County of San Luis Obispo General Plan

Community-Wide and County Government Operations Baseline Greenhouse Gas Emissions Inventory

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San Luis Obispo County
Department of Planning and Building

Credits and Acknowledgements

Report prepared by PMC for the County of San Luis Obispo.

PMC PROJECT TEAM

Tammy Seale, Project Manager

Jillian Rich, Associate Planner

Jaime Hill, Associate Planner

WITH ASSISTANCE FROM:

County of San Luis Obispo

Kami Griffin, Acting Director, Department of Planning and Building

Chuck Stevenson, AICP, Division Manager, Department of Planning and Building

Mike Wulkan, Supervising Planner, Department of Planning and Building

James Caruso, Senior Planner, Project Manager, Department of Planning and Building

Amber Colson, Long-Range Planning Intern, Department of Planning and Building

Annette Young, Department of Public Works

Courtney Ward, Air Pollution Control District

David Clew, Utility Coordinator, General Services Agency

Eric Cleveland, Battalion Chief of Support Services, Cal Fire

Gary Hicklin, Technology Supervisor

Jacquiline Barthelow, Child Support Services

Janice Campbell, Agriculture Department

Mark Hutchinson, Environmental Programs Manager, Department of Public Works

Melissa Guise, Air Pollution Control District

Melody Mullis, County Library

Mike Matus, Fiscal Services, Sheriff's Department

Integrated Waste Management Authority

Peter Cron

PG&E

Jeremy Howard

Southern California Gas Company

Colby Morrow

Waste Connections, Inc.

Tom Martin

ICLEI – Local Governments for Sustainability

Jonathan Strunin, Program Officer

Allison Culpen, Program Associate

California Air Resources Board

Tom Scheffelin and Jon Taylor

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Executive Summary

Climate change is quickly becoming a high priority among policy makers and residents alike. In July 2008, the County Board of Supervisors made a commitment to calculating San Luis Obispo's contribution to global climate change through the development of a Community-Wide and County Government Operations Baseline Greenhouse Gas Emissions (GHG) Inventory (Inventory). This Inventory identifies the major sources of greenhouse gas emissions within the county[1] and provides a baseline against which future progress can be measured. This Inventory includes two components: a community-wide analysis and a County government operations analysis. It is important to note that the County government operations inventory is a subset of the community inventory, meaning that all County government operations emissions are included in the commercial/industrial, transportation, waste, or 'other' categories of the community-wide inventory. The County government operations inventory should not be added to the community analysis; rather it should be looked at as a slice of the complete picture. Specifically, this Inventory does the following:

- Calculates GHGs from community-wide[2] activities, including County government operations, within County's jurisdictional boundary in calendar year 2006;
- Identifies the major sources of greenhouse gas emissions from community-wide sources and County government operations;
- Provides County decision-makers and the community with adequate information to inform policy decisions; and,
- Forecasts how emissions will grow in the community if no behavioral changes are made.

What are Greenhouse Gas Emissions (GHGs)?

Gases that trap heat in the Earth's atmosphere are called greenhouse gases, or GHGs. Greenhouse gases include carbon dioxide, methane, nitrous oxide, and fluorinated gases. While many of these gases occur naturally in the atmosphere, modern human activity has led to a steep increase in the amount of GHGs released into the atmosphere over the last 100 years. Collectively, these gases intensify the natural greenhouse effect, thus causing global average surface temperatures to rise, which in turn affects global climate patterns. GHGs are often quantified in terms of CO_2 equivalent, or CO_2e, a unit of measurement that equalizes the potency of GHGs.

Source: Intergovernmental Panel on Climate Change (IPCC), 2007

The 2006 community-wide and County government operations baseline GHG Inventory represents a key step in San Luis Obispo County's efforts to improve air quality, enhance environmental sustainability, and ensure the safety and comfort of its residents for generations

[1] In this report, the term 'county' refers to the area inside the jurisdictional boundary of San Luis Obispo County, whereas 'County' refers to those activities which are under the operational control of County agencies.

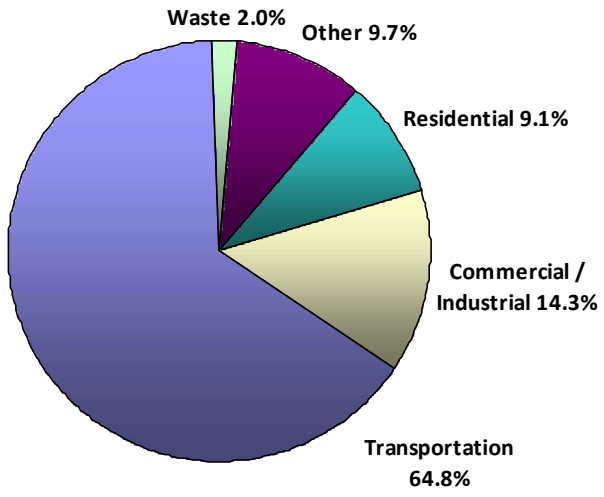
[2] 'Community-wide' or 'community' refers to all activities within the county (as defined above), including those from businesses, industrial processes, residents, vehicles, and municipal operations.

to come. In addition, this Inventory allows the County to quantitatively track and take credit for its numerous efforts related to energy efficiency and the mitigation of global climate change.

COMMUNITY-WIDE GHG INVENTORY RESULTS

The GHG Inventory identifies that the community of San Luis Obispo County emitted approximately 1,506,163 metric tons of CO_2e in the baseline year 2006. As shown in **Figure A2-ES1**, the transportation sector was by far the largest contributor to emissions (64.8%), producing approximately 976,585 metric tons of CO_2e in 2006. Emissions from the residential, commercial, and industrial sectors accounted for a combined 23.4% of the total, while emissions from the waste sector accounted for 2.0% of emissions and other sources, including livestock and agricultural equipment, comprised 9.7% of the total.

FIGURE A2-ES1
COMMUNITY GHG EMISSIONS BY SECTOR



The majority of emissions from the transportation sector were the result of gasoline consumption in private vehicles traveling on local roads, US 101, and state highways. GHG figures from the waste sector are the estimated future emissions that will result from the decomposition of waste generated by county residents and businesses in the base year 2006, with a weighted average methane capture factor of 58%.

COUNTY GOVERNMENT OPERATIONS GHG INVENTORY RESULTS

County operations and facilities produced approximately 34,335 metric tons of CO_2e from inventoried greenhouse gas emission sources in 2006. As displayed in **Figure A2-ES2**, this represents approximately 2.2% of total community-wide emissions in the county. County emissions are comprised of employee commute trips, waste, streetlight electricity, energy consumption from water and sewage facilities, building energy, vehicle fleet fuel consumption, and miscellaneous equipment. Employee commute was by far the largest contributor to the County's emissions (73.6%) producing 25,257 metric tons of carbon dioxide equivalent. (Refer to **Figure A2-ES3**) The second largest contributor (14.5%) was from energy consumption in County-owned and -operated facilities.

FIGURE A2-ES2
COUNTY GOVERNMENT OPERATIONS PORTION OF COMMUNITY-WIDE GHG EMISSIONS, 2006

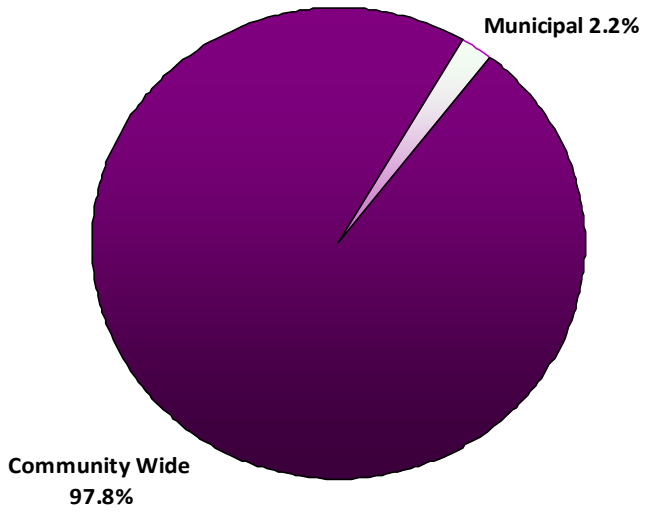
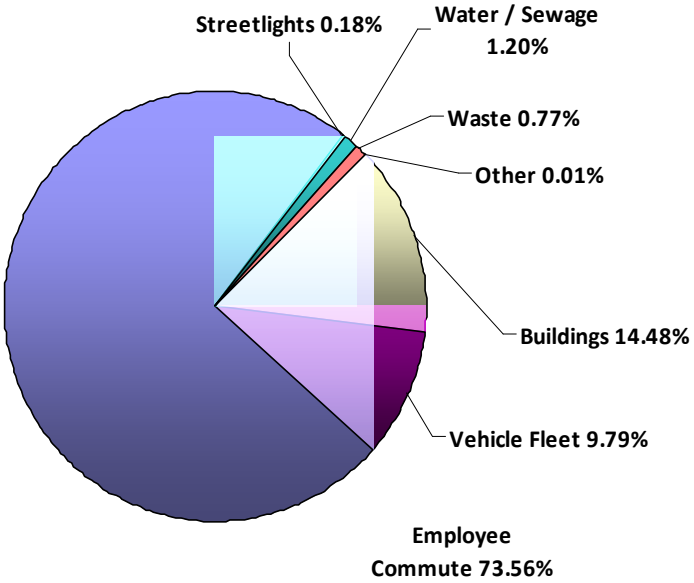


FIGURE A2-ES3
COUNTY GOVERNMENT OPERATIONS GHG EMISSIONS BY SECTOR, 2006



County government operations emissions are a subset of the total community-wide emissions as outlined above. However, similar to how businesses and factories perform their own facility-scale GHG Inventories this Inventory analyzes County emissions separately to identify cost-saving and emissions-reducing strategies in the future. The methodology for estimating emissions from local government operations is guided specifically by the Local Government Greenhouse Gas Inventory Protocol developed by the California Air Resources Board, ICLEI – Local Governments for Sustainability, and the California Climate Registry.

DATA LIMITATIONS

This County government operations and community-wide Inventory captures the major sources of greenhouse gases caused by activities within the County per standard practice. However, it is important to note that some likely emission sources were not included in the Inventory either because of privacy laws, lack of data, or a lack of reasonable methodology for calculating emissions. It is estimated that these sources not included in the inventory comprise less than 5% of total emissions in the county. It is likely that as greenhouse gas inventories become more common, methodology and accessibility to data will improve.

The sources that could not be included due to privacy laws, lack of data availability, and/or a reasonable methodology include the following:

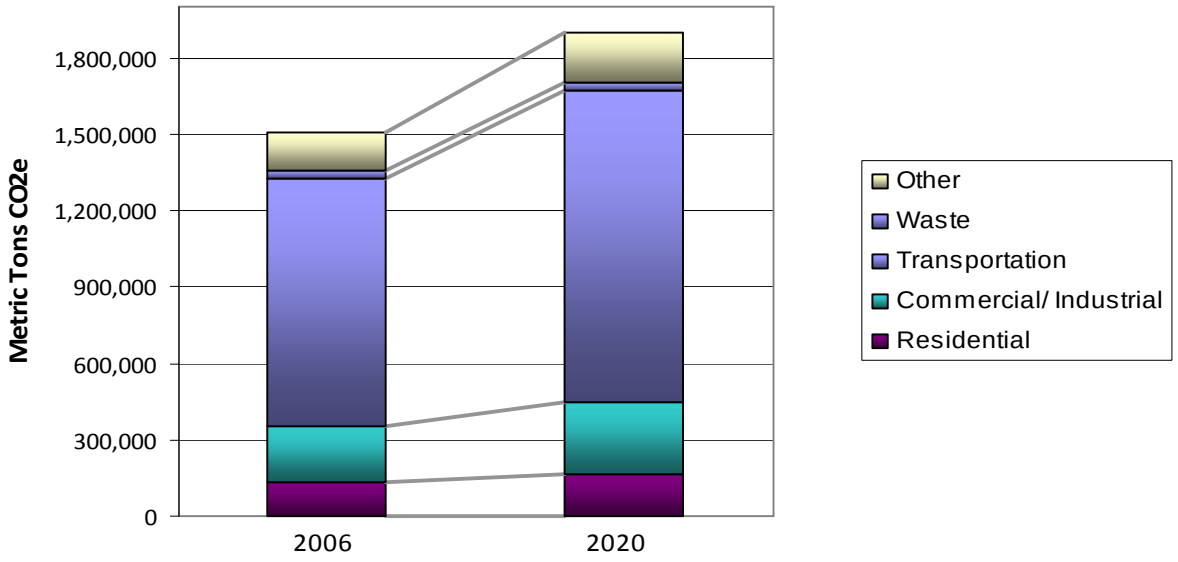
- Aircraft activities
- Military base activities
- Port and harbor activities
- Refrigerants from County government operations facilities and vehicles
- Freight and passenger trains
- Sewage and water treatment for the community-at-large
- Propane use for the community-at-large

These limitations are explained further in this document.

FORECAST AND NEXT STEPS

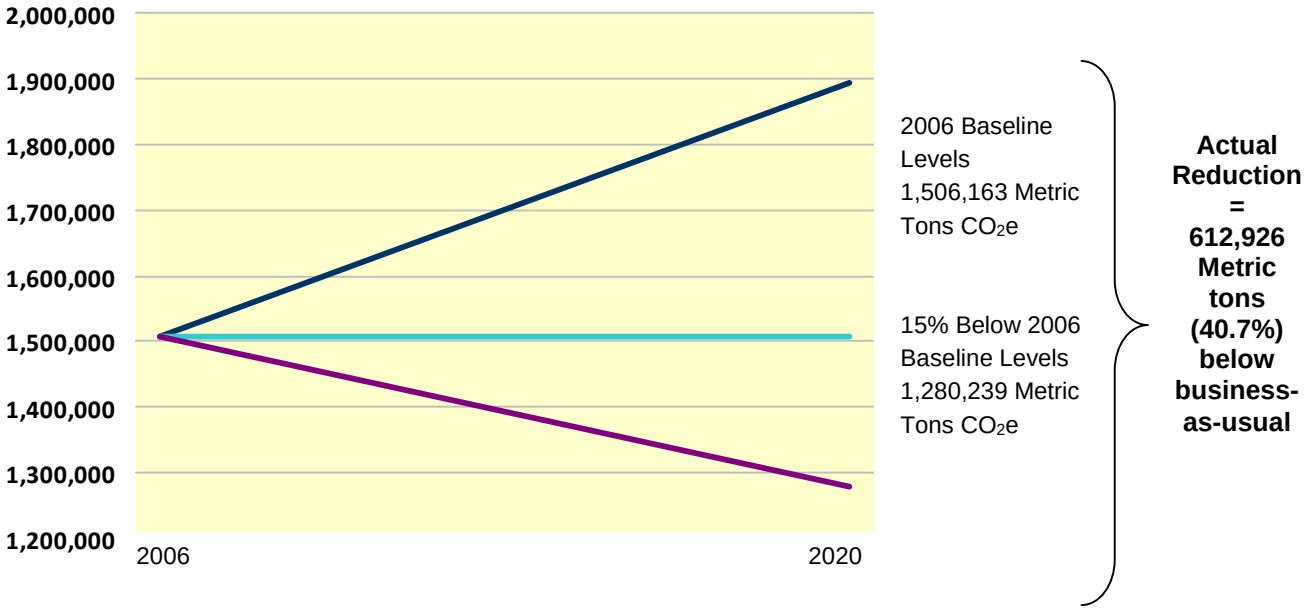
If consumption trends continue the pattern observed in 2006 emissions will reach 1,893,164 metric tons of CO_2e by 2020, or a 25.7% increase over 2006 baseline levels. This growth, shown in **Figure A2-ES4**, is due to projected increases in households, population, and jobs within the County.

