete list of all emissions that can be inventoried in a government operations inventory.

While this report uses a standard roll-up number, these numbers should be used with caution, as they can be problematic for three reasons:

First, a roll-up number does not represent all emissions from San Carlos' operations, only a summation of inventoried emissions using available estimation methods. Reporting a roll-up number can be misleading and encourage citizens, staff, and policymakers to think of this number as the local government's "total" emissions. Therefore, when communicating a roll-up number it is important to represent it only as a sum of inventoried emissions, not as a comprehensive total.

Second, rolling up emissions may not simply involve adding emissions from all sectors, as emissions from different scopes can be double-counted when they are reported as one number. For example, if a local government operates a municipal utility that provides electricity to government facilities, these are emissions from both the power generation and facilities sectors. If these sectors are rolled up into a single number, these emissions are double counted, or reported twice. For these reasons, it is important to be cautious when creating a roll-up number to avoid double counting; the roll-up number used in this report was created specifically to avoid any possible double counting.

Third, local governments often wish to compare their emissions to those of other local governments. But it is very difficult to use a roll-up number as a common measure between local governments, for a number of reasons. First, as of now there is no national or international standard for reporting emissions as a single roll-up number. In addition, local governments provide different services to their citizens, and the scale of the services (and thus the emissions) is highly dependent upon the size of the jurisdiction. For these reasons, comparisons between local government roll-up numbers should not be made without significant analysis of the basis of the roll-up number and the services provided by the local governments being compared.

2.3.3 Emissions Sectors

ICLEI recommends that local governments examine their emissions in the context of the part of their operations (sector) that is responsible for those emissions. This is helpful from a policy perspective, and will assist local governments in formulating sector-specific reduction measures and climate action plans. This inventory uses LGOP sectors as a main reporting framework, including the following sectors:

- Buildings and other facilities
- Streetlights, traffic signals, and other public lighting
- Water delivery facilities
- Vehicle fleet and mobile equipment
- Government-generated solid waste
- Emissions from employee commutes

Section Three: Inventory Results

Inventory Results

This chapter provides a detailed description of the City of San Carlos' emissions from government operations in 2005, rolling up and comparing emissions across sectors and sources as appropriate. This chapter also provides details on the greenhouse gas emissions from each sector, including a breakdown of emissions types and, where possible, an analysis of emissions by department. This information identifies more specific sources of emissions (such as a particular building) that can help staff and policymakers best target emissions reduction activities in the future.

For a report of emissions by scope, and a detailed description of the methodology and emission factors used in calculating the emissions from the City's operations, please see Appendix B: LGOP Standard Report.

In 2005, the City of San Carlos' direct emissions, emissions from electricity consumption and select indirect sources totaled 1,743 metric tons of CO_2e.[12] In this report, this number is the basis for comparing emissions across sectors and sources (fuel types), and is the aggregate of all emissions estimates used in this inventory.

3.1 Summary by Sector

Reporting emissions by sector provides a useful way to understand the sources of the City of San Carlos' emissions. By better understanding the relative scale of emissions from each of the sectors, the City can more effectively focus emissions reductions strategies to achieve the greatest emissions reductions.[13]

12 This number represents a roll-up of emissions, and is not intended to represent a complete picture of emissions from San Carlos' government operations. This roll-up number should not be used for comparison with other local government roll-up numbers without a detailed analysis of the basis for this total. See section 2.3.2 for more detail.

13 The sectors with the largest scale of emissions do not necessarily represent the best opportunity for emissions reductions. Cost, administration, and other concerns may affect San Carlos' ability to reduce emissions from any one sector.

Figure 3.1 2005 Government Operations Emissions by Sector

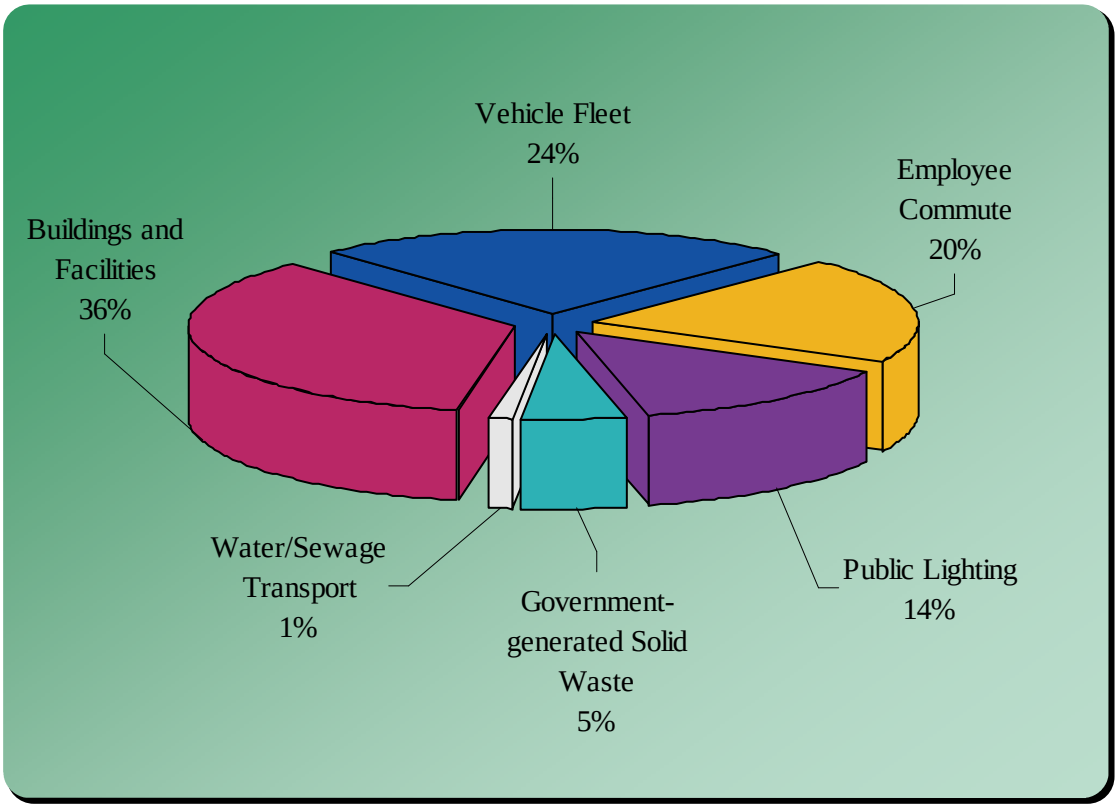


Table 3.1 2005 Government Operations Emissions by Sector

Sector	Greenhouse Gas Emissions (metric tons CO2e)
Buildings and Facilities	613
Vehicle Fleet	425
Employee Commute	353
Public Lighting	241
Government-generated Solid Waste	93
Water/Sewage Transport	18

As visible in Figure 3.1 and Table 3.1, buildings and facilities were the largest emitters of greenhouse gases (613 metric tons CO_2e) in 2005. Emissions from the vehicle fleet produced the second highest quantity of emissions (24 percent), resulting in 425 metric tons of CO_2e. The City of San Carlos' employee commute produced 353 metric tons of CO_2e (20 percent) of total emissions, with the remainder coming from public lighting (241 metric tons CO_2e), government-generated waste (93 metric tons of CO_2e), and water delivery (18 metric tons of CO_2e).

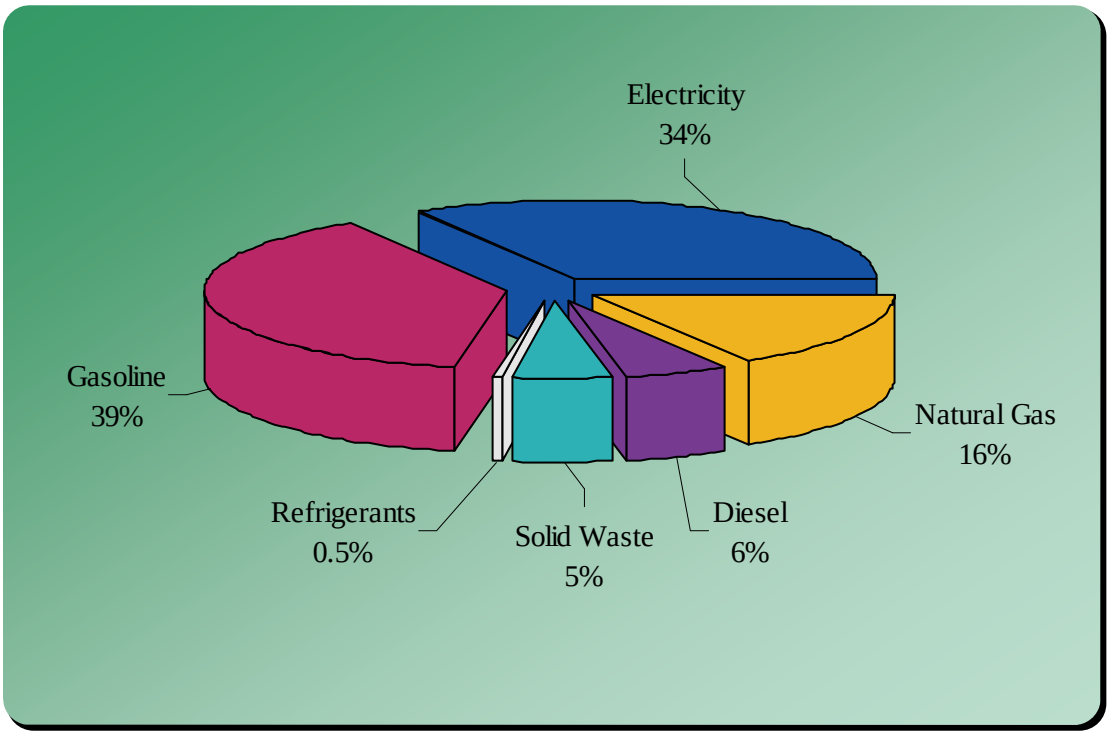
3.2 Summary by Source

When considering how to reduce emissions, it is helpful to look not only at which sectors are generating emissions, but also at the specific raw resources and materials (gasoline, diesel, electricity, natural gas, solid waste, etc.) whose use and generation directly result in the release of greenhouse gases. This analysis can help target resource management in a way that will successfully reduce greenhouse gas emissions. Table 3.2 and Figure 3.2 provide a summary of San Carlos government operations 2005 greenhouse gas emissions by fuel type or material.

Table 3.2 2005 Government Operations Emissions by Source

Fuel/Source	Greenhouse Gas Emissions (metric tons CO2e)
Gasoline	671
Electricity	588
Natural Gas	284
Diesel	99
Government-Generated Solid Waste	93
Refrigerants	8

Figure 3.2 2005 Government Operations Emissions by Source



3.3 Summary of Energy-Related Costs

In addition to tracking energy consumption and emissions per sector, ICLEI has calculated the basic energy costs of various government operations. During 2005, the City of San Carlos spent approximately $523,419 on energy (electricity, natural gas, gasoline, and diesel). Sixty-four percent of these energy expenses ($335,255) resulted from electricity consumption, and 11 percent ($58,036) from natural gas purchases from PG&E and ABAG Power. Fuel purchases (gasoline and diesel) for the vehicle fleet and mobile equipment totaled $130,127 or 25 percent of total costs included in this inventory. In addition to these direct costs, the City of San Carlos received waste disposal service in 2005 with an estimated value of $58,139.[14] Beyond reducing harmful greenhouse gases, any future reductions in energy use will have the potential to reduce these costs, enabling the City to reallocate limited funds toward other municipal services or create a revolving energy loan fund to support future climate protection activities.

Table 3.3 2005 Energy Costs by Sector

Sector	Costs ($)
Buildings and Facilities	$260,556
Vehicle Fleet	$130,127
Public Lighting	$122,501
Water / Sewage	$10,234
TOTAL	**$523,419**

3.4 Detailed Sector Analyses

3.4.1 Buildings and Other Facilities

Through their use of energy for heating, cooling, lighting, and other purposes, buildings and other facilities operated by local governments constitute a significant amount of their greenhouse gas emissions. Facility operations contribute to greenhouse gas emissions in two major ways. First, facilities consume electricity and fuels such as natural gas, and this consumption contributes the majority of greenhouse gas emissions from facilities. In addition, fire suppression, air conditioning, and refrigeration equipment in buildings can emit hydrofluorocarbons (HFCs) and other greenhouse gases when these systems leak refrigerants or fire suppressants.

In 2005, the operation of the City of San Carlos' facilities produced approximately 613 metric tons of CO_2e from the consumption of electricity and natural gas.[15] Table 3.4 shows estimated energy use and costs associated with the

[14] While, in 2005, the City did not pay directly for waste hauling services (these costs were—and are currently—bundled under the franchise agreement with Allied Waste through the SBWMA and passed on to tax-payers), the monetary value of these services has been quantified to help inform policy decisions.

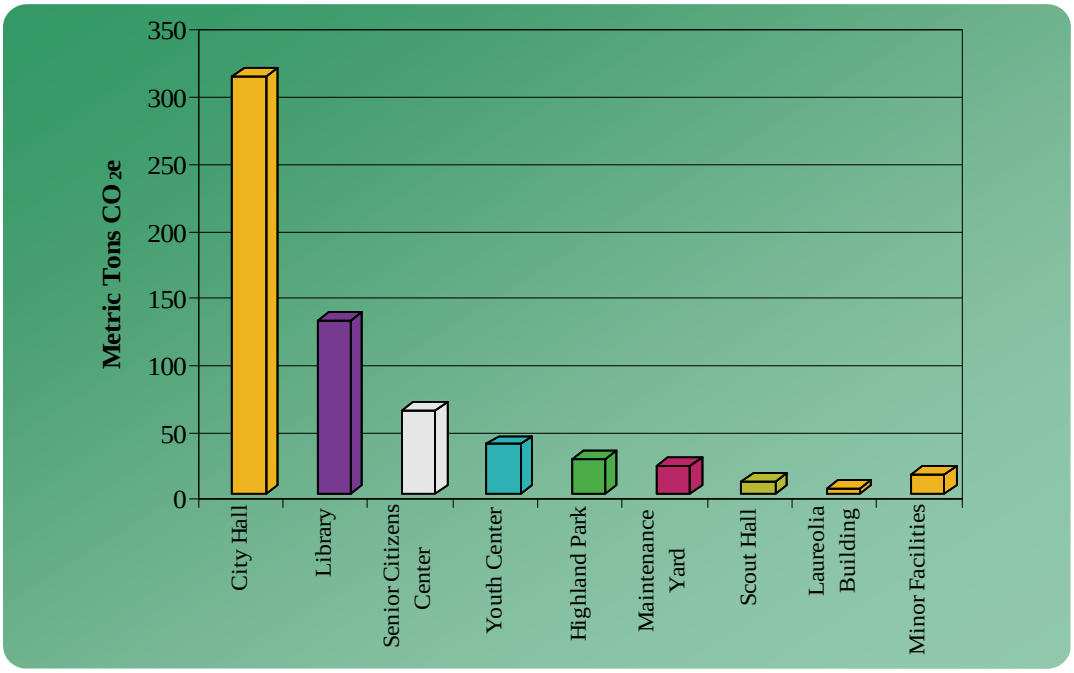
[15] In 2005, San Carlos facilities also generated fugitive refrigerant emissions with global warming potential. The particular refrigerant used in City buildings was the ozone-depleting gas R-22, which is monitored separately under the Montreal

activities that generated these emissions, and Figure 3.3 depicts 2005 emissions per facility. Of total facility emissions, 54 percent came from the consumption of electricity and 46 percent came from the combustion of natural gas (see Figure 3.4). The City spent approximately $260,556 in 2005 on these sources of energy. In developing emissions reduction policy, the City is encouraged to address all facilities, however it is important to note that in 2005 over 70 percent of facility emissions came from the City Hall and the City Library alone (Table 3.4).

Table 3.4: Energy Use and Emissions from Facilities

Facility	Greenhouse Gas Emissions (metric tons CO_2e)	Percent Emissions of All Facilities[16]	Electricity Use (kWh)	Natural Gas Use (therms)	Total Energy Cost
City Hall	312	51%	711,600	28,640	$127,390
Library	130	21%	293,040	12,042	$54,261
Senior Citizens Center	62	10%	153,600	5,169	$29,156
Youth Center	37	6%	88,160	3,224	$17,918
Highland Park	25	4%	113,600	0	$13,061
Maintenance Yard	21	3%	21,120	3,011	$3,064
Scout Hall	9	1%	27,694	536	$4,738
Laureolia Building	4	1%	19,294	0	$2,396
Minor Facilities	14	2%	46,837	648	$8,572
TOTAL	**613**	**100%**	**1,474,945**	**53,270**	**$260,556**

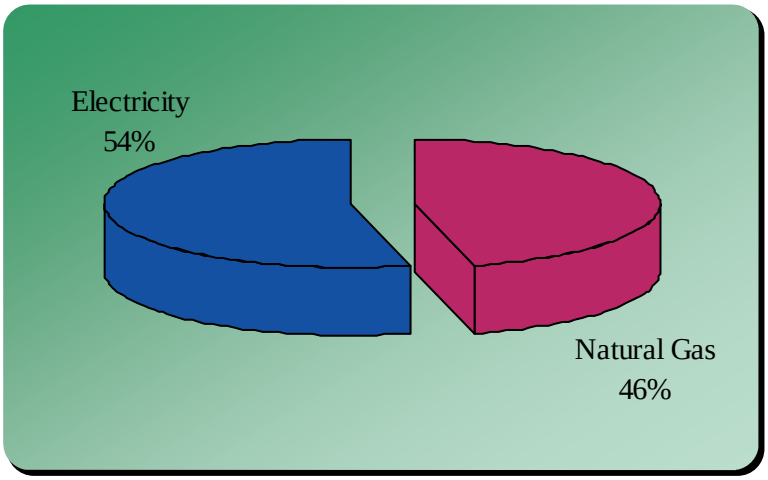
Figure 3.3: Emissions from Facilities



Protocol. Per LGOP guidelines, these emissions are excluded from the main body of this accounting, however the CO_2 equivalency and quantity of these emissions are recorded in the LGOP Standard Report (Appendix B).

16 Estimated emissions from leaked refrigerants and fire suppressants were not reported by facility and therefore are not included in the total emissions used to calculate these percentages.

Figure 3.4: Emissions from Facilities by Source



3.4.2 Streetlights, Traffic Signals, and Other Public Lighting

Like most local governments, San Carlos operates a range of public lighting, from traffic signals and controllers to streetlights and other outdoor lighting. Electricity consumed in the operation of this infrastructure is a significant source of greenhouse gas emissions.

In 2005, public lighting in San Carlos consumed a total of 1,077,512 kilowatt hours of electricity, producing approximately 241 metric tons CO_2e. Table 3.5 depicts 2005 emissions per lighting type and estimated electricity consumption and costs associated with the activities that generated these emissions. The City spent approximately $122,501 in 2005 on the fuels and electricity that were the cause of these emissions.

Table 3.5: Energy Use and Emissions from Public Lighting

Source	Greenhouse Gas Emissions (metric tons CO_2e)	Percent Emissions of All Lighting	Electricity Use (kWh)	Cost
Streetlights	198	82%	883,734	$95,118
Traffic Signals/Controllers	27	11%	120,066	$17,951
Other Outdoor Lighting	16	7%	73,712	$9,432
TOTAL	**241**	**100%**	**1,077,512**	**$122,501**

3.4.3 Water Transport

This section addresses any equipment used for the distribution of water or stormwater.[17] Typical systems included in this section are water pumps/lifts and sprinkler and other irrigation controls. The City of San Carlos operates a range of water transport equipment, including water pumps and irrigation/sprinkler systems. Electricity consumption is the most significant source of greenhouse gas emissions from the operation of San Carlos' water transport equipment, with a minor contribution from natural gas use as well.

In 2005, the operation of the City's water transport equipment produced approximately 18 metric tons of CO_2e from the above sources. Table 3.6 depicts 2005 emissions per equipment type and shows estimated activities and costs associated with the operation of this equipment. San Carlos spent approximately $10,234 in 2005 on the fuels and electricity that were the cause of these emissions.

Table 3.6: Energy Use and Emissions from Water Transport Equipment

Source	Greenhouse Gas Emissions (metric tons CO_2e)	Percent Emissions of Water Transport Equipment	Electricity Use (kWh)	Natural Gas Use (therms)	Cost
Water Pumps	17	96%	74,156	84	$9,611
Irrigation / Sprinkler Systems	1	4%	3,021	0	$623
TOTAL	**18**	**100%**	**77,177**	**84**	**$10,234**

3.4.4 Vehicle Fleet and Mobile Equipment

The majority of local governments use vehicles and other mobile equipment (such as: backhoes, lawn mowers, power washers, chainsaws, etc.) as an integral part of their daily operations—from maintenance trucks used for parks and recreation to police cruisers and fire trucks. These vehicles and equipment burn gasoline, diesel, and other fuels, which results in greenhouse gas emissions. In addition, vehicles with air conditioning or refrigeration equipment use refrigerants that can leak from the vehicle. Emissions from vehicles and mobile equipment compose a significant portion of emissions within most local governments.

In 2005, San Carlos emitted approximately 417 metric tons of CO_2e in the combustion of fuels to power the City's vehicle fleet and mobile equipment. Table 3.7 shows estimated costs associated with the activities that generated these emissions, and Figure 3.5 depicts 2005 emissions per department. The Police Department was the largest emitter of mobile emissions (45 percent), and the Fire Department produced the second highest quantity (20

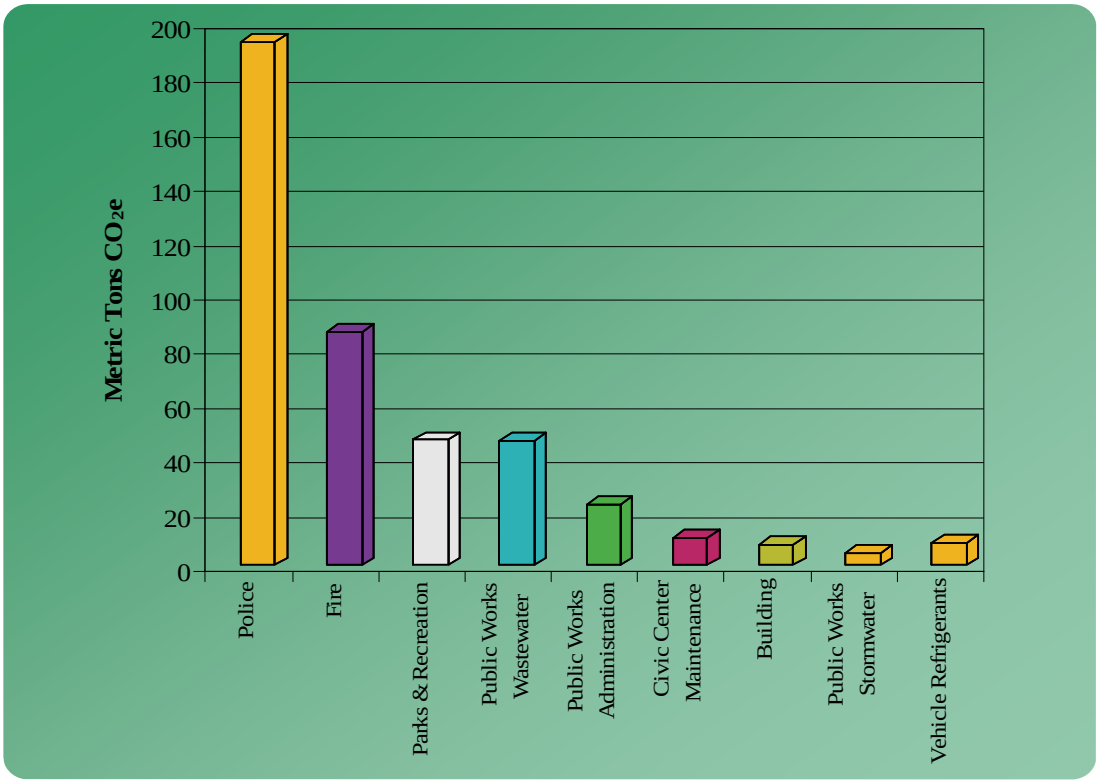
17 While equipment that transports water or stormwater may be managed separately in jurisdiction's operations, the types of equipment are similar, and therefore the ways to reduce emissions from this equipment, are similar. For this reason, this section groups equipment used for transporting water and wastewater.

percent). Seventy-five percent of fleet emissions stem from the use of gasoline, 43 percent from diesel consumption, and the remaining 2 percent from leaked refrigerants.[18]

Table 3.7: Vehicle Fleet and Mobile Equipment Emissions

Function	GHG Emissions (metric tons CO_2e)	Percent of All Mobile Emissions	Gasoline Consumption (gal)	Diesel Consumption (gal)	Cost ($)
Police	193	45%	21,386	0	$60,304
Fire	86	20%	2,424	6,341	$26,791
Parks & Recreation	46	11%	4,855	241	$14,595
Public Works Wastewater	46	11%	1,782	2,949	$14,405
Public Works Administration	23	5%	2,267	201	$6,949
Civic Center Maintenance	10	2%	1,156	0	$3,236
Building	8	2%	866	0	$2,469
Public Works Stormwater	5	1%	507	0	$1,378
Vehicle Refrigerants	8	2%	0	0	n/a
TOTAL	**425**	**100%**	**35,243**	**9,733**	**$130,127**

Figure 3.5: Emissions from Mobile Sources



[18] The LGOP Alternative Method (Equipment Inventory and Refrigerant Use) was used to estimate emissions from leaked refrigerants. This amount is a significant overestimate but in line with LGOP methods.

3.4.5 Government-Generated Solid Waste

Many local government operations generate solid waste, much of which is eventually sent to a landfill. Typical sources of waste in local government operations include paper and food waste from offices and facilities, construction waste from public works, and plant debris from parks departments. Organic materials in government-generated solid waste (including paper, food scraps, plant debris, textiles, wood waste, etc.) generate methane as they decay in the anaerobic environment of a landfill. An estimated 75 percent of this methane is routinely captured via landfill gas collection systems;[19] however, a portion escapes into the atmosphere, contributing to the greenhouse effect. As such, estimating emissions from waste generated by government operations is an important component of a comprehensive emissions inventory.

Inventorying emissions from government-generated solid waste is considered optional by LGOP for two reasons. First, the emissions do not result at the point of waste generation (as with fuel combustion), but often in a landfill located outside of the City's boundaries. In addition, the majority of emissions are not generated in the base year, but over a lengthy decomposition period. Since inventorying these emissions is considered optional, LGOP does not provide guidance on recommended methods for quantification. ICLEI therefore devised data collection and calculation methods based upon previous experience and national standards. See Appendix D for more information on quantifying emissions from government-generated solid waste.

It is estimated that the waste disposed by government facilities in 2005 will cumulatively produce 4.4 metric tons of methane gas, or 93 metric tons $C0_2e$. Please see Table 3.8 for a breakdown of emissions per facility.

Table 3.8: Emissions from Government-Generated Solid Waste

Source	Greenhouse Gas Emissions (metric tons CO_2e)	Estimated Landfilled Waste (Tons)
Miscellaneous Roll-Off	51	201
City Cans	16	65
1000 Bransten Rd.	8	32
San Carlos City Hall	5	20
San Carlos Library	5	20
San Carlos Youth Center	5	20
Adult Community Center	2	6
Laurel Street Park	0.4	2
TOTAL	**93**	**367**

19 This is a default methane collection rate per LGOP. This rate can vary from 0 to 99 percent based upon the presence and extent of a landfill gas collection system at the landfill/s where the waste is disposed. Most commonly, captured methane gas is flared into the atmosphere, which converts the methane gas to CO_2 and effectively negates the human-caused global warming impact of the methane. Increasingly, landfill methane is being used to power gas-fired turbines as a carbon-neutral means of generating electricity.

3.4.6 Employee Commute

Fuel combustion from employees commuting to work is another important emissions source from San Carlos' operations. Similar to San Carlos' vehicle fleet, personal employee vehicles use gasoline and other fuels which, when burned, generate greenhouse gas emissions. Emissions from employee commutes are considered optional to inventory by LGOP because the vehicles are owned and operated privately by the employees. However, LGOP encourages reporting these emissions because local governments can influence how their employees commute to work through incentives and commuting programs. For this reason, employee commute emissions were included in this report as an area where San Carlos could achieve significant reductions in greenhouse gases.

To calculate emissions, the City administered a survey to all of its employees regarding their commute patterns and preferences. ICLEI then extrapolated the results of the survey to represent emissions from all employees. See Appendix C for a detailed description of the survey and methods used to calculate emissions.

In 2005, employees commuting in vehicles to and from their jobs at the City of San Carlos emitted an estimated 353 metric tons of CO_2e. Table 3.9 shows estimated emissions and vehicle miles traveled for all San Carlos employees.

Table 3.9: Emissions from Employee Commute

	Greenhouse Gas Emissions (metric tons CO_2e)	Estimated Vehicle Miles Traveled to Work	Average Estimated Vehicle Miles Traveled to Work
All Employees (Estimated)	353	673,983	6,419

3.4.9.1 Employee Commute Indicators

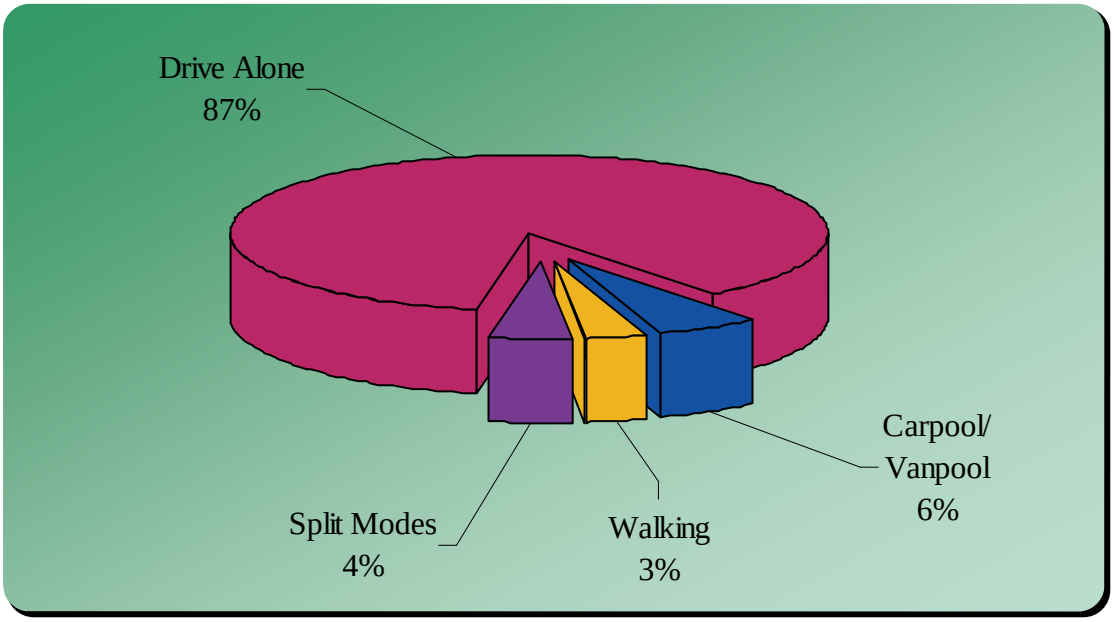
In addition to estimating greenhouse gas emissions from employee commutes, ICLEI examined other policy-relevant information that was extracted from the employee commute survey—in this way City staff can develop the most effective policies to reduce emissions from employee commutes. These measures often have co-benefits including increased productivity, reduced commute times and costs, and improvement in the quality of life for employees. No extrapolation was done with the following data; analyses were done using data from survey respondents only.

Commute Modes

In 2005, the majority (87 percent) of respondents commuted to work using single occupancy vehicles. Thirteen percent of all respondents used some form of alternative transportation (bicycle, public transit, carpool, etc) to commute to work with carpool/vanpool being the most used form of alternative transportation (6 percent of total

respondents), followed by split modes (4 percent of total respondents) and walking (3 percent of total respondents). See Figure 3.6 for an analysis of the most common commute mode for employees who responded to the survey.

Figure 3.6: Employee Commute Modes



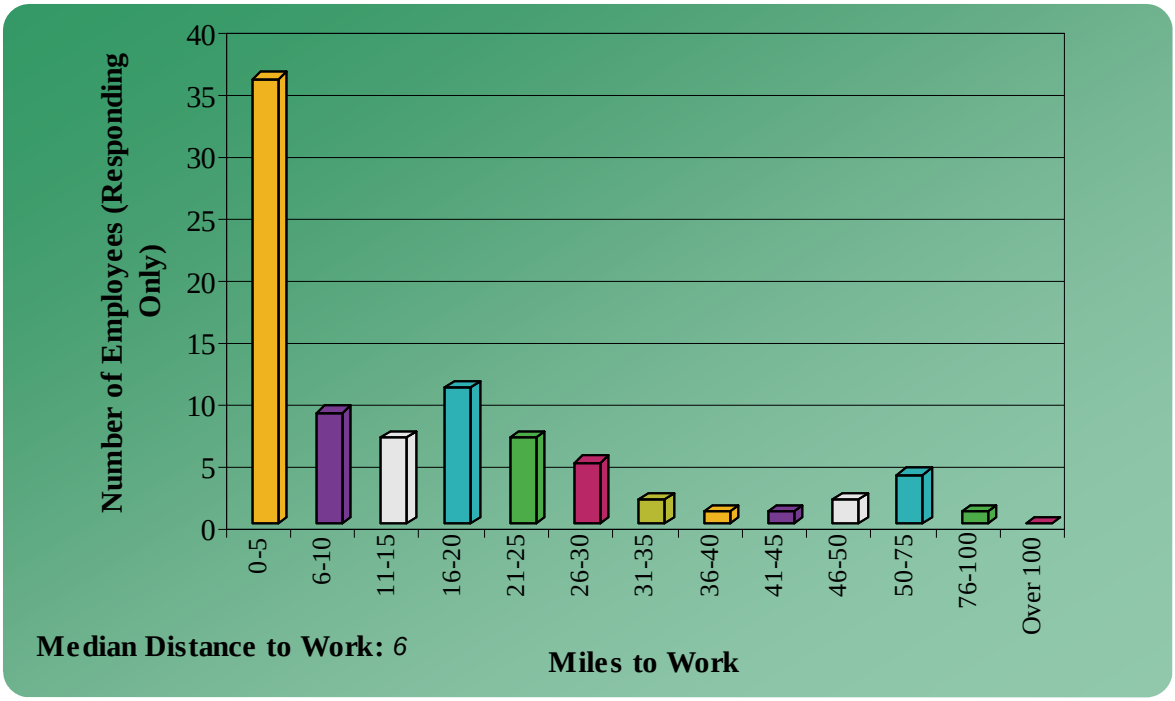
Commute Time and Costs

Table 3.10 shows the median time, cost, and distance of City employee commutes. Figure 3.7 shows that the majority of employees live within 6 miles, suggesting that there may be good opportunities for San Carlos to promote effective biking programs, carpooling/vanpooling and shuttle programs, or other alternative transit modes. According to the employee commute survey, 26 percent of employees were interested in public transit, while 21 percent were interested in carpooling and another 21 percent in biking (see Figure 3.8). By encouraging employees to utilize alternative modes of transit through incentives and City programs, San Carlos could not only reduce emissions, but save employees money and time—enhancing the benefits associated with working for the City.

Table 3.10: Median Distance and Time to Work and Cost of Employee Commute

	Median Time to Work (daily minutes)	Median Cost of Commute (weekly)	Median Distance To Work (daily miles)
Responding Employees	15	$20	6

Figure 3.7: Employee Commute Distance to Work



Commuter Preferences

When asked if employees would consider taking a list of alternative transportation modes (see Figure 3.8), 26 percent of respondents indicated they would be interested in public transit, with carpooling as well as biking following by 21 percent. Five percent of respondents indicated that they had no interest in converting to an alternative mode of transportation (see Figure 3.8).

Despite employees' interest in public transit, only 34 percent of respondents indicated that there was a transit route available to and from work (Figure 3.9). This suggests that San Carlos can reduce emissions from commutes by working collaboratively with (BART, Caltrain, SamTrans, VTA) to provide better service for employees. Respondents also indicated that they would be interested in commute benefits such as (see Figure 3.10) a free public transit benefit (32 percent), a free/inexpensive shuttle service (29 percent), improved transit options (27 percent), vanpool/carpool incentives (25 percent), and a telecommuting program (24 percent).

Figure 3.8: Interest in Alternative Commute Modes

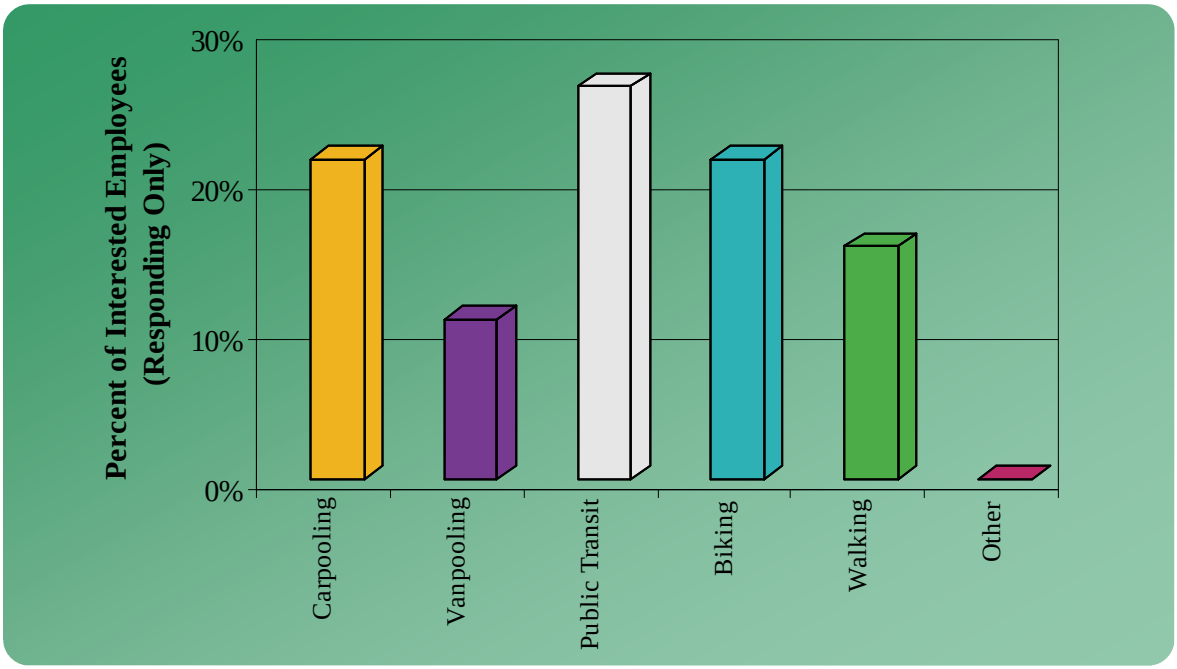


Figure 3.9: Employees with Available "Usable" Transit Route to Work

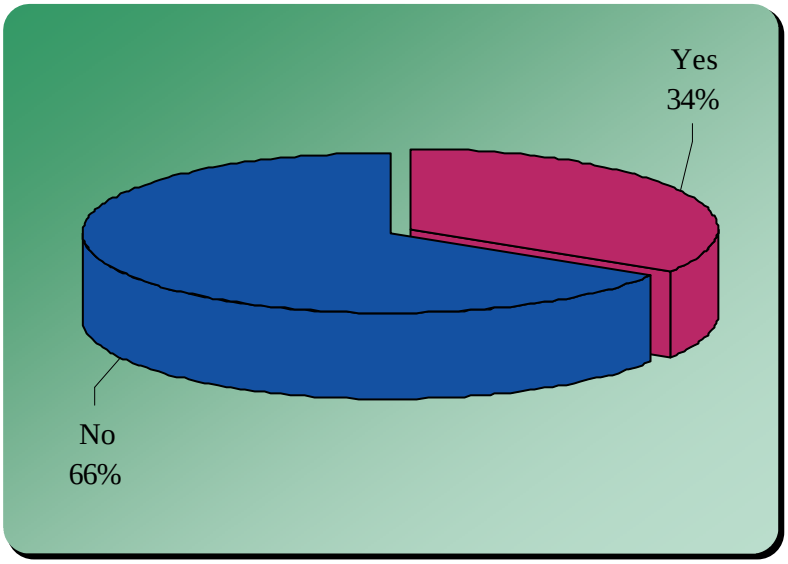
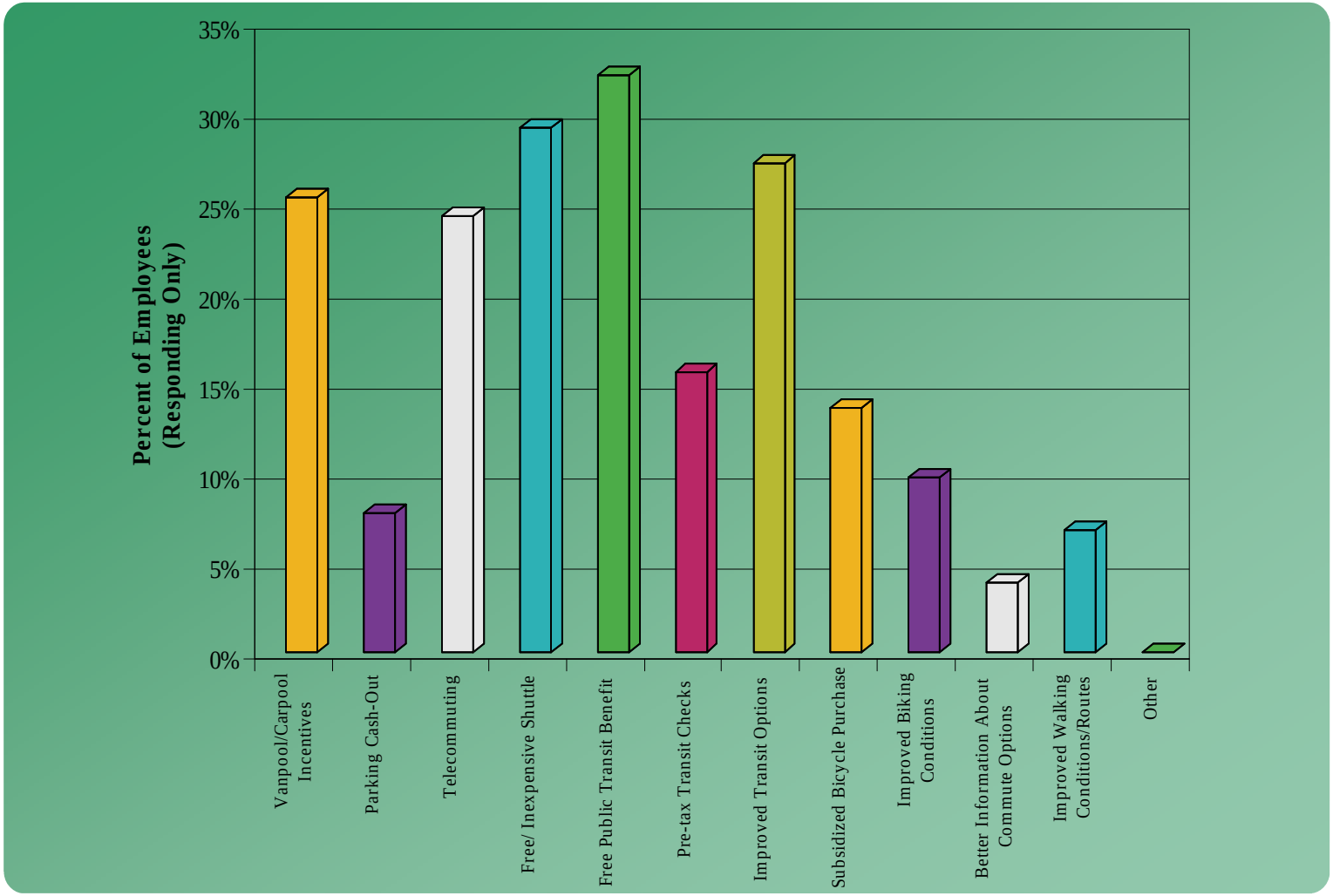


Figure 3.10: Employee Interest in Commute Benefits



Section Four: Conclusion

Conclusion

By committing itself to the Silicon Valley Climate Protection Partnership and through its previous actions on sustainability, the City of San Carlos has taken bold steps toward reducing its impacts on the environment. Staff and policymakers have chosen to take a leadership role in addressing climate change, and this leadership will allow San Carlos to make tough decisions to create and implement innovative approaches to reduce its emissions. With increasing guidance and support from the state and the federal governments, the City should be increasingly empowered to make the necessary changes to promote its vision for a more sustainable future.

This inventory provides an important foundation for San Carlos' comprehensive approach to reducing the greenhouse gas emissions from its operations. Specifically, this inventory serves to:

- Establish a baseline for setting emissions reductions targets.
- Identify the largest sources of emissions from local government operations.

This conclusion discusses the inventory as a baseline for emissions targets and suggests steps for the City to move forward to reduce emissions from its internal operations.

4.1 Toward Setting Emissions Reduction Targets

This inventory provides an emissions baseline against which the City can move forward to Milestone Two of ICLEI's Five-Milestone process—setting emissions reduction targets for its municipal operations. The greenhouse gas emissions reduction target represents the percentage by which San Carlos plans to reduce total greenhouse gas emissions in its government operations below base year levels by a chosen future target year. An example target might be a 30 percent reduction in emissions below 2005 levels by 2020. A target provides an objective toward

which to strive and against which to measure progress. It allows a local government to quantify its commitment to fighting global warming—demonstrating that the jurisdiction is serious about its commitment and systematic in its approach.

In selecting a target, it is important to strike a balance between scientific necessity, ambition, and what is realistically achievable. San Carlos will want to give itself enough time to implement chosen emissions reduction measures—but note that the farther out the target year is, the more that the City should pledge to reduce. ICLEI recommends that regardless of San Carlos' chosen long-term emissions reduction target (e.g., 15-year, 40-year), it should establish interim targets for every two- to three-year period. Near-term targets facilitate additional support and accountability, and help to ensure continued momentum around San Carlos' local climate protection efforts. To monitor the effectiveness of its programs, the City should plan to re-inventory its emissions at least every five years and more frequently if possible. See Appendix E for more information on how to re-inventory San Carlos' emissions.

4.1.1 The Long-Term Goal

ICLEI recommends that the San Carlos' near-term climate work should be guided by the long-term goal of reducing its emissions by 80 percent to 95 percent from the 2005 baseline level by the year 2050. By referencing a long-term goal that is in accordance with current scientific understanding, San Carlos can demonstrate that it intends to do its part towards addressing greenhouse gas emissions from its internal operations.

It is important to keep in mind that it will be next to impossible for local governments to reduce emissions by 80 to 95 percent without the assistance of state and federal policy changes that create new incentives and new sources of funding for emissions reduction projects and programs. However, in the next 15 years, there is much that local governments can do to reduce emissions independently. It is also important that the City works to reduce its emissions sooner, rather than later: the sooner a stable level of greenhouse gases in the atmosphere is achieved, the less likely we are to face some of the most dire climate change scenarios.

4.1.2 State of California Targets and Guidance

An integral component of the State of California's climate approach has been establishing three core emissions reduction targets at the community level. While these targets are specific to the community-scale, they can be used to inform

Figure 4.1: California Greenhouse Gas Reduction Targets

On June 1, 2005, California Governor Schwarzenegger signed Executive Order S-3-05 establishing climate change emission reductions targets for the State of California. The California targets are an example of near-, mid- and long-term targets:

Reduce emissions to 2000 levels by 2010
Reduce emissions to 1990 levels by 2020
Reduce emissions to 80 percent below 1990 levels by 2050

emissions targets for government operations as well. Figure 4.1 highlights adopted emissions targets for the State. The AB 32 Scoping Plan also provides further guidance on establishing targets for local governments; specifically the Plan suggests creating an emissions reduction goal of 15 percent below "current" levels by 2020. This target has informed many local government's emission reduction targets for municipal operations—most local governments in California with adopted targets have targets of 15 to 25 percent reductions under 2005 levels by 2020.

4.1.3 Department Targets

If possible, ICLEI recommends that San Carlos consider department-specific targets for each of the departments that generate emissions within its operations. This allows City staff to do a more in-depth analysis of what is achievable in each sector in the near, mid and long-term, and also provides encourages each department head to consider their department's impact on the climate and institute a climate-conscious culture in its operations.

4.1.4 Monitoring Progress

ICLEI encourages the City of San Carlos to monitor its progress towards achieving specific emission reduction targets, by re-inventorying emissions every two to three years. A re-inventory (or monitoring inventory) will allow the City of San Carlos to identify any increases in building energy efficiency and conservation, advancements in waste reduction, improvements to the vehicle fleet, etc. This will not only help the City track it's progress towards reaching its emission reduction targets, but also to critique the success of any projects or policies that may be implemented to reduce emissions. C/CAG and San Mateo County Energy Watch may be able to provide support in carrying out periodic inventory updates in the future. For further information on conducting a monitoring inventory please see Appendix E.

4.2 Creating an Emissions Reduction Strategy

This inventory identifies the major sources of emissions from San Carlos' operations and, therefore, where staff and policymakers will need to target emissions reductions activities if they are to make significant progress toward adopted targets. For example, since electricity was a major source of emissions from San Carlos operations, it is possible that the City could meet near-term targets simply by implementing a few significant energy efficiency and conservation measures. In addition, medium-term targets could be met by focusing emissions reduction actions on the employee commute, the vehicle fleet, and renewable energy installation projects; and the long term (2050) target will not be achievable without major reductions in all of those sectors.

Given the results of the inventory, ICLEI recommends that San Carlos focus on the following tasks in order to significantly reduce emissions from its government operations:

- Offer increased public transit options; new shuttle, vanpool and carpool programs; and telecommuting scenarios to eligible employees to reduce emissions from employee commute;
- Conduct an energy audit of City buildings and improve energy efficiency where possible;
- Continue to convert the fleet to more fuel-efficient vehicles on a replacement basis (retire older, less efficient vehicles);
- Consider using a higher percentage of low-carbon fuels (such as biodiesel and ethanol) in all fleet vehicles;[20]
- Consider purchasing electric vehicles;
- Replace streetlights and traffic signals with more energy efficient LED models;
- Consider installing renewable energy technologies, such as solar, wind or micro-hydro (only after energy efficiency improvements have been made); and
- Increase waste diversion by developing reuse, composting and recycling efforts.

Using these strategies as a basis for a more detailed emissions reductions strategy, San Carlos should be able to reduce and reverse its impact upon global warming. In the process, it may also be able to improve the quality of its services, become more efficient with energy, and reduce long-term costs.

[20] A growing number of California local governments have developed biofuel production facilities (see http://www.sfgreasecycle.org/), by gathering waste vegetable and animal fats from local resources—such as restaurants. There is growing critique of the overall sustainability of biofuels that are sourced from crop-lands that would have otherwise been used for food production or would have remained virgin forest (South America). It is important to consider the sourcing of the biofuels that you use, and local production of waste oil is one of the best, most sustainable options. The California Air Resources Board will agree upon biofuel standards later this year, as part of the Low-Carbon Fuel Standard.

Appendices

Appendix A: The Local Government Operations Protocol

This inventory follows the standard outlined in the Local Government Operations Protocol, which was adopted in 2008 by the California Air Resources Board (ARB) and serves as the national standard for quantifying and reporting greenhouse emissions from local government operations. This and the other inventories conducted for the Silicon Valley Climate Protection partnership are the first to follow LGOP, representing a strong step toward standardizing how inventories are conducted and reported.

A.1 Local Government Operations Protocol

A.1.1 Background

In 2008, ICLEI, ARB, and the California Climate Action Registry (CCAR) released LGOP to serve as a U.S. supplement to the International Emissions Analysis Protocol. The purpose of LGOP is to provide the principles, approach, methodology, and procedures needed to develop a local government operations greenhouse gas emissions inventory. It leads participants through the process of accurately quantifying and reporting emissions, including providing calculation methodologies and reporting guidance. LGOP guidance is divided into three main parts: identifying emissions to be included in the inventory, quantifying emissions using best available estimation methods, and reporting emissions.

The overarching goal of LGOP is to allow local governments to develop emissions inventories using standards that are consistent, comparable, transparent, and recognized nationally, ultimately enabling the measurement of emissions over time. LGOP adopted five overarching accounting and reporting principles toward this end: relevance, completeness, consistency, transparency and accuracy. Methodologies that did not adhere to these principles were either left out of LGOP or included as Scope 3 emissions. LGOP was created solely to standardize how emissions inventories are conducted and reported; as such it represents a currently accepted standard for inventorying emissions but does not contain any legislative or program-specific requirements. Mandates by the State of California or any other legislative body, while possibly using LGOP as a standard, do not currently exist, and California local governments are not currently required to inventory their emissions. Program-specific

requirements, such as ICLEI's Milestones or CCAR's reporting protocol, are addressed in LGOP but should not be confused with LGOP itself.

Also, while LGOP standardizes inventories from government operations, it does not seek to be a wholly accurate inventory of all emissions sources, as certain sources are currently excluded or otherwise impossible to accurately estimate. This and all emissions inventories therefore represent a best estimate of emissions using best available data and calculation methodologies; it does not provide a complete picture of all emissions resulting from San Carlos' operations, and emissions estimates are subject to change as better data and calculation methodologies become available in the future.

A.1.2 Organizational Boundaries

Setting an organizational boundary for greenhouse gas emissions accounting and reporting is an important first step in the inventory process. The organizational boundary for the inventory determines which aspects of operations are included in the emissions inventory, and which are not. Under LGOP, two control approaches are used for reporting emissions: operational control or financial control. A local government has operational control over an operation if it has full authority to introduce and implement its operating policies at the operation. A local government has financial control if the operation is fully consolidated in financial accounts. If a local government has joint control over an operation, the contractual agreement will have to be examined to see who has authority over operating policies and implementation, and thus the responsibility to report emissions under operational control.[21] Local governments must choose which approach is the most applicable and apply this approach consistently throughout the inventory.

While both control approaches are acceptable, there may be some instances in which the choice may determine whether a source falls inside or outside of a local government's boundary. LGOP strongly encourages local governments to utilize operational control as the organization boundary for a government operations emissions inventory. Operational control is believed to most accurately represent the emissions sources that local governments can most directly influence, and this boundary is consistent with other environmental and air quality reporting program requirements. For this reason, all inventories in the Silicon Valley Climate Protection Partnership are being conducted according to the operational control framework.

A.1.3 Types of Emissions

The greenhouse gases inventoried in this report are described in Section 2.1 As described in LGOP, emissions from each of the greenhouse gases can come in a number of forms:

21 Please see Local Government Operations Protocol for more detail on defining your organizational boundary: http://www.icleiusa.org/programs/climate/ghg-protocol

Stationary or mobile combustion: These are emissions resulting from on-site combustion of fuels (natural gas, diesel, gasoline, etc.) to generate heat, electricity, or to power vehicles and mobile equipment.

Purchased electricity: These are emissions produced by the generation of power from utilities outside of the jurisdiction.

Fugitive emissions: Emissions that result from the unintentional release of greenhouse gases into the atmosphere (e.g., leaked refrigerants, methane from waste decomposition, etc.).

Process emissions: Emissions from physical or chemical processing of a material (e.g., wastewater treatment).

A1.4 Quantifying Emissions

Emissions can be quantified two ways:

Measurement-based methodologies refer to the direct measurement of greenhouse gas emissions (from a monitoring system) emitted from a flue of a power plant, wastewater treatment plant, landfill, or industrial facility. This methodology is not generally available for most types of emissions and will only apply to a few local governments that have these monitoring systems.

The majority of the emissions recorded in the inventory can be and will be estimated using **calculation-based methodologies** to calculate their emissions using activity data and emission factors. To calculate emissions, the equation below is used:

Activity Data x Emission Factor = Emissions

Activity data refer to the relevant measurement of energy use or other greenhouse gas–generating processes such as fuel consumption by fuel type, metered annual energy consumption, and annual vehicle mileage by vehicle type. Emissions factors are calculated ratios relating emissions to a proxy measure of activity at an emissions source (e.g., CO_2 generated/kWh consumed). For a list of common emissions calculations see Table 2.2.

The guidelines in LGOP are meant to provide a common method for local governments to quantify and report greenhouse gas emissions by using comparable activity data and emissions factors. However, LGOP recognizes that local governments differ in how they collect data concerning their operations and that many are not able to meet the data needs of a given estimation method. Therefore, LGOP outlines both “recommended” and “alternative” methods to estimate emissions from a given source. In this system, recommended methods are the preferred method for estimating emissions, as they will result in the most accurate estimate for a given emission source. Alternative methods often require less intensive data collection, but are likely to be less accurate. This approach allows local governments to estimate emissions based on the data currently available to them. It also allows local governments

that are unable to meet the recommended methods to begin developing internal systems to collect the data needed to meet these methods.

This inventory has used the recommended activity data and emissions factors wherever possible, using alternative methods where necessary. For details on the methodologies used for each sector, see Appendix B.

A.1.5 Reporting Emissions

A.1.5.1 Significance Thresholds

Within any local government's own operations there will be emission sources that fall within Scope 1 and Scope 2 that are minimal in magnitude and difficult to accurately measure. Within the context of local government operations, emissions from leaked refrigerants, backup generators and other septic tanks may be common sources of these types of emissions. For these small, difficult to quantify emission sources, LGOP specifies that up to 5 percent of total emissions can be reported using estimation methods not outlined in LGOP.[22]

In this report, the following emissions fell under the significance threshold and were reported using best available methods:

- Scope 1 fugitive emissions from leaked vehicle refrigerants from HV/AC
- Scope 1 CH_4 and N_2O emissions from vehicle fleet

A.1.5.2 Units Used in Reporting Emissions

LGOP requires reporting of individual gas emissions, and this reporting is included in Appendix B. In this narrative report, emissions from all gases released by an emissions source (e.g., stationary combustion of natural gas in facilities) are combined and reported in metric tons of carbon dioxide equivalent (CO_2e). This standard is based on the global warming potential (GWP) of each gas, which is a measure of the amount of warming a greenhouse gas may cause, measured against the amount of warming caused by carbon dioxide. For the GWPs of reported greenhouse gases, see Table 2.1.

A.1.5.3 Information Items

Information items are emissions sources that, for a variety of reasons, are not included as Scope 1, 2, or 3 emissions in the inventory. In order to provide a more complete picture of emissions from San Carlos' operations, however, these emissions should be quantified and reported.

22 In the context of registering emissions with an independent registry (such as the California Climate Action Registry), emissions that fall under the significance threshold are called *de minimis*. This term, however, is not used in LGOP and was not used in this inventory.

In this report, the following emissions are included as information items (emission quantities are reported in Appendix B):

- Scope 3 CO_2 emissions from biofuel consumption and employee commutes
- Ozone depleting chemical used as refrigerants (R-22 and R-12)

A common emission type that is categorized as an information item is carbon dioxide released by the combustion of biogenic fuels. Local governments will often burn fuels that are of biogenic origin (wood, landfill gas, organic solid waste, biofuels, etc.) to generate power. Common sources of biogenic emissions are the combustion of landfill gas from landfills or biogas from wastewater treatment plants, as well as the incineration of organic municipal solid waste at incinerators.

Carbon dioxide emissions from the combustion of biogenic fuels are not included in Scope 1 based on established international principles. [23] These principles indicate that biogenic fuels (e.g., wood, biodiesel), if left to decompose in the natural environment, would release CO_2 into the atmosphere, where it would then enter back into the natural carbon cycle. Therefore, when wood or another biogenic fuel is combusted, the resulting CO_2 emissions are akin to natural emissions and should therefore not be considered as human activity-generated emissions. The CH_4 and N_2O emissions, however, would not have occurred naturally and are therefore included as Scope 1 emissions.

A.2 Baseline Years

Part of the local government operations emissions inventory process requires selecting a "performance datum" with which to compare current emissions, or a base year. Local governments should examine the range of data they have over time and select a year that has the most accurate and complete data for all key emission sources. It is also preferable to establish a base year several years in the past to be able to account for the emissions benefits of recent actions. A local government's emissions inventory should comprise all greenhouse gas emissions occurring during a selected *calendar* year.

For the Silicon Valley Climate Protection Partnership inventories, 2005 was chosen as the baseline year, since this year is increasingly becoming the standard for such inventories; the 1990 baseline year for California is usually difficult for most local governments to meet and would not produce the most accurate inventory.

After setting a base year and conducting an emissions inventory for that year, local governments should make it a practice to complete a comprehensive emissions inventory on a regular basis to compare to the baseline year. ICLEI recommends conducting an emissions inventory at least every five years.

23 Methane and nitrous oxide emissions from biogenic fuels are considered Scope 1 stationary combustion emissions and are included in the stationary combustion sections for the appropriate facilities.

Appendix B:
LGOP Standard Report

Local Government Operations Standard Inventory Report

1. Local Government Profile

Jurisdiction Name:	City of San Carlos
Street Address:	600 Elm Street
City, State, ZIP, Country:	San Carlos, CA 94070
Website Address:	www.cityofsancarlos.org
Size (sq. miles):	5.92 square miles
Population:	28839
Annual Budget:	$46 mil total / $28 mil general fund
Employees (Full Time Equivalent):	111
Climate Zone:	CA Climate Zone 3
Annual Heating Degree Days:	3649*
Annual Cooling Degree Days:	292**
Lead Inventory Contact Name:	Brian Moura
Title:	Assistant City Manager
Department:	City Manager Department
Email:	bmoura@cityofsancarlos.org
Phone Number:	(650) 802-4210

* www.energycodes.gov/implement/pdfs/climate_paper_review_draft_rev.pdf
** www7.ncdc.noaa.gov/CDO/CDODivisionalSelect.jsp#

Services Provided:

☐ Water treatment	☐ Mass transit (buses)	☐ Hospitals	☐ Natural gas utility
☑ Water distribution	☐ Mass transit (light rail)	☐ Airport	☐ Other (Specify below)
☐ Wastewater treatment	☐ Mass transit (ferries)	☐ Seaport/shipping terminal	
☐ Wastewater collection	☐ Schools (primary/secondary)	☐ Marina	
☐ Electric utility	☐ Schools (colleges/universities)	☐ Stadiums/sports venues	
☐ Fire Protection	☐ Solid waste collection	☐ Convention center	
☑ Police	☐ Solid waste disposal	☑ Street lighting and traffic signals	

Local Government Description:

San Carlos, "The City of Good Living," is located in the center of the San Francisco Bay Area and has everything at its doorstep. San Francisco is 25 miles north and San Jose is 25 miles south. San Carlos boasts an ideal climate, good government, an outstanding school system, attractive residential areas, a fine shopping district, excellent restaurants, a modern industrial and commercial area and plenty of open space. As part of the northern end of Silicon Valley, San Carlos hosts several technology companies and is the address of many of the West Coast's biotech and medical instrumentation firms. You'll find friendly, involved people here and an inviting community atmosphere.

2. GHG Inventory Details

Reporting Year:	2005
Protocol Used:	Local Government Operations Protocol, Version 1.0 (September 2008)
Control Approach:	e.g. Operational Control

GHG Emissions Summary (All Units in Metric Tons Unless Stated Otherwise)

Note: CO_2e totals listed here are summed totals of the estimated emissions of each inventoried gas based upon their global warming potentials (Appendix E of LGOP)

BUILDINGS & OTHER FACILITIES

SCOPE 1

	CO_2e	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6
Stationary Combustion	283.375	282.651	0.027	0.001			
Fugitive Emissions							
Total Direct Emissions from Buildings & Facilities	283.375	282.651	0.001	0.001	0.000	0.000	0.000

SCOPE 2

	CO_2e	CO_2	CH_4	N_2O
Purchased Electricity	329.948	327.260	0.019	0.007
Purchased Steam				
District Heating & Cooling				
Total Indirect Emissions from Buildings & Facilities	329.948	327.260	0.019	0.007

SCOPE 3

	CO_2e
See list at bottom for some examples	

INDICATORS

Operating Hours	
Square Footage	
Number of Employees	

STREETLIGHTS AND TRAFFIC SIGNALS

SCOPE 2

	CO_2e	CO_2	CH_4	N_2O
Purchased Electricity	241.042	239.078	0.014	0.005
Total Indirect Emissions from Streetlights and Traffic Signals	241.042	239.078	0.005	0.014

SCOPE 3

	CO_2e
See list at bottom for some examples	

INDICATORS

WATER DELIVERY FACILITIES

SCOPE 1

	CO_2e	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6
Stationary Combustion	0.447	0.446	0.000	0.000			
Total Direct Emissions from Water Delivery Facilities	0.447	0.446	0.000	0.000	0.000	0.000	0.000

SCOPE 2

	CO_2e	CO_2	CH_4	N_2O
Purchased Electricity	17.265	17.124	0.001	0.000
Purchased Steam				
District Heating & Cooling				
Total Indirect Emissions from Water Delivery Facilities	17.265	17.124	0.001	0.000

SCOPE 3

	CO_2e
See list at bottom for some examples	

INDICATORS

Gallons of Drinking Water Treated	
Gallons of Water Transported	

VEHICLE FLEET

SCOPE 1

	CO_2e	CO_2	CH_4	N_2O	HFCs	PFCs
Mobile Combustion	416.440	409.039	0.020	0.023		
Fugitive Emissions	8.400				0.002	
Total Direct Emissions from Vehicle Fleet	424.840	409.039	0.020	0.023	0.002	0.000

SCOPE 2

	CO_2e	CO_2	CH_4	N_2O
Purchased Electricity for Electric Vehicles				
Total Indirect Emissions from Vehicle Fleet	0.000	0.000	0.000	0.000

SCOPE 3

	CO_2e
See list at bottom for some examples	

INDICATORS

Number of Vehicles	
Vehicle Miles Traveled	
Number of Pieces of Equipment	
Equipment Operating Hours	

WASTE GENERATION

SCOPE 3

	CO_2e
Waste All Facilities	92.974

INDICATORS

Short tons of solid waste accepted for disposal	366.763
Short tons of recyclable materials accepted for processing	

EMPLOYEE COMMUTE		
SCOPE 3		CO_2e
	Mobile Combustion	353.424
INDICATORS	Vehicle Miles Traveled	
	Number of Vehicles	

INFORMATION ITEMS	
	CO_2e
Employee Commute B100	11.125
R-22	38.555
R-12	25.440
Total Information Items	75.120

Total Emissions	CO_2e	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6
SCOPE 1	708.662	692.135	0.020	0.023	0.002	0.000	0.000
SCOPE 2	588.255	583.461	0.026	0.022	0.000	0.000	0.000
SCOPE 3	446.398						
INFORMATION ITEMS	75.120						

POSSIBLE SOURCES OF OPTIONAL SCOPE 3 EMISSIONS
Employee Commute
Employee Business Travel
Emissions From Contracted Services
Upstream Production of Materials and Fuels
Upstream and Downstream Transportation of Materials and Fuels
Waste Related Scope 3 Emissions
Purchase of Electricity Sold to an End User
Transmission and Distribution Losses from Consumed Electricity
Other Scope 3

POSSIBLE INFORMATION ITEMS
Biogenic CO_2 from Combustion
Carbon Offsets Purchased
Carbon Offsets Sold
Renewable Energy Credits (Green Power) Purchased
Renewable Energy Credits Sold (GreenPower)
Ozone-depleting Refrigerants/Fire Suppressants not in LGOP
Other Information Items

Local Government Operations Standard Inventory Report

3. Activity Data Disclosure

Every emission source must be accompanied by a reference for the activity data. This worksheet is meant to assist in recording activity data and the methods used to gather those data for government operations. Activity data represent the magnitude of human activity resulting in emissions; data on energy use, fuel consumtion, vehicle miles traveled, and waste generation are all examples of activity data that are used to compute GHGs. Detailed disclosure should be made of the activity data used and at what quantities. This disclosure should also cite the source(s) of the data and the methodology used, including whether that methodology is a recommended method or an alternate method.

Deviations from the primary methodology should be explained in detail. All assumptions and estimations should be cited as such. Local governments may also use this space in the reporting format to discuss the rationale for the inclusion or exclusion of optional inventory components. It is good practice to include appropriate citations (such as website URL, report title, etc) and all contact information that is necessary to verify the source and accuracy of the activity data.

BUILDINGS & OTHER FACILITIES (Chapter 6)

SCOPE 1

Stationary Combustion

Emissions Source Name	GHG	Methodology Type	Methodology Name and Description	Resource Quantity	Fuel Unit	Data Sources and References
Natural Gas	CO_2e	Primary	Application of GWP to CH4 and N2O calculations listed below; sum of three primary GHGs (CO2, CH4 and N2O.)	53,270	therms	PG&E
	CO_2	Primary	Known fuel use	53,270	therms	PG&E
	CH_4	Primary	Known fuel use	53,270	therms	PG&E
	N_2O	Primary	Known fuel use	53,270	therms	PG&E
	HFCs					
	PFCs					
	SF_6					

SCOPE 2

Purchased Electricity

Emissions Source Name	GHG	Methodology Type	Methodology Name and Description	Resource Quantity	Fuel Unit	Data Sources and References
Electricity	CO_2e	Primary	Application of GWP to CH4 and N2O calculations listed below; sum of three primary GHGs (CO2, CH4 and N2O.)	1,474,945	kWh	PG&E
	CO_2	Primary	Known Electricity Use	1,474,945	kWh	PG&E
	CH_4	Primary	Known Electricity Use	1,474,945	kWh	PG&E
	N_2O	Primary	Known Electricity Use	1,474,945	kWh	PG&E
	HFCs					
	PFCs					
	SF_6					

STREETLIGHTS AND TRAFFIC SIGNALS (Chapter 6.2)

SCOPE 2

Purchased Electricity

Emissions Source Name	GHG	Methodology Type	Methodology Name and Description	Resource Quantity	Fuel Unit	Data Sources and References
Electricity	CO_2e	Primary	Application of GWP to CH4 and N2O calculations listed below; sum of three primary GHGs (CO2, CH4 and N2O.)	1,077,512	kWh	PG&E
	CO_2	Primary	Known Electricity Use	1,077,512	kWh	PG&E
	CH_4	Primary	Known Electricity Use	1,077,512	kWh	PG&E
	N_2O	Primary	Known Electricity Use	1,077,512	kWh	PG&E
	HFCs					
	PFCs					
	SF_6					

WATER DELIVERY FACILITIES (Chapter 6)

SCOPE 1

Stationary Combustion

Emissions Source Name	GHG	Methodology Type	Methodology Name and Description	Resource Quantity	Fuel Unit	Data Sources and References
Natural Gas	CO_2e	Primary	Application of GWP to CH4 and N2O calculations listed below; sum of three primary GHGs (CO2, CH4 and N2O.)	84	therms	PG&E
	CO_2	Primary	Known Fuel Use	84	therms	PG&E
	CH_4	Primary	Known Fuel Use	84	therms	PG&E
	N_2O	Primary	Known Fuel Use	84	therms	PG&E
	HFCs					
	PFCs					
	SF_6					

SCOPE 2

Purchased Electricity

Emissions Source Name	GHG	Methodology Type	Methodology Name and Description	Resource Quantity	Fuel Unit	Data Sources and References
Electricity	CO_2e	Primary	Application of GWP to CH4 and N2O calculations listed below; sum of three primary GHGs (CO2, CH4 and N2O.)	77,177	kWh	PG&E
	CO_2	Primary	Known Electricity Use	77,177	kWh	PG&E
	CH_4	Primary	Known Electricity Use	77,177	kWh	PG&E
	N_2O	Primary	Known Electricity Use	77,177	kWh	PG&E
	HFCs					
	PFCs					
	SF_6					

VEHICLE FLEET (Chapter 7)

SCOPE 1

Mobile Combustion

Emissions Source Name	GHG	Methodology Type	Methodology Name and Description	Resource Quantity	Fuel Unit	Data Sources and References
Gasoline	CO_2e	Primary	Application of GWP to CH4 and N2O calculations listed below; sum of three primary GHGs (CO2, CH4 and N2O.)	35,243	gallons	Marilyn Maytum, Senior Accountant, City of San Carlos
	CO_2	Primary	Known Fuel Use	35,243	gallons	Marilyn Maytum, Senior Accountant, City of San Carlos
	CH_4	Alternate	Known fuel use by vehicle type, inventory year, and fuel type.	35,243	gallons	Marilyn Maytum, Senior Accountant, City of San Carlos
	N_2O	Alternate	Known fuel use by vehicle type, inventory year, and fuel type.	35,243	gallons	Marilyn Maytum, Senior Accountant, City of San Carlos
	HFCs					
	PFCs					
	SF_6					
Diesel	CO_2e	Primary	Application of GWP to CH4 and N2O calculations listed below; sum of three primary GHGs (CO2, CH4 and N2O.)	9,733	gallons	Marilyn Maytum, Senior Accountant, City of San Carlos
	CO_2	Primary	Known Fuel Use	9,733	gallons	Marilyn Maytum, Senior Accountant, City of San
	CH_4	Alternate	Known fuel use by vehicle type, inventory year, and fuel type.	9,733	gallons	Marilyn Maytum, Senior Accountant, City of San Carlos
	N_2O	Alternate	Known fuel use by vehicle type, inventory year, and fuel type.	9,733	gallons	Marilyn Maytum, Senior Accountant, City of San Carlos
	HFCs					
	PFCs					
	SF_6					

Fugitive Emissions

Emissions Source Name	GHG	Methodology Type	Methodology Name and Description	Resource Quantity	Fuel Unit	Data Sources and References
Refrigerants	R-134	Alternate	Estimation based upon equipment inventory and use	8	kg	Danny Vergara, Mechanic, City of San Carlos

WASTE GENERATION (Scope 3)

SCOPE 3

Emissions Source Name	GHG	Methodology Type	Methodology Name and Description	Resource Quantity	Fuel Unit	Data Sources and References
Generated Waste	CH_4	Primary/Alternate	Combined data set: 1) Known waste weight (Primary); 2) Estimated waste weight based upon volume and number of containers (Alternate)	367	tons	Jennifer Chicconi, Community Relations Manager, Allied Waste

EMPLOYEE COMMUTE (Scope 3)

SCOPE 3

Stationary Combustion

Emissions Source Name	GHG	Methodology Type	Methodology Name and Description	Resource Quantity	Fuel Unit	Data Sources and References
Gasoline	CO_2e	Primary	Application of GWP to CH4 and N2O calculations listed below; sum of three primary GHGs (CO2, CH4 and N2O.)	39,210	gallons	Online and paper surveys of all employees; see Appendix C of Narrative report for examples; Data in posession of Brian Moura, Assistant City Manager
	CO_2	Alternate	Proxy Year Estimated Fuel Use-based upon daily vehicle miles traveled for all repspondents extrapolated to represent all local government employees	39,210	gallons	Online and paper surveys of all employees; see Appendix C of Narrative report for examples; Data in posession of Brian Moura, Assistant City Manager
	CH_4	Alternate	Proxy Year Estimated Fuel Use-based upon daily vehicle miles traveled for all repspondents extrapolated to represent all local government employees	39,210	gallons	Online and paper surveys of all employees; see Appendix C of Narrative report for examples; Data in posession of Brian Moura, Assistant City Manager
	N_2O	Alternate	Proxy Year Estimated Fuel Use-based upon daily vehicle miles traveled for all repspondents extrapolated to represent all local government employees	39,210	gallons	Online and paper surveys of all employees; see Appendix C of Narrative report for examples; Data in posession of Brian Moura, Assistant City Manager
	HFCs					
	PFCs					
	SF_6					

INFORMATION ITEMS

Stationary Combustion

Emissions Source Name	GHG	Methodology Type	Methodology Name and Description	Resource Quantity	Fuel Unit	Data Sources and References
Ozone Depleting Refrigerants	R-22	Alternate	Estimation based upon equipment inventory and use	23	kg	Pat Thomasson, Sr. Maintenance Worker, City of San Carlos
	R-12	Alternate	Estimation based upon equipment inventory and use	2	kg	Danny Vergara, Mechanic, City of San Carlos

Biodiesel 100 (Employee Commute)	CO_2e	Primary	Application of GWP to CH4 and N2O calculations listed below; sum of three primary GHGs (CO2, CH4 and N2O.)	1,176	gallons	Online and paper surveys of all employees; see Appendix C of Narrative report for examples; Data in posession of Brian Moura, Assistant City Manager
	CO_2	Alternate	Proxy Year Estimated Fuel Use-based upon daily vehicle miles traveled for all repspondents extrapolated to represent all local government employees	1,176	gallons	Online and paper surveys of all employees; see Appendix C of Narrative report for examples; Data in posession of Brian Moura, Assistant City Manager
	CH_4	Alternate	Proxy Year Estimated Fuel Use-based upon daily vehicle miles traveled for all repspondents extrapolated to represent all local government employees	1,176	gallons	Online and paper surveys of all employees; see Appendix C of Narrative report for examples; Data in posession of Brian Moura, Assistant City Manager
	N_2O	Alternate	Proxy Year Estimated Fuel Use-based upon daily vehicle miles traveled for all repspondents extrapolated to represent all local government employees	1,176	gallons	Online and paper surveys of all employees; see Appendix C of Narrative report for examples; Data in posession of Brian Moura, Assistant City Manager
	HFCs					
	PFCs					
	SF_6					

POSSIBLE SOURCES OF OPTIONAL SCOPE 3 EMISSIONS
Employee Commute
Employee Business Travel
Emissions From Contracted Services
Upstream Production of Materials and Fuels
Upstream and Downstream Transportation of Materials and Fuels
Waste Related Scope 3 Emissions
Purchase of Electricity Sold to an End User
Transmission and Distribution Losses from Consumed Electricity
Other Scope 3

POSSIBLE INFORMATION ITEMS
Biogenic $C0_2$ from Combustion
Carbon Offsets Purchased
Carbon Offsets Sold
Renewable Energy Credits (Green Power) Purchased
Renewable Energy Credits Sold (GreenPower)
Ozone-depleting Refrigerants/Fire Suppressants not in LGOP
Other Information Items

Local Government Operations Standard Inventory Report

4. Calculation Methodology Disclosure

In addition to activity data, every emission source must be accompanied by the emission factor used, a reference for each emission factor, and the calculation

BUILDINGS & OTHER FACILITIES (Chapter 6)

SCOPE 1

Stationary Combustion

Emissions Source Name	GHG	Default/Alternate	Emission Factor	Emission Factor Sources and References
Natural Gas	CO_2e	Default	Various Global Warming Potentials (GWP)	LGOP v1 Table E.1
	CO_2	Default	53.06 kg/MMBtu	LGOP v1 Table G.1
	CH_4	Default	5 g/MMBtu	LGOP v1 Table G.3
	N_2O	Default	0.1 g/MMBtu	LGOP v1 Table G.3
	HFCs			
	PFCs			
	SF_6			

SCOPE 2

Purchased Electricity

Emissions Source Name	GHG	Default/Alternate	Emission Factor	Emission Factor Sources and References
Electricity	CO_2e	Default	Various Global Warming Potentials (GWP)	LGOP v1 Table E.1
	CO_2	Default	489.2 lbs/MWh	PG&E (2005); LGOP v1 Table G.5
	CH_4	Default	0.029 lbs/MWh	CA Grid Average (2004 proxy); LGOP v1 Table G.6
	N_2O	Default	0.011 lbs/MWh	CA Grid Average (2004 proxy); LGOP v1 Table G.6
	HFCs			
	PFCs			
	SF_6			

STREETLIGHTS AND TRAFFIC SIGNALS (Chapter 6.2)

SCOPE 2

Purchased Electricity

Emissions Source Name	GHG	Default/Alternate	Emission Factor	Emission Factor Sources and References
Electricity	CO_2e	Default	Various Global Warming Potentials (GWP)	LGOP v1 Table E.1
	CO_2	Default	489.2 lbs/MWh	PG&E (2005); LGOP v1 Table G.5
	CH_4	Default	0.029 lbs/MWh	CA Grid Average (2004 proxy); LGOP v1 Table G.6
	N_2O	Default	0.011 lbs/MWh	CA Grid Average (2004 proxy); LGOP v1 Table G.6
	HFCs			
	PFCs			
	SF_6			

WATER DELIVERY FACILITIES (Chapter 6)

SCOPE 1

Stationary Combustion

Emissions Source Name	GHG	Default/Alternate	Emission Factor	Emission Factor Sources and References
Natural Gas	CO_2e	Default	Various Global Warming Potentials (GWP)	LGOP v1 Table E.1
	CO_2	Default	53.06 kg/MMBtu	LGOP v1 Table G.1
	CH_4	Default	5 g/MMBtu	LGOP v1 Table G.3
	N_2O	Default	0.1 g/MMBtu	LGOP v1 Table G.3
	HFCs			
	PFCs			
	SF_6			

SCOPE 2

Purchased Electricity

Emissions Source Name	GHG	Default/Alternate	Emission Factor	Emission Factor Sources and References
Electricity	CO_2e	Default	Various Global Warming Potentials (GWP)	LGOP v1 Table E.1
	CO_2	Default	489.2 lbs/MWh	PG&E (2005); LGOP v1 Table G.5
	CH_4	Default	0.029 lbs/MWh	CA Grid Average (2004 proxy); LGOP v1 Table G.6
	N_2O	Default	0.011 lbs/MWh	CA Grid Average (2004 proxy); LGOP v1 Table G.6
	HFCs			
	PFCs			
	SF_6			

VEHICLE FLEET (Chapter 7)

SCOPE 1

Mobile Combustion

Emissions Source Name	GHG	Default/Alternate	Emission Factor	Emission Factor Sources and References
Gasoline	CO_2e	Default	Various Global Warming Potentials (GWP)	LGOP v1 Table E.1
	CO_2	Default	8.81 kg/gallon	LGOP v1 Table G.9
	CH_4	Default	Varies by model year	LGOP v1 Table G.10; Table G.12 for other equipment
	N_2O	Default	Varies by model year	LGOP v1 Table G.10; Table G.12 for other equipment
	HFCs			
	PFCs			
	SF_6			
Diesel	CO_2e	Default	Various Global Warming Potentials (GWP)	LGOP v1 Table E.1
	CO_2	Default	10.15 kg/gallon	LGOP v1 Table G.9
	CH_4	Default	Varies by model year	LGOP v1 Table G.10; Table G.12 for other equipment
	N_2O	Default	Varies by model year	LGOP v1 Table G.10; Table G.12 for other equipment
	HFCs			
	PFCs			
	SF_6			

Fugitive Emissions

Emissions Source Name	GHG	Default/Alternate	Emission Factor	Emission Factor Sources and References
Refrigerants	R-134	None	GWP-1,000	LGOP v1 Table E.1

WASTE GENERATION (Scope 3)

SCOPE 3

Emissions Source Name	GHG	Default/Alternate	Emission Factor	Emission Factor Sources and References
Generated Waste	CH_4	Alternate	Varies by waste type	EPA Waste Reduction Model http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html; Public Administration waste charaterization provided by CIWMB

EMPLOYEE COMMUTE (Scope 3)

SCOPE 3

Stationary Combustion

Emissions Source Name	GHG	Default/Alternate	Emission Factor	Emission Factor Sources and References
Gasoline	CO_2e	Default	Various Global Warming Potentials (GWP)	LGOP v1 Table E.1
	CO_2	Default	8.81 kg/gallon	LGOP v1 Table G.9
	CH_4	Default	0.02990 g/mi (cars)	LGOP v1 Table G.13
	N_2O	Default	0.03413 g/mi (cars)	LGOP v1 Table G.13
	HFCs			
	PFCs			
	SF_6			

INFORMATION ITEMS

Stationary Combustion

Emissions Source Name	GHG	Default/Alternate	Emission Factor	Emission Factor Sources and References
Ozone Depleting Refrigerants	R-22	None	GWP-1,700	http://www.epa.gov/ozone/science/ods/classone.html
	R-12	None	GWP-10,600	http://www.epa.gov/ozone/science/ods/classone.html

Biodiesel 100 (Employee Commute)	CO_2e			
	CO_2	Default	9.46 kg/gallon	LGOP v1 Table G9
	CH_4			
	N_2O			
	HFCs			
	PFCs			
	SF_6			

POSSIBLE SOURCES OF OPTIONAL SCOPE 3 EMISSIONS	POSSIBLE INFORMATION ITEMS
Employee Commute	Biogenic $C0_2$ from Combustion
Employee Business Travel	Carbon Offsets Purchased
Emissions From Contracted Services	Carbon Offsets Sold
Upstream Production of Materials and Fuels	Renewable Energy Credits (Green Power) Purchased
Upstream and Downstream Transportation of Materials and Fuels	Renewable Energy Credits Sold (GreenPower)
Waste Related Scope 3 Emissions	Ozone-depleting Refrigerants/Fire Suppressants not in LGOP
Purchase of Electricity Sold to an End User	Other Information Items
Transmission and Distribution Losses from Consumed Electricity	
Other Scope 3	

Appendix C: Employee Commute

Emissions from employee commutes make up an important optional source of emissions from any local government's operations. The scale of emissions from employee commutes is often large in comparison with many other facets of local government operations, and local governments can affect how their employees get to and from work through a variety of incentives. For this reason, ICLEI recommends estimating emissions from employee commutes as part of a complete government operations greenhouse gas emissions inventory.

To assist in the data collection process, ICLEI provided the jurisdictions with both an online and a paper copy of an employee commute survey.[24] The questions in the survey were aimed at finding three categories of information:

- **Activity data** to calculate emissions from employee commute (vehicles miles traveled, vehicle type, vehicle model year) both current and in 2005.
- **Indicator data** to help San Carlos understand how much time and money employees spend as they commute, as well as how many employees use alternative modes of transportation to get to work.
- **Policy data** that will serve as guidance for San Carlos as it adopts policies aimed at reducing emissions from employee commutes. These questions asked employees for their interest in alternative modes of transportation as well as what policies would be most effective in allowing them to switch modes of transportation away from driving alone.

This section provides the emissions estimation methodology and both surveys. Individual survey results are in the possession of City staff.

C.1 Methodology Summary

The methodology for estimating the employee commute emissions portion of the inventory is similar to the mobile emissions methodology outlined in the mobile emissions section of Appendix B. San Carlos administered the employee commute survey to 105 current employees working for the City, and 103 employees responded to the

24 The paper survey was administered only to employees that do not have access to a computer. The survey asked slightly different questions but was aimed at garnering the same emissions and policy-relevant data as the electronic survey.

survey (a response rate of 98 percent). The survey was administered in 2008 and current data was used as a proxy for 2005 data. Both full time and part-time employee data were included.

To calculate emissions, the survey collected the following information:

- The number of days and number of miles employees drive alone to work (one-way) in an average week
- The number of days they carpooled and how often they drove the carpool in an average week
- The vehicle type of their vehicle and the type of fuel consumed

These weekly data were then converted into annual VMT estimates by the following equation:

Number of days driven to work/week x to-work commute distance x 2 x 48 weeks worked/year

Actual CO_2e emissions from respondents' vehicles were calculated by converting vehicle miles traveled per week by responding employees into annual fuel consumption by fuel type (gasoline, diesel). The VMT data collected were converted to fuel consumption estimates using fuel economy of each vehicle type.[25]

ICLEI then extrapolated estimated fuel consumption to represent all 105 of San Carlos' employees in 2005. This was a simple extrapolation, multiplying the estimated fuel consumption number by the appropriate factor to represent all current employees. For example, if 33.3 percent of employees responded, fuel consumption numbers were tripled to estimate fuel consumption for all employees. This is not a statistical analysis and no uncertainty has been calculated as there is uncertainty not only at the extrapolation point but also in the calculation of actual emissions. Therefore, the resulting calculated emissions should be seen as directional and not as statistically valid.

25 Fuel efficiency estimates from www.fueleconomy.gov, EPA *Green Fleets Guide* and other national sources.

C.2 Electronic Employee Commute Survey

1. Introduction
The purpose of this survey is to gather information on your commute to work so your employer can offer the best transportation options to you while reducing the jurisdiction's impact on the environment. The survey should take no more than 15 minutes.

Unless otherwise indicated, all questions refer to a ONE-WAY commute TO WORK only. Please do not include any traveling you do during work hours (meetings, site visits, etc). Any question with an asterisk (*) next to it requires an answer in order to proceed.

Please note that this survey is completely anonymous. We will not collect or report data on any individuals who respond to the survey.

Thank you very much.

2. Workplace
Please provide the following information regarding your workplace. Click "Next" at the bottom when finished or click "Prev" to go back.

*1. What local government do you currently work for?
Atherton
Belmont
Brisbane
Burlingame
Campbell
Colma
Cupertino
Daly City
East Palo Alto
Foster City
Gilroy
Half Moon Bay
Los Altos
Los Gatos
Milpitas
Mountain View
Pacifica
Portola Valley
Redwood City
San Bruno
San Carlos
San Mateo County
Santa Clara
Santa Clara County
Santa Cruz County
Saratoga
South San Francisco
Woodside

*2. What department do you work in?

3. Commuter Background Information
Please provide the following information regarding your background. Click "Next" at the bottom when finished or click "Prev" to go back.

*1. What city/town do you live in?

*2. How many miles do you live from your place of work?
(please enter a whole number)

3. How many minutes does your commute to work typically take?
(please enter a whole number)

4. In a typical week, how much money do you spend on your ROUND TRIP commute? (transit fees, gas, tolls, etc-please enter a number)

5. If you drive to work, what type of vehicle do you usually drive?
Full-size auto
Mid-size auto
Compact/hybrid
Light truck/SUV/Pickup
Van
Heavy Truck
Motorcycle/scooter

6. What year is your vehicle?
(please enter a four digit year)

7. What type of fuel does your vehicle use?
Gas
Diesel
Biodiesel (B20)
Biodeisel (B99 or B100)
Electric
Other (please specify-if Ethanol please indicate grade)

4. Employment Information
Please provide the following information regarding your employment. Click "Next" at the bottom when finished or click "Prev" to go back.

1. Do you typically travel to work between 6-9 am Monday-Friday?
Yes
No
If No, please specify what time of day you commute:

2. Does your position allow you to have flexible hours or to telecommute?
Yes
No

*3. Are you a full time employee or part time employee?
Full
Part

5. Part Time Employees
Please provide the following information regarding your part time employment. Click "Next" at the bottom when finished or click "Prev" to go back.

*1. What is the average number of days you work per week?
(please enter a number)

6. Current Daily Commute
Please provide the following information regarding your current daily commute. Click "Next" at the bottom when finished or click "Prev" to go back.

*1. In a typical week, do you drive to work alone at least once?
Yes
No

7. Drive Alone
Click "Next" at the bottom when finished or click "Prev" to go back.

*1. How many DAYS a week do you drive alone to work?
(please enter a number)

*2. How many MILES PER DAY do you drive TO WORK ONLY?
(please enter a number)

8. Carpool
Click "Next" at the bottom when finished or click "Prev" to go back.

*1. In a typical week, do you carpool to work at least once?
Yes
No

9. Carpool
*1. How many DAYS a week do you carpool?
(please enter a number)

*2. How many MILES do you drive TO WORK ONLY when you carpool?
(please enter a number)

3. How many PEOPLE are in your carpool?
(please enter a number)

*4. How many DAYS a week are you the driver of the carpool?
(please enter a number)

10. Public Transit
*1. In a typical week, do you take public transit to work at least once?
Yes
No

11. Public Transit
*1. How many DAYS a week do you take public transit TO WORK?
(please enter a number)

2. What type of public transit do you take TO WORK?
SamTrans
BART
Caltrain
VTA Bus
VTA Rail
ACE Train
Capitol Corridor
City Operated Transit
Paratransit
Other (please specify)

12. Bike/Walk
*1. In a typical week, do you bike or walk to work at least once?
Yes
No

13. Bike/Walk
1. How many DAYS a week do you bike to work?
(please enter a number)

2. How many DAYS a week do you walk to work?
(please enter a number)

14. Telecommute

1. If you telecommute:
How many DAYS do you telecommute in a typical week?
(please enter a number)
If you do not telecommute, leave this question blank.

15. Commute in Base Year
Please provide the following information regarding your commute in 2005.

*1. Did you work for us in 2005?
Yes
No

16. Commute in Base Year
Please provide the following information regarding your commute in your base year.

*1. In 2005, did you typically commute by the same mode(s) as you do now?
Yes
No

17. Commute in Base Year
Please provide the following information regarding your commute change.

1. Why did you change your commute mode?

18. 2005 Daily Commute
Please provide the following information regarding your 2005 daily commute.

*1. In 2005, did you typically drive to work alone at least once a week?
Yes
No

19. Drive Alone
*1. In 2005, how many DAYS a week did you typically drive alone?
(please enter a number)

*2. In 2005, how many MILES a day did you typically drive TO WORK ONLY?
(please enter a number)

20. Carpool
*1. In 2005, did you carpool at least once in a typical week?
Yes
No

21. Carpool
*1. In 2005, how many DAYS did you typically carpool in a week?
(please enter a number)

*2. In 2005, how many MILES did you typically drive TO WORK when you carpooled?
(please enter a number)

*3. In 2005, how many DAYS in a typical week were you the driver of your carpool?
(please enter a number)

22. Public Transit
*1. In 2005, did you typically take public transit to work at least once a week?
Yes
No

23. Public Transit
*1. In 2005, how many days in a typical week did you take public transit TO WORK?
(please enter a number)

2. In 2005, what type of public transit did you take TO WORK?
SamTrans
BART
VTA Bus
VTA Rail
ACE Train
Capitol Corridor
City Operated Transit
Paratransit
Other (please specify)

24. Bike/Walk
*1. In 2005, did you typically bike or walk to work at least once a week?
Yes
No

25. Bike/Walk
1. In 2005, how many DAYS did you typically bike to work in a week?
(please enter a number)

2. In 2005, how many DAYS did you typically walk to work in a week?
(please enter a number)

26. Telecommute
1. If you telecommuted in 2005:
How many DAYS in a typical week in 2005 did you telecommute?
(please enter a number)
If you did not telecommute in 2005, leave this question blank.

27. Commute Preference Information
Please answer the following questions regarding your CURRENT commute.

1. Why have you chosen your current commute mode?

2. Would you consider taking any of the following transportation modes? (check all that apply):
Public Transportation
Carpooling
Vanpooling
Bicycling
Walking
Other (please specify)

*3. Is there a transit route that you would use to commute by public transit?
Yes
No

4. If no to question 3, please explain why not.

5. If you drive alone, which, if any, of the following benefits would encourage you to take alternative forms of transportation? (check all that apply)
Vanpool/carpool incentives
Pre-tax transit checks
Parking cash-out (reimbursement to give up your parking spot)
Improved transit options
Improved walking routes/conditions
Telecommuting option
Free/inexpensive shuttle
Free public transit benefit
Subsidizing bicycle purchase
Improved bike routes/conditions
Better information about my commute options
None of the above
Other (please specify)

28. Comments

1. If you have other concerns or issues related to your commute, or if something we should know about was not captured in any survey questions, please describe below.

29. Thank You
Thank you for responding to this survey!

C.3 Paper Employee Commute Survey

<Insert Logo Here>

< Jurisdiction name> Employee Commute Survey

<Date>:

To all of our employees:

As you may be aware, *<local government name>* is actively working to reduce its impact on the environment. As part of this effort, we are collecting information on our employee's commuting patterns and preferences. This will help us to better understand what impact our employees' commutes are having on climate change *and* to provide ways to make your commute easier and less expensive.

Please take 15 minutes to fill out this survey created by ICLEI-Local Governments for Sustainability. **Please complete the survey by *<due date>* and return to *<name>* in the *<department>*.**

This survey is completely anonymous. We will not be collecting or reporting any individual responses.

If you have any questions regarding the survey, please feel free to contact me at *<phone number>.*

Thank you very much,

<Your name>

< *Jurisdiction name*> Employee Commute Survey

Unless otherwise indicated, all questions refer to a one-way commute to work only. Please do not include any traveling you do during work hours (e.g., meetings, site visits, etc). Asterisks (*) indicate questions that require an answer.

A. Commuter Background Information

1. About how many miles do you live from work?
   _____

2. What city/town do you live in?
   _____

* *3.* If you drive to work, what type of vehicle do you usually drive? (check one) If you don't drive to work, skip to Section B.

❑ Full size auto ❑ Compact/hybrid ❑ Heavy truck

❑ Mid size auto ❑ SUV/Pickup ❑ Other_____

* 4. What year was your vehicle manufactured?
   _____

* 5. What type of fuel does your vehicle use? (if biodiesel or ethanol, specify grade)_____

B. Estimate Your Current Commute for a typical work week.

* 1. Please enter below the number of days per week you use each type of commute mode and the number of miles you travel each day ***to work only*** in a typical week:

Commute Mode	Drive Alone	Carpool	Vanpool	Public Transit	Bike	Walk	Other (specify)
Days per week you travel *to work* by this mode (max 7)							
Miles Traveled *to work per day* in this mode							

2. How much does your ***round trip*** commute cost per week?
   $_____

3. How many minutes does your commute to work typically take?
   _____

4. If you take public transit, what transit agency do you use?
   _____

*5. If you carpool to work, how many days in a typical week are you the driver?
   _____

6. How many days do you telecommute in a typical week?

_____

C. Employment Information (check one answer for each question)

1. Are you a full time or part time employee? ❑ Full ❑ Part
2. Do you typically travel to work between 6-9 a.m.? ❑ Y ❑ N
3. Does your position allow you to have flexible hours or to telecommute? ❑ Y ❑ N
4. What department do you work for?

_____

5. **D. Your Commute *in 2005***

*1. Did you work for us in 2005? ❑ Y ❑ N

*2. If yes to Q.1, did you typically commute by the same mode(s) as you do now? ❑ Y ❑ N

*3. If no to Q.2, please enter the number of miles you traveled (*to work only*) in a typical week in 2005 below*:*

Commute Mode	Drive Alone	Carpool	Vanpool	Public Transit	Bike	Walk	Other
Days per Week (max 7)							
Miles Traveled *to Work* per Day							

If you commute differently now than in 2005, why did you change your commute mode?

_____

E. <u>Current</u> Commute Preference Information

1. Why have you chosen your <u>current</u> commute mode?

_____

2. Would you consider taking any of the following transportation modes?(check all that apply):

❑ Carpooling ❑ Vanpooling ❑ Bicycling

❑ Public transit ❑ Walking ❑ Other_____

3. a. Is there a transit route that you would use to commute by public transit? ❑ Y ❑ N

b. If not, please explain:

_____

_____

4. If you drive alone, which, if any, of the following benefits would encourage you to take alternative forms of transportation? (check all that apply)

- ❑ Vanpool/carpool incentives
- ❑ Free/inexpensive shuttle
- ❑ Pre-tax transit checks
- ❑ Free public transit benefit
- ❑ Parking cash-out (reimbursement to give up your parking spot)
- ❑ Subsidized bicycle purchase
- ❑ Improved transit options
- ❑ Improved bike routes/conditions
- ❑ Improved walking routes/conditions
- ❑ Better information about my commute options
- ❑ Telecommuting option
- ❑ Other_____

5. Other comments?

_____

_____

Appendix D: Government-Generated Solid Waste Methodology

Emissions from the waste sector are an estimate of methane generation that will result from the anaerobic decomposition of all organic waste sent to landfill in the base year. It is important to note that although these emissions are attributed to the inventory year in which the waste is generated, the emissions themselves will occur over the 100+ year timeframe that the waste will decompose. This frontloading of emissions is the approach taken by EPA's Waste Reduction Model (WARM). Attributing all future emissions to the year in which the waste was generated incorporates all emissions from actions taken during the inventory year into that year's greenhouse gas release. This facilitates comparisons of the impacts of actions taken between inventory years and between jurisdictions. It also simplifies the analysis of the impact of actions taken to reduce waste generation or divert it from landfills.

D.1 Estimating Waste Tonnages from Government Operations

Like most local governments, San Carlos does not directly track the amount of waste generated from its operations. Therefore, to estimate the amount of waste generated, ICLEI worked with Allied Waste, the hauler of waste for San Carlos and the South Bayside Waste Management Authority (SBWMA). The amount of waste was estimated by compiling pick-up accounts owned by the City. Garbage trucks do not weigh waste at each pick-up, therefore, it is not possible to directly track disposal figures in mass per facility. Mass of waste generation was estimated using volumetric container size (gallons, yards, etc.) data, along with pick-up frequency and average fill of containers. These data produced a comprehensive annual volumetric figure, which was then converted to mass using standard conversion factors supplied by the California Integrated Waste Management Board (CIWMB). Estimated waste *generation* was converted to final *disposal* (quantity sent to landfill) by applying average waste diversion percentages for each account. Where applicable, self-haul waste (waste brought directly from the local government to landfills) was included as part of this total.

D.2 Emissions Calculation Methods

As some types of waste (e.g., paper, plant debris, food scraps, etc.) generate methane within the anaerobic environment of a landfill and others do not (e.g., metal, glass, etc.), it is important to characterize the various components of the waste stream. Waste characterization for government-generated solid waste was estimated using the CIWMB's 2004 statewide waste characterization study.[26]

Most landfills in the Bay Area capture methane emissions either for energy generation or for flaring. EPA estimates that 60 percent to 80 percent[27] of total methane emissions are recovered at the landfills to which the City sends its waste. Following the recommendation of LGOP, ICLEI adopted a 75 percent methane recovery factor.

Recycling and composting programs are reflected in the emissions calculations as reduced total tonnage of waste going to the landfills. The model, however, does not capture the associated emissions reductions in "upstream" energy use from recycling as part of the inventory.[28] This is in-line with the "end-user" or "tailpipe" approach taken throughout the development of this inventory. It is important to note that, recycling and composting programs can have a significant impact on greenhouse gas emissions when a full lifecycle approach is taken. Manufacturing products with recycled materials avoids emissions from the energy that would have been used during extraction, transporting and processing of virgin material.

D.2.1 Methane Commitment Method

CO_2e emissions from waste disposal were calculated using the methane commitment method outlined in the EPA WARM model. This model has the following general formula:

$CO_2e = W_t * (1-R)A$

Where:
Wt is the quantify of waste type "t"
R is the methane recovery factor,
A is the CO2e emissions of methane per metric ton of waste at the disposal site (the methane factor)

While the WARM model often calculates upstream emissions, as well as carbon sequestration in the landfill, these dimensions of the model were omitted for this particular study for two reasons:

This inventory functions on an end-use analysis, rather than a life-cycle analysis, which would calculate upstream emissions), and this inventory solely identifies emissions sources, and no potential sequestration "sinks."

26 CIWMB Waste Characterization Study-Public Administration Group available at http://www.ciwmb.ca.gov/WasteChar/BizGrpCp.asps.
27 AP 42, section 2.4 Municipal Solid Waste, 2.4-6, http://www.epa.gov/ttn/chief/ap42/index.html
28 "Upstream" emissions include emissions that may not occur in your jurisdiction resulting from manufacturing or harvesting virgin materials and transportation of them.

Appendix E: Conducting a Monitoring Inventory

The purpose of this appendix is to assist City staff in conducting a monitoring inventory to measure progress against the baseline established in this inventory report. Conducting such an inventory represents milestone five of the Five-Milestone process, and allows a local government to assess how well it is progressing toward achieving its emissions reduction targets.

This inventory was conducted by ICLEI in conjunction with Brian Moura, Assistant City Manager at San Carlos, who served as the lead data gathering coordinator for the inventory. To facilitate a monitoring inventory, ICLEI has documented all of the raw data, data sources, and calculation methods used in this inventory. Future inventories should seek to replicate or improve upon the data and methods used in this inventory. Wherever possible, however, ICLEI strongly recommends institutionalizing internal data collection in order to be able to meet the recommended methods outlined in LGOP.

E.1 ICLEI Tools for Local Governments

ICLEI has created a number of tools for San Carlos to use to assist them in future monitoring inventories. These tools were designed specifically for the Silicon Valley Climate Protection Partnership, and comply with the methods outlined in LGOP. These tools are designed to work in conjunction with LGOP, which is, and will remain, the primary reference document for conducting an emissions inventory. These tools include:

- A “master data sheet” that contains most or all of the raw data (including emails), data sources, emissions calculations, data templates, notes on inclusions and exclusions, and reporting tools (charts and graphs and the excel version of LGOP reporting tool).
- A copy of all electronic raw data, such as finance records or Excel spreadsheets.
- LGOP reporting tool (included in the master data sheet and in Appendix B) that has all activity data, emissions factors, and methods used to calculate emissions for this inventory.

- Sector-specific instructions that discuss the types of emissions, emissions calculations methods, and data required to calculate emissions from each sector, as well as instructions for using the data collection tools and calculators in the master data sheet.
- The appendices in this report include detailed methodologies for calculating emissions from Scope 3 employee commute and government-generated solid waste, as well as two versions of the employee commute survey.

It is also important to note that all ICLEI members receive on-demand technical assistance from their ICLEI liaison, which local staff should feel free to contact at any point during this process.

E.2 Relationship to Other Silicon Valley Climate Protection Partnership Inventories

While the emissions inventories for the 27 participating local governments were conducted simultaneously using the same tools, a local government operations inventory is based on data specific to each local government's operations. For this reason, data must be collected internally within each local government, and the availability of data (and thus emissions estimation methods) will vary between local governments.

That said, local governments in the Silicon Valley Climate Protection Partnership may benefit by cooperating during the re-inventorying process. For example, by coordinating inventories, they may be able to hire a team of interns to collectively perform the inventories – saving money in the process. In addition, local staff may be able to learn from each other during the process or conduct group training sessions if necessary. As a whole, the Silicon Valley Climate Protection Partnership provides the basis for a continuing regional platform for climate actions, and ICLEI recommends taking advantage of this opportunity during all climate actions, including conducting future greenhouse gas emissions inventories.

E.3 Improving Emissions Estimates

One of the benefits of a local government operations inventory is that local government staff can identify areas in their current data collection systems where data collection can be improved. For example, a local government may not directly track fuel consumption by each vehicle and instead will rely upon estimates based upon VMT or purchased fuel to calculate emissions. This affects both the accuracy of the emissions estimate and may have other implications for government operations as a whole.

During the inventory process, ICLEI and local government staff identified the following gaps in data that, if resolved, would allow San Carlos to meet the recommended methods outlined in LGOP in future inventories.

- Direct tracking of refrigerants recharged into stationary HVAC and refrigeration equipment by refrigerant type

- Direct tracking of fire suppressants recharged into fire suppression equipment by suppressant type
- Direct tracking of refrigerants recharged into vehicles in the vehicle fleet by refrigerant type
- Odometer readings of individual vehicles (to calculate vehicle miles traveled)
- Improved mechanisms for tracking and storing data on fuel consumption per fuel type and department if possible
- Fuel consumption by mobile equipment
- Fuel consumption by back-up generators
- Government generated waste data by ton and facility (not relying as much on volumetric data – see Appendix D.1).

ICLEI encourages staff to review the areas of missing data and establish data collection systems for this data as part of normal operations. In this way, when staff are ready to re-inventory for a future year, they will have the proper data to make a more accurate emissions estimate.

E.4 Conducting the Inventory

ICLEI recommends the following approach for Silicon Valley Partnership local governments that wish to conduct a monitoring inventory:

Step 1: Identify a Climate Steward

This steward will be responsible for the jurisdiction's climate actions as a whole and could serve as an ICLEI liaison in all future climate work. In the context of a monitoring inventory, the steward will be responsible for initiating discussions on a new inventory.

Step 2: Determine which Sectors to Inventory

There are many ways to determine which sectors apply to a local government's operations, but the easiest to review will be LGOP Standard Report, which is located both in Appendix B and in the master data sheet. This document clearly delineates which sectors will need to be inventoried within a local government's operations and which LGOP sectors do not apply to a jurisdiction.

Step 3: Gather Support: Identify Data Gathering Team and Leads

Coordination and acceptance among all participating departments is an important factor in coordinating a successful inventory. To that end, the inventory coordinator should work with the city/town/county administrator to identify all staff who will need to be part of the inventory. To facilitate this process, ICLEI has documented all people associated with the inventory in the master data sheet—these names are located in the final completed data form for each sector. Once this team has been identified, the inventory coordinator should hold a kickoff meeting with the

administrator, all necessary staff, and relevant department heads which clearly communicates the priority of the inventory in relationship to competing demands. At this meeting, the roles of each person, including the inventory coordinator, should be established.

Step 4: Review Types of Emissions and Available Methodologies for Applicable Sectors

Local staff should then review LGOP and the instructions documents provided through this inventory to better understand the types of emissions for each sector (for example, within Mobile Emissions, CO_2 emissions and CH_4/N_2O emissions represent two different data requirements and emissions calculations methodologies). Each emissions type may have more than one possible estimation methodology, and it is important that the inventory coordinator understands all possible methodologies and be able to communicate this to all parties assisting in the data gathering.

Step 5: Review Methodologies Used for the 2005 Inventory to Determine Data to Collect

In order to duplicate or improve upon the methods used in this inventory, local staff should again review the methods used for this inventory—these methods are again located in Appendix B—and within the master data sheet. These methods reflect the data limitations for each local government (as many local governments could not obtain data necessary to meet the recommended methods in LGOP). Wherever possible, these methods should be duplicated or, if it is possible, replaced with the recommended methods outlined in LGOP. Using these methodologies, staff will determine what data needs to be collected and communicate this effectively to the data gathering team.

Step 6: Begin Data Collection

With the exception of electricity and natural gas for stationary sources, all data collection will be internal. To obtain stationary source energy consumption data, staff will need to contact the ICLEI representative to determine who the contact is for PG&E data (other utilities will need to be contacted directly).

Step 7: Use the Data Forms as a Resource During Data Gathering

A number of questions will come up during the data gathering process that may be difficult to answer. ICLEI has attempted to capture all of the questions that arose during the 2005 inventory and how they were addressed through the master data sheet. Within the master data sheet, staff should review the raw data, working data, and completed data forms to review how raw data was converted to final data, and also to review any notes taken by ICLEI staff during the 2005 inventory process.

For example, reviewing the stationary sources PG&E data within the master data sheet will allow local staff to review how individual accounts were separated into each category and which counts may have been excluded from the inventory.

Step 8: Use Emissions Software to Calculate Emissions

ICLEI has provided the staff lead on the 2005 inventory with a backup of the software used to calculate many of the emissions included in this report. Staff should use this (or more current ICLEI software) to calculate emissions by inputting the activity data into the software. ICLEI staff and ICLEI trainings are available to assist local government staff in calculating emissions.

Step 9: Report Emissions

The master data sheet also contains the LGOP Standard Reporting Template, which is the template adopted by ARB as the official reporting template for government operations emissions inventory. This tool, as well as the charts and graphs tool provided by ICLEI can be used to report emissions from government operations. Also, local government staff should utilize this narrative report as guide for a narrative report if they so choose.

Step 10: Standardize and Compare to Base Year

Conducting a monitoring inventory is meant to serve as a measuring point against the baseline year represented in this report. In order to make a more accurate comparison, it is necessary to standardize emissions from stationary sources based upon heating and cooling degree days (staff can use a ratio of heating /cooling degree days to standardize across years).

In addition, it is important, when comparing emissions across years, to clearly understand where emissions levels may have changed due to a change in methodology or due to excluding an emissions source. For example, if the default method was used to estimate refrigerant leakage in 2005 (this method highly overestimates these emissions), and the recommended method was available in a monitoring year, this would appear as a dramatic reduction in these emissions even though actual leaked refrigerants may be similar to the base year. Changes such as these should not be seen as progress toward or away from an emissions reduction target, but emissions estimates should be adjusted to create as much of an apples-to-apples comparison as possible. If such an adjustment is not possible, staff should clearly note the change in methodology between years when comparing emissions.

Appendix F:

2009 Annual Report to Council on Green Programs and Climate Change

CITY OF SAN CARLOS

COUNCIL/RDA MEETING DATE: June 8, 2009

ITEM TITLE: Report to Council – Annual Report on Green Programs and Climate Change

Background

For a number of years, the City of San Carlos was active in green programs including recycling (at City Hall and in the community) and in one of the early solar projects in the County. In May 2007, the City Council discussed and approved an expansion of activities in the Green Programs and Climate Change arenas. Since that time, Staff has prepared annual updates for the City Council on these activities. It is now time to review some of the highlights of our work in this area during the past year.

Multi-Tiered Approach

Due to both the scope of the challenge in this area and the City's challenging General Fund Budget deficit, our work in this area has involved both work at City Hall as well as partnering with other groups in the City (Chamber of Commerce, Local Businesses and San Carlos Green), the County (SBWMA, Recycle Works, Green Business Program, San Mateo County Energy Watch, C/CAG and Local Utilities), Silicon Valley (Joint Venture: Silicon Valley), the Bay Area (ABAG, Bay Area Regional Air Quality Board) and Other Resources (ICLEI). The result continues to be a very low cost program that has produced a number of successes one that has received a number of inquiries from other cities around the State as a potential model for their efforts.

Highlights from the City's Green Programs & Climate Protection Projects

While this is not a complete list, here are some of the highlights of our work in the Green Programs and Climate Protection area over the past year:

City of San Carlos Programs

During the past year, the City continued its work in the area of Green Programs and Climate Change. Many accomplishments occurred in the past year including:

- Green Section of City Web Site and Green eNewsletters
- Energy Efficiency Audits of City Buildings – ABAG Energy Watch and PG&E
- Significantly Upgraded the Construction & Demolition (C&D) Recycling Program
- 2 Year Extension of the City's Good Faith Effort program to meet State recycling requirements under AB 939 and SB 1018
- Hired a Green Janitorial Contractor for City Buildings
- Creek Cleanup & Material Pick Up Days (September 2008)

- City Council Approval of Green Housing Development at Cherry & Chestnut
- Monthly Composting Workshops with Recycle Works & San Carlos Green
- Completion of Community-Wide Greenhouse Gas Inventory
- Work on Agency Greenhouse Gas Inventory (completion in Summer 2009)
- Staffing the San Carlos Climate Action Plan Subcommittee
- Work with Countywide, Regional and Local Programs

South Bayside Waste Management Authority (SBWMA)

The City works on Solid Waste (Garbage and Recycling) programs as well as operation of the Shoreway Transfer Station and Recyclery in San Carlos with the SBWMA. Accomplishments:

- City eWaste Events (July & November 2008); Next Event in August 2009
- Continued success of Cell Phone & Battery Recycling Started in San Carlos (now over 50,000 pounds of materials collected in service area)
- Compost Giveaways at Crestview Park
- City Council Selection of Norcal Waste Systems – Enhanced Solid Waste Services
- Approval of Use Permit to Rebuild & Enhance Shoreway Transfer Station & Materials Recovery Facility (MRF)
- Green Design Features in New Shoreway Center to Qualify for LEED Certification
- Selection of South Bay Recycling to Operate Install Equipment & Operate Single Stream Recycling Facility on Shoreway Road
- Progress on Shoreway Bonds to Finance Upgrade of Shoreway Transfer Station & Materials Recovery Facility (MRF)
- Launched Weekly Food Scraps & Yard Clippings Program (Feed the Pail, Feed the Planet) in March 2009
- Exploring Mandatory Commercial Recycling Program in San Carlos ahead of State Requirements from California Air Resources Board (CARB)
- Considering Household Waste (HHW) Collection Program in San Carlos
- Planning for Norcal's "Recycling Blitz" for Commercial & Multi-Family Residential Accounts in San Carlos to Accelerate Recycling Activity (launches next June)

Chamber of Commerce & San Carlos Business Community

The Chamber of Commerce formed a Green Business Committee that is meeting monthly and developing a program for local businesses. Accomplishments:

- Monthly "Green Scene" column in the Chamber of Commerce newsletter
- Spotlighting San Carlos Businesses with Green Practices in the Chamber Newsletter
- Green Business Trade Show with Sustainable San Mateo County
- Established the Green Business of the Year Awards at the Annual Chamber Dinner
- Working with the City to Explore a Mandatory Commercial Recycling Program
- **REI San Carlos** – Installed largest Solar Power System in the City
- **A+ Japanese Auto** – First Silicon Valley Auto Facility to offer Plug-In conversions of Hybrid Vehicles including the Toyota Prius
- **Kelly Moore Paint** – Certified Green Business, Introduced Green Paints and Product Lines & Won Green Awards
- **Level 3 Communications** – Green modifications to their site saved thousands of gallons of water each month and Green Business of the Year (Large)
- **Held & Lau DDS** – Certified Green Business & Green Business of the Year (Small)

San Carlos Green (Community Non-Profit Group - San Carlos Residents)
San Carlos Green is a community based non-profit group. They are leading a group of San Carlos resident volunteers focused on green activities in the community. Key Programs include:

- Continued work on Vista Park with Parks and Recreation Department & local residents
- San Carlos Green eWaste Event (October 2008)
- Involvement in Program Marketing & Design for Weekly Food Scraps Program
- Community outreach at events including Hometown Days and Art & Wine Faire

San Mateo County Green Business Program (San Carlos Businesses)
County Supervisor Mark Church and San Mateo County Recycle Works brought the Bay Area Green Business Program to San Carlos in the summer of 2007. Since then:

- 20 San Carlos firms have earned Certified Green Business status
- One of every 3 Certified Green Businesses in the County are in San Carlos
- 30 additional San Carlos firms have now applied for Certified Green Business status
- **Piacere Restaurant & Pebbles-Piazza Floor and Windows** – 2 Certified Green Businesses in San Carlos – were featured in a video that encourages more small businesses to become Certified Green Businesses in San Carlos and San Mateo County
- The program is exploring a Certified Green Program for local schools
- Also under development is a way to calculate the Carbon Footprint reduction the program is having by business and by City

San Mateo County Energy Watch
This is a new program started by San Mateo County and their Recycle Works group. It replaces ABAG's Bay Area Energy Watch program in this county and will offer several excellent programs to San Carlos and its residents and businesses. Projects include:

- Transfer of the ABAG Energy Watch audits of 4 key City Buildings (City Hall, Library, Youth Center, Adult Community Center) to SMC Energy Watch for potential energy saving projects, rebates and implementation
- Referral of 3 Green Business Program applicants in San Carlos to energy efficiency firms to help with efforts to modernize, save energy and cut operating costs
- A new program for local businesses to become more energy efficient that will be introduced to the San Carlos business community through the Chamber of Commerce's Green Committee
- Future programs that may include residential energy audits and residential and business energy efficiency programs, rebates and funding

Joint Venture: Silicon Valley Climate Protection Initiative
Joint Venture: Silicon Valley's Climate Protection Initiative for all 42 cities and counties in Silicon Valley continues to be a valuable resource. The Assistant City Manager is a member of the program's Executive Committee. Accomplishments:

- Assisting with the completion of the Community-wide Greenhouse Gas (GHG) Inventory along with ICLEI, Bay Area Air Quality Management District (BAAQMD)
- Discount program for the calculation of Agency GHG inventories coordinated with C/CAG, ICLEI and BAAQMD

- Updates on Climate Change legislation and regulations affecting cities including AB 32 implementation, SB 375, AB 811 and SB 279 with support from the League of California Cities and CSAC
- Overviews on Green technologies and options including Solar Systems & Energy Efficiency
- Exploring Solar Power Purchase Agreements (PPAs) for City Buildings
- Pilots of LED Streetlights and Safety lighting in several cities

Climate Action Plan

Using a $75,000 grant from the Bay Area Air Quality Management District (BAAQMD), the City was able to integrate Greenhouse Gas emission reduction and climate change strategies into the Environmental Management Element of the General Plan as well as develop a Climate Action Plan that will be integrated with the upcoming City General Plan. The City worked with a three member Climate Action Plan Subcommittee of the General Plan Advisory Committee (Don Cook, Suzanne Emerson and Michelle Margiotta) to develop the first Climate Action Plan (CAP) for San Carlos. The effort was led by Deborah Nelson, Planning Manager with support from the Assistant City Manager Brian Moura and Michael McCormick and Jillian Rich from PMC, a planning consulting firm. Results to date:

- The CAP subcommittee worked through an initial list of 125 measures to reduce the Carbon Footprint in San Carlos
- A Community Workshop on the Climate Action Plan was held last September and residents helped fine tune the list of proposed measures
- The Draft Climate Action Plan was completed and posted on the City's Web Site. It includes 21 reduction goals and 39 reduction measures aimed at reducing the City's GHG levels to 15% below the 2005 levels by the year 2020.
- High interest in the San Carlos Draft plan has led to presentations on the plan to groups including city and county officials in Monterey County on Earth Day and the Silicon Valley Climate Protection Task Force and the BAAQMD Climate Action Leadership Summit
- Recently the San Carlos Climate Action Plan won an Award of Merit from the Northern California Chapter of the American Planning Association (APA)
- The development and public involvement portion of the work on the CAP will soon be featured as a case study by the Institute of Local Government (ILG).
- The Draft Climate Action Plan will be reviewed by the Planning Commission and City Council this July prior to adoption, in conjunction with the General Plan, in October.

The Year Ahead

San Carlos has accomplished quite a bit in the Green Programs and Climate Change area since this program was expanded in 2007. The result has been significant progress towards the Council's direction that we pursue a greener future for San Carlos. Staff looks forward to working with residents, businesses and the partners mentioned in this report to continue to progress in this area.

Respectfully submitted,

Brian Moura, Assistant City Manager

Approved for submission by:

Mark Weiss, City Manager