



**COUNTY OF PLACER**  
**Community Development/Resource Agency**

Michael J. Johnson, AICP  
Agency Director

**PLANNING**  
**SERVICES DIVISION**

Paul Thompson, Deputy Director

**MEMORANDUM**

**TO:** Honorable Board of Supervisors

**FROM:** Michael J. Johnson, AICP  
CD/RA Director

**DATE:** September 13, 2010

**SUBJECT:** Green Community Program

**ACTION REQUESTED**

The purpose of this report is to provide the Board with the results of the *Green Communities Program Phase I, County Operational Greenhouse Gas Emissions Inventory*, and to request that the Board execute a memorandum of understanding (MOU) with the Sierra Business Council to continue to participate in the *Green Communities Program* and to assist the Sierra Business Council in Phase II of that program, which includes the preparation of community-wide greenhouse gas emissions inventory.

**BACKGROUND**

The *Green Communities Program* is a multi-phase program approved and overseen by the California Public Utilities Commission (CPUC) and administered by Pacific Gas and Electric Company (PG&E) using rate payer funds. The program is a collaborative effort to provide innovative energy efficiency and climate change solutions for local governments and communities in the Sierra Nevada region within PG&E service areas. The first phase of the Program is complete, which included a *2005 Government Operations Greenhouse Gas Emissions Inventory* for Placer County (see Attachment 1). Over the last year, staff has coordinated with Sierra Business Council (SBC) on quantifying the County's greenhouse gas emissions and has developed a County operations greenhouse gas inventory, which helps identify opportunities for energy savings and related operational cost savings, as well as serving as background information for the County's future planning efforts.

With a growing population and increasing demand for energy, California has set goals for reducing emissions related to the generation and use of energy and for reducing dependence on fossil fuels. In response to these goals, CPUC has refocused ratepayer-funded energy efficiency programs on achieving a long-term transformation in the way Californians use energy. The CPUC has long-recognized the unique role of local governments in fostering innovation and has directed utilities to develop programs that take advantage of the expertise of local governments in promoting the pursuit of energy efficiency and the reduction of green house gas emissions (GHGE). Accordingly, the *Green Communities Program* was established by PG&E and will be implemented in the Sierra Nevada region by the Sierra Business Council.

The purpose of the *Green Communities Program* is to engage, train and assist local governments to prepare greenhouse gas emissions inventories. This program will offer a workshop training series at no cost to local government participants. Program participants will be paired with trained interns to provide

additional staffing needed to conduct data collection, analysis, and inventory development. Local government program participants will also have free access to a software program, which will provide the participant with streamlined data collection and calculations of their inventory of emissions.

The *Green Communities Program* is a multiphase program. As noted above, the first phase of the program was to assist local governments to inventory greenhouse gas emissions from their municipal operations. That phase of the program has been finalized and a *2005 Government Operations Greenhouse Gas Emissions Inventory for Placer County* has been prepared. The second phase of the Program includes conducting a community-wide greenhouse gas emissions inventory. The Sierra Business Council is funded to assist 20 local governments in the Sierra Nevada region for the second phase of the program, and has selected Placer County as one of the 20 local governments to assist. Depending on further funding, SBC may also proceed with a third and final phase, which would include the development of or coordinated assistance in preparing Climate Action Plans for local governments.

The ultimate goal of the *Green Communities Program* is to reduce energy consumption and greenhouse gas emissions in the Sierra Nevada, while promoting economic development, social fairness, and long-term environmental quality. Through the implementation of several energy efficiency programs, Sierra Business Council has set specific goals related to energy conservation in the region and seeks to address and achieve these goals through a set of strategies that embrace and reinforce the broader sustainability objectives.

Conducting emissions inventories is consistent with Assembly Bill 32 and is favored by the State Attorney General's office as a way that local governments can begin to address climate action change at the land use planning level. With the passage of Senate Bill 97 in 2007, as well as the 2010 CEQA Guidelines Update, climate change has been considered an environmental impact within the scope of CEQA. Emission inventories will help with the County's CEQA analysis, while also demonstrating that the County is making a good faith effort to evaluate and mitigate impacts on climate from planned development.

Participating in the *Green Communities Program* and conducting emissions inventories will also assist the County in future planning efforts, such as the development of a Climate Action Plan and the update of the County's General Plan. Emissions inventories can provide the County with baseline data for which the County can establish community-wide emission reductions through a broad range of integrated goals, objectives, policies and implementation measures.

#### **PHASE ONE**

The first phase of the Green Communities Program provides Placer County with an inventory of the greenhouse gas emissions resulting specifically from the County's government operations (see Attachment 1). The inventory addresses where and what the quantity of emissions are generated through the County's activities.

The purpose of the first phase of the program was to conduct emissions inventories to help to identify opportunities for energy savings and related operational cost savings for the County. An end product of the inventory process is a "Master Data Workbook", which contains all of the energy data from County operations for a chosen year. The *2005 Government Operations Greenhouse Gas Emissions Inventory* prepared for Placer County can be viewed as an energy audit tool for the County, pointing out where utility usage is highest; therefore a green house gas inventory is directly related to outflow of County funds. The County can use this information to analyze and understand operational inefficiencies, providing a metric for gaining efficiency and lowering energy related costs across the board.

The inventory prepared for the County's operations utilized 2005 as a baseline year. The Report indicates that in 2005, Placer County's greenhouse gas emissions from government operations totaled 26,921 metric tons of carbon dioxide equivalent (CO<sub>2</sub>e). In summary, the results indicate that wastewater treatment, buildings and facilities, and vehicle fleet are the top three contributors to greenhouse gas

emissions resulting from County operations. The County's wastewater treatment plant contribution results in approximately 46 percent of the County's greenhouse gas emissions, and the inventory's narrative report (Attachment 1) notes that this contribution is primarily related to the methane process emissions related to sewage disposal. The County's buildings and facility contribution results in 24 percent, as does the County's vehicle fleet contribution. The inventory's narrative report in Attachment 1 contains further information and breakdown of the results of the County's operational emissions.

The inventory's narrative report also identifies further strategies and next steps that the County can take to reduce greenhouse gas emissions. The next steps outlined in the narrative report include conducting a community-wide greenhouse gas inventory for Placer County, adopt an emissions reduction target for a forecasted year, develop and prepare a Climate Action Plan for the County, implement the Climate Action Plan and monitor progress and report results of the implementation. The inventory's narrative report in Attachment 1 also contains further information on strategies that the County can embark upon to further reduce greenhouse gas emissions. The information contained in the report will also provide a foundation for the County's future preparation of a Climate Action Plan.

## **PHASE TWO**

*Green Communities Program Phase II* will be launched in the fall of 2011. As in Phase I, this program will offer training services to County staff at no cost to the County. SBC will provide an intern who will work with County staff to conduct data collection, analysis, and develop the community-wide inventory. At the program's end, the County will have a greenhouse gas emissions inventory at the community-wide level, quantifying greenhouse gas emissions resulting from five sectors within the community: the built environment, land use (agriculture and forestry), transportation, water and wastewater treatment, and solid waste.

Quantifying such emissions establishes a baseline against which to measure future progress towards emission reduction projects and develops an understanding of the scale of emissions from the various sources within community-wide activities. With a better understanding of the sources of emissions, the County can create policy and implement projects to reduce emissions.

As with the first phase of the *Green Communities Program*, the County will also have the opportunity to utilize the community-wide greenhouse gas emissions inventory as a baseline from which to establish greenhouse gas reduction targets and to develop a Climate Action plan. Co-benefits of the inventory could include lower energy bills for residents, improved air quality, and better land use practices. In addition, completing the community-wide inventory ties into the Phase I inventory effort and demonstrates to the State that the County is moving forward on State emission targets and meeting the State's mandated standards set forth in Assembly Bill 32.

## **FISCAL IMPACT**

The Green Communities Program is funded by California utility customers and administered by PG&E under the auspices of the California Public Utility Commission. Through this effort, the Sierra Business Council will arrange technical tools, professional training, and support for the County to complete a greenhouse gas emissions inventories.

There are no direct costs to the County associated with the development of the emission inventories; however, with the Board's authorization to participate, the County would commit in-kind staff hours to do the following:

- Provide Sierra Business Council with available data related to the inventory;
- Attend training workshops and assist the Sierra Business Council intern in connecting with other key staff that may be necessary for collecting information; and

- Provide any information on the community-wide level and review the inventory final report.

**REQUESTED ACTION**

The Planning Services Division recommends that the Board of Supervisors take the following actions:

1. Direct staff to utilize the information in the *2005 Government Operations Greenhouse Gas Emissions Inventory* for Placer County in Attachment 1 as a foundation for the future preparation of a *Climate Action Plan*;
2. Authorize the Chairman of the Board to execute the Memorandum of Understanding between Placer County and Sierra Business Council.

**ATTACHMENTS:**

- Attachment 1: Placer County 2005 Government Operations Greenhouse Gas Emissions Inventory (Green Communities Program Phase I)
- Attachment 2: MOU with Sierra Business Council: Community-Wide Greenhouse Gas Emissions Inventory (Green Communities Program Phase II)

# Placer County

## 2005 Government Operations

### Greenhouse Gas Emissions Inventory



Photo provided by Placer County

#### **Narrative Report**

Prepared by Kristin York & Paul Wilson

Developed by Sierra Business Council

Supported by Pacific Gas & Electric Company

In collaboration with ICLEI-Local Governments for Sustainability USA

May 2011

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# Credits and Acknowledgements

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PG&E provides comprehensive climate planning assistance to local governments, from providing energy usage data and assistance with greenhouse gas inventories, to training and guidance on climate action plans.

This program is funded by California utility customers and administered by PG&E under the auspices of the California Public Utilities Commission.

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This report was prepared by Kristin York and Paul Wilson, Green Communities Interns at Sierra Business Council. The authors would like to thank Placer County staff for providing much of the insight and local information necessary for the completion of this report.

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# Executive Summary

## The Purpose of Conducting an Inventory

Each day, local governments operate buildings, vehicle fleets, street lights, traffic signals, water systems, and wastewater plants; local government employees consume resources commuting to work and generate solid waste which is sent for disposal. All of these activities directly or indirectly cause the release of carbon dioxide and other greenhouse gases into the atmosphere. This report presents the findings and methodology of a local government operations (LGO) greenhouse gas emissions inventory for Placer County. The inventory measures the greenhouse gas emissions resulting specifically from Placer County's government operations, arranged by sector to facilitate detailed analysis of emissions sources. The inventory addresses where and what quantity of emissions are generated through various local government activities. Through analysis of a local government's emissions profile, the County of Placer can tailor strategies to achieve the most effective greenhouse gas emission reductions.

Strategies by which local governments can significantly reduce emissions from their operations include increasing energy efficiency in facilities and vehicle fleets, utilizing renewable energy sources, reducing waste, and supporting alternative modes of transportation for employees. The benefits of these actions include lower energy bills, improved air quality, and more efficient government operations, in addition to the mitigation of local and global climate change impacts. By striving to save taxpayer money through efficient government operations, Placer County is working to improve government services in a smart and targeted way that will benefit all of the County's residents.

The unique characteristics of Placer County render a situation where risk management and mitigation plans are inevitable. The County is geographically one of the largest in California and spreads from the edge of the Central Valley, east through the foothills and Sierra Nevada to Lake Tahoe and the Nevada border. Approximately half of the County's 969,600 acres are forested including considerable portions of the Tahoe National Forest and Lake Tahoe Basin. The effects of climate change on these diverse regions and communities are of particular interest to Placer County because of growing populations, massive snowpack and watershed resources, dense forests with sequestration opportunities and the heavy transportation through the region. Globally, the average surface temperatures are rising due to intensification of activities that release carbon dioxide and other greenhouse gases into the atmosphere and Placer County will be directly impacted by these changes. Potential impacts of climate change include higher snow levels, reduced snowpack, more severe and frequent storms, increased flooding, loss of critical habitat and ecosystems, more severe heat waves, increased precipitation, extended drought conditions, larger catastrophic wildfires, shortages in water supply, and heightened exposure to vector born diseases.

By conducting this inventory, Placer County is acting now to limit future impacts that threaten the lives and property of Placer County's residents and businesses, make government operations more efficient, and improve the level of service

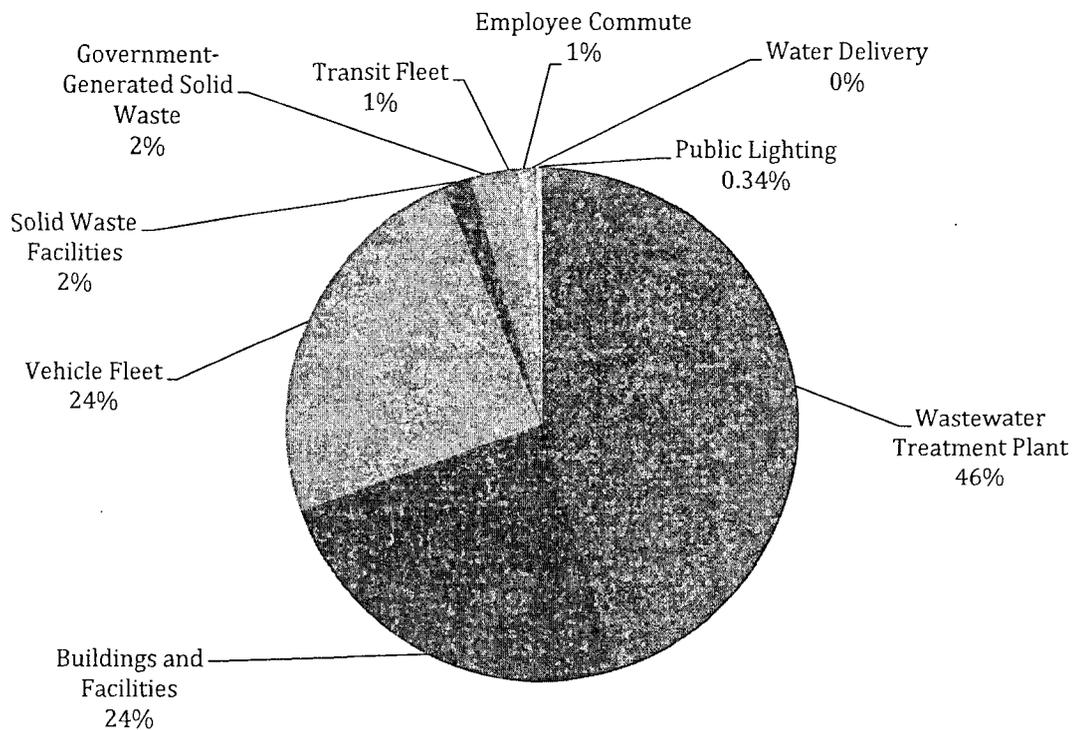
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it offers to the residents of Placer County. This report represents the first step in managing the County's greenhouse gas ("GHG") emissions with a baseline inventory of 2005 emissions from government operations owned and operated by Placer County. Subsequent phases will be planned to perform a community-wide GHG inventory including residential, commercial and industrial sectors as well as pass-through transportation emissions.

## Inventory Results

The following figures summarize the results of the LGO greenhouse gas emissions inventory for Placer County by sector and source. As shown in Figure 1 and Table 1, wastewater treatment (46%), buildings and facilities (24%), and vehicle fleet (24%) are the top three contributors to GHG emissions resulting from County operations. The wastewater treatment contribution is primarily related to the large number of septic systems in the County. Table 1 also includes energy and fuel costs (where available) for each sector. As shown in Figure 2, methane, natural gas and electricity are the sources of the greatest percentage of emissions (45%, 23% and 14% respectively). Methane process emissions are attributed to several sectors, including Solid Waste Facilities, Wastewater Treatment, and Solid Waste generation in the County. Methane also has one of the highest global warming potentials, making it the greatest source of emissions in the County. Table 2 shows, in detail, all of the sources of emissions with associated costs (where available). Table 3 delineates the greenhouse gas components (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, etc.), which are assigned a standard metric of carbon dioxide equivalent (CO<sub>2</sub>e) then combined to describe total emissions for 2005 (26,921 metric tons CO<sub>2</sub>e).

**Figure 1: 2005 Government Operations CO<sub>2</sub>e Emissions by Sector**



**Table 1: Overall Emissions & Costs by Sector**

Sector	Metric Tons CO <sub>2</sub> e	Cost
--------	-------------------------------	------

Wastewater Treatment Plant	12271.91	\$ 301,028.00
Vehicle Fleet	6532.28	\$ 1,789,117.82
Buildings and Facilities	6501.17	\$ 2,679,249.85
Solid Waste Facilities	482.92	\$ 1,793.00
Government-Generated Solid Waste	481.63	N/A*
Transit Fleet	342.57	\$ 368,188.96
Employee Commute	164.79	N/A*
Water Delivery	52.23	\$ 32,451.00
Public Lighting	91.87	\$ 66,913.00
<b>Totals</b>	<b>26,921.37</b>	<b>\$ 5,238,741.63</b>

\*Energy costs included where available (includes utility data and fuel costs)

Figure 2: 2005 Government Operations CO<sub>2</sub>e Emissions by Source

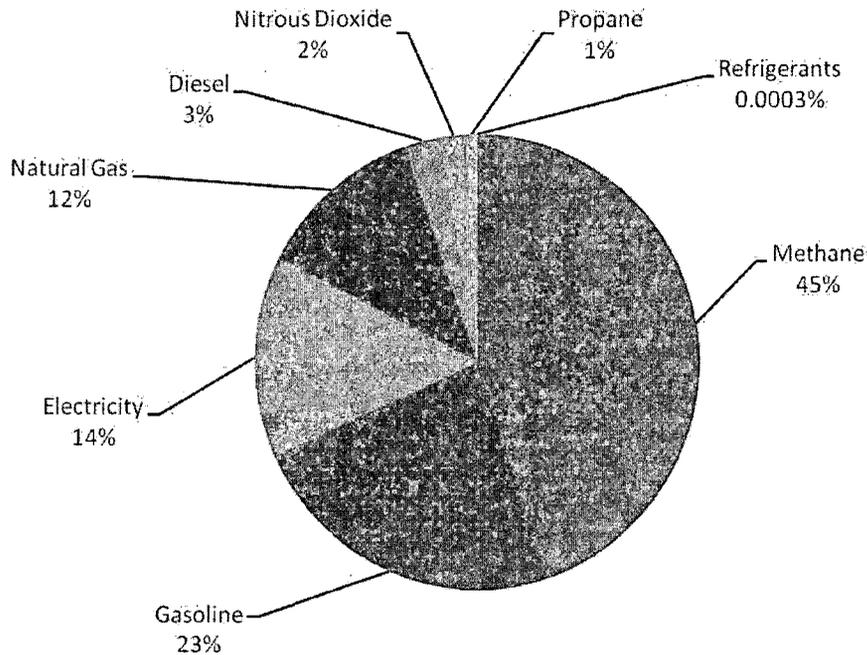


Table 2: Overall Emissions & Costs by Source

Source	Metric Tons CO <sub>2</sub> e	Costs
Methane	12041.71	N/A
Gasoline	6326.26	\$ 1,708,813.00
Electricity	3821.18	\$ 2,286,761.85
Natural Gas	3311.64	\$ 1,000,152.82
Diesel	698.45	\$ 151,251.96
Nitrous Dioxide	505.30	N/A
Propane	216.73	\$ 91,762.00
Refrigerants	0.09	N/A
<b>Totals</b>	<b>26,921.37</b>	<b>\$ 5,238,741.63</b>

Table 3: LGO Protocol Report - Overall Emissions by Scope

<b>Total Emissions</b>
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	CO <sub>2</sub> e	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs
<b>SCOPE 1</b>	22,453.768	10,318.841	0.231	0.085	0.150
<b>SCOPE 2</b>	3,821.181	3,790.042	551.046	1.816	0.000
<b>SCOPE 3</b>	646.419	161.421	22.943	0.010	0.000
<b>INFORMATION ITEMS</b>	578.882	574.206	0.036	0.013	0.000

For more detail on the concepts of scopes, sources, and sectors, and to review more granular data produced through the inventory study, please refer to the full report on the following pages.

## Regional and Local Context

### Climate Change Mitigation Activities in California

Since 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 requires the state to reduce its greenhouse gas emissions to 1990 levels by 2020. The AB 32 Scoping Plan was developed to identify strategies for meeting the AB 32 goal, and was adopted by ARB in December 2008. Among many other strategies, it encourages local governments to reduce emissions in their jurisdictions by 15 percent below current levels by 2020. In addition, it identifies the following strategies that will impact local governance:

- Develop a California cap-and-trade program
- Expand energy efficiency programs
- Establish and seek to achieve reduction targets for transportation-related GHG emissions
- 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
- Reduce methane emissions at landfills
- Preserve forests that sequester carbon dioxide

Other measures taken by the state include 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 legislative and regulatory changes that have significant implications for 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

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and transportation thresholds in CEQA reviews, which may require local governments to account for greenhouse gas emissions when reviewing project applications.

- AB 811 (2007) authorizes 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 375 (2008) revises the process of regional transportation planning by metropolitan planning organizations (MPOs), which are governed by elected officials from local jurisdictions. The statute calls on ARB to establish regional transportation-related greenhouse gas targets and requires the large MPOs to develop regional “Sustainable Communities Strategies” of land use, housing and transportation policies that will move the region towards its GHG target. The statute stipulates that transportation investments must be consistent with the Sustainable Communities Strategy and provides CEQA streamlining for local development projects that are consistent with the Strategy.

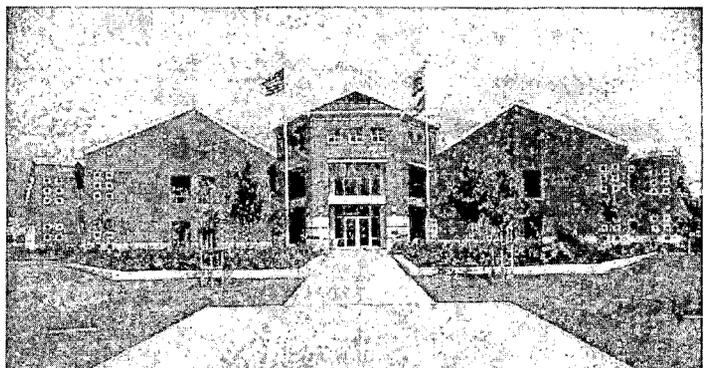
### **Pacific Gas and Electric Company - Sponsored Inventory Project**

With funding from California utility customers under the auspices of the California Public Utilities Commission, and administrative duties generously provided by the Pacific Gas and Electric Company (PG&E), ICLEI - Local Governments for Sustainability was contracted to work with Sierra Business Council to assist in the quantification of greenhouse gas emissions in Placer County and the following other participating communities: Cities of Ione, Jackson,, Plymouth, Sutter Creek, Placerville, Amador City, Auburn, Lincoln, Nevada City and Grass Valley, Town of Loomis, and the Counties of Alpine, Nevada, Plumas, and Sierra. ICLEI is a nonprofit association of local governments that provides information, delivers training resources, organizes conferences, facilitates networking and city-to-city exchanges, carries out research and pilot projects, and offers technical services and consultancy related to climate planning. Throughout 2010, ICLEI provided training and technical assistance to participating regional organizations, interns, and local government staff and facilitated the completion of this report.

### **Climate Change Mitigation Activities in Placer County**

Placer County has taken active and specific measures to address energy efficiency and other GHG reduction issues. The following major initiatives or projects are currently underway in the County:

**Biomass Facility:** In 2007, the Placer County Board of Supervisors created the Biomass Strategic Plan and program to determine the feasibility of removing woody biomass from forestlands in the County and



examined the options for using excess biomass to generate economically sustainable forms of energy or other beneficial products. The County is currently planning to install a new small-scale biomass facility within the Lake Tahoe Basin

region with a scheduled operation date in 2013. The facility will generate 24/7 renewable power for distribution in the Tahoe Basin and provide a demonstration of heat for the building and to melt snow on the roof, road, and sidewalks of the site.

**Energy Efficiency Financing:** To encourage investments in energy efficiency, Placer County sponsors the mPower Placer program for non-commercial properties. The program provides special assessment financing for energy efficiency and renewable energy projects. Loans are repaid through property taxes.

**Comprehensive Recycling Program:** The County operates two Materials Recovery Facilities (“MRF”) through joint powers associations. For jurisdictions contributing to the western MRF a “one big bin” program allows residents to send all trash to the facility and recyclables are sorted on-site. The successful program results in a landfill diversion rate in excess of 30%. In addition, the County’s website has informational support and tips around reduce, reuse, recycle and posts classes on how to compost.

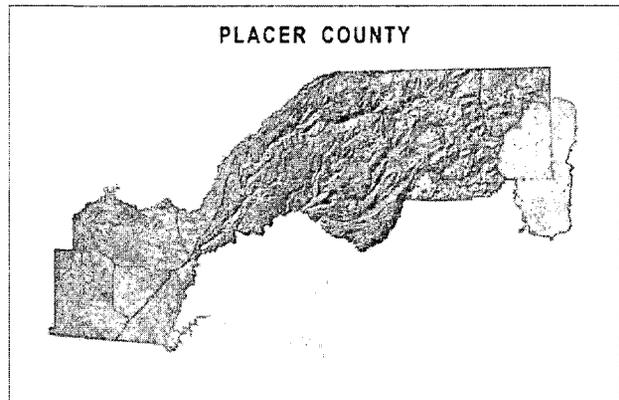
**Resource Efficient Buildings:** Since 2005, the County has embarked on a massive facilities consolidation and upgrade. The facilities strategy was to build the most cost effective, energy efficient buildings within the designated budget. In most cases the new buildings exceed Title 24 guidelines for energy efficiency. For example, the new South Placer jail facility is a LEED Silver building, the County used Energy Efficiency Block Grants to upgrade the lighting and HVAC on 30 separate buildings, and all new projects include water conservation fixtures.

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# Introduction

## Profile – Placer County

Placer County is situated in the northeast portion of the State of California, with elevation ranging from near sea level to over 7,000 feet. Because of the range in altitude, the county's climate zone falls into 11 and 16, however, 90% of the population live in the lower elevations in climate zone 11. Bisected by the Interstate 80, the major east/west corridor in Northern California, Placer County is easily accessible and provides ideal opportunities for growing commuter communities as well as tourism driven



recreation. The western side of the county is anchored by the County seat, Auburn, and the rapidly growing retail commerce city, Roseville. The eastern side of the county features the stunning tourist destination Lake Tahoe and several surrounding ski areas. Placer County is one of the fastest growing counties in the state. Between 2000 and 2010, the population grew from 248,399 to 348,432. County government employs a full-time equivalent staff of approximately 2,300. The County has a total area of 1,503 square miles, of which 1,404 square miles are land and 98 square miles are water. In addition to the primary watershed tributary, the American River, 41% of Lake Tahoe's surface area lies within the Placer County boundary, more than in any of the four other counties that border its shoreline. The County's annual budget for 2004/2005 was approximately \$860 million. The majority of the County's government operations utilize electricity and natural gas distributed by the Pacific Gas and Electric Company (PG&E). Minor amounts of electricity and natural gas are purchased for the eastern slope facilities, including NV Energy, Roseville Electric, Southwest Gas and North Tahoe Public Utility District. Propane for several of the County facilities was purchased from Northern Energy JPA facilities (Western Placer Waste Management Agency's Materials Recovery Facility (MRF), Placer County Water Agency and the Fire District) are not included in the GHG emissions estimates attributed to County-owned operations.

## General Methodology

### Local Government Operations Protocol

A national standard called the Local Government Operations Protocol (LGO Protocol) has been 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 provides accounting principles, boundaries, quantification methods,

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and procedures for reporting greenhouse gas emissions from local government operations. The LGO Protocol forms the basis of ICLEI's Clean Air & Climate Protection Software (CACP 2009), which allows local governments to compile data and perform the emissions calculations using standardized methods.

### Greenhouse Gases and Carbon Dioxide Equivalent

In accordance with LGO Protocol recommendations, CACP 2009 calculates and reports all six internationally recognized greenhouse gases regulated under the Kyoto Protocol (Carbon Dioxide, Methane, Nitrous Oxide, Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride). Emissions summaries found throughout this report also use CACP 2009's ability to combine emissions from the various greenhouse gases into carbon dioxide equivalent, CO<sub>2</sub>e. Since equal quantities of each greenhouse gas have more or less influence on the greenhouse effect, converting all emissions to a standard metric, CO<sub>2</sub>e, allows apples-to-apples comparisons amongst quantities of all six emissions types. Greenhouse gas emissions are reported in this inventory as metric tons of CO<sub>2</sub>e (MTCO<sub>2</sub>e).

Table 4 exhibits the greenhouse gases and their global warming potential (GWP), a measure of the amount of warming a greenhouse gas may cause compared to the amount of warming caused by carbon dioxide.

**Table 4: Greenhouse Gases**

Gas	Chemical Formula	Activity	Global Warming Potential (CO <sub>2</sub> e)
Carbon Dioxide	CO <sub>2</sub>	Combustion	1
Methane	CH <sub>4</sub>	Combustion, Anaerobic Decomposition of Organic Waste (Landfills, Wastewater), Fuel Handling	21
Nitrous Oxide	N <sub>2</sub> O	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 <sub>6</sub>	Transmission and Distribution of Power	23,900

### Calculating Emissions

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.

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2. **Calculation-based methodologies** refer to an estimate of emissions calculated based upon measurable *activity data* and *emission factors*. Table 5 provides examples of common emissions calculations.

**Table 5: Basic Emissions Calculations**

Activity Data	x	Emissions Factor	=	Emissions
Electricity Consumption (kilowatt hours)		CO <sub>2</sub> emitted/kWh		CO <sub>2</sub> emitted
Natural Gas Consumption (therms)		CO <sub>2</sub> emitted/therm		CO <sub>2</sub> emitted
Gasoline/Diesel Consumption (gallons)		CO <sub>2</sub> emitted /gallon		CO <sub>2</sub> emitted
Waste Generated by Government Operations (tons)		CH <sub>4</sub> emitted/ton of waste		CH <sub>4</sub> emitted

### The Scopes Framework

This inventory reports greenhouse gas emissions by sector and additionally by “scope”, in line with the LGO Protocol and WRI/WBCSD GHG Protocol Corporate Standard.

**Scope 1:** Direct emissions from sources within a local government’s operations that it owns and/or controls, with the exception of direct CO<sub>2</sub> emissions from biogenic sources. 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 purchased or acquired electricity, steam, heating, or cooling.

**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. 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.

ICLEI and the LGO Protocol provide standard methodologies for calculating emissions from the sources shown in the following table. Other sources of emissions, such as those associated with the production of consumed products do not yet have standard calculation methodologies and are thus excluded from this inventory.

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**Table 6: Inventoried Emissions Sources by Scope**

Scope 1	Scope 2	Scope 3
Fuel consumed at facilities	Purchased electricity consumed by facilities	Solid waste generated by government operations
Fuel consumed by vehicle fleet and mobile equipment	Purchased electricity consumed by electric vehicles	Fuel consumed by vehicles during employee commuting
Fuel consumed to generate electricity	Purchased steam	
Leaked refrigerants from facilities and vehicles	Purchased cooling (chilled water)	
Leaked / deployed fire suppressants		
Solid waste in government landfills		
Wastewater decomposition and treatment at a municipal wastewater treatment plant		

**Organizational Boundaries**

The organizational boundary for the inventory determines which aspects of operations are included in the emissions inventory, and which are not. Under the LGO Protocol, 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 policies that impact 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.

LGO Protocol 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, this inventory was conducted according to the operational control framework.

**Types of Emissions**

As described in the LGO Protocol, emissions from each of the greenhouse gases can come in a number of forms:

**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.

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**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).

### **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 and backup generators may be common sources of these types of emissions. For these less significant emissions sources, LGO Protocol specifies that up to 5 percent of total emissions can be reported using methodologies that deviate from the recommended methodologies in LGO Protocol. 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*.

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

- Scope 1 fugitive emissions from leaked refrigerants from HVAC and refrigeration equipment and fugitive emissions from leaked/deployed fire suppressants.
- Scope 1 CH<sub>4</sub> and N<sub>2</sub>O emissions from fugitive and leaked emissions from vehicle fleet refrigerant capacity. This inventory data was not available, so refrigerant was selected from the standard year 2003 models for all vehicle manufacturers.

### **Information Items**

Information items are emissions sources that are not included as Scope 1, 2, or 3 emissions in the inventory, but are reported here separately in order to provide a more complete picture of emissions from Placer County's government operations.

A common emission that is categorized as an information item is carbon dioxide emitted in 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. 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. These principles indicate that biogenic fuels (e.g., wood, biodiesel), if left to decompose in the natural environment, would

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release CO<sub>2</sub> 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<sub>2</sub> emissions are akin to natural emissions and should therefore not be considered as human activity-generated emissions. The CH<sub>4</sub> and N<sub>2</sub>O emissions, however, would not have occurred naturally and are therefore included as Scope 1 emissions.

Information items quantified for this inventory include:

- Scope 2 emissions from electricity consumption by LS-1 designated streetlights. These lights are owned, operated, maintained and directly paid for by PG&E, but the charges for operation of these lights are indirectly charged to Placer County through their general PG&E rate case.

## Understanding Totals

It is important to realize that the totals and sub-totals listed in the tables and discussed in this report are intended to represent all-inclusive, complete totals for Placer County's operations. However, these totals are only a summation of inventoried emissions using available estimation methods. Each inventoried sector may have additional emissions sources associated with them that were unaccounted for, such as Scope 3 sources that could not be estimated.

Also, local governments provide different services to their citizens, and the scale of the services (and thus the emissions) is highly dependent upon the size and purview of the local government. For these reasons, comparisons between local government totals should not be made without keen analysis of the basis for figures and the services provided.

It is important to understand that in the case where a local government operates a municipal utility that generates electricity for government facilities, the associated emissions should be considered Scope 1 emissions within the Power Generation Facilities sector, and not Scope 2 emissions within each of the other facilities sectors, when calculating a total. This is advised by the LGO Protocol and done to avoid reporting the same emissions twice, also known as double counting.

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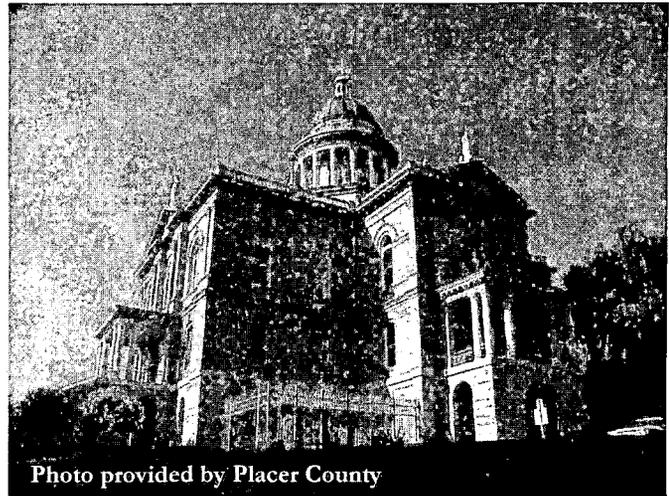
# Inventory Results

## Emissions Total

In 2005, Placer County's greenhouse gas emissions from government operations totaled 26,921 metric tons of CO<sub>2</sub>e. This number represents a roll-up of emissions, and is not intended to represent a complete picture of emissions from Placer County's operations. This roll-up number was calculated specifically to avoid double counting. Refer to the Understanding Totals section of this report's Introduction for more information on calculating totals and avoiding double counting.

## Buildings and Other Facilities

Facility operations contribute to greenhouse gas emissions in two major ways. First, facilities consume electricity and fuels such as natural gas. This consumption is associated with 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. Refrigerants and fire suppressants are very potent greenhouse gases, and have Global Warming Potential (GWP) of up to many thousand times that of CO<sub>2</sub>. For example, HFC-134a, a very common refrigerant, has a GWP of 1300, or 1300 times that of CO<sub>2</sub>. Therefore, even small amounts of leaked refrigerants can have a significant effect on greenhouse gas emissions. These refrigerants are most commonly found in heating, ventilation and air conditioning equipment (HVAC) or fire suppression systems.



In 2005, most HVAC and fire suppression systems in Placer County buildings operated with Freon (HCFC-22 or R-22) or certain Halons, refrigerants banned by the Environmental Protection Agency through Title VI of the Clean Air Act. As of January 1, 2010, the U.S. has set a goal of reducing consumption of HCFCs by 75% and chemical manufacturers will no longer be able to produce R-22 to service existing air conditioners and heat pumps after 2020. Refrigerants that have been recovered and recycled will be allowed beyond 2020 to service existing systems. Because these refrigerants are classified as discontinued because of their ozone depletion potential, attributed emissions are not included in this inventory, as recommended by ICLEI.

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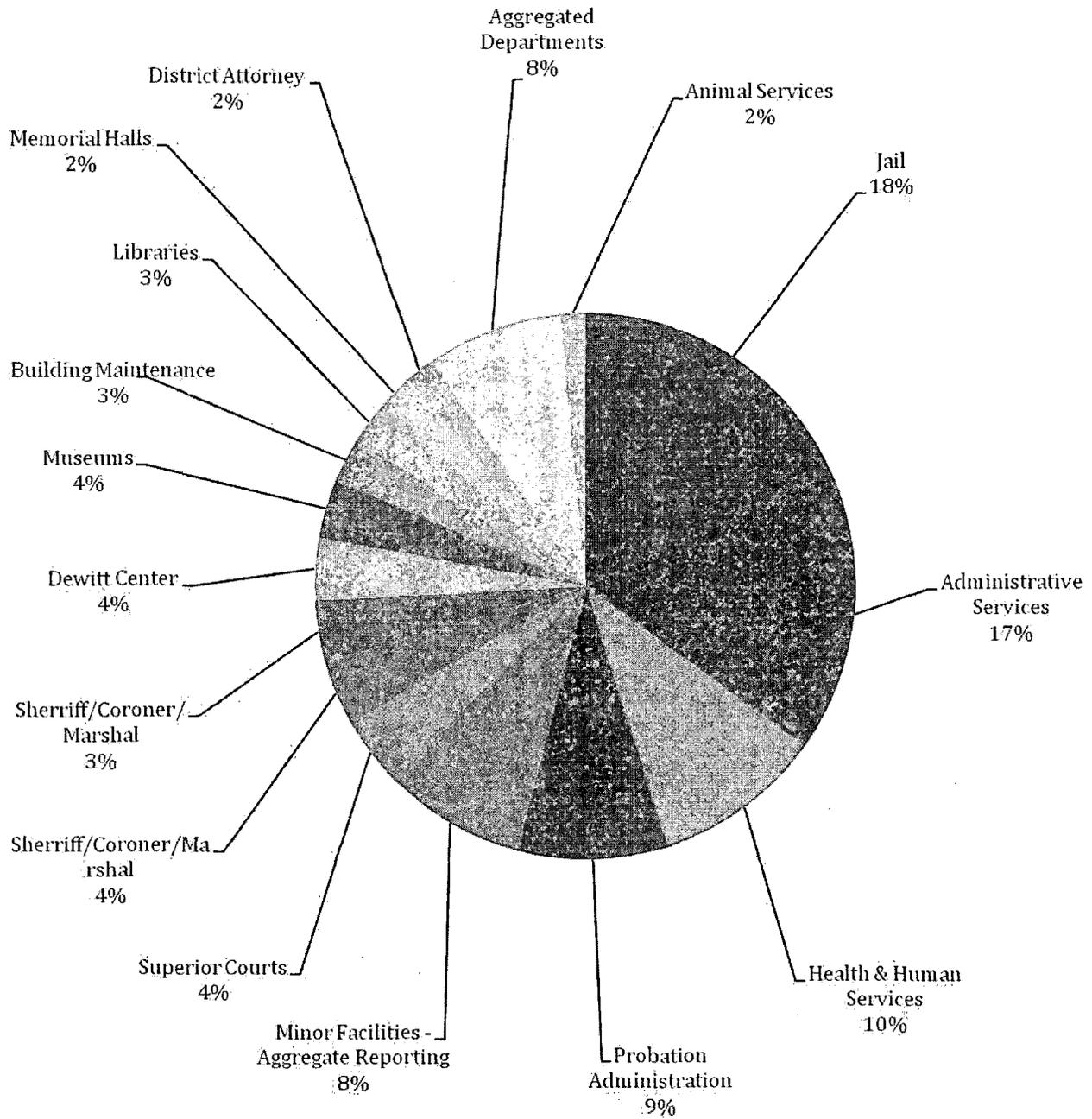
In 2005, Placer County operated over 230 facilities including 80 major facilities (defined as having an annual energy expense of greater than \$5,000) and 154 minor facilities. Emissions attributed to the Buildings and Facilities sector totaled 6,501 metric tons of CO<sub>2</sub>e in 2005. Since 2005, Placer County has undergone a massive consolidation of space clustered around the Dewitt Center to reduce operating costs and increase efficiencies. For example, the 97,400-square-foot Placer County Community Development Resource Center (CDRC) completed in 2008 now houses a variety of County departments including Planning, Building, Engineering, Environmental Health and Public Works. Sustainable design elements were a major consideration in the design of this facility and include energy conserving features that resulted in a building that exceeds California's Title 24 Energy Efficiency Standards by 44%. A second major facility, the Auburn Justice Center (AJC) was used to consolidate the Sheriff's Department, which had previously been dispersed in 10 separate buildings. The AJC (now adjacent to the jail and juvenile facility) creates a localized justice center which houses probation officials, the district attorney, "911" dispatch, and the county coroner. Significant changes from the 2005 inventory results shown below can be expected due to the County's efforts to consolidate and utilize more energy efficient facilities.

As depicted in Figure 3 and Table 7, the facilities with the highest attributed emissions directly relate to business hours, resulting in increased emissions in the Administration Offices, the Fulweiler office building and the Nevada Street offices (19% combined, 1,154.91 metric tons CO<sub>2</sub>e). The Jail at 2775 Richardson Drive was the single largest contributor to emissions in the facility category (16%, 993.44 metric tons CO<sub>2</sub>e). "Minor Departments" refers to individual departments which emitted under 100 metric tons of CO<sub>2</sub>e in 2005 (aggregated to reduce congestion in Figure 3). Departments included within this category include: Animal Services, Public Works, Facility Services, Information Technology, Risk Management, Food & Agriculture, Planning Services Division, Fire, Children's Services, and Veterans. Further detail on these departments can be found in the supporting workbook, accompanying this report. "Minor Departments" should not be confused with "Minor Facilities", which includes facilities defined as having an annual energy expense of less than \$5,000.

In terms of the sources of emissions from the buildings and facilities sector, emissions from electricity usage were slightly higher (51%) than natural gas (48%). The primary sources for building emissions are natural gas and electricity, as shown in Table 8. Propane is used for backup power generation for a few facilities. Electricity is the source of emissions generating the highest cost to the County. Table 9 depicts the largest emitters in 2005, with emissions broken down by source and total percentage of sector. As mentioned before, some of these facilities have been consolidated or have undergone major lighting retrofits. Table 10 lists total Buildings and Facilities sector emissions by scope and type.

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Figure 3: Buildings and Other Facilities Emissions by Department



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**Table 7: Buildings and Other Facilities Emissions by Department**

<b>Department</b>	<b>Metric Tons CO<sub>2</sub>e</b>
Office Buildings	1154.91
Jail	993.44
Administrative Services	905.00
Health & Human Services	549.28
Probation Administration	491.10
Minor Facilities - Aggregate Reporting*	459.59
Superior Courts	223.30
Sherriff/Coroner/Marshal	208.70
Minimum Security	198.81
Dewitt Center	198.69
Museums	190.13
Building Maintenance	143.24
Libraries	139.53
Memorial Halls	106.45
District Attorney	102.93
<b>Total Aggregated "Minor Departments"***</b>	<b>436.06</b>
<b>Aggregated "Minor Departments"</b>	
Animal Services	83.82
Public Works	80.57
Facility Services	60.77
Information Technology	58.28
Risk Management	47.27
Food & Agriculture	31.07
Planning Services Division	29.89
Fire	27.79
Children's Services	9.99
Veterans	6.61
<b>Grand Total</b>	<b>6,501.17</b>

\*Minor Facilities are defined as facilities with an annual energy cost of less than \$5,000

\*\*Minor departments are defined as departments with attributed emission estimates which are lower than 100 metric tons of CO<sub>2</sub>e

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Figure 4: Buildings and Other Facilities Emissions by Source

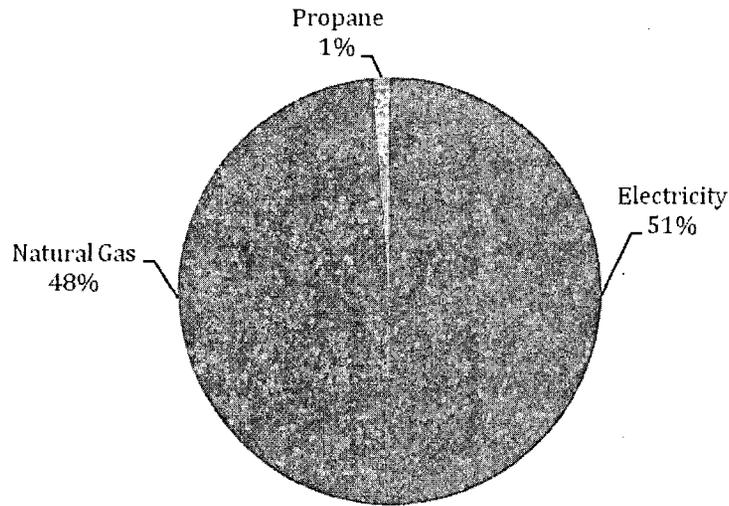


Table 8: Buildings and Other Facilities Emissions & Costs by Source

Source	Metric Tons CO <sub>2</sub> e	Cost
Electricity	3281.33	\$ 1,968,004
Natural Gas	3135.28	\$ 668,012
Propane	84.56	\$ 35,803
<b>Totals</b>	<b>6,501.17</b>	<b>\$ 2,671,819</b>

Table 9: Top 5 Largest Contributors to Emissions from Buildings Sector

Facility	% of Sector Emissions from Electricity	% of Sector Emissions from Natural Gas	CO <sub>2</sub> e Emissions from Electricity	CO <sub>2</sub> e Emissions from Natural Gas	Total CO <sub>2</sub> e Emissions
Office Buildings	5%	13%	297.29	857.62	1,154.91
Jail	8%	7%	512.55	480.90	993.44
Administrative Services	10%	4%	658.11	246.88	905.00
Health & Human Services	5%	4%	304.14	245.14	549.28
Probation Administration	4%	3%	271.24	219.86	491.10
<b>Totals</b>	<b>32%</b>	<b>32%</b>	<b>2,043.33</b>	<b>2,050.40</b>	<b>4,093.73</b>

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Table 10: LGO Protocol Report - Buildings Sector Emissions by Scope and Emission Type

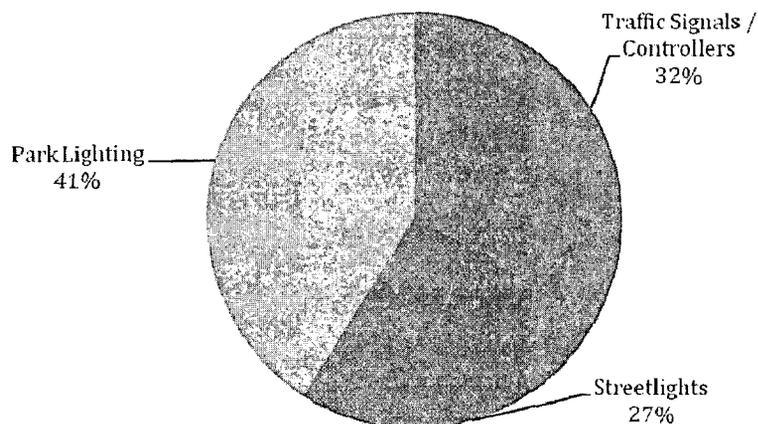
BUILDINGS & OTHER FACILITIES					
Scope	Emission Type	Greenhouse Gas Emissions (Metric Tons)			
SCOPE 1		CO <sub>2</sub> e	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
	Stationary Combustion	3,219.839	3,211.038	0.310	0.007
	<b>Total Direct Emissions</b>	<b>3,219.839</b>	<b>3,211.038</b>	<b>0.310</b>	<b>0.007</b>
SCOPE 2		CO <sub>2</sub> e	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
	Purchased Electricity	3,281.329	3,254.611	0.198	0.073
	<b>Total Indirect Emissions</b>	<b>3,281.329</b>	<b>3,254.611</b>	<b>0.198</b>	<b>0.073</b>

### Streetlights, Traffic Signals, and Other Public Lighting

Like most local governments, Placer County operates a range of public lighting including traffic signals, street lights and park lighting. All of the emissions associated with the operation of this infrastructure are due to electricity consumption. Data relating to electricity consumption for public lighting was obtained from PG&E.

Figure 5 and Table 11 depict the percentage of emissions attributed to each subsector. Park lighting is the source of the highest percentage of public lighting emissions (41%, 37.64 metric tons CO<sub>2</sub>e.) Table 12 shows that all emissions from the public lighting sector are due to electricity consumption. Also included in Table 12 are emissions categorized as information items. Emissions from streetlights within Placer County which are owned, operated and maintained by PG&E are not included in the roll up total. The cost of operating and maintaining these streetlights is incorporated in the general rate case charged to the County by PG&E, therefore the subsector should still be considered for cost and emission reduction purposes.

Figure 5: Public Lighting Emissions by Subsector



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**Table 11: Public Lighting Emissions by Subsector**

Subsector (Light Type)	Metric Tons CO <sub>2</sub> e	% of Sector Emissions	Electricity Use (kWh)	Cost (\$)
Traffic Signals / Controllers	29.60	32%	132,304	\$18,851
Streetlights	24.63	27%	110,104	\$22,443
Park Lighting	37.64	41%	168,266	\$25,619
<b>Totals</b>	<b>91.87</b>	<b>100%</b>	<b>410,674</b>	<b>\$66,913</b>

**Table 12: LGO Protocol Report – Public Lighting Emissions by Scope and Emission Type**

STREETLIGHTS, TRAFFIC SIGNALS, AND OTHER PUBLIC LIGHTING					
Scope	Emission Type	Greenhouse Gas Emissions (Metric Tons)			
		CO <sub>2</sub> e	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
<b>SCOPE 2</b>					
	Purchased Electricity	91.873	91.120	0.006	0.002
	<b>Total Indirect Emissions</b>	<b>91.873</b>	<b>91.120</b>	<b>0.006</b>	<b>0.002</b>
<b>INFORMATION ITEMS</b>					
	PG&E Owned & Operated Streetlights	70.386	69.809	0.004	0.002
	<b>Total Indirect Emissions</b>	<b>70.386</b>	<b>69.809</b>	<b>0.004</b>	<b>0.002</b>

## Water Delivery Facilities

This sector includes emissions from equipment used for the distribution or transport of water. Placer County owned and operated water delivery/transport facilities are primarily irrigation systems, sprinkler systems and sewer pumps. The Placer County Water Agency (PCWA) provides a broader range of services including water resource planning and management, retail and wholesale supply of irrigation water and drinking water and production of hydroelectric energy. The PCWA is governed by a separate Board of Directors and operated independently of Placer County; therefore, emissions related to PCWA activities are not included in this inventory. Scope 2 indirect emissions related to electricity consumption are the sole source of greenhouse gas emissions from the operation of Placer County’s water transport equipment.

Figure 6 and Table 13 show that the majority of emissions from the water delivery sector result from the operation of water pumps (98%, 119.53 metric tons CO<sub>2</sub>e), with the remaining 2% (2.26 metric tons of CO<sub>2</sub>e) resulting from irrigation/sprinkler systems. Table 14 outlines emissions by scope and type.

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Figure 6: Water Delivery Facilities Emissions by Subsector

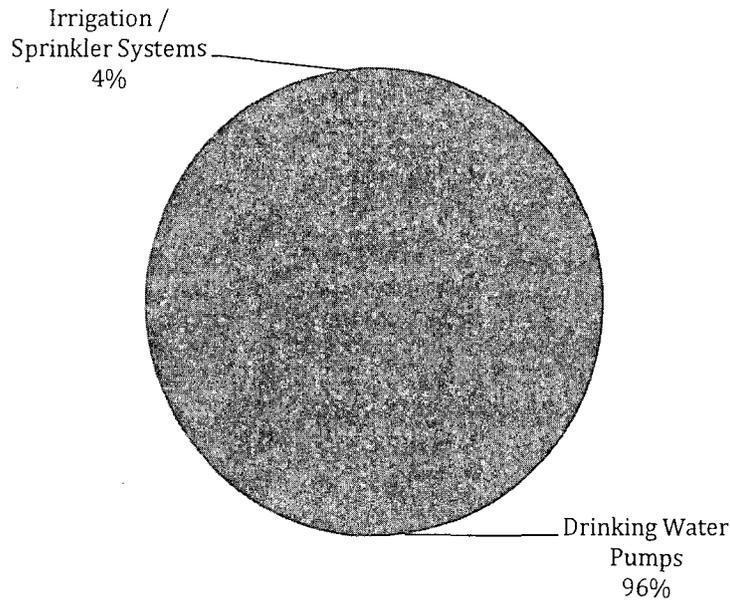


Table 13: Water Delivery Facilities Emissions by Subsector

Subsector (Equipment Type)	Metric Tons CO <sub>2</sub> e	% of Sector Emissions	Electricity Use (kWh)	Cost (\$)
Water Pumps	49.97	96%	534,317	\$71,905
Irrigation / Sprinkler Systems	2.26	4%	10,095	\$2,472
<b>Totals</b>	<b>52.23</b>	<b>100%</b>	<b>544,412</b>	<b>\$74,377</b>

Table 14: LGO Protocol Report - Water Delivery Facilities Emissions by Scope and Emission Type

WATER TRANSPORT FACILITIES					
Scope	Emission Type	Greenhouse Gas Emissions (Metric Tons)			
		CO <sub>2</sub> e	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
SCOPE 2	Purchased Electricity	52.227	51.799	0.003	0.001
	Total Indirect Emissions	52.227	51.799	0.003	0.001

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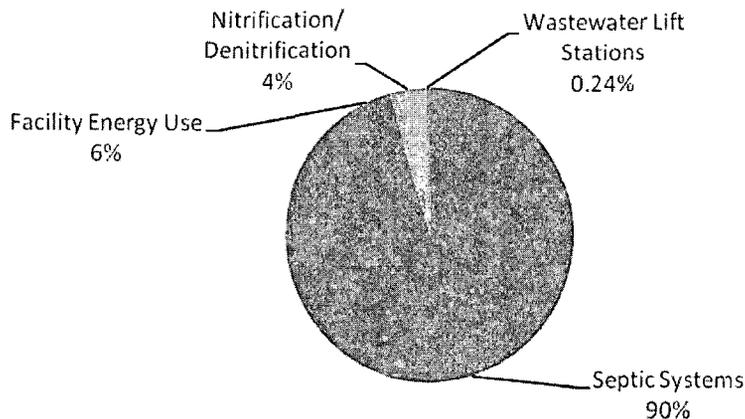
## Wastewater Treatment Facilities

Wastewater coming from homes and businesses is rich in organic matter and has a high concentration of carbon and nitrogen (along with other organic elements). As wastewater is collected, treated, and discharged, chemical processes in aerobic and anaerobic conditions lead to the creation and emission of two greenhouse gases: methane and nitrous oxide. Local governments that operate wastewater treatment facilities, including treatment plants, septic systems, collection lagoons, and other facilities, must therefore account for the emission of these gases.

Placer County Facilities Services, through the Sewer Maintenance Division (SMD), operates and maintains the County's two wastewater treatment facilities, lift stations and collection pipelines. SMD 1 serves North Auburn, Christian Valley, and Loomis and SMD 3 serves western Placer County, Roseville, Sheridan, and Granite Bay. A third facility is operated by the Placer County Water Agency and is not included in this inventory. These facilities serve approximately 17,060 people, including the residents and businesses located in the aforementioned jurisdictions. The County operates multiple septic systems in the rural areas, serving approximately 53,500 residents, which is also included in the inventory. The methane and nitrous oxide fugitive emissions related to these septic systems contribute powerful greenhouse gases that collectively make up 91% of the wastewater treatment emissions. Since 2005 many changes have occurred to the wastewater facilities that will result in improvements to emissions factors. For example, the Sheridan Wastewater Treatment Plant, completed in October 2010 was a \$1.47 million project that added 5.4 acres of spray disposal capacity for treated effluent. The new plant includes upgraded pumps and controls, new aerators, chlorine chemical feed pumps and high efficiency, low maintenance sprinklers.

Figure 7 and Table 15 show the breakdown of Wastewater Treatment-related emissions by subsector. The largest percentage of emissions result from the methane emissions released from County-owned septic systems (90%, 11,079 metric tons CO<sub>2</sub>e.) Table 16 outlines emissions by scope and type. The only available costs associated with this sector result from energy consumption used to run the facility (electricity, natural gas, propane), and totaled \$301,028.00.

**Figure 7: Wastewater Treatment Facilities Emissions by Subsector**



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**Table 15: Wastewater Treatment Facilities Emissions by Subsector**

Subsector	Metric Tons CO <sub>2</sub> e
Septic Systems	11,079.60
Facility Energy Use	657.33
Nitrification/ Denitrification	505.30
Wastewater Lift Stations	29.68
<b>Totals</b>	<b>12,271.91</b>

**Table 16: LGO Protocol Report - Wastewater Treatment Facilities Emissions by Scope and Emission Type**

Scope	Emission Type	Greenhouse Gas Emissions (Metric Tons)			
		CO <sub>2</sub> e	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
<b>SCOPE 1</b>					
	Stationary Combustion	293.699	292.068	0.039	0.003
	Fugitive Emissions	11,079.600	0.000	527.600	0.000
	Process Emissions	505.300	0.000	0.000	1.630
	<b>Total Direct Emissions</b>	<b>11,878.599</b>	<b>292.068</b>	<b>527.639</b>	<b>1.633</b>
<b>SCOPE 2</b>					
	Purchased Electricity	393.311	390.089	0.024	0.009
	<b>Total Indirect Emissions</b>	<b>393.311</b>	<b>390.089</b>	<b>0.024</b>	<b>0.009</b>

## Solid Waste Facilities

There are a variety of emissions associated with solid waste management services including the collection, processing, and storage of solid waste generated from residents and businesses. The most prominent source of emissions from solid waste facilities is fugitive methane released by the decomposition of organic waste over time in landfills. The scale of these emissions depends upon the size and type of the landfill and the presence of a landfill gas collection system. Other emissions included in this section are from purchased electricity used to generate power for all solid waste management facilities. Placer County has closed or does not directly operate most of its solid waste facilities, including recycling centers, transfer stations and composting centers, minimizing emissions related to this sector.

Placer County has (or has had) direct operational control over four solid waste facilities. In 2005, Placer County had one operating landfill (Loomis) and three non-operating landfills within its boundary. The Foresthill facility was opened in 1966 and closed in 1983; the Meadow Vista facility opened in 1965 and was closed 1983; and the Eastern Landfill was opened in 1973 and closed in 1995. Collectively, the facilities served approximately 17,000 people, including the

residents and businesses located in rural areas of Placer County and the multiple towns within the county. The Meadow Vista facility does have a methane collection system and flares the gas. A facility in Loomis was closed in 1979, but residual emissions are still included in this inventory. Two material recovery facilities (MRFs) located in the county (Eastern Regional and Western Regional) are operated by Joint Powers Agreements and are not included in this inventory. The MRFs process the garbage delivered to the facility and divert recyclables from landfill waste.

Table 16 outlines the scopes and types of emissions that are attributed to the operation of the County's solid waste facilities (Loomis and Meadow Vista). The majority of emissions (99.5%) released from this sector are attributed to methane from decomposing waste at the site. Both Loomis and Meadow Vista collect and destroy a percentage of the methane released. Table 16 includes details on these processes.

**Table 16: LGO Protocol Report – Solid Waste Facilities Emissions by Scope and Emission Type**

<b>SOLID WASTE FACILITIES</b>					
<b>Scope</b>	<b>Emission Type</b>	<b>Greenhouse Gas Emissions (metric tons)</b>			
		<b>CO<sub>2</sub>e</b>	<b>CO<sub>2</sub></b>	<b>CH<sub>4</sub></b>	<b>N<sub>2</sub>O</b>
<b>SCOPE 1</b>					
	Fugitive Emissions	480.480	0.000	22.880	0.000
	<b>Total Direct Emissions</b>	<b>480.480</b>	<b>0.000</b>	<b>22.880</b>	<b>0.000</b>
<b>SCOPE 2</b>					
	Purchased Electricity	2.442	2.422	0.00015	0.000054
	<b>Total Indirect Emissions</b>	<b>2.442</b>	<b>2.422</b>	<b>0.00015</b>	<b>0.000054</b>
<b>INDICATORS</b>					
		Landfill Gas Collected (Million Cu Ft)	Percentage of Methane Collected	Destruction Efficiency	Collection Efficiency
	Loomis Facility	12.37	27%	98%	75%
	Meadow Vista	1.58	26%	99%	75%

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## Vehicle Fleet and Mobile Equipment

The vehicles and mobile equipment used in Placer County's daily operations include maintenance trucks used for parks and recreation to police cruisers and fire trucks, burning 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. The County maintains over 1,100 miles of roadways. Unique to Placer County is the significant fleet dedicated to snow removal. Almost 20% of the county's roads (about 200 miles) fall within expected "normal" snowfall areas on both sides of the Sierra Crest. Snowfall amounts in these areas range from less than 100 inches to over 500 inches annually depending on location and elevation.

In 2005, Placer County operated a vehicle fleet with 813 vehicles including passenger vehicles, sheriff cruisers, SUVs, light trucks, heavy trucks and snow removal equipment. Placer County's vehicle fleet performed a number of essential services, from law enforcement, public works, road and facility maintenance, health and human services and probation. In 2005, the majority of vehicles in the fleet (194 vehicles, contributing 52% of emissions) were used in the Sheriff's Department.

Figure 8 and Table 17 show vehicle fleet emissions by source, with gasoline consumption contributing the highest percentage of emissions in this sector (95%, 6,187.20 metric tons CO<sub>2</sub>e). Natural gas, diesel and leaked refrigerants make up the remaining 5%. Figure 10 and Table 18 breakdown emissions by department, showing the Sheriff's Department as the highest emitter (52%, 3,413.77 metric tons of CO<sub>2</sub>e), with the Pool as the next highest (18%, 1,211.23 metric tons of CO<sub>2</sub>e), followed by Public Works (14%, 906.91 metric tons of CO<sub>2</sub>e). "Minor Departments" are defined as departments with less than 100 metric tons of CO<sub>2</sub>e attributed to their fleet. The departments were combined to avoid chart congestion. Table 19 shows total emissions by scope and type.

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Figure 8: Vehicle Fleet Emissions by Source

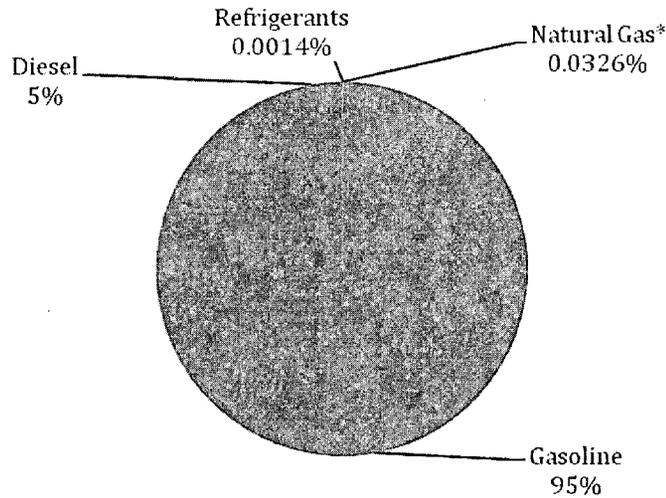
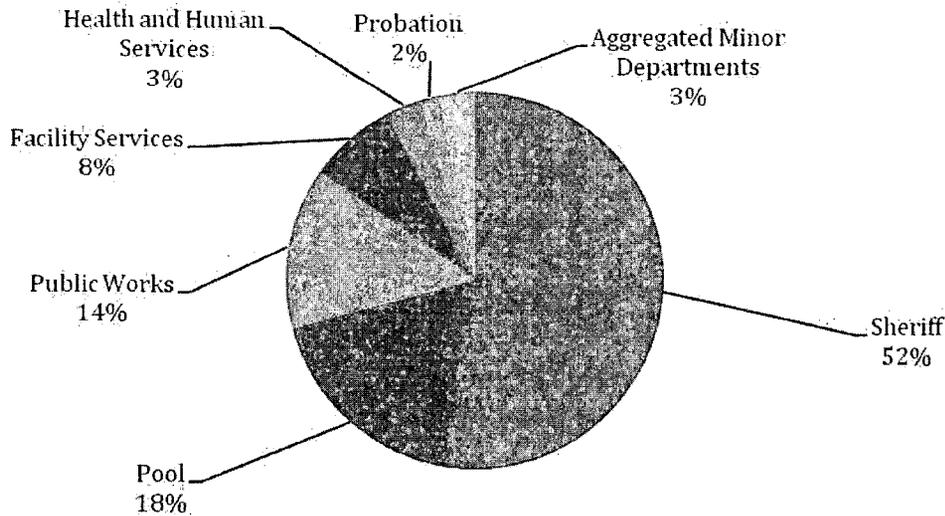


Table 17: Vehicle Fleet Emissions by Source

Source	Metric Tons CO <sub>2</sub> e	Consumption (gal)	Cost (\$)
Gasoline	6,187.20	698,381	\$1,708,813
Diesel	342.85	33,554	\$70,015
Natural Gas*	2.13	5,082	\$10,290
Refrigerants**	0.09	N/A**	N/A
<b>Totals</b>	<b>6,532.28</b>	<b>737,017</b>	<b>\$1,789,118.82</b>

\*Note that Natural Gas is measured in cubic feet  
 \*\*Leaked refrigerants are measured in metric tons

Figure 9: Vehicle Fleet Emissions by Department



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Table 18: Vehicle Fleet Emissions, Consumption & Costs by Department

Source	Metric Tons CO <sub>2</sub> e	Consumption (gal)	Consumption (VMT)	Cost (\$)
Sheriff	3,413.77	386,399	4,219,006	\$1,001,566
Pool	1,211.23	139,875	2,152,954	\$331,331
Public Works	906.91	101,164	1,006,303	\$199,368
Facility Services	497.17	53,704	1,099,031	\$124,059
Health and Human Services	195.64	21,679	394,513	\$52,633
Probation	104.20	11,582	195,699	\$27,652
<b>Total Aggregated Minor Departments</b>	<b>203.27</b>	<b>22,614</b>	<b>381,780</b>	<b>\$52,509</b>
<b>Total Aggregated Minor Departments</b>				
District Attorney	58.48	6,479	142,147	\$14,900
Administrative Services	42.33	4,766	65,618	\$10,874
Agriculture	31.95	3,536	56,721	\$8,208
Community Development	22.85	2,533	38,158	\$6,058
Library	14.90	1,695	11,423	\$3,959
Executive	14.44	1,595	28,719	\$3,759
Board of Supervisors	11.46	1,270	19,329	\$2,907
Assessor	6.85	740	19,665	\$1,844
<b>Grand Totals</b>	<b>6,532.28</b>	<b>737,017</b>	<b>9,449,286</b>	<b>\$1,789,118.82</b>

Table 19: LGO Protocol Report - Vehicle Fleet Emissions by Scope and Emission Type

VEHICLE FLEET					
Scope	Emission Type	Greenhouse Gas Emissions (metric tons)			
SCOPE 1		CO <sub>2</sub> e	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
	Mobile Combustion	6,532.189	6,474.646	0.192	0.173
	<b>Total Direct Emissions</b>	<b>6,532.189</b>	<b>6,474.646</b>	<b>0.192</b>	<b>0.173</b>
<b>INDICATORS</b>	Number of Vehicles	813			
	Vehicle Miles Traveled	9,449,286			

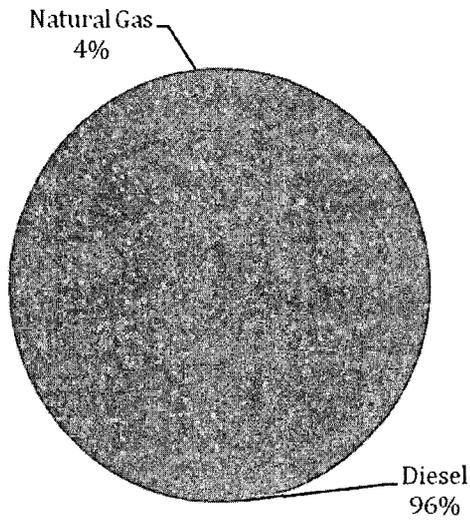
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## Transit Fleet

The vehicles and mobile equipment used in Placer County's public transportation operations, including buses and shuttles burn diesel, or compressed natural gas ("CNG"), resulting in greenhouse gas emissions. In addition, vehicles with air conditioning use refrigerants that can leak from the vehicle, however, no information related to refrigerants was provided for this inventory. In 2005, Placer County operated 32 vehicles, which traveled 991,855 miles during the year, used 245,981 gallons of fuel, and released 342.57 metric tons of CO<sub>2</sub>e.

Figure 10 and Table 20 show that 96% of transit fleet emissions (329.87 metric tons CO<sub>2</sub>e) are the result of diesel consumption, with the remaining percentage attributed to natural gas. Table 21 outlines emissions by scope and type.

**Figure 10: Transit Fleet Emissions by Source**



**Table 20: Transit Fleet Emissions by Source**

Source	Metric Tons CO <sub>2</sub> e	Consumption (gal)	Cost (\$)
Diesel	329.87	32,277	\$81,237
Natural Gas	12.70	213,704	\$286,951
<b>Totals</b>	<b>342.57</b>	<b>245,981</b>	<b>\$368,188</b>

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Table 21: LGO Protocol Report - Transit Fleet Emissions by Scope and Emission Type

TRANSIT FLEET					
Scope	Emission Type	Greenhouse Gas Emissions (Metric Tons)			
SCOPE 1		CO <sub>2</sub> e	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
	Mobile Combustion	342.571	341.088	0.025	0.003
	<b>Total Direct Emissions</b>	<b>342.571</b>	<b>341.088</b>	<b>0.025</b>	<b>0.003</b>
<b>INDICATORS</b>	Number of Vehicles	32			
	Vehicle Miles Traveled	991,855			

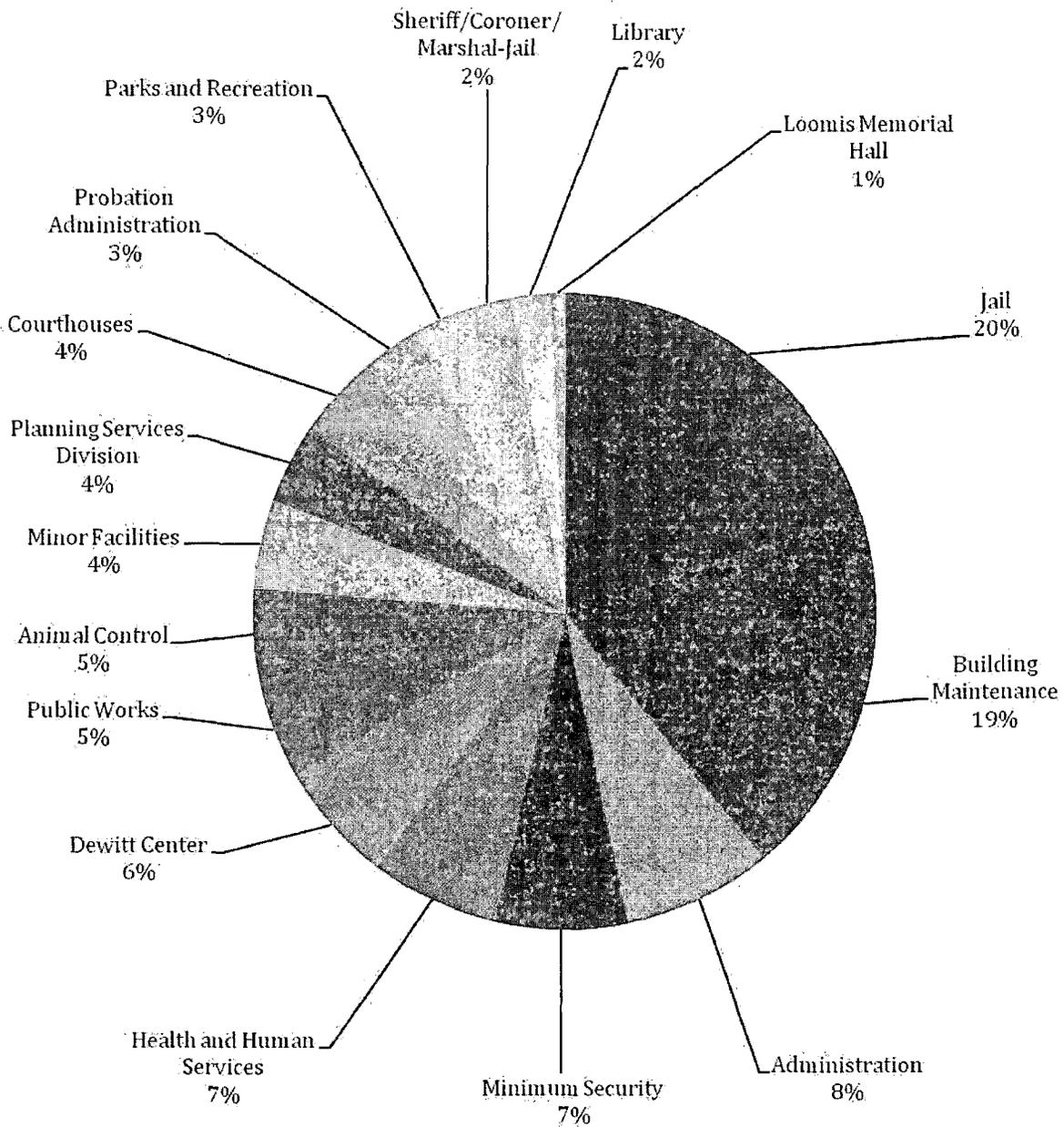
### Government-Generated Solid Waste

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. 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.

Figure 12 and Table 21 show the breakdown of emissions by facility. As to be expected, facilities with regular or extended operating hours generate the most waste, and therefore contribute the highest emissions. The jail is the top emitter in this sector, with 20% of the sector's emissions (96.45 metric tons of CO<sub>2</sub>e) resulting from facility operations. Building Maintenance closely follows as the next highest emitter with 19% of emissions (91.50 metric tons of CO<sub>2</sub>e). "Minor Facilities" refers to facilities which utilize solid waste containers that hold 2 yards or less. Table 22 shows that, in 2005, Placer County facilities landfilled an estimated 1,899 tons of solid waste, contributing 481.632 metric tons of CO<sub>2</sub>e.

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Figure 12: Government Waste Emissions by Subsector



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Table 21: Government Waste Emissions by Subsector

Department	Metric Tons CO <sub>2</sub> e	Landfilled Tons
Jail	96.45	380
Building Maintenance	91.50	361
Administration	37.10	146
Minimum Security	33.38	132
Health and Human Services	32.18	127
Dewitt Center	29.67	117
Public Works	24.73	98
Animal Control	22.27	88
Minor Facilities	21.63	85
Planning Services Division	19.78	78
Courthouses	19.78	78
Probation Administration	14.84	59
Parks and Recreation	13.59	54
Sheriff/Coroner/Marshal-Jail	11.13	44
Library	9.89	39
Loomis Memorial Hall	3.70	15
<b>Totals</b>	<b>481.63</b>	<b>1,899</b>

Table 22: LGO Protocol Report - Government Waste Emissions by Scope and Emission Type

Scope	Emission Type	Greenhouse Gas Emissions (metric tons)
SCOPE 3		CO <sub>2</sub> e
	Waste All Facilities	481.632
INDICATORS		
	Short tons of solid waste	1,899.1

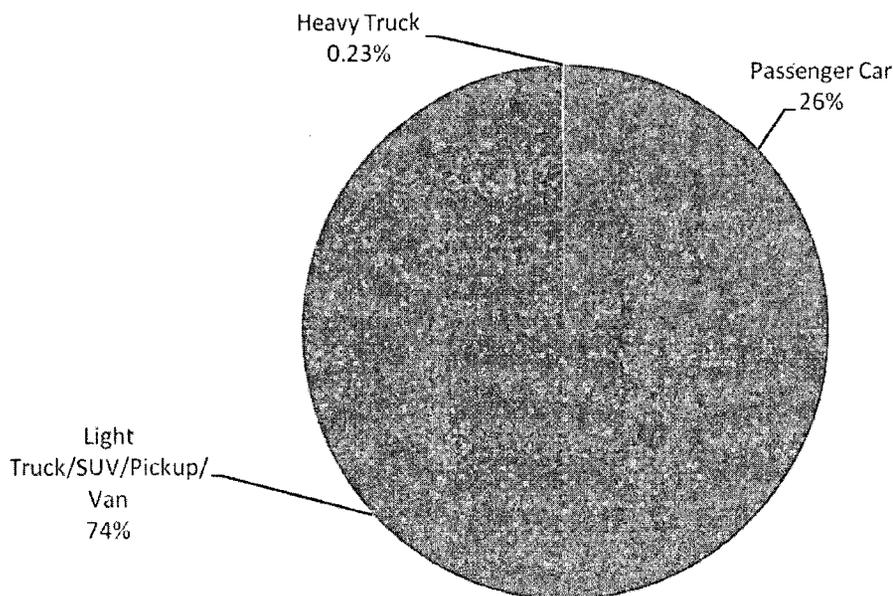
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## Employee Commute

Emissions in the Employee Commute sector are due to combustion of fuels in vehicles used by government employees for commuting to work at Placer County. Results from a survey designed by ICLEI and administered by Placer County are shown below. The survey was used to collect the data needed to calculate emissions and also capture other information that will help Placer County set effective policy addressing this sector. The survey was distributed to all employees with access to computers (approximately 1,700) and 615 responses representing over 7.7 million miles traveled are included in this inventory. Due to Placer County's largely rural geography, a very high percentage of employees travel to work in single occupant vehicles. A number of respondents did indicate that they would carpool or use public transportation if it was more convenient. This represents a huge opportunity for emission reductions in future years.

Figure 13 and Table 23 show light trucks/SUV/pickup/van category (74%) make up the majority of vehicles used by employees. Table 24 shows the employee commute emissions broken down by scope. Employees were also queried on their reasoning for choosing certain commute modes over others. Tables 25-31 describe the results from survey respondents. The majority of employees choose not to carpool due to "other people do not match my schedule or route" (69%). Most respondents don't use public transit because it "doesn't match their route or schedule" (70%). Respondents do not walk or bike to work because they live too far away (78%). Most employees commute to work alone (97%), and live 0-5 miles away from work (19%). Almost one third of the employees' commute takes anywhere from 16-25 minutes, and many employees are interested in telecommuting (45%) or carpooling (44%).

**Figure 13: Employee Commute Emissions by Vehicle Class**



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Table 23: Employee Commute Emissions by Vehicle Class

Vehicle Class	Metric Tons CO <sub>2</sub> e
Passenger Car	43.40
Light Truck/SUV/Pickup/Van	121.01
Heavy Truck	0.38
<b>Totals</b>	<b>164.79</b>

Table 24: LGO Protocol Report - Employee Commute Emissions by Scope and Emission Type

Scope	Emission Type	Greenhouse Gas Emissions (metric tons)
SCOPE 3		CO <sub>2</sub> e
	Mobile Combustion	164.787
INDICATORS	Vehicle Miles Traveled	5,167,816
	Number of Vehicles	615

Table 25: Employee Commute - Reasons for Not Carpooling Data

Reason	Percentage
Other people do not match my schedule or route	69%
Need to make stops on the way to work or home	62%
Dislike being dependent on others	47%
May not be able to get home quickly in an emergency	41%
Work late or irregular hours	40%
Difficult to find others to carpool/vanpool	36%
Like the privacy when I'm in my own car	33%
Need my car on the job	24%
Makes my trip too long	15%
Other*	13%
I don't know enough about carpooling or vanpooling	7%
Never considered carpooling or vanpooling	5%

\*Other responses include: "Live too near", "Need to pick up kids from school after work", "I pick up grandson from daycare"

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**Table 26: Employee Commute - Reasons for Not Taking Transit**

Reason	Percentage
Transit service doesn't match my route or schedule	70%
Need to make stops on the way to work or home	46%
It takes too long	45%
May not be able to get home quickly during an emergency	38%
I work late or irregular hours	28%
Like the privacy when I'm in my own car	24%
Need my car on the job	21%
Other*	16%
It is not safe or easy to walk to work from the transit stop	10%
Not enough parking at the transit stop from which I'd depart	8%
I don't know enough about taking transit	7%
Never considered using public transit	6%
It costs too much	6%
It is too far to walk to work from the transit stop	1%

\*Other responses include: "I hate public transportation", "Not available in my area", "Child care hours and special needs of child", "Long walk to stop from home"

**Table 27: Employee Commute - Reasons for Not Walking/Biking**

Reason	Percentage
I live too far away	78%
Weather	46%
There isn't a safe or easy route for walking or biking	40%
Need to make stops on the way to work or home	31%
May not be able to get home quickly in an emergency	28%
It's not easy to look good and feel comfortable for work after walking or biking	23%
Workplace does not have adequate facilities for showering/changing	20%
No place at work to store bikes safely	8%
Other*	8%
Never considered walking or biking to work	6%
I don't know enough about walking or biking to work	1%

\*Other responses include: "Need car at work", "Health reasons", "I don't own a bike", "Need to get kids to school/daycare"

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**Table 28: Employee Commute - Travel Mode Data**

Mode	Percentage
Drive Alone	97%
Carpooling/Vanpooling	3%
Public Transportation	0%
Bicycling	0%
Walking	0%
Telecommute/Other	0%
Split Modes	0%

**Table 29: Employee Commute - Miles from Work Data**

Miles	Percentage
0-5	19%
6-10	16%
11-15	14%
15-20	16%
21-25	14%
26-30	7%
31-35	5%
36-40	3%
41-45	2%
46-50	1%
51-75	3%
76-100	0%
Over 100	0%

**Table 30: Employee Commute - Time to Work Data**

Time (Minutes)	Percentage
Less than 5	5%
6 to 15	26%
16 to 25	31%
26 to 35	20%
36 to 45	11%
Over 45	6%

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Table 31: Employee Commute - Interest in Other Modes

Mode	Percentage
Carpooling	44%
Telecommute	45%
Vanpooling	27%
Public Transportation	23%
Bicycling	9%
Walking	6%
Other*	3%

\*Other responses include: "Alternative work schedules", "Flex schedule",  
"Would love to bike - would need a shower"

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# Inventory Methodologies

## Buildings and Other Facilities

2005 energy usage data from PG&E was produced by the Rate Data Analysis Group, Phase 1 Gas and Electric GHG Summary of Government Operations for Placer County for year 2005, based on energy usage of PG&E service accounts. Energy usage data included aggregate electricity (kilowatt hours- kWh) and natural gas (therms) consumption data and related costs. Scope 1 emissions were calculated using default emission factors for natural gas, and Scope 2 emissions were calculated using verified PG&E-specific emission factors for electricity, which were included in the 2009 Clean Air Climate Protection (CACP) software. In addition, for Placer County facilities on the eastern slope of the Sierra, 2005 energy use data was provided by NV Energy, as well as a few accounts in Roseville were provided by Roseville Electric.

## Streetlights, Traffic Signals, and Other Public Lighting

2005 Energy usage data from PG&E was produced by the Rate Data Analysis Group, Phase 1 Gas and Electric GHG Summary of Government Operations for Placer County for the year 2005, based on energy usage of PG&E service accounts. Energy usage data included aggregate electricity (kWh) consumption data and related costs. Scope 2 emissions were calculated using verified PG&E-specific emission factors for electricity, which were included in the CACP software. Emissions from accounts listed as PG&E “LS-1” are included as Information Items only. LS-1 designated streetlights are owned, operated, maintained and directly paid for by PG&E, but are indirectly paid for by the customer through Placer County’s general rate case with PG&E.

## Water Transport Facilities

2005 Energy usage data from PG&E was produced by the Rate Data Analysis Group, Phase 1 Gas and Electric GHG Summary of Government Operations for Placer County for the year 2005, based on energy usage of PG&E service accounts. Energy usage data included aggregate electricity (kWh) consumption data and related costs. Scope 2 emissions were calculated using verified PG&E-specific emission factors for electricity, which were included in the CACP software.

## Wastewater Treatment Facilities

2005 Energy usage data from PG&E was produced by the Rate Data Analysis Group, Phase 1 Gas and Electric GHG Summary for Government Operations in Placer County for the year 2005, based on energy usage of PG&E service accounts. Energy usage data included aggregate electricity (kWh) consumption data and related costs. Scope 2 emissions

were calculated using verified PG&E-specific emission factors for electricity, which were included in the CACP software.

Most of the wastewater treatment facilities in Placer County are owned and operated by the Placer County Water Agency and thus are not included in the inventory. However, scope 2 emissions for the energy to run two County owned facilities operated by the Sewer Maintenance Department are included. Scope 1 process emissions are included for all county septic systems and effluent treatment plants operated by the County. Data was provided by the Placer County Environmental Engineering Department.

## **Solid Waste Facilities**

The two major solid waste facilities in Placer County (Eastern MRF and Western MRF) are operated as JPAs and are therefore not included in this inventory. However, two small transfer stations in Loomis and Meadow Vista are operated by the County and their energy use is included. 2005 Energy usage data from PG&E was produced by the Rate Data Analysis Group, Phase 1 Gas and Electric GHG Summary for Government Operations in Placer County for the year 2005, based on energy usage of PG&E service accounts.

Landfill data was provided by a number of sources, used to collect total methane emissions resulting from the operation of the facilities. Total Landfill Gas Collected (million standard cubic feet) was provided in a Report from SCS Engineers, dated March 29, 2010. Percentage of Methane in Collected Landfill Gas was provided by Robin Mahoney-Associate. The Destruction Efficiency of Methane Based upon the system was provided by the Civil Engineering Department and the County of Placer Department of Facility Services. Collection Efficiency of Landfill Gas Collection System was provided by the Environmental Engineering Division, using an Applicability Review of Federal and Mandatory Report Rule and AB 32. Methane Soil Oxidation Factor was determined using the Landfill Methane Rule report, provided by Facility Services.

## **Vehicle Fleet and Mobile Equipment**

Scope 1 CO<sub>2</sub> emissions from gasoline, diesel and compressed natural gas (CNG) used by fleet vehicles (both on and off-road) were based on Placer County's fuel use and vehicle miles traveled (VMT) data supplied by the Department of Public Works Fleet Department.

Scope 1 CH<sub>4</sub> and N<sub>2</sub>O emissions from gasoline and diesel fuel used by the on-road vehicles were based on VMT data, and vehicle year, make and model data. Emissions were calculated using default emissions factors for gasoline and diesel fuel. In cases where the vehicle year data was not available a proxy year of 2003 was used.

Scope 1 fugitive emissions from vehicle air conditioning refrigerants were estimated using the alternate approach as actual recharge records were not available. Each make and model was verified as to type of refrigerant used from the

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manufacturers website. Where refrigerant type and model year were not available, we used a default of 2003 and R134a refrigerant. The full-charge capacity of refrigerant estimated by the alternate approach is the upper bound of the range approved for the equipment type. This alternate approach uses operation emission factors that are very conservative.

## **Transit Fleet**

Transit fleet information was provided by the Department of Public Works and supplemented by the Fleet Department. Scope 1 CO<sub>2</sub> emissions were based on the information supplied including make, model and year of bus; fuel type, primarily compressed natural gas (CNG); and vehicle miles travelled (VMT). Scope 1 CH<sub>4</sub> and N<sub>2</sub>O emissions were based on VMT data; and fleet vehicle year, make and model data. Emissions were calculated using default emission factors for diesel and CNG fuel.

## **Government-Generated Solid Waste**

The data for solid waste generated by government operations of Placer County was provided by Environmental Engineering Department. Data was supplied by facility and included frequency and bin size. It was assumed that bins were full. Using conversion factors provided by the California Integrated Waste Management Board (CIWMB) specifically tailored to the unique public administration waste characterization profile, this information was converted into tons of solid waste for the various types. The default diversion rate of 37.5% for recyclable material was applied. Scope 3 emissions were calculated using standard emission factors and equations.

## **Employee Commute**

The employee commute survey resulted in 615 responses which represents 27% of Placer County's employees. Scope 3 CO<sub>2</sub> emissions associated with employee travel to and from work were calculated using respondent's commute distance, mode and frequency. Vehicle miles traveled (VMT) were estimated from the 2010 survey data by extrapolating responses, standardized by using number of employees in 2005 (2,300). Fuel use was calculated using standard CACP equations and emissions were calculated using standard CACP emission factors for gasoline and diesel fuel use.

Scope 3 CH<sub>4</sub> and N<sub>2</sub>O emissions from gasoline and diesel fuel used by the on-road vehicles were based on the recommended method using VMT data, vehicle year, make and model data, although VMT was estimated as described above. Emissions were calculated using default emissions factors for gasoline and diesel fuel.

## **Information Items**

The only information items tracked for Placer County are the scope 2 emissions from electricity used for LS-1 designated streetlights and PG&E owned water and wastewater transport (PG&E owned, operated, maintained and directly paid for, indirectly paid for through Placer County's general rate case with PG&E).



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# Next Steps

## ICLEI's Five Milestone Process

While Placer County has already begun to reduce greenhouse gas emissions through its actions, this inventory represents the first step in a systematic approach to reducing Placer County'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 14: ICLEI's Five Milestones for Climate Mitigation



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ICLEI staff are available to local governments who are members and should be contacted to discuss the full range of resources available at each stage of the Milestone process. The following sections provide a glimpse at next steps and help capture the lessons learned in conducting this inventory.

## **Setting Emissions Reduction Targets**

This inventory provides an emissions baseline that can be used to inform Milestone Two of ICLEI's Five-Milestone process—setting emissions reduction targets for Placer's municipal operations. The greenhouse gas emissions reduction target is a goal to reduce emissions to a certain percentage below base year levels by a chosen planning horizon 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. Placer County should give itself enough time to implement chosen emissions reduction measures—noting that the farther out the target year is, the more Placer County should pledge to reduce. ICLEI recommends that regardless of the chosen long-term emissions reduction target (e.g., 15-year, 40-year), Placer County should establish linear interim targets for every two- to three-year period. Near-term targets facilitate additional support and accountability, and linear goals help to ensure continued momentum around local climate protection efforts. To monitor the effectiveness of its programs, Placer County should plan to re-inventory its emissions on a regular basis; many jurisdictions are electing to perform annual inventories. ICLEI recommends conducting an emissions inventory every three to five years.

### **The Long-Term Goal**

ICLEI recommends that 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, Placer County 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 Placer County 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 it is that some of the most dire climate change scenarios will be realized. Additionally, cost saving projects can be undertaken now – why wait to increase the quality of local government service and operations, while reducing taxpayer costs?

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## **State of California Targets and Guidance**

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

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.

## **Departmental Targets**

If possible, ICLEI recommends that Placer County consider department-specific targets for each of the departments that generate emissions within its operations. This allows Placer County 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 department leaders to consider their department's impact on the climate and institute a climate-conscious culture within their operations.

## **Creating an Emissions Reduction Strategy**

This inventory identifies the major sources of emissions from Placer County's operations and, therefore, where policymakers will need to target emissions reductions activities if they are to make significant progress toward adopted targets. For example, since largest sector was a major source of emissions from Placer County's operations, it is possible that Jurisdiction could meet near-term targets by implementing a few major actions within largest sector of emissions. Medium-term targets could be met by focusing emissions reduction actions on the other major sectors, and the long term (2050) target will not be achievable without major reductions in all of these sectors.

Please note that, whenever possible, reduction strategies should include cost-saving projects that both reduce costs (such as energy bills) while reducing greenhouse gas emissions. These "low hanging fruit" are important because they frequently represent win-win situations in which there is no downside to implementation. Selecting these projects in the order of largest to smallest benefit ensures that solid, predictable returns can be realized locally. These projects lower recurring expenditures, save taxpayer dollars, create local jobs, and benefit the community environmentally.

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

- Continue with sub-metering, benchmarking and comprehensive re-commissioning and municipal retrofits of existing buildings
- Switch traffic signals from incandescent bulbs to Light Emitting Diodes (LEDs)
- Change procurement policy to specify high fuel efficiency for each vehicle class.
- Continue to upgrade water pumping systems to high efficiency pumps
- Conversion of extensive septic systems to sewer connections where possible
- Increase office recycling, e.g. paper, cardboard, cans, toner cartridges
- Etc.

Using these strategies as a basis for a more detailed overall emissions reductions strategy, or climate action plan, Placer County should be able to reduce its impact on global warming. In the process, it may also be able to improve the quality of its services, reduce costs, stimulate local economic development, and inspire local residents and businesses to redouble their own efforts to combat climate change.

## Improving Emissions Estimates

One of the benefits of a local government operations emissions 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 the accuracy of the emissions estimate and may have other implications for government operations as a whole.

During the inventory process, Placer County staff identified the following gaps in data that, if resolved, would allow Placer County to meet the recommended methods outlined in LGO Protocol in future inventories.

- Sub metering of buildings to track energy usage.
- Direct tracking of refrigerants recharged into HVAC and refrigeration equipment
- Logistics tracking of fleet vehicles
- Fuel consumption by diesel and other generators
- Refrigerants recharged into vehicles in the vehicle and transit fleet

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.

## Project Resources

ICLEI has created tools for Placer County to use to assist with future monitoring inventories. These tools are designed to work in conjunction with LGO Protocol, which is the primary reference document for conducting an emissions inventory. The following tools should be saved as resources and supplemental information to this report:

- The “Master Data Workbook” that contains most or all of the raw data (including emails), data sources, emissions, notes on inclusions and exclusions, and reporting tools
- The “Data Gathering Instructions” on the types of emissions and data collection methodology for each inventory sector

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MEMORANDUM OF UNDERSTANDING  
BETWEEN  
THE COUNTY OF PLACER AND THE SIERRA BUSINESS COUNCIL

WHEREAS, the Sierra Business Council proposes to arrange for technical tools, professional training and support to assist the County of Placer in quantifying community-wide greenhouse gas emissions and operations utilizing the International Local Government Greenhouse Gas Emissions Analysis Protocol (IEAP), and

WHEREAS, Sierra Business Council's work is supported by the Pacific Gas and Electric Company's Green Communities Program, a program funded by California utility rate payers and administered by the Pacific Gas and Electric Company under the auspices of the California Public Utilities Commission, and

WHEREAS, participation in the Green Communities Program as administered through the Sierra Business Council will provide the County of Placer with the opportunity to be able to develop greenhouse gas emissions inventories, establish a baseline and track progress and thereby undertake an analysis of its greenhouse gas emissions at minimal cost and commitment of staff resources, and

WHEREAS, the County of Placer desires to participate in the Green Communities Program on the terms and conditions as set forth in the Memorandum of Understanding,

NOW, THEREFORE, the County of Placer and Sierra Business Council hereby agree in this Memorandum of Understanding as follows:

SECTION ONE SIERRA BUSINESS COUNCIL RESPONSIBILITIES

The Sierra Business Council shall:

- Provide training for County staff in preparation and interpretation of the International Local Government Greenhouse Gas (GHG) Emissions Analysis Protocol (IEAP).
- Provide a paid intern trained to assist County staff to conduct the County greenhouse gas emissions inventory, process the data and complete the report. The inventory will include baseline emissions on the community level, reported by sector. This agreement does not commit SBC to performing emissions analysis of specific plans or development projects.
- Disseminate climate protection resource materials as approved by the County of Placer
- Present the final report to the County.

SECTION TWO COUNTY RESPONSIBILITIES

The County shall:

- Provide available data related to the inventory
- Provide County staff personnel to attend training workshops, assist the Sierra Business Council intern in connecting with key staff for the purposes of data collection, and review the inventory final report.

SECTION THREE      EMPLOYEES AND COSTS

All persons performing services in connection with this Memorandum which are associated with, retained by or employed by Sierra Business Council shall be independent contractors of or employees of Sierra Business Council and not employees of the County of Placer. Sierra Business Council shall be solely responsible for the salaries and other applicable benefits, including Worker's Compensation, of all such personnel. The County of Placer shall be solely responsible for the salaries and other applicable benefits, including Worker's Compensation, of all County personnel.

Each party hereto shall bear any and all costs and expenses of furnish facilities, equipment, and other materials which may be required for performing its responsibilities as described in Sections 1 and 2, above.

SECTION FOUR      MUTUAL INDEMNIFICATION

Sierra Business Council shall indemnify, defend and hold harmless the County of Placer and its elected and appointed officials, employees, agents and contractors from and against any and all loss, liability, cost, claim, cause of action, judgment, expense, (including reasonable attorneys' fees) or damage arising from, or related to, Sierra Business Council's performance of its obligations pursuant to this Memorandum, except to the extent the same are attributable to the gross negligence or willful misconduct of the County.

County of Placer shall indemnify, defend and hold harmless Sierra Business Council and its, employees, agents and contractors from and against any and all any and all loss, liability, cost, claim, cause of action, judgment, expense, (including reasonable attorneys' fees) or damage arising from or related to County's performance of its obligations pursuant to this Memorandum, except to the extent the same are attributable to the gross negligence or willful misconduct of Sierra Business Council.

SECTION FIVE      TERMINATION

This Memorandum may be terminated by either party at any time without cause by providing the other party ten (10) days written notice.

SECTION SIX      NOTICE

Any notice required to be given hereunder shall be in writing and deemed given when personally delivered or deposited in the mail, postage prepaid, and addressed to the parties as follows:

COUNTY OF PLACER:

Placer County Planning Dept  
Attn: Loren Clark  
3901 County Center Drive  
Auburn, CA 95603

Phone: (530) 745-3000  
Fax: (530) 886-3080

SIERRA BUSINESS COUNCIL:

Steve Frisch  
P.O. Box 2428  
Truckee, CA 96160

Phone: (530) 582-4800  
Fax: (530) 582-1230

Any notice so delivered personally shall be deemed to be received on the date of delivery, and any notice mailed shall be deemed to be received five (5) days after the date on which it was mailed.

SECTION SEVEN

ENTIRE AGREEMENT

This Memorandum contains the entire agreement of County and Sierra Business Council with respect to the subject matter hereof, and no other agreement, statement, or promise made by any party, or to any employee, officer or agent of any party, which is not contained in this Memorandum shall be binding or valid.

IN WITNESS WHEREOF, the County of Placer and Sierra Business Council have authorized execution of this Memorandum of Understanding on the dates set forth below.

SIERRA BUSINESS COUNCIL

PLACER COUNTY

BY:   
Steven Frisch  
President  
Sierra Business Council

By: \_\_\_\_\_  
Robert Weygandt, Chairman  
Placer County Board of Supervisors

Dated: 8-29-2011

Dated: \_\_\_\_\_

ATTEST:

BY: \_\_\_\_\_  
ANN HOLMAN  
Clerk of the Board

APPROVED AS TO FORM:

BY: \_\_\_\_\_  
County Counsel