FIGURE A2-ES4 2020 SAN LUIS OBISPO COUNTY BUSINESS-AS-USUAL GHG EMISSIONS FORECAST



With this information the County can make an informed determination of a reduction target. Conformance with the State of California's recommended reduction of 15% below present levels by 2020 would result in a 32.4% reduction below the county's business-as-usual emissions (**Figure A2-ES5**).[3]

FIGURE A2-ES5 2020 BUSINESS-AS-USUAL FORECAST IN RELATION TO 15% STATE-RECOMMENDED REDUCTION TARGET



It is likely that the county's emissions are already below the business-as-usual forecast due to sustainability efforts initiated by the County since 2006. As directed by the Conservation and Open Space Element (April 2009 Public Hearing Draft), this baseline Inventory will be updated on a regular basis, most likely 3-7 years, in order to track the County's progress and reassess reduction targets.

[3] AB 32 Scoping Plan, page 27 states that ARB encourages local governments to "move toward establishing similar goals for community emissions that parallel the State commitment to reduce greenhouse gas emissions by approximately 15 percent from current levels by 2020." http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm

1. Introduction

In July 2008, the County Board of Supervisors adopted a resolution to join ICLEI-Local Governments for Sustainability (ICLEI) and to authorize the preparation of a greenhouse gas emissions (GHG) baseline inventory as part of the Conservation and Open Space Element (COSE) update. In committing to the project, the County of San Luis Obispo embarked on an ongoing, coordinated effort to reduce the GHG emissions that cause global warming, improve air quality, reduce waste, cut energy use, and save money.

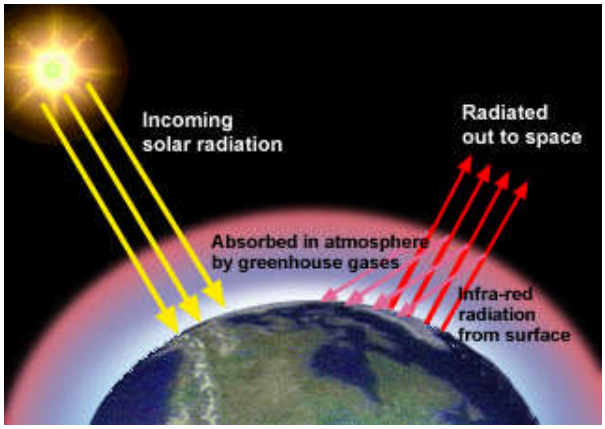
ICLEI, formerly the Intergovernmental Council of Local Environmental Initiatives, is now named ICLEI - Local Governments for Sustainability. The non-profit organization provides technical assistance to more than 1,000 local governments worldwide on quantifying and reducing greenhouse gas emissions.

This section introduces the Inventory, defines key terms used throughout the Inventory, and provides an overview of climate change science and regulation in California.

1.1 PURPOSE OF A GHG INVENTORY

This Inventory represents completion of the first step in the County's climate protection process. As advised by ICLEI, quantifying recent-year emissions is essential to establish: 1) a baseline against which to measure future emission levels, and 2) an understanding of where the highest percentages of emissions are coming from, and, therefore, the greatest opportunities for emissions reductions. This Inventory presents estimates of greenhouse gas emissions in 2006 resulting from the community as a whole.

FIGURE A2.1-1
THE GREENHOUSE GAS EFFECT



Source: Tufts University

Climate Change – Scientific Background

Since the early 1990's scientific consensus holds that the world's population is releasing greenhouse gases faster than the earth's natural systems can absorb them. These gases are released as by-products of fossil fuel combustion, waste disposal, energy use, land-use changes, and other human activities. This release of gases, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), creates a blanket around the earth that allows light to pass through but traps heat at the surface preventing its escape into space (**Figure A2.1-1**). Known as the greenhouse effect, models show that this phenomenon will lead to a 2°F to 10°F temperature increase over the next 100

years. The Intergovernmental Panel on Climate Change warns that most of the warming observed over the last 50 years is attributable to human activities.[4]

Although used interchangeably, there is a difference between the terms "climate change" and "global warming." According to the National Academy of Sciences, climate change refers to any significant, measurable change of climate lasting for an extended period. It can be caused by natural factors and human activities alike. Global warming, on the other hand, is an average increase in the temperature of the atmosphere caused by increased greenhouse gas emissions from human activities. The use of the term 'climate change' is becoming more prevalent because it encompasses all changes to the climate, not just temperature. Additionally, the term 'climate change' conveys temporality, implying that climate change can be slowed with the efforts of local, regional, state, national, and world entities.

Changes in the earth's temperature will have impacts for residents and businesses of San Luis Obispo County. Some of the major impacts expected to occur before 2099 include the following, separated by sector:[5]

- Coastline: The San Luis Obispo coastline could face inundation as a result of sea level rise and global warming. As temperatures rise, the ocean waters rise as well due to thermal expansion and the melting of glaciers and snowpack. New reports commissioned by the California Climate Action Team and performed by the Pacific Institute suggest that sea levels will rise by at least 55 inches by 2099.[6]
- Agriculture: County agriculture will be greatly affected by climate change. Rising sea levels will cause greater soil salinity, increased temperatures will cause longer and more severe periods of drought and wildfire.
- Public Health: Heat waves are expected to have a major impact on public health, as will decreasing air quality and an increase in mosquito-breeding and mosquito-borne diseases. The elderly, young and other vulnerable populations will need assistance as they will not have the resources to deal with the costs and adapt to the expected changes.

Although one county cannot resolve the issue of climate change, local governments can make a positive impact through cumulative local action. Cities and counties have the ability to reduce

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[4] Intergovernmental Panel on Climate Change. Fourth Assessment Report, Working Group I. 2007. Climate Change 2007: The Physical Science Basis, Summary for Policy Makers.

[5] Our Changing Climate: Assessing the Risks to California (2006), www.climatechange.ca.gov

[6] California Climate Change Center, The Impacts of Sea-Level Rise on the California Coast, March 2009. http://www.pacinst.org/reports/sea_level_rise/index.htm

greenhouse gas emissions through effective land use and transportation planning, wise waste management, and the efficient use of energy. The County can achieve multiple benefits including lower energy bills, improved air quality, economic development, reduced emissions, and better quality of life through:

- Energy efficiency in county facilities and vehicle fleet;
- Sustainable purchasing and waste reduction efforts;
- Land use and transportation planning; and
- Preparing for sea level rise.

This Inventory serves as a baseline measurement for implementing and tracking the effectiveness of these efforts.

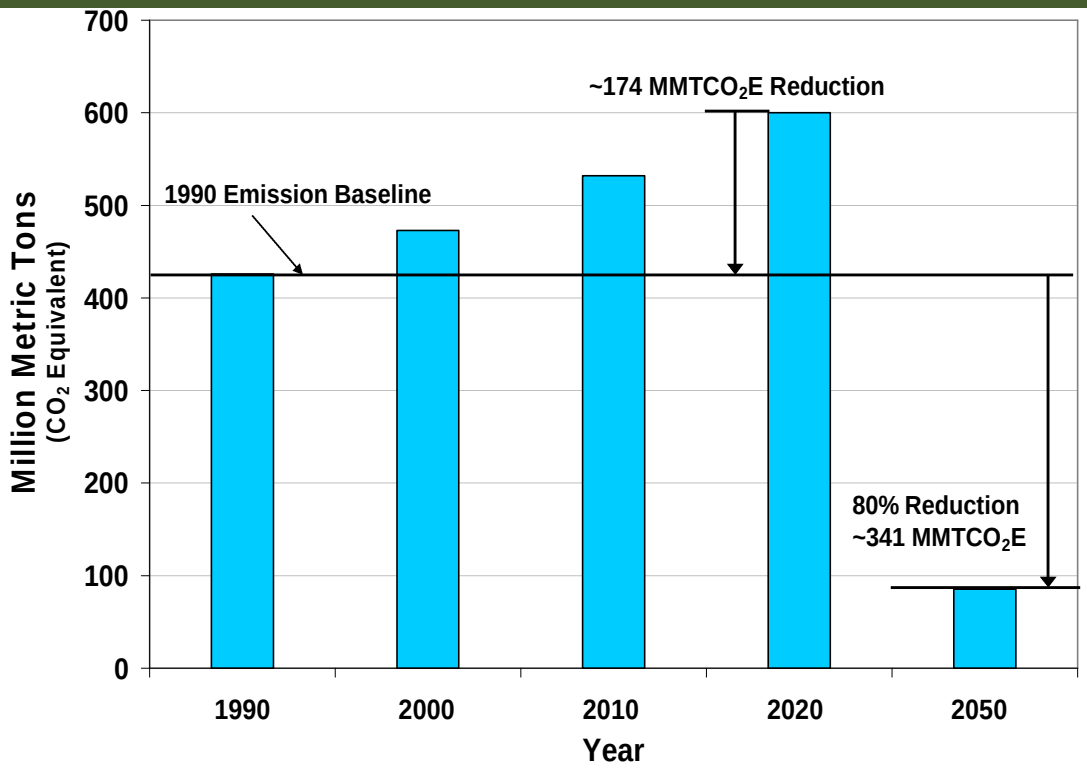
1.2 CLIMATE CHANGE – LEGISLATIVE BACKGROUND

California continues to be a leader in addressing climate change in the United States and in the world. In June of 2005, Governor Schwarzenegger issued a landmark Executive Order establishing progressive greenhouse gas emissions targets for the entire state. **Executive Order S-3-05** makes the following goals:

- By 2010, reduce greenhouse gas emissions to 2000 levels;
- By 2020 reduce greenhouse gas emissions to 1990 levels;
- By 2050, reduce greenhouse gas emissions to 80% below 1990 levels.

To support these reduction targets, the California legislature adopted the **California Global Warming Solutions Act of 2006, also known as AB 32**. The law requires the California Air Resources Board (CARB) to develop regulatory and market mechanisms that will reduce greenhouse gas emissions to 1990 levels by 2020 as shown in **Figure A2.1-2** below. CARB approved a scoping plan in January 2009 outlining preliminary mechanisms for emissions reductions, including a cap-and-trade program and regional reduction targets.

FIGURE A2.1-2
CALIFORNIA CLIMATE CHANGE EMISSIONS AND TARGETS



Source: California Air Resources Board

AB 32 has caused a ripple effect among cities, counties, and environment groups throughout the state. In *State of California Attorney General v. San Bernardino County* in 2007, the California Attorney General's office argued that the Environmental Impact Report for San Bernardino's General Plan update did not conform to the overall goals of AB 32 because it did not adequately analyze or mitigate the effects of development on global warming. The County settled with the State by agreeing to produce a greenhouse gas emissions reduction plan much like this report and, at the same time, furthering California's commitment to addressing climate change.

The San Bernardino Settlement Agreement led senators to write SB 97 in August 2007. This law formally acknowledges that climate change is an important environmental issue that requires analysis under the California Environmental Quality Act (CEQA). The Governor's Office of Planning and Research (OPR) is responsible for developing guidelines for addressing climate

change in CEQA documents by 2009. The guidelines will be adopted by the State Resources Agency in 2010.

In September 2008, the Attorney General reached another settlement agreement concerning climate change, this time with the City of Stockton. According to the Attorney General's office and the Sierra Club, the City of Stockton did not adequately address climate change in its 2035 General Plan update and corresponding Environmental Impact Report. The City of Stockton settled with the Attorney General by agreeing to adopt a climate action plan designed to reduce sprawl, increase infill development, promote public transit, and encourage more energy-efficient buildings.

Although EO S-3-05, AB 32, SB 97, and the Attorney General's actions have made California a national leader in climate change policy, there is much more to come. The California Legislature passed numerous bills in recent years concerning energy use, land use, transportation, and other climate change topics. These bills will result in the guidance and funding necessary for local governments to move forward with climate action efforts. At the same time, the State is working to form regional approaches to reducing greenhouse gas emissions in response to the passage of Senate Bill 375 (SB 375). SB 375 (Steinberg) aims to reduce greenhouse gas emissions by linking transportation funding to land use planning. It also requires Metropolitan Planning Organizations, including the San Luis Obispo Council of Governments, to include a Sustainable Communities Strategy (SCS) in their Regional Transportation Plans (RTPs) for reducing suburban sprawl. It also creates incentives for implementation of the sustainable communities strategies and sustainable transportation plans. Additional efforts are underway to affect the overall transportation sector by mandating fewer emissions from vehicles, including Assembly Bill 1493 (Pavley), signed into law in 2002, which will require carmakers to reduce emissions from new passenger cars and light trucks beginning in 2009.

The scale and pace at which the State of California is addressing this issue necessitates that San Luis Obispo County accelerate efforts to combat climate change.

1.3 THE CITIES FOR CLIMATE PROTECTION CAMPAIGN

By adopting a resolution to join ICLEI-Local Governments for Sustainability, San Luis Obispo County is now part of an international movement of local governments. More than 1,000 local governments, including over 500 in the United States, have joined ICLEI's Cities for Climate Protection (CCP) campaign.

The CCP campaign provides a framework for local communities to identify and reduce greenhouse gas emissions, organized along five milestones as represented in **Figure A2.1-3** below:

FIGURE A2.1-3: THE ICLEI FIVE MILESTONE PROCESS

This report represents the completion of the first CCP milestone, and provides a foundation for future work to reduce greenhouse gas emissions in San Luis Obispo County.

1.4 SUSTAINABILITY AND CLIMATE CHANGE MITIGATION ACTIVITIES IN THE COUNTY

Many of the air pollution programs already in place throughout the county reduce ozone forming pollutants and toxic emissions, but they also have ancillary benefits and reduce greenhouse gas emissions. The County, cities, and the Air Pollution Control District (APCD) implement rules and regulations, clean fuels programs, CEQA mitigations measures, grants, Transportation Choices Program, pollution prevention activities, energy efficiency and conservation measures, water conservation programs, partnerships, and general public outreach that directly or indirectly address climate change and reduce greenhouse gas emissions.

The APCD Board approved the first report or plan to address climate change in the county. The plan, *Options for Addressing Climate Change in San Luis Obispo County (2005)* identifies the following seven actions that could be implemented to specifically address greenhouse gases (GHG) at the local level:

1) Prepare a countywide inventory of greenhouse gas emissions.
2) Target a percentage of mitigation grant funds for greenhouse gas emission reductions.
3) Evaluate and quantify the GHG reduction benefits from existing district programs.
4) Develop public education and outreach campaigns on climate change.
5) Encourage and provide support for local governments to join Cities for Climate Protection program.
6) Develop partnership with Cal Poly for addressing climate change.
7) Join the California Climate Registry and encourage local industry participation.

As of November 2008, the APCD has initiated, promoted, or supported all of the implementation actions to address climate change and reduction of greenhouse gas emissions in the county. The APCD joined the California Climate Registry and conducted its greenhouse gas emissions inventory in the fall of 2008. The APCD facilitates regular meetings of Climate Change Stakeholders, a local group of city and county representatives that shares resources to address climate change. To encourage and support local greenhouse gas emissions inventories, the APCD is providing technical assistance to all of the incorporated cities to assist or perform GHG County government operations and community-wide emissions inventories, similar to this Inventory, for all of the incorporated cities in the county.

The APCD also coordinates the Central Coast Clean Cities Coalition (C5). C5 is a partnership of public/private entities whose goal is to promote the use of alternative fuels vehicles (AFV) on the Central Coast. By working with area fleet operators, C5 sponsors training seminars, public events and grant funding workshops related to use of alternative fuels.

In 2008, the APCD and the San Luis Obispo Council of Governments partnered to conduct a countywide survey regarding air quality, climate change, energy use and land use. The key findings follow.

Attitudes toward Air Quality and Climate Change

County residents are more concerned about local air quality than they are about climate change. Moreover, the percentage of people who said they have ‘no’ concern for climate change far exceeds those who said they have ‘no’ concern for protecting air quality. North County residents are less concerned about both air quality and climate change issues than are residents of other regions.

- About one fourth of residents say they are ‘very’ knowledgeable about ways to reduce their impact on air quality and climate change.

- Approximately 1/3 of all residents have made 'a lot' of lifestyle changes to reduce their impact on air quality and climate change. Another third have made some changes while the remaining third have made a few or no changes.
- Messages that encourage residents to 'buy locally grown produce or manufactured items' and/or to 'combine errands into one trip' are likely to influence the greatest number of people; least effective are statements about 'reducing car use'.

Attitudes toward Alternative Sources of Energy

- 94% of respondents support the idea of government agencies working to provide more energy through renewable sources. Two-thirds of respondents would support such efforts even with a 5% increase over current costs.

Land Use Issues

- Respondents support development in urban areas more than they do in rural areas. 80% - 85% support development that provides single-family homes or condominiums in urban areas.
- 78% support the idea of planning communities that make it easier to get around by bus, biking or walking rather than planning communities that accommodate cars.
- Rural development is the planning issue with the least consensus among respondents.
- 54% indicated they would like planners to discourage rural development while 46% would like to allow such developments. North County respondents, followed by South County respondents, were generally more in support of rural development than were respondents the central and coastal regions.

Local and state-level conversations and regulatory actions regarding climate change have been evolving rapidly since the APCD and SLOCOG survey. The County and other municipal agencies will use the results of GHG baseline inventories and public outreach and engagement processes to develop a local response to climate change.

Many non-governmental organizations in the county have prioritized sustainability[7] and climate change. Consequently, these organizations partnered with government agencies and others to develop activities and programs to educate, engage, and assist government agencies, businesses, and residents understand and address sustainability and a local response to climate change.

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[7] The most widely quoted definition of 'sustainability' internationally is the "Brundtland definition" of the 1987 Report of the World Commission on Environment and Development – that sustainability means "**meeting the needs of the present without compromising the ability of future generations to meet their own needs.**" http://www.epa.gov/sustainability/basicinfo.htm#sustainability

2. Community and County government operations Inventory Methodology

The first step toward reducing greenhouse gas emissions is to identify baseline levels and sources of emissions in the county. This information can later inform the selection of a reduction target and possible reduction measures to be included in a climate action plan.

This section outlines the methodology used to calculate the community and County government operations[8] inventories, including the difference between the two inventories, and the data collection process, data sources, GHG emission scopes, data limitations, and means of calculation.

2.1 BASELINE AND FORECAST YEARS

The year 2006 was selected as the county's baseline year due to the availability of reliable data. The State of California uses 1990 as a reference year to remain consistent with the Kyoto Protocol, and also because it has well-kept records of transportation trends and energy consumption in that year. However, cities and counties throughout California typically elect to use 2005 or 2006 as a baseline year because of the more reliable recordkeeping from those years and because of the large amount of growth that has occurred since 1990.

This Inventory uses a forecast year of 2020 to be consistent with the State of California GHG Inventory[9] forecast year and AB 32 target, both of which reference 2020. In addition, it is likely that any forecast beyond 2020 would have a significant margin of error because of unknown population growth rates and new technology.

2.2 THE TWO INVENTORIES: COMMUNITY-WIDE AND COUNTY GOVERNMENT OPERATIONS

This inventory is separated into two sections, community-wide and County government operations. Per ICLEI protocol, the County has completed an assessment of activities throughout the community and a more detailed analysis of County government operations including streetlights, building energy use, fleet vehicles, and more. The County government operations inventory was conducted consistent with the Local Government Operations Protocol

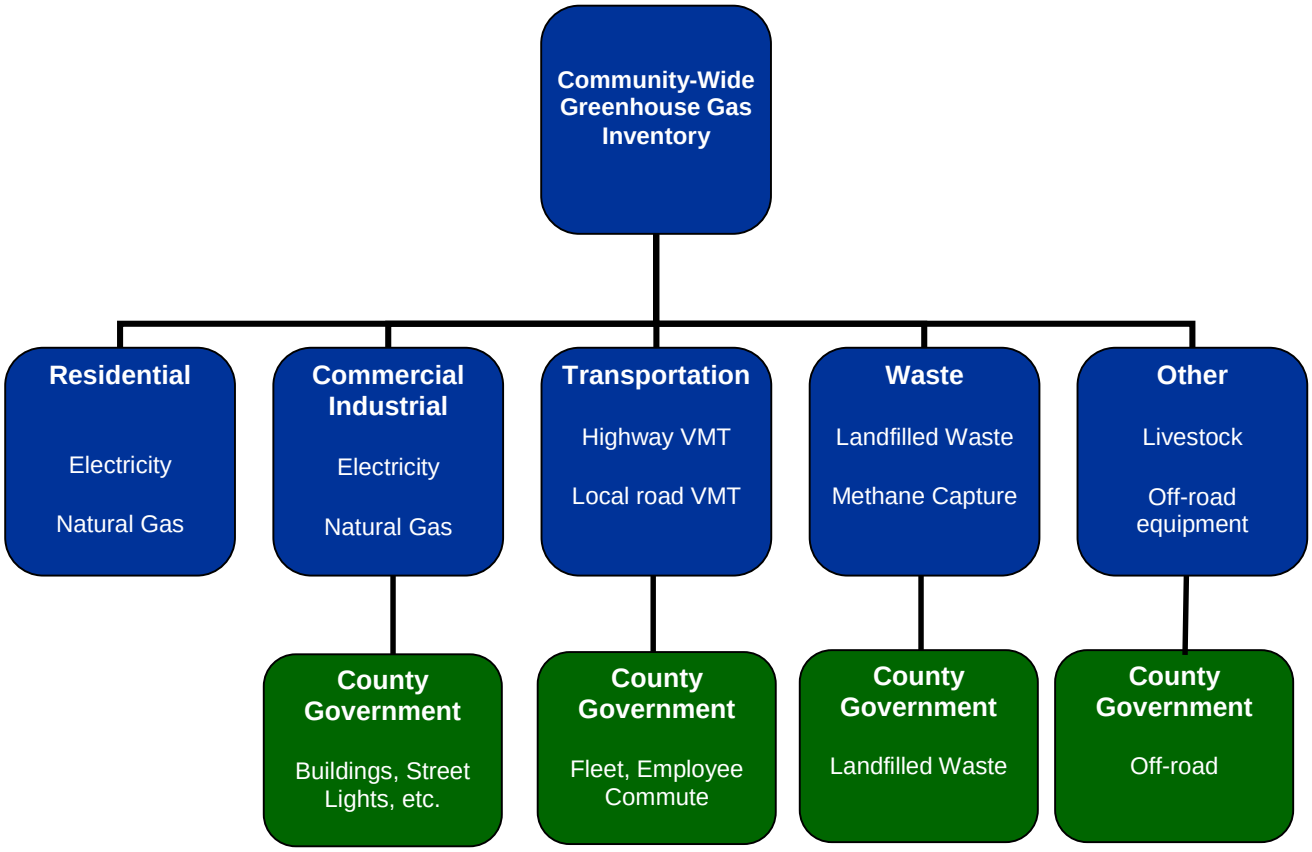
[8] In this report, the term 'county' refers to the unincorporated area (the jurisdictional boundary of the San Luis Obispo County), whereas 'County' refers to those activities that are under the operational control of County agencies. 'Community-wide' or 'community' refers to all activities within the unincorporated county (as defined above), including those from businesses, industrial processes, residents, vehicles, and municipal operations.

[9] California Greenhouse Gas Inventory, http://www.arb.ca.gov/cc/inventory/inventory.htm

developed by the California Air Resources Board (CARB), ICLEI, The Climate Registry, and the California Climate Action Registry (CCAR).

It is important to note that the County government operations inventory is a subset of the community inventory, meaning that all County government operations are included in the commercial/industrial, transportation, waste, or 'other' categories of the community-wide inventory. The County government operations inventory should not be added to the community analysis; rather it should be looked at as a slice of the complete picture as illustrated in **Figure A2.2-1**. Although a small contributor to the community's overall emissions levels, a County government operations audit allows the County to track its individual facilities and vehicles and to evaluate the effectiveness of its emissions reduction efforts at a more detailed level.

FIGURE A2-2-1 THE RELATIONSHIP BETWEEN COMMUNITY-WIDE AND GOVERNMENT OPERATIONS INVENTORIES



Once completed, these inventories provide the basis for policy development, the quantification of emissions reductions associated with proposed measures, the creation of an emissions forecast, and the establishment of an informed emissions reduction target.

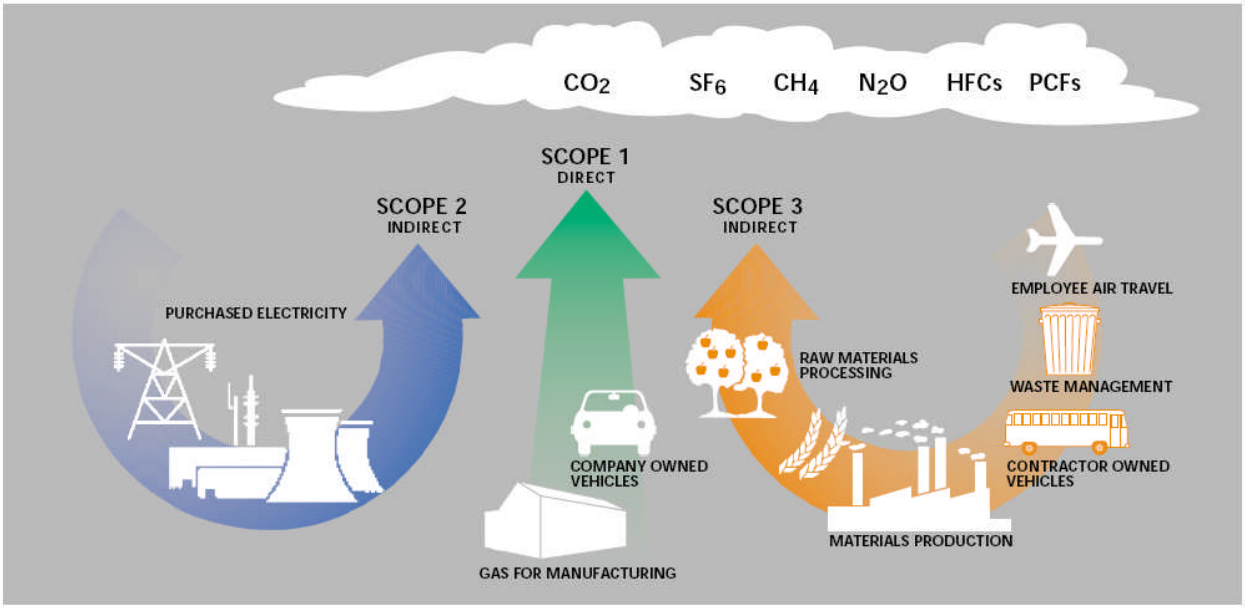
2.3 DATA COLLECTION AND METHODOLOGY

Creating the community and County government operations emissions inventories required the collection of information from a variety of sources. Sources for community data included the Pacific Gas and Electric Company (PG&E), the Southern California Gas Company, Caltrans, and the California Integrated Waste Management Board. County government operations data sources included PG&E, the Southern California Gas Company, and documentation from multiple County departments including sheriff, fire, general services, planning, public works, and more. Data from the year 2006 were used in both inventories, with the following exceptions: 1) A subset of waste data by type was not available for 2006, therefore this study utilizes a California statewide waste characterization study conducted in 2003-2004, 2) County employee commuting trips were calculated using an employee survey conducted in 2008, and 3) Aircraft operations data was not available for 2006, therefore this study utilizes a APCD report conducted in 2007.

For community activities and government operations, emissions sources are categorized by scope. Scopes help us identify where emissions originate from and what entity retains regulatory control and the ability to implement efficiency measures. The scopes are illustrated in **Figure A2.2-2** and defined as follows:

- **Scope 1.** Direct emissions sources located within the unincorporated areas of the county, mostly from the combustion of fuels. Examples of Scope 1 sources include use of fuels such as gasoline and natural gas.
- **Scope 2.** Indirect emissions that result because of activites within the unincorporated areas of the county, limited to electricity, district heating, steam and cooling consumption. Examples of Scope 2 sources include purchased electricity used within the unincorporated areas and associated with the generation of greenhouse gases at the power plant. These emissions should be included in the community-scale analysis, as they are the result of the community's electricity consumption.
- **Scope 3.** All other indirect emissions that occur as a result of activity within the unincorporated areas. Examples of Scope 3 emissions include methane emissions from solid waste generated within the community which decomposes at landfills either inside or outside of the unincorporated areas of the county.

FIGURE A2.2-2 GHG EMISSION SCOPES



Source: NZBCSD (2002), The Challenge of GHG Emissions: the "why" and "how" of accounting and reporting for GHG emissions: An Industry Guide, New Zealand Business Council for Sustainable Development, Auckland

Appendices 1A and 1B of this report separate the community and County government operations emissions by scope. Each sector is labeled with a 1, 2, or 3 that corresponds to the scopes above.

2.4 DATA SOURCES

The data used to complete this Inventory came from multiple sources, as summarized in **Tables A2.2-1 and A2.2-2**. Utility providers supplied electricity and natural gas consumption data associated with commercial, industrial, residential, and County government buildings in 2006. Vehicle miles traveled (VMT) was obtained from the 2006 Highway Performance Maintenance System (HPMS) developed by Caltrans and refined with County Geographic Information System (GIS) data. These data sources are further explained in the sector-specific discussions of this document.

TABLE A2.2-1 DATA SOURCES FOR COMMUNITY ANALYSIS, 2006

Sector	Information	Unit of Measurement	Data Source
Residential	Electricity Consumption	Therms	PG&E
	Natural Gas Consumption	kWh	PG&E Southern California Gas
Commercial / Industrial	Electricity Consumption	Therms	PG&E
	Natural Gas Consumption	kWh	PG&E Southern California Gas
Transportation	Local road VMT for unincorporated areas	Annual average VMT	Caltrans HPMS data
	Highway and Interstate VMT for SLO County	Annual average VMT	Caltrans HPMS data
	Portion of highways and interstates within unincorporated areas	Highway miles	County GIS shape files
Solid Waste	Solid waste tonnage sent to landfill from activities in unincorporated SLO County	Short tons	San Luis Obispo Integrated Waste Management Board
Other - Aircraft	Emissions from aircraft take-offs and landings, calculated as part of a separate analysis	Tons CO, NOx, VOC	Engineering report by APCD (2007 data)
Other - Cattle and Sheep	Number of cattle and number of sheep in the unincorporated County	County 2006 Crop Report	Number of heads in the County
Other - Off-Road Agricultural Equipment	Emissions from off-road agricultural equipment	Tons/year of N_20, CO_2, and CH_4	California Air Resources Board OFFROAD2007 model
	Portion of land within unincorporated areas	Square feet	County GIS shape files

TABLE A2.2-2 DATA SOURCES FOR COUNTY GOVERNMENT OPERATIONS ANALYSIS, 2006

Sector	Information	Unit of Measurement	Data Source
Buildings	Electricity Consumption	Therms	Billing Records
	Natural Gas Consumption	kWh	Billing Records
Vehicle Fleet	Diesel Consumption and Corresponding Vehicle Type	Gallons	Billing Records
	Gasoline Consumption and Corresponding Vehicle Type	Gallons	Billing Records
Employee Commute	Sample of Employee Commuting Patterns	Annual VMT	Commuter Survey (September 2008)
Streetlights	Electricity Consumption	kWh	Billing Records
Water / Sewage	Electricity Consumption	kWh	Billing Records
Waste	Annual waste tonnage sent to landfill	Tons	Billing Records
Other – Misc. Equipment	Fuel consumption of various types of equipment	Gallons	County General Services

2.5 DATA LIMITATIONS

It is important to note that calculating community-wide greenhouse gas emissions with precision is a complicated task. The ICLEI model relies on numerous assumptions and is limited by the quantity and quality of available data. Because of these limitations it is useful to think of any specific number generated by the model as an approximation of reality, rather than an exact value.

Despite these limitations, the Clean Air and Climate Protection (CACP) software[10] and ICLEI methodology provide the best-available snapshot of the county's greenhouse gas emissions. Additionally, the CACP tool is utilized to promote consistency among municipalities throughout the country and the world. **Appendices 2A** and **2B** include the detailed CACP reports for the Community-wide and Government Operations inventories. Sector-specific data limitations or methodological issues are explained thoroughly in **Appendices 2C and 2D**. The following paragraphs highlight emissions that cannot be included in a GHG Inventory under current science and policy direction, or lack of reliable data.

[10] The Clean Air and Climate Protection (CACP) software was developed by the State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials (SAPPA/ALAPCO), the International Council for Local Environmental Issues (ICLEI), and Torrie Smith Associates.

This Inventory does not separately analyze site-level emissions from specific sources such as refineries, landfills, and large industrial emitters. The emissions from industrial energy consumption and related transportation are included under the commercial/industrial category, but will not be analyzed independently as part of this Inventory. This is for two reasons: 1) State privacy laws prevent us from obtaining site-level energy consumption data from utility providers, and 2) It is the responsibility of the emitter, whether it is a large refinery or household, to perform their own energy audit and subsequent reduction process. Efforts to require site-level energy audits and greenhouse gas emissions reporting are being continually expanded and required by the California Climate Action Registry, U.S. Environmental Protection Agency, and California Air Resources Board.

The county's actual 2006 greenhouse gas emissions are likely to be slightly greater than what are reported in this document due to three main factors: 1) data limitations, 2) privacy laws, and 3) a lack of a reasonable methodology to collect or model emissions data.

Lack of available data prevented the calculation of emissions from community-wide freight and passenger trains, ports, off-road vehicles and equipment, propane use and County government operations refrigerants. For rail, port and other off-road vehicles and equipment emissions, the California Air Resources Board OFFROAD 2007 software provides emissions from rail and port activities; however these numbers are aggregated for the entire San Luis Obispo County area, including incorporated, unincorporated, and State or federally owned land. Without data specific to unincorporated areas and without a reasonable methodology for allocating the OFFROAD calculation, port and rail activity emissions were omitted. Lack of data availability also prevents the calculation of emissions from propane (liquefied petroleum gas, or LPG) created in the unincorporated county. Propane is basically an unregulated fuel in California (except for storage and safety issues which are regulated). Because it is an unregulated commodity, no data is collected by the state on propane sales or usage. Another sector that was excluded from the inventory is County government operations refrigerants. The County of San Luis Obispo made a best effort to gather data on the amount of refrigerants consumed by fleet vehicles, HVAC systems, and County government operations facilities; however County records were not suited to this

What's the difference between an emissions inventory and a carbon footprint?

An emissions inventory incorporates emissions directly caused by actions taken within the county that we know how to calculate. A carbon footprint, on the other hand, encompasses greenhouse gas emissions from the entire life cycle of a product or service. This could include the emissions from raising beef for sale at the supermarket or the fuel consumption associated with residents' flights out of SBP for vacation. At this time, it is difficult to accurately estimate the community's carbon footprint. However, individuals may reduce their carbon footprint by buying locally produced foods and goods, reducing packaging, and other behavioral changes.

purpose. It is recommended that the County consider changes to its record keeping to inventory amount of refrigerants purchased and consumed within a year.

Lack of data also prevents the calculation of emissions from wastewater (sewage) created in unincorporated county. Municipalities, special services districts, and private landowners that collect, treat, and dispose of wastewater differ with regard to treatment and disposal methods, water efficiency requirements, impervious surface allowances, landscape irrigation efficiency standards, type of building stock, and data collection and reporting. As a result, it is unclear what portion of the sewage treated at each facility originates from unincorporated county businesses and residents. For this reason, estimates associated with the County's share of sewage cannot be made at this time. Full accounting of emissions from wastewater collection, treatment, and disposal would require extensive coordination with special services districts, such as community services districts and sanitary districts, other municipalities, and private landowners. Opportunities for improvement in data collection and reporting could occur through the Resource Management System Annual Resource Summary Report.

Privacy laws restrict us from collecting data on the military bases and certain aviation activities within the county. Also, as stated previously, the California Public Utilities Commission 15/15 rule prevents us from analyzing industrial emissions separately from commercial emissions.

A lack of a reasonable methodology for calculating carbon dioxide, methane, and nitrous oxide from aircraft takeoffs and landings also prevent the inclusion of the majority of emissions from the San Luis Obispo County Regional Airport. This is despite the fact that, according to the United Nations Intergovernmental Panel on Climate Change (IPCC), aviation activities are currently thought to contribute about 2 to 3 percent to total global greenhouse gas emission inventories. Therefore, although an airport may make a considerable contribution to an inventory, it cannot be accurately estimated or included. However, as awareness of climate change increases and local governments improve data collection protocols it can be expected that a greater percentage of actual emissions will be captured through improved data management.

Similarly, protocol and methodological barriers prevent us from including all emissions from the treatment and movement of water consumed by the community. Water in the county largely comes from incorporated cities, community services districts or other special districts, mutual water companies, and private landowners (groundwater wells and onsite septic systems). The emissions from these treatment facilities are the responsibility of the jurisdiction in which these facilities are located. As a result, if the total emissions from all water consumed within the county were included in the inventory regardless of its source, emissions generated within other jurisdictions would be double-counted. As such, this Inventory only includes emissions from the electricity and natural gas consumed by water treatment facilities within the county's

jurisdictional boundary. As a result, all emissions from water treatment facilities used to serve the county may not be included in the County government operations Inventory, whereas facilities that are located within unincorporated areas which serve incorporated cities will be included in the commercial/industrial sector of the Community-wide inventory.

Lastly, there is a lack of reasonable methodology for estimating lifecycle emissions for the community. Lifecycle emissions are emissions associated with the production and disposal of items consumed by a community. For instance, a lifecycle assessment would estimate the emissions associated with the planning, production, delivery, and disposal of each car currently in the county. In contrast, this analysis only captures how much that car drives within the county.

Given these limitations it is likely that the county's emissions are greater than presented in this Inventory. However, it is important to note that the emissions identified in this report are primarily greenhouse gases that the community has directly caused and has the ability to reduce through implementation of the Conservation and Open Space Element, a Climate Action Plan, and corresponding efforts.

2.6 CACP SOFTWARE

The County government operations and community-wide inventories use the Clean Air and Climate Protection (CACP) software package developed by ICLEI in partnership with the National Association of Clean Air Agencies (NACAA) and Torrie Smith Associates. This software calculates emissions resulting from energy consumption, vehicle miles traveled, and waste generation. The CACP software calculates emissions using specific factors (or coefficients) according to the type of fuel used.

CACP aggregates and reports the three main greenhouse gas emissions (CO_2, CH_4, and N_2O) and converts them to equivalent carbon dioxide units, or CO_2e. Equalizing the three main greenhouse gas emissions as CO_2e allows for the consideration of different greenhouse gases in comparable terms. For example, methane (CH_4) is twenty-one times more powerful than carbon dioxide on a per weight basis in its capacity to trap heat, so the CACP software converts one metric ton of methane emissions to 21 metric tons of carbon dioxide equivalents.[11]

The emissions coefficients and quantification method employed by the CACP software are consistent with national and international inventory standards established by the Intergovernmental Panel on Climate Change (1996 Revised IPCC Guidelines for the Preparation of National Inventories) and the U.S. Voluntary Greenhouse Gas Reporting Guidelines (EIA form1605).

[11] The potency of a given gas in heating the atmosphere is defined as its Global Warming Potential, or GWP. For more information on GWP see: IPCC Fourth Assessment Report, Working Group I, Chapter 2, Section 2.10.

3. Community GHG Inventory Results

The community of San Luis Obispo County contains the unincorporated rural areas and communities of Avila Beach, Black Lake, Callender-Garrett, Cambria, Cayucos, California Valley, Creston, Garden Farms, Heritage Ranch, Los Berros, Los Osos, Los Ranchos-Edna, Nipomo, Oak Shores, Oceano, Palo Mesa, Pozo, San Miguel, San Simeon, Santa Margarita, Shandon, Templeton, Whitley Gardens and Woodlands. In the 2006 baseline year, there were approximately 101,786 people, 99,300 jobs, and 101,447 households in these unincorporated areas. The following section provides an overview of the emissions caused by activities within the jurisdictional boundary of the county and analyzes them in terms of scope, sector, source, and population.

3.1 COMMUNITY-WIDE EMISSIONS BY SCOPE

Although there are countless items that can be included in a community-scale emissions inventory, as discussed in Chapter 2, this Inventory includes Scope 1, Scope 2, and Scope 3 sources from the following sectors, consistent with ICLEI protocol:

- Residential
- Commercial / Industrial
- Transportation
- Waste
- Other – Livestock, Aircraft (calculated as part of a separate analysis), and Off-Road Agricultural Equipment Emissions

What are Scopes?

The key principles to remember are that Scope 1 emissions are caused by activities within the county and emitted within the county (fuel combustion), while Scope 2 emissions are caused by activities within the county, but most likely are emitted outside of the county (electricity). Scope 3 emissions are indirect emissions, such as methane released from cattle, sheep, and waste decomposition.

Table A2.3-1 summarizes the scopes of each sector in this analysis.

TABLE A2.3-1 EMISSION SOURCES INCLUDED IN 2006 COMMUNITY INVENTORY BY SCOPE AND SECTOR

Sector	Scope 1	Scope 2	Scope 3
Residential	Natural Gas	Electricity	---
Commercial / Industrial	Natural Gas	Electricity	---
Transportation	Gasoline & Diesel	---	---
Waste	---	---	Methane from Decomposition
Other	Aircraft Emissions, calculated as part of a separate analysis Off-Road Agricultural Equipment	---	Methane from Cattle and Sheep

Including all sectors and scopes, the community emitted approximately 1,506,163 metric tons of CO_2e in 2006. As shown in **Figure A2.3-1 and Table A2.3-2**, the majority of community GHG emissions were Scope 1 (83.5%), with Scope 2 (8.9%) and Scope 3 (7.6%) constituting the remainder.

The largest portion of Scope 1 emissions came from the transportation sector (refer to **Table A2.3-2 and Figure A2.3-2)**. These emissions qualify as Scope 1 because they involve the direct combustion of fuel within the jurisdictional boundary of the county. The second largest source of Scope 1 emissions was commercial and industrial natural gas use.

FIGURE A2.3-1 COMMUNITY GHG EMISSIONS BY SCOPE

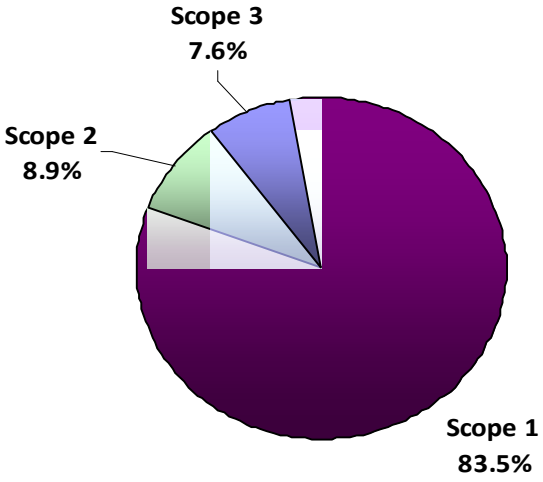


TABLE A2.3-2 COMMUNITY GHG EMISSIONS PER SECTOR PER SCOPE (METRIC TONS OF CO_2E)

Sector	Scope 1	Scope 2	Scope 3	TOTAL
Residential	70,853	65,514	---	136,367
Commercial / Industrial	147,493	68,483	---	215,976
Transportation	976,585	---	---	976,585
Waste	---	---	30,540	30,540
Other12	63,278	---	83,417	146,695
TOTAL	**1,258,209**	**133,997**	**113,957**	**1,506,163**
Percentage of Total CO2e	83.5%	8.9%	7.6%	100.0%

Commercial and industrial energy use generated the largest percentage of Scope 2 emissions; however, the difference between this sector and the residential sector is minimal. Methane emissions from livestock and sheep within the county account for all Scope 3 emissions, with landfilled waste operations adding incrementally to total emissions.

3.2 ALL-SCOPE EMISSIONS BY SECTOR

As noted above, the community emitted approximately 1,506,163 metric tons of CO_2e in calendar year 2006. In addition to analyzing the data by scope, it can also be aggregated by sector. As depicted in **Figure A2.3-2** and **Table A2.3-3** below, the transportation sector was by far, the largest emitter (64.8%) in 2006. Emissions from commercial and industrial energy use accounted for a combined 14.3%, while residential energy use produced 9.1% of emissions. The remaining 11.7% is attributed to emissions from waste (2.0%) and livestock and agricultural equipment (9.7%).

What is 1,506,163 Metric Tons of CO2e equivalent to?

1,506,163 Metric Tons of CO2e is equivalent to the air volume of about 308,612 hot air balloons under standard conditions of pressure and temperature. The same amount of emissions is also equivalent to one year of electricity used in 290,689 California residences!

Source: California Air Resources Board, "Conversion of 1 MMT CO2 to

[12] The "other" category includes emissions from livestock (sheep and cattle), aircraft takeoffs and landings, and off-road agricultural equipment. These sources are categorized as 'other' to correspond with the ICLEI CACP software.

FIGURE A2.3-2
COMMUNITY GHG EMISSIONS BY SECTOR

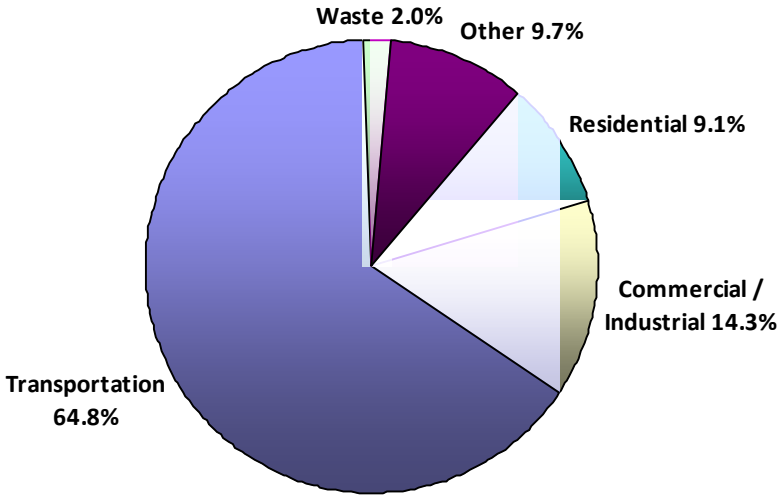


TABLE A2.3-3 COMMUNITY GHG EMISSIONS BY SECTOR (METRIC TONS CO_2E)

2006 Community Emissions by Sector	Residential	Commercial / Industrial	Transportation	Waste	Other[13]	TOTAL
CO_2e (metric tons)	136,367	215,976	976,585	30,540	146,695	1,506,163
Percentage of Total CO_2e	9.1%	14.3%	64.8%	2.0%	9.7%	100.0%
Energy Use (MMBtu)	2,321,301	3,736,644	13,557,909	---	---	19,615,854

3.3 TRANSPORTATION

As with the majority of California municipalities,[14] travel by on-road motorized vehicle constitutes the greatest percentage of greenhouse gas emissions in the county (64.8%). The Inventory

[13] The "other" category includes emissions from livestock (sheep and cattle), aircraft takeoffs and landings, and off-road agricultural equipment. These sources are categorized as 'other' to correspond with the ICLEI CACP software.

does not include trains, boats or off-road recreational vehicles as there is no feasible methodology for calculating emissions from these sources. Less than one-fourth, or 21.2% of the emissions in the transportation sector came from travel on local roads in the unincorporated areas (**Table A2.3-4**). Approximately 78.8% of the greenhouse gas emissions in the transportation sector resulted from highway travel. Of the total emissions in the transportation sector, an estimated 89% was due to gasoline consumption, with the remaining 11% coming from diesel use (see **Figure A2.3-3** and **Table A2.3-5**).

FIGURE A2.3-3 COMMUNITY GHG EMISSIONS BY FUEL TYPE

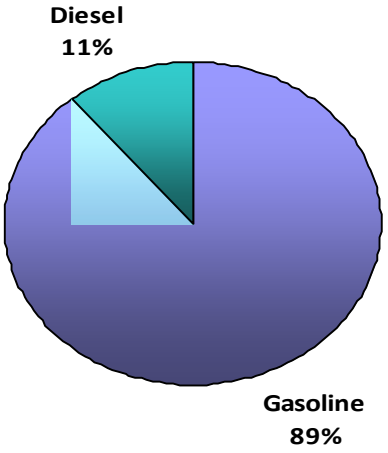


TABLE A2.3-4 TRANSPORTATION GHG EMISSIONS BY ROAD TYPE

Transportation Road Type Emissions Sources 2006	Local Roads	State Highways	TOTAL
CO_2e (metric tons)	207,356	769,230	976,586
Percentage of Total CO_2e	21.2%	78.8%	100%
Energy Use (MMBtu)	2,878,714	10,679,195	13,557,909

[14] For a list of California cities and counties that have developed GHG Inventories, see the California Office of Planning and Research document here: http://www.opr.ca.gov/ceqa/pdfs/City_and_County_Plans_Addressing_Climate_Change.pdf

TABLE A2.3-5 TRANSPORTATION GHG EMISSIONS BY FUEL SOURCE

Transportation Fuel Emissions Sources 2006	Gasoline	Diesel	TOTAL
CO_2e (metric tons)	868,985	107,601	976,586
Percentage of Total CO_2e	89.0%	11.0%	100%
Energy Use (MMBtu)	12,274,606	1,283,303	13,557,909

These emissions result from the gasoline and diesel consumption of vehicles traveling within the unincorporated areas of the county, including those that are just passing through. As a result, it is likely that the County does not have jurisdictional control to reduce the transportation emissions from the majority of this sector. However ICLEI and State protocol require that these emissions be included in a local inventory in order to capture all emissions within the area and calculate their effect on the local community.

This analysis of highway transportation emissions assumes constant levels of travel along all highways in the county. The Caltrans data includes aggregated vehicle miles traveled (VMT) along highways for the whole county, including incorporated areas. This data was allocated to municipal jurisdictions using the proportion of highway miles in unincorporated areas versus incorporated; traffic counts were not used to measure actual traffic levels at specific locations. This could mean that the community-wide transportation emissions are slightly inflated; however, there is currently no feasible methodology to calculate emissions for individual jurisdictions with traffic data levels. Further discussion of the transportation sector methodology is included in **Appendix 2C**.

Emissions that resulted from the air, rail, and boat travel of county residents were not included in the transportation sector analysis. As science and data collection methodology develop it is likely that the greenhouse gas emissions from air, rail and boat travel could be estimated as a Scope 3 items. Partial emissions from county airport takeoffs and landings are discussed in the 'other' section; however, these are not quantifiable as CO_2-equivalent. Please see **Appendix 2C** for more detail on methods and emissions factors used in calculating emissions from the transportation sector.

3.4 THE BUILT ENVIRONMENT (RESIDENTIAL, COMMERCIAL, INDUSTRIAL)

With all scopes aggregated, 23.4% of total community-wide emissions in the year 2006 came from the "built environment." The built environment is comprised of the residential, commercial, and industrial natural gas and electricity consumption. This analysis does not include emissions from other types of energy such as propane, solar, and wind due to lack of reliable sales, construction, or consumption data. It also does not include emissions from harbors and ports as

they are largely outside of County jurisdiction. The commercial and industrial sectors are combined in this Inventory due to a mandatory aggregating of commercial and industrial data by PG&E[15].

In 2006, emissions from the built environment were split roughly 60-40 between the commercial/industrial sector and the residential sector (see **Figure A2.3-4**). All of the emissions calculated from the built environment were the result of local natural gas consumption (Scope 1) and local consumption of electricity generated outside of the county (Scope 2). Overall, natural gas consumption caused the majority of emissions from the built environment in 2006, as shown in **Figure A2.3-5**.

FIGURE A2.3-4 BUILT ENVIRONMENT EMISSIONS BY SECTOR

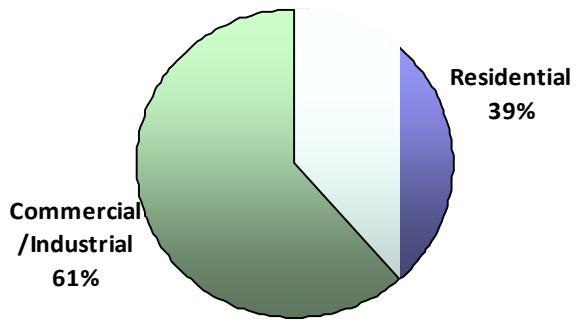
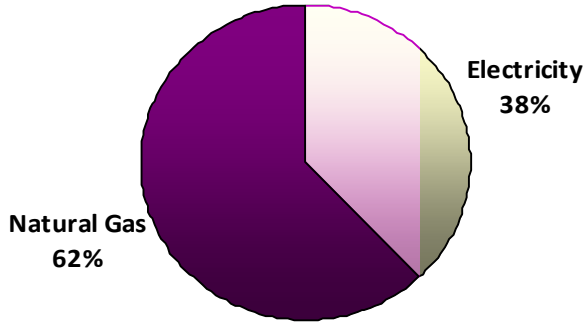


FIGURE A2.3-5 BUILT ENVIRONMENT EMISSIONS BY SOURCE



A little over 50% of emissions in the residential sector resulted from the combustion of natural gas for heating and cooking (see **Figure A2.3-6** and **Table A2.3-6**), while about 68% of emissions in the commercial/industrial sector came from natural gas usage (see **Figure A2.3-7** and **Table A2.3-7**).

[15] Commercial and Industrial Electricity and Natural Gas were combined into one section due to the California 15/15 rule. The 15/15 rule was adopted by the California Public Utilities Commission in the Direct Access Proceeding (CPUC Decision 97-10-031) to protect customer confidentiality. Corie Cheeseman, Program Manager with Pacific Gas and Electric Company - Customer Energy Efficiency, provided this information.

FIGURE A2.3-6 COMMERCIAL / INDUSTRIAL EMISSIONS BY SOURCE

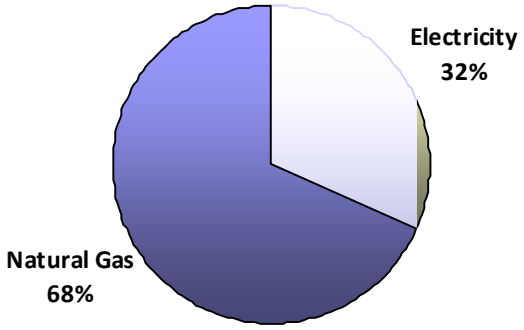
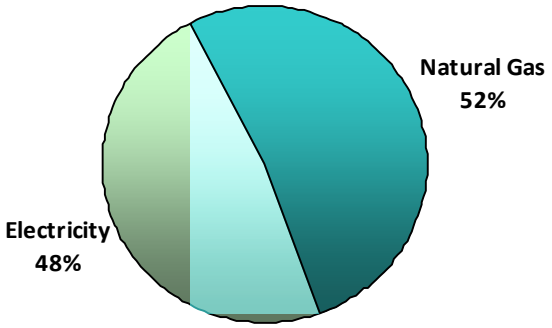


FIGURE A2.3-7 RESIDENTIAL EMISSIONS BY SOURCE



It is useful to consider the causes behind significant variations in data when developing policies and programs to reduce emissions from each sector. For example, the policies that would aim to reduce emissions from the commercial/ industrial sector may differ from those aiming to reduce emissions from the residential sector based upon the information above (and in the figures and tables below). In this regard, the emissions inventory provides valuable insight into policy development strategies.

TABLE A2.3-6 RESIDENTIAL GHG EMISSIONS SOURCES

Residential Emission Sources 2005	Electricity	Natural Gas	TOTAL
CO_2e (metric tons)	65,514	70,853	136,367
Percentage of Total CO_2e	48.0%	52.0%	100%
Energy Use (MMBtu)	1,056,643	1,264,658	2,321,301

TABLE A2.3-7 COMMERCIAL / INDUSTRIAL GHG EMISSIONS SOURCES

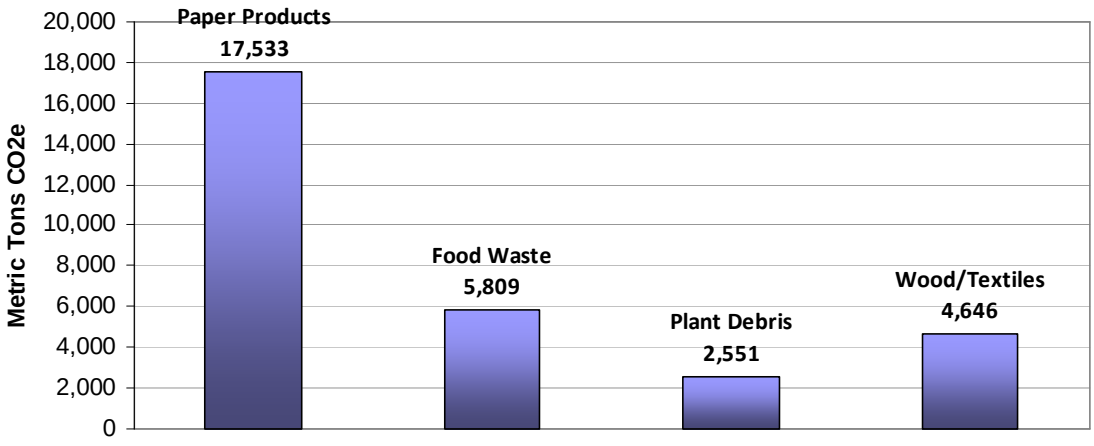
Commercial / Industrial Emission Sources 2005	Electricity	Natural Gas	TOTAL
CO_2e (metric tons)	68,483	147,493	215,976
Percentage of Total CO_2e	31.7%	68.3%	100%
Energy Use (MMBtu)	1,104,531	2,632,113	3,736,644

3.5 WASTE

Solid waste disposed of at managed landfills was responsible for 2.0% of total emissions for the community. The CACP software calculates methane generation from waste sent to landfill in 2006, and accounts for the confirmed methane recovery factors among the three active landfills (Cold Canyon, Paso Robles, and Chicago Grade), which have a 57% weighted average. The methane recovery factors of all three landfills are well documented and verified. For more information, please see detailed methodology in **Appendix 2C**.

Waste emissions are considered Scope 3 emissions because they are not generated in the base year, but will result from the decomposition of waste generated in 2006 over the full 100-year+ cycle of its decomposition. In 2006, the community sent approximately 106,000 tons of waste to landfill. The 2004 California Statewide Waste Characterization Study provides standard waste composition for the State of California.[16] Identifying the different types of waste in the general mix is necessary, because decomposition of some materials generate methane within the anaerobic environment of landfills whereas others do not. Carbonaceous materials such as paper and wood actually sequester the methane released in managed landfills, therefore offsetting some or all of the emissions from food and plant waste. **Figure A2.3-8** and **Table A2.3-8** show the estimated percentage of emissions coming from the various types of organic, methanogenic waste.

FIGURE A2.3-8 WASTE GHG EMISSIONS BY TYPE



[16] http://www.ciwmb.ca.gov/Publications/default.asp?pubid=1097

TABLE A2.3-8 WASTE GHG EMISSIONS BY WASTE TYPE

Waste Emissions Sources 2006	Paper Products	Food Waste	Plant Debris	Wood / Textiles	TOTAL
CO_2e (metric tons)	17,533	5,809	2,551	4,646	30,539
Percentage of Total CO_2e	57.4%	19.0%	8.4%	15.2%	100%
Energy Use (MMBtu)	0	0	0	0	0

3.6 OTHER – EMISSIONS FROM LIVESTOCK

Waste emissions from cattle and sheep in San Luis Obispo County accounted for 5.5% of greenhouse gas emissions within the county, or 83,417 metric tons CO_2e in 2006. Cattle caused the majority of emissions (99%), with sheep only accounting for 1% of the sector, as shown in **Figure A2.3-9** and **Table A2.3-9** below. Ruminant animals, such as cattle and sheep, as well as buffalo and goats, which are not present in the county in significant numbers, release large amounts of methane, a highly potent greenhouse gas. Their special digestive systems have the ability to convert otherwise unusable plant materials into nutritious food and fiber, however this same helpful digestive system produces methane.

FIGURE A2.3-9 GHG EMISSIONS FROM LIVESTOCK, 2006

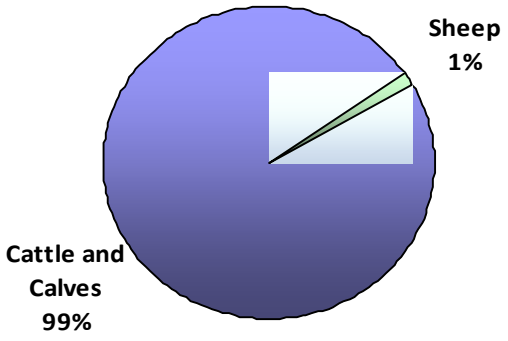


TABLE A2.3-9 GHG EMISSION FROM LIVESTOCK, 2006

Cattle and Sheep Emissions Sources 2006	Cattle	Sheep	TOTAL
CO_2e (metric tons)	82,293	1,124	83,417
Percentage of Total CO_2e	99%	1%	100%
Energy Use (MMBtu)	0	0	0

3.7 OTHER – EMISSIONS FROM AIRCRAFT TAKEOFFS AND LANDINGS

This emissions sector accounts for all aircraft exhaust emissions associated with airports located within San Luis Obispo County (excluding agricultural crop dusting). This information was taken from an engineering report prepared by the Air Pollution Control Board (APCD) in August 2008 (**Appendix 2E**). The report estimated the tons of exhaust emissions per year from operations below 3,000 feet in altitude. The report was a special project analyzing 2007, and provided the most complete data set available. No significant change in airport activity or aircraft type distribution occurred during this time interval.

The number of landing and takeoff operations (LTO) was obtained from the major airports in San Luis Obispo County, including San Luis County Airport, and Oceano Municipal Airport. Aircraft emissions are computed using FAA Emissions & Dispersion Modeling System (EDMS 5.0.2). EDMS 5.0.2 provided emission factors for the majority of aircrafts with the following results.

TABLE A2.3-10 AIRCRAFT EMISSIONS (TONS PER YEAR) FOR THE COUNTY OF SAN LUIS OBISPO

Description	CO	HC	VOC	NOx	SOx	PM10	PM2.5
Commercial-Jet (47555)	64.715	13.848	12.852	16.787	3.461	0.735	0.735
Civil-Jet (47589)	155.349	19.175	17.222	1.759	0.746	0.261	0.261
Civil-Piston (57331)	184.949	28.766	23.957	0.516	0.333	0	0
Military-Jet (47571)	0	3.452	3.322	0.364	0.144	0.075	0.075
Military-Piston (57323)	0.18	0.053	0.049	0.007	0.003	0.001	0.001
Totals	**384.733**	**65.255**	**57.401**	**19.432**	**4.686**	**1.068**	**1.068**

The report's findings were entered into the CACP software by aggregated tons per emission gas type as shown in **Table A2.3-10** above. However, since the gases above are not included in the CACP or EPA calculations of CO_2e, the emissions from aircrafts are not reflected in the total

greenhouse gas inventory for San Luis Obispo County. It is likely that aircrafts are a significant source of greenhouse gas emissions within the community, but until it is technically and politically feasible to obtain emissions coefficients and data for carbon dioxide (CO_2), methane (CH_4), nitrous oxide (NOx), and fluorocarbons to be included as carbon dioxide equivalents, these gases should not be compared or aggregated with other county emissions.

3.8 OTHER - OFF-ROAD AGRICULTURAL EQUIPMENT

Off-road agricultural equipment including tractors, mowers, balers, combines, tillers, and other equipment produced approximately 4.2% of emissions in 2006, or 63,278 metric tons CO_2e. This calculation was performed using the California Air Resources Board OFFROAD2007 model and inputted into the 'other' category in CACP. The OFFROAD model generates emission inventories by equipment type, accounting for age within a given year (2006).

The OFFROAD software has the ability to calculate emissions from other types of off-road vehicles such as recreational vehicles, motor boats, and more. However, since data is aggregated by county, this information is only usable if it can be divided by jurisdiction within the county in a reasonable manner. As a reminder, this emissions inventory is a snapshot of emissions caused by activities within the unincorporated areas of the county in the year 2006. Therefore, absent a methodology for estimating the portion of off-road vehicles driven or used within various jurisdictions, OFFROAD data cannot be allocated to different jurisdictions. As current practice and methodology stands, population data is not an acceptable measure of emissions per jurisdiction.

To complete the analysis of impacts associated with agriculture activities, the Inventory allocated total agricultural emissions by the percentage of agricultural and open space land contained in each jurisdiction. For consistency, County agriculture and crop GIS data from 2007 was utilized to determine acreage within each jurisdiction. The unincorporated county held the vast majority of agricultural land (98%) and therefore the majority of off-road agricultural equipment emissions.

Why Can't We Calculate All Off-Road Emissions in San Luis Obispo County?

According to a report by the Center for Biological Diversity, off-road vehicle use in California releases as much GHG as burning 500,000 barrels of oil each year, which is equivalent to more than 1.5 million car trips from San Francisco to Los Angeles. Despite this fact, there is no current methodology to calculate GHGs from off-road vehicles at the local level. The California Air Resources Board OFFROAD2007 model produces countywide figures for San Luis Obispo which cannot be separated by jurisdiction. This is for two main reasons: 1) Many off-road vehicles, such as motor boats and recreational vehicles, are operated outside of County jurisdiction in State-owned parks or waters, and 2) There are wide degrees of variability in off-road vehicle use and fuel consumption. For instance, if we allocated the emissions from off-road agricultural equipment by population and not by portion of agricultural land, cities that have minimal agricultural lands, would receive an equal portion of agricultural emissions per person as the county, which has 98% of agricultural land in the county. This approach would misrepresent emissions.

Source: Center for Biological Diversity, http://www.biologicaldiversity.org/programs/public_lands/off-road_vehicles/pdfs/Fuel_to_Burn_Exec_Summary.pdf

3.8 COMMUNITY EMISSIONS BY SOURCE

In addition to viewing emissions by sector and by scope, it can be useful for building policy and programs to analyze emissions according to their raw fuel or waste source. **Figure A2.3-10** and **Table A2.3-11** below demonstrates that more than 57% of all community emissions come from the consumption of gasoline on local roads and highways. Natural gas (14.5%) and electricity (8.9%) consumption from the built environment are the next most significant figures, with the remainder coming from various waste products.

FIGURE A2.3-10 COMMUNITY GHG EMISSIONS BY SOURCE

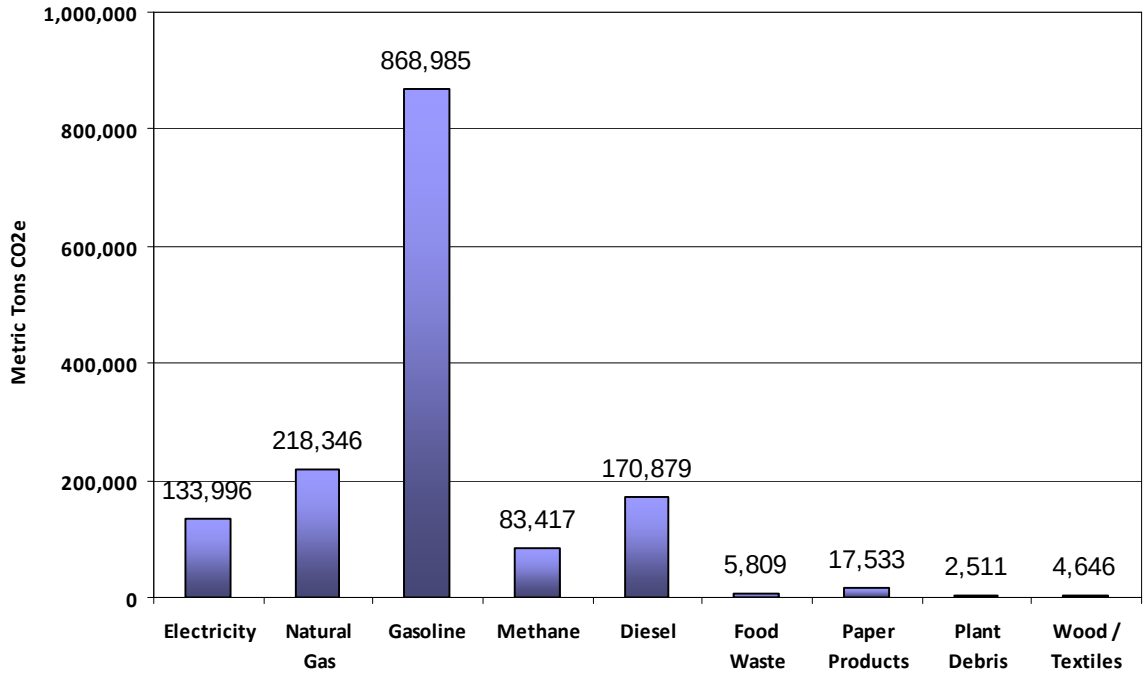


TABLE A2.3-11 COMMUNITY GHG EMISSIONS BY SOURCE

Community Emissions 2006 by Source	CO_2e (metric tons)	CO_2e (percent of total)
Electricity	133,996	8.9%
Natural Gas	218,346	14.5%
Gasoline	868,985	57.7%
Methane	83,417	5.5%
Diesel	170,879	11.3%
Food Waste	5,809	0.4%
Paper Products	17,533	1.2%
Plant Debris	2,511	0.2%
Wood / Textiles	4,646	0.3%
TOTAL	**1,464,131**	**100.0%**

3.9 PER CAPITA EMISSIONS

Per capita emissions can be a useful metric for measuring progress in reducing greenhouse gases and for comparing one community's emissions with neighboring cities and against regional and national averages. Currently it is difficult to make meaningful comparisons between local inventories because of variations in the scope of inventories conducted. For instance, this Inventory takes in to account emissions from off-road vehicles, which many inventories like the Sonoma County GHG Inventory do not. Only when ICLEI, the California Air Resources Board, and other organizations adopt universal reporting standards will local inventories be prepared in a consistent manner and therefore be comparable.

Simply dividing total community greenhouse gas emissions by unincorporated county population in 2006 (101,786) yields a result of 14.80 metric tons CO_2e per capita.[17] It is important to understand that this number is not the same as the carbon footprint of the average individual living in San Luis Obispo County. It is also important to note that the per capita emissions number for the county is not directly comparable to every per capita number produced by other emissions studies because of differences in emission inventory methods.

[17] Population in 2006 derived from US Census data for the County

4. County Government Operations GHG Emissions Inventory Results

The San Luis Obispo County government is comprised of over 40 different agencies located throughout the county, including General Services, Sheriff, Fire, Public Works, Planning and Building, the Air Pollution Control District, Library Services, and more. This Inventory accounts for the over 2,567 people employed by the County and the over 130 County-owned and/or –operated buildings.

This chapter reviews the results of the County government operations inventory by scope, sector, and source, including employee commuting emissions.

4.1 COUNTY GOVERNMENT OPERATIONS EMISSIONS BY SCOPE

This Inventory includes Scope 1, Scope 2, and Scope 3 sources of emissions sources within the operational control of the County from the following sectors, consistent with ICLEI protocol:

- Buildings
- Vehicle Fleet
- Water/Sewage Facilities
- Streetlights
- Waste
- Other Equipment
- Employee Commute

Table 4-1 summarizes the scopes of each sector in this analysis.

TABLE A2.4-1 EMISSION SOURCES INCLUDED IN 2006 GOVERNMENT OPERATIONS INVENTORY BY SCOPE AND SECTOR

Sector	Scope 1	Scope 2	Scope 3
Buildings	Natural Gas	Electricity	---
Vehicle Fleet	Gasoline & Diesel	---	---
Water/Sewage Facilities	---	Electricity	---
Streetlights	---	Electricity	---
Waste	---	---	Methane from Decomposition
Miscellaneous Equipment	Gasoline & Diesel	---	---
Employee Commute	---	---	Gasoline & Diesel

4.2 COUNTY GOVERNMENT OPERATIONS INVENTORY RESULTS

Including all scopes and sectors, County operations and facilities produced approximately 34,335 metric tons of greenhouse gas emissions in 2006. As displayed in **Figure A2.4-1**, this is approximately 2.2% of total community-wide emissions. County emissions are comprised of employee commute trips, waste, streetlight and signal electricity, energy consumption from water and sewage facilities, building energy, vehicle fleet fuel consumption, and miscellaneous equipment. Employee commute was by far the largest contributor to the County's emissions (73.6%) with 25,257 metric tons of carbon dioxide equivalent. The second largest contributor (14.5%) was from energy consumption in County-owned and -operated facilities. (Refer to **Figure A2.4-2** and **Table A2.4-2** below.)

FIGURE A2.4-1 COUNTY GOVERNMENT OPERATIONS CONTRIBUTION TO COMMUNITY-

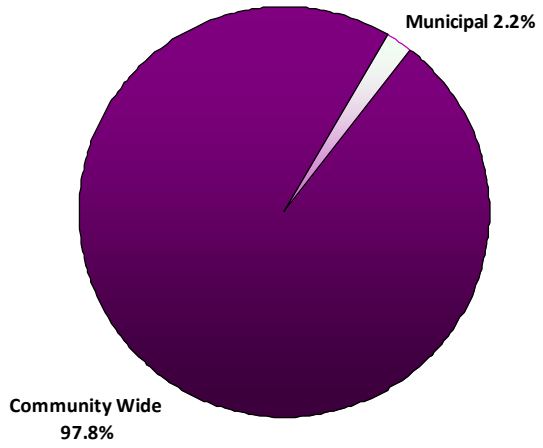
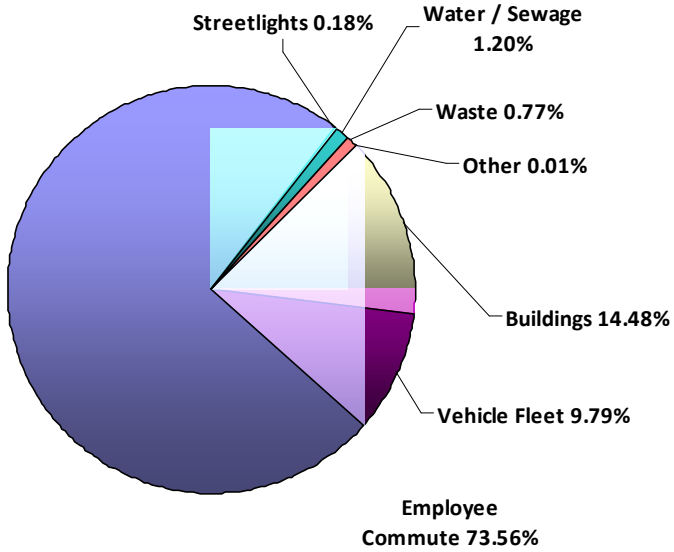


FIGURE A2.4-2 COUNTY GOVERNMENT OPERATIONS GHG EMISSIONS BY SECTOR



As mentioned in the Introduction, these emissions are a subset of the community emissions inventory discussed in **Chapter 3.** The County's operations emissions are separately analyzed in this section in a manner that is similar to how an industry or business would produce a facility-scale greenhouse gas audit. The Local Government Greenhouse Gas Inventory Protocol developed by the California Air Resources Board, The Climate Registry, the California Climate Action Registry, and ICLEI guides the methodology for estimating emissions from local government operations. Local government emissions reporting is deemed significant in order to establish local governments as climate leaders in the community so that they can lead by example and pave the way for energy efficiency improvements.

TABLE A2.4-2 2006 COUNTY GOVERNMENT OPERATIONS EMISSIONS BY SECTOR

2006 Emissions by Sector	Buildings	Vehicle Fleet	Employee Commute	Street lights	Water / Sewage	Waste	Other	TOTAL
CO2e (metric tons)	4,972	3,363	25,257	63	413	265	2	34,335
Percentage of Total CO2e	14.5%	9.8%	73.6%	0.2%	1.2%	0.8%	0.0%	100.0%
Energy Use (MMBtu)	83,606	43,325	362,292	1,017	6,659	n/a	n/a	496,899

4.3 BUILDING SECTOR

The building sector calculates greenhouse gas emissions from energy consumption in facilities owned and operated by a municipality. This inventory calculates electricity, natural gas, and propane consumption in County-owned and -operated facilities. The facilities included in this analysis include fire stations, child care facilities, sheriff stations, the courthouse, government centers, libraries, and numerous other facilities. As depicted in **Figure A2.4-3** at right and **Table A2.4-3** below, the majority of emissions resulted from electricity consumption (60%), which is consistent with the community at large.

FIGURE A2.4-3
BUILDING EMISSIONS BY SECTOR

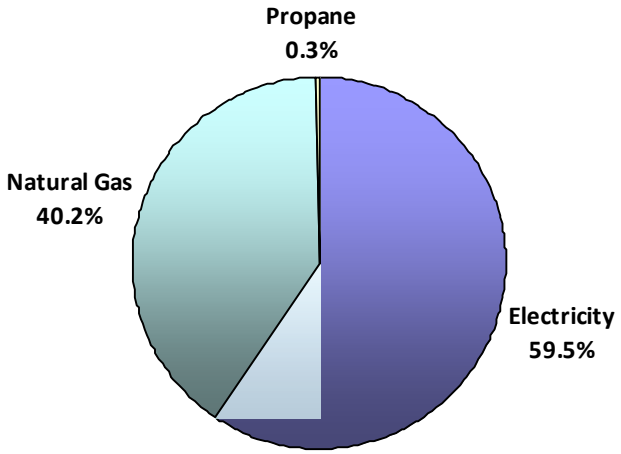


TABLE 4-3 BUILDING SECTOR EMISSIONS BY SOURCE, 2006

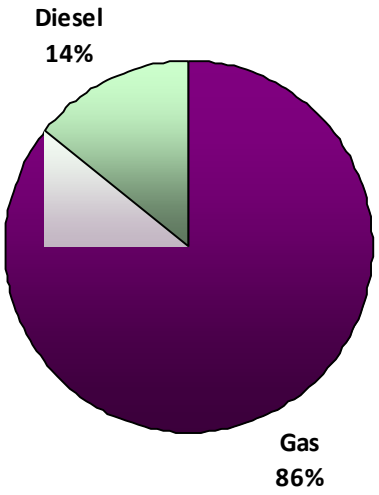
2006 Community Emissions by Sector	Electricity	Natural Gas	Propane	Total
CO_2e (metric tons)	2,950	2,005	17	4,972
Percentage of Total CO_2e	59.5%	40.2%	0.3%	100.0%
Energy Use (MMBtu)	55,262	35,758	262	91,282

These emissions and associated consumption data will be useful in determining significant sources of energy consumption from County facilities. This will allow for the County to designate priority facilities for energy efficiency retrofits and conservation outreach.

4.4 VEHICLE FLEET

County-owned and –operated vehicles emitted approximately 3,363 metric tons of CO_2e in 2006, or 9.8% of total County government emissions. This sector includes gasoline and diesel consumption from billing records of all departments in the County operating vehicles, including the Fire Department, Air Pollution Control District, Public Works, General Services, and the County libraries.

FIGURE A2.4-4 VEHICLE FLEET FUEL CONSUMPTION PER YEAR BY TYPE



The majority of fuel used by the County is gasoline (86%), with the rest diesel (14%) (see **Figure A2.4-4)**. When compared to the total emissions per fuel type, diesel emissions actually produce less CO_2e for the vehicle types used by the County. However, there are other, non-CO_2e emissions from diesel-like particulate matter that make such a comparison misleading to the reader. The trend for diesel to emit less CO_2e in this case does not necessarily mean that the County should aim to convert more vehicles to conventional diesel. There are multiple clean and alternative fuel options available, including biodiesel conversion, electric vehicles, hybrid vehicles, smaller vehicles, and shared vehicles.

4.5 EMPLOYEE COMMUTE

This sector estimates greenhouse gas emissions from County employees traveling to and from work in 2006. The estimate is based on a September 2008 online survey conducted by the County, a blank version of which is included as **Appendix 2F**. Approximately 1,300 employees responded to the survey with usable information, meaning that all essential questions were answered. This results in approximately a 50% response rate, the results of which were applied to the County employment total for 2006.

The online survey found that most County employees travel by car. Employees were asked how many days of the week they travel by each commute mode, including driving alone (which includes motorcycles), carpooling, vanpooling, public transit, bicycling, walking, telecommuting,

and other. The results show that employees get to and from 70% of their workdays by personal vehicle. The second most popular mode of transportation was carpooling (14%) and the third public transit (5.7%).

TABLE 4-4 DAYS OF COUNTY EMPLOYEE TRAVEL BY COMMUTE MODE

	Days traveled by Commute mode	% of Total
Drive Alone	4,556	71.11%
Carpool	904	14.11%
Vanpool	84	1.31%
Public transit	368	5.74%
Bicycle	269	4.20%
Walk	141	2.20%
Telecommute	27	0.42%
Other	58	0.91%
Total	**6,407**	**100.00%**

These figures for commute mode were combined with each respondent's travel distance to work, car model (if any), and fuel type (if any). The results show vehicle miles traveled (VMT) annually per vehicle type and fuel type (see **Table A2.4-5**). These VMT numbers were then adjusted for the total employee population in 2006 and entered into the CACP software to obtain CO_2e.

Driving patterns were assumed to be constant for the purposes of this study; therefore, the 2008 sample was applied directly to the 2006 employee population. Only one modification to the sample data was made in order to account for the large increase in hybrid car sales between 2006 and 2008. The proportion of hybrid to traditional vehicles was roughly two-thirds less in 2006 than in 2008, according to State sales data.[18]

[18] www.hybridcars.com

TABLE A2.4.5-EMPLOYEE COMMUTE VMT BY VEHICLE & FUEL TYPE

Vehicle Group	2008 Survey results		Adjusted for 2006	
	Annual VMT	Fuel Type	Annual VMT	Fuel Type
Light Truck/SUV/Pickup	3,086,462.65	Gasoline	6,288,055.26	Gasoline
	110,621.60	Diesel	225,369.56	Diesel
Motorcycle	127,517.48	Gasoline	259,791.57	Gasoline
Passenger Vehicle	25,226,718.43	Gasoline	51,766,151.53	Gasoline
	80.00	Diesel	162.98	Diesel
	273,684.10	Hybrid	185,859.02	Hybrid
Total	**28,825,084.26**		**58,725,389.93**	

The 2008 survey results, adjusted for 2006 employee totals, resulted in an estimate of 25,257 metric tons CO_2e in 2006 from commuter travel to and from work. This figure comprises approximately 74% of total greenhouse gas emissions released from County operations. The calculation does not include employee business travel or travel during lunchtime hours.

Employee business travel is usually included in a government agency operations (or municipal) GHG Inventory per protocol, however we could not include it in this baseline analysis due to data limitations. The County maintains financial records of when employees travel by air or vehicle to conferences and other events; however, it does not keep records of business travel destinations. As such, this Inventory could not accurately account for GHG emissions from employee business travel. A minor adjustment to County recordkeeping would allow the data to be included in the next County government operations GHG inventory.

4.6 STREETLIGHTS

The electricity consumed by County streetlights and traffic signals in calendar year 2006 resulted in approximately 63 metric tons of CO2e, or approximately 0.2% of total County emissions.

4.7 WATER AND SEWAGE

In 2006, electricity consumption from water and wastewater facilities in the County emitted approximately 413 metric tons of CO_2e, or 1.2% of total County emissions. These facilities provide for a small part of the collection, treatment, disposal, and movement of water and wastewater within the county and other areas. This number does not represent the total emissions from water and wastewater treatment, largely because the County is not in the business of managing water and wastewater facilities. Water and wastewater services are

provided by incorporated cities, community services districts or other special districts, mutual water companies, and private landowners (groundwater wells and onsite septic systems).[19] As a result, this number should be looked upon as a small fraction of the energy emissions from community water and sewage. However, to avoid double-counting with water and sewage facilities in other jurisdictions, the total water and sewage emissions from the community are not included in the community analysis.

4.8 WASTE

Similar to the Community-Wide analysis, waste produced by County facilities was calculated using the methane commitment. The CACP calculates the methane expected to be released from this landfilled waste over the course of its lifetime. In 2006, County facilities sent a total of 912 tons of waste to landfill, producing 265 metric tons of CO_2e, or 0.8% of total emissions.

4.9 OTHER – MISCELLANEOUS EQUIPMENT

The 'other' category encompasses emissions from miscellaneous equipment such as golf course facilities, general service equipment, and park facilities equipment. Equipment analyzed included leaf blowers, chainsaws, golf carts, drills, tractors, and more. This equipment resulted in 2 metric tons of carbon dioxide, or less than 1% of total emissions.

Emissions from miscellaneous County equipment were analyzed outside of the CACP software using California Air Resources Board protocol for inventorying local GHGs. They were then put into the CACP software in the 'other' category, which allows for direct inputs when CACP automation is not feasible. Since the emissions from miscellaneous equipment are insignificant or *de minimis*, it is not necessary or required by protocol to include them; however, we did so in the event that these emissions grow to a more significant level in the future.

4.10 COUNTY EMISSIONS BY SOURCE

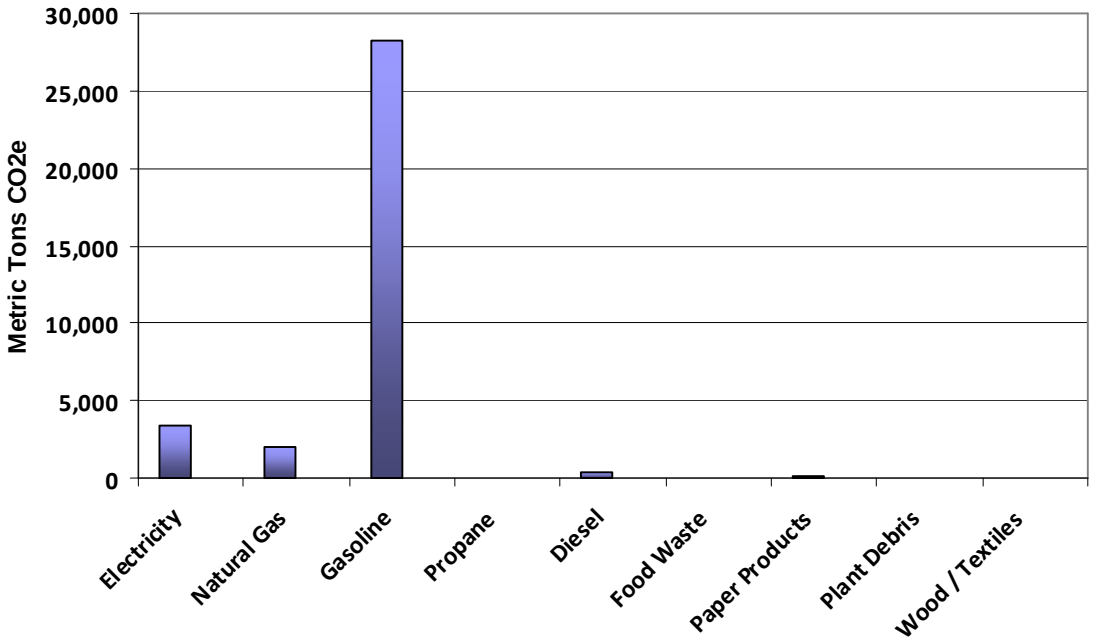
It can also be helpful to view overall County emissions by source. As shown in **Table A2.4-6** and **Figure A2.4-5**, the vast majority (82.3%) of emissions are from gasoline consumption in fleet and employee vehicles. The remainder of emissions is primarily from electricity and natural gas consumption in County buildings, streetlights, and water/sewage facilities. Propane, diesel, and waste products contribute minimally to the overall County greenhouse gas inventory.

[19] Individual Community Service Districts and other Special Districts are outside of the jurisdiction of the County and will be responsible for developing their own Emissions Inventories in the future. The County does not currently track the number of active septic systems or their capacity.

TABLE A2.4-6 COUNTY EMISSIONS BY SOURCE

Emission Source	CO_2e (metric tons)	CO_2e (percent of total)
Electricity	3,426	10.0%
Natural Gas	2,005	5.8%
Gasoline	28,244	82.3%
Propane	17	0.05%
Diesel	376	1.1%
Food Waste	50	0.1%
Paper Products	152	0.4%
Plant Debris	22	0.1%
Wood / Textiles	40	0.1%
TOTAL	**34,332**	**100.0%**

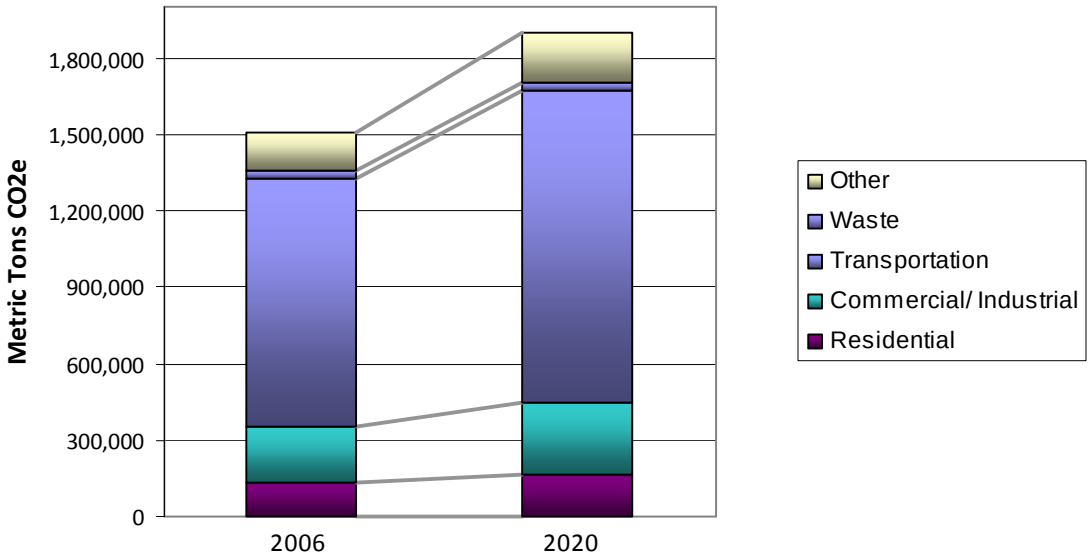
FIGURE A2.4-5 COUNTY EMISSIONS BY SOURCE



5. Forecast

The emissions forecast for San Luis Obispo County represents a business-as-usual prediction of how community GHG levels will change over time if consumption trends and behavior continue as they did in 2006. These predictions are based on the community inventory results included in this report and statistics on job, household, and population growth from the County. The analysis (**Figure A2.5-1** below) shows that if behavior and consumption trends continue as business-as-usual, emissions will reach 1,896,164 metric tons of CO_2e by 2020, or a 25.7% increase over 2006 baseline levels.

FIGURE A2.5-1 BUSINESS-AS-USUAL PROJECTED GROWTH IN COMMUNITY-WIDE EMISSIONS, 2006-2020



The forecast does not quantify emissions reductions from State or federal activities including AB 32, the renewable portfolio standard, and SB 375. Additionally, it does not take into account reduction activities already underway or completed since 2006, the results of which likely put the community's emissions on a track well below the business-as-usual linear projection.

Forecasts were performed by applying household, job, and population growth rates to 2006 community-wide greenhouse gas emissions levels. Estimates were obtained from a long-range projections report developed by the San Luis Obispo Council of Governments in 2006. The "mid-range" cases for population, job, and household growth were used in this forecast estimation.

County government operations emissions are not separately analyzed as part of this forecast due to a lack of reasonable growth indicators for the County government sector. However, an increase in emissions is not expected for existing facilities and operations in the County government operations sector. If anything, the County expects that emissions within the scope of the 2006 County government operations inventory will decrease because of improved commuter programs, energy efficiency improvements, and fleet upgrades. At the same time, it is likely the County will have to expand services and infrastructure to accommodate the expected growth in the region, which could add new sources of emissions to the County government operations inventory that did not exist in 2006.

6. Conclusion and Next Steps

The County of San Luis Obispo has made a formal commitment to reduce its greenhouse gas emissions. This report lays the groundwork for those efforts by estimating baseline emission levels against which future progress can be demonstrated.

This analysis found that the community was responsible for emitting 1,506,163 metric tons of CO_2e in the base year 2006, with the transportation sector contributing the most (64.8%) to this total. As a component of the community-wide analysis, county government operations produced 34,335 metric tons of CO_2e, or a little over 2% of total. In addition to establishing the baseline for tracking progress over time, this report serves to identify the major sources of county emissions, and therefore the greatest opportunities for emission reductions. In this regard, the emissions inventory ought to inform the focus of the County Climate Action Plan. If no action is taken, this report found that business-as-usual emissions will likely rise by 25.7%.

It is important to note that in order to remain consistent with greenhouse gas reduction methodology, all future quantifications of reduction activities must be subtracted from this 'business-as-usual' line. Not doing so would be assuming that emissions remain at constant 2006 levels while reduction activities are underway. In reality, the County's climate action efforts will be working against a rising emissions level due to job, population, and household growth. **Figure A2.6-1** below shows the business-as-usual emissions forecast in relation to 2006 baseline levels and the 15% reduction below 2006 levels recommended by the State Attorney General and Air Resources Board.

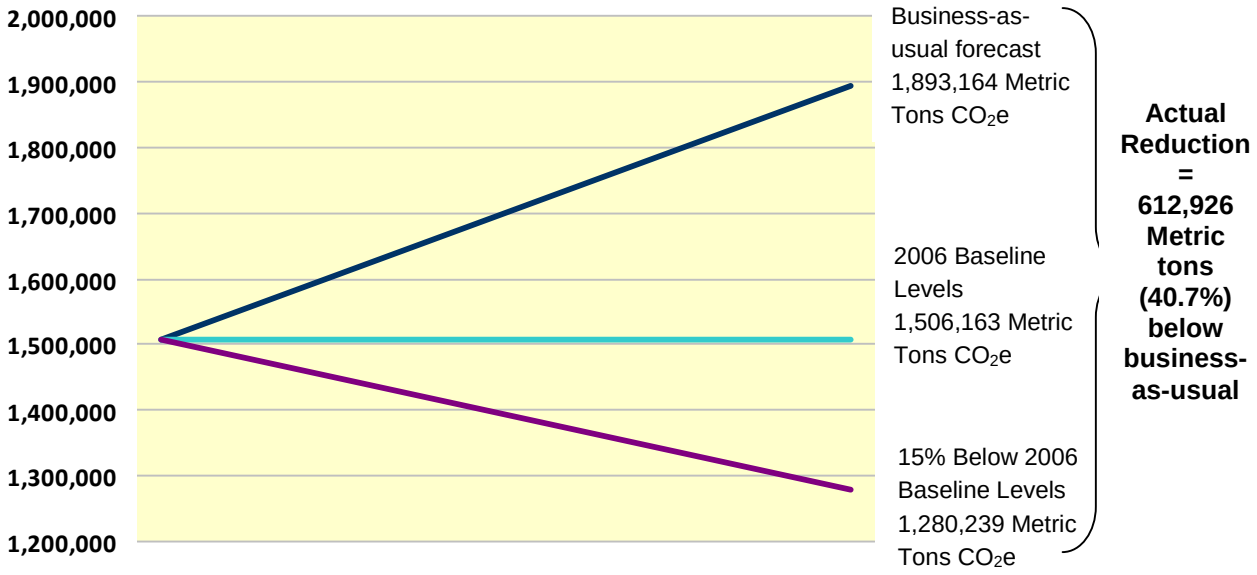
The difference between the business-as-usual forecast and the 15% reduction target is actually 4%, which makes the State's recommended reduction goal challenging, but still feasible. As noted in the Forecast section, it is likely that the County's sustainability efforts have already caused emissions to fall below the business-as-usual linear projection line, thus making the 40.7% reduction (612,926 metric tons of CO2e) by 2020 achievable.

If the community reduced GHG emissions by 612,926 metric tons of CO2e, what would that be equivalent to?

- **132,392 passenger cars not driven for one year**
- **1.4 million barrels of oil saved**
- **15,936,076 tree seedlings grown over 10 years**
- **7,968,036 compact fluorescent bulbs used instead of standard light bulbs for one year**

Source: California Air Resources Board, "Conversion of 1 MMT CO2 to Familiar Equivalents," Oct. 2007.

FIGURE A2.6-1 GHG FORECAST IN RELATION TO 15% REDUCTION TARGET, 2006 - 2020



As the County moves forward to the next milestones in the process, including designation of emission reduction targets and development of a Climate Action Plan, the County should identify and quantify the emission reduction benefits of projects that have already been implemented since 2006, as well as the emissions reduction benefits of proposed Conservation and Open Space Element policies and climate protection measures. The benefits of both existing and proposed strategies can be tallied against the baseline established in this report to determine the appropriate set of strategies that will deliver the County to its chosen emissions reduction goal.

APPENDICES

APPENDIX 2A: CACP DETAILED REPORT FOR COMMUNITY-WIDE EMISSIONS, 2006

Community Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)

Residential

San Luis Obispo County, CA

1 PG&E Residential Natural Gas

Natural Gas	798	0.1	14,993
Subtotal 1 PG&E Residential Natural Gas	798	0.1	14,993

Source(s):
- All PG&E Data was received from Jeremy Howard, Account Executive with PG&E (805.595-6430 Email: J2H6@pge.com)
- Data file: "PG&E_2006_UNINC.xls"

Notes:
- The "California Coefficients for Natural Gas" coefficient set is based on a PG&E eCO2 emissions factor of 53.05 kg/MMBtu of delivered natural gas, certified by the California Climate Action Registry and the CEC, and was reported to ICLEI in Dec 2007 by Jasmin Ansar. Criteria air pollutant emissions factors for natural gas are derived from the US EPA's annual report of air pollution emission trends (USEPA, 2001c).

1 SoCal Gas Co. Residential Natural Gas

Natural Gas	70,055	4.7	1,249,665
Subtotal 1 SoCal Gas Co. Residential Natural Gas	55	4.7	1,249,665

Source(s):
- Southern California Gas Co Data was provided by Colby Morrow, Air Quality Manager, Customer Programs Environmental Affairs; office:559.324.0109 or email CLMorrow@semprautilities.com
- Data file: "Gas Usage by Market (MCF).xls"

Notes:
- Conversion of 1 MCF=10 therms was used.
- Default Fuel CO2 Set
- CEC Emission Factor for Natural Gas - RCI Average Set

2 PG&E Residential Electricity

Electricity	65,514	4.3	1,056,643
Subtotal 2 PG&E Residential Electricity	65,514	4.3	1,056,643

Source(s):
- All PG&E Data was received from Jeremy Howard, Account Executive with PG&E (805.595-6430 Email: J2H6@pge.com)
- Data file: "PG&E_2006_UNINC.xls"

Notes:
- The "PG&E California" electricity coefficient set is based on the 2005 PG&E eCO2 emission factor of 0.492859 lbs/kWh of delivered elctricity. This emissions factor is certified by the California Climate Action Registry and was reported to ICLEI in January 2007 by Greg San Martin. Criteria air pollutant emission factors for electricity are derived from the NERC Region 13 - Western Systems Coordinating Council/CNV Average Grid Electricity Set.

Community Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)
Subtotal Residential	136,367	9.1	2,321,301
Commercial			
San Luis Obispo County, CA			
1 PG&E Commercial + Industrial Natural Gas			
Natural Gas	1,144	0.1	21,506
Subtotal 1 PG&E Commercial + Industrial Natural Gas		0.1	21,506

Source(s):
- All PG&E Data was received from Jeremy Howard, Account Executive with PG&E (805.595-6430 Email: J2H6@pge.com);
- Data file: "PG&E_2006_UNINC.xls"

Notes:
- PG&E supplies natural gas to Shandon and portions of Creston, while SoCal Gas serves the rest of SLOCo. Conversion of 1 MCF=10 therms was used.
- PG&E data for commercial and industrial was combined and included under commercial, due to 15/15 Rule
- Notation: The "California Coefficients for Natural Gas" coefficient set is based on a PG&E eCO2 emissions factor of 53.05 kg/MMBtu of delivered natural gas, certified by the California Climate Action Registry and the CEC, and was reported to ICLEI in Dec 2007 by Jasmin Ansar. Criteria air pollutant emissions factors for natural gas are derived from the US EPA's annual report of air pollution emission trends (USEPA, 2001c).

1 SoCal Gas Co. Commercial Natural Gas			
Natural Gas	72,214	4.8	1,288,177
Subtotal 1 SoCal Gas Co. Commercial Natural Gas	4	4.8	1,288,177

Source(s):
- Southern California Gas Co Data was provided by Colby Morrow, Air Quality Manager, Customer Programs Environmental Affairs; office:559.324.0109 or email CLMorrow@semprautilities.com
- Data file: "Gas Usage by Market (MCF).xls"

Notes:
- Conversion of 1 MCF=10 therms was used.
- CEC Emission Factor for Natural Gas - RCI Average Set
- Default Fuel CO2 Set

1 SoCal Gas Co. Industrial Natural Gas			
Natural Gas	74,135	4.9	1,322,431
Subtotal 1 SoCal Gas Co. Industrial Natural Gas	135	4.9	1,322,431

Source(s):
- Southern California Gas Co Data was provided by Colby Morrow, Air Quality Manager, Customer Programs Environmental Affairs; office:559.324.0109 or email CLMorrow@semprautilities.com
- Data file: "Gas Usage by Market (MCF).xls"

Notes:
- Conversion of 1 MCF=10 therms was used.
- Default Fuel CO2 Set
- CEC Emission Factor for Natural Gas - RCI Average Set

Community Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)
2 PG&E Commercial + Industrial Electricity			
Electricity	68,483	4.5	1,104,531
Subtotal 2 PG&E Commercial + Industrial Electricity	68,483	4.5	1,104,531

Source(s):
- All PG&E Data was received from Jeremy Howard, Account Executive with PG&E (805.595-6430 Email: J2H6@pge.com);
- Data file: "PG&E_2006_UNINC.xls"

Notes:
- PG&E data for commercial and industrial was combined and included under commercial, due to 15/15 Rule adopted by the CPUC to protect customer confidentiality. The 15/15 rule requires that any aggregated information provided by the Utilities must be made up of at least 15 customers. A single customer's load must be less than 15 percent of an assigned category. If the number of customers in the complied data is below 15, or if a single customer's load is more than 15 percent of the total data, categories must be combined before the information is released. The Rule further requires that if the 15/15 Rule is triggered for a second time after the data has been screened already using the 15/15 Rule, the customer must be dropped from the information provided.
This information was provided by Corie Cheeseman, Program Manager with Pacific Gas and Electric Company - Customer Energy Efficiency C3CL@pge.com or 415-973-4999.

Subtotal Commercial	215,976	14.3	3,736,644

Transportation

San Luis Obispo County, CA

1 Community On-Road VMT - Unincorp SLOco			
Gasoline	184,509	12.3	2,606,234
Diesel	22,847	1.5	272,480
Subtotal 1 Community On-Road VMT - Unincorp SLOco		13.8	2,878,714

Source(s):
- Community On-road VMT in unincorporated areas provided by Caltrans Highway Performance Maintenance data (HPMS) 2006, http://www.dot.ca.gov/hq/tsip/hpms/hpmslibrary/hpmspdf/2006PRD.pdf

Notes:
- Emissions factors for gas and diesel per vehicle class provided by EMFAC2007 v2.3 run by Tom Scheffelin, California Air Resources Board Planning and Technical Support Division, Tscheffe@arb.ca.gov. Manipulated by Jillian Rich, PMC, jrich@PMCworld.com to convert EMFAC vehicle classes to those used in CACP

1 State Highway VMT - Unincorp. SLOco			
Gasoline	684,476	45.4	9,668,372
Diesel	84,754	5.6	1,010,823
Subtotal 1 State Highway VMT - Unincorp. SLOco	769,230	51.1	10,679,195

Source(s):
- Highway road segments derived from San Luis Obispo County GIS shapefiles for roads and political boundaries, provided by Bobby Jo Close, Mapping Systems Specialist at the County of San Luis Obispo. Manipulated by John DeMartino, PMC, jdemartino@pmcworld.com.
- Total State highway VMT data provided by Caltrans Highway Performance Maintenance data (HPMS) 2006,

Community Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)

http://www.dot.ca.gov/hq/tsip/hpms/hpmslibrary/hpmspdf/2006PRD.pdf

Notes:
- The unincorporated highway VMT was calculated by using GIS to find the portion of highway road segments in unincorporated County land and multiplying it by total County highway VMT
- Emissions factors for gas and diesel per vehicle class provided by EMFAC2007 v2.3 run by Tom Scheffelin, California Air Resources Board Planning and Technical Support Division, Tscheffe@arb.ca.gov. Manipulated by Jillian Rich, PMC, jrich@PMCworld.com to convert EMFAC vehicle classes to those used in CACP.

Subtotal Transportation	976,585	64.8	13,557,909

Waste

Chicago Grade

3 Unincorp. SLOco Solid Waste - Chicago Grade			*Disposal Method - Managed Landfill*
Paper Products	4,401	0.3	
Food Waste	1,458	0.1	
Plant Debris	640	0.0	
Wood/Textiles	1,166	0.1	
Subtotal 3 Unincorp. SLOco Solid Waste - Chicago Grade		0.5	

Sources:
- Total waste tonnage for unincorporated SLO County in 2006 provided by the 2006 Disposal Report prepared by San Luis Obispo Couny Integrated Waste Management Authority on 3/6/07, provided by Tom Martin, tmartim@wasteconnections.com.
- Percentages of waste share by type for landfill tonaage provided by CIWMB 2004 Statewide Waste Characterization Study, http://www.ciwmb.ca.gov/Publications/default.asp?pubid=1097.
- Chicago Grade landfill reports a methane recovery factor of 60%. Chicago Grade total gas generated = 170.21 mmcf/yr. Total gas transferred = 102.13 mmcg/yr.

Notes:
- Waste Type data not collected by landfill. State average waste characterization data is used for residential, commerical, and self haul waste.
- A weighted average methane recovery factor of 58% is used for this calculation to account for the different recovery factor of Paso Robles.

Cold Canyon

3 Unincorp. SLOco Solid Waste - Cold Canyon			*Disposal Method - Managed Landfill*
Paper Products	10,712	0.7	
Food Waste	3,549	0.2	
Plant Debris	1,559	0.1	
Wood/Textiles	2,839	0.2	
Subtotal 3 Unincorp. SLOco Solid Waste - Cold Canyon		1.2	

Sources:
- Total waste tonnage for unincorporated SLO County in 2006 provided by the 2006 Disposal Report prepared by San Luis Obispo Couny Integrated Waste Management Authority on 3/6/07, provided by Tom Martin, tmartim@wasteconnections.com.
- Percentages of waste share by type for landfill tonage provided by CIWMB 2004 Statewide Waste Characterization Study, http://www.ciwmb.ca.gov/Publications/default.asp?pubid=1097.
- Cold Canyon landfill reports a methane recovery factor of 60%. Cold Canyon total gas generated = 763.1 mmcf/yr. Total gas transferred = 457.84

Community Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)

mmcg/yr.

Notes:
- Waste Type data not collected by landfill. State average waste characterization data is used for residential, commerical, and self haul waste.
- A weighted average methane recovery factor of 58% is used for this calculation to account for the different recovery factor of Paso Robles.

Paso Robles

3 Unincorp. SLOco Solid Waste - Paso Robles *Disposal Method - Managed Landfill*

Paper Products	2,420	0.2	
Food Waste	802	0.1	
Plant Debris	352	0.0	
Wood/Textiles	641	0.0	
Subtotal 3 Unincorp. SLOco Solid Waste - Paso Robles		0.3	

Sources:
- Total waste tonnage for unincorporated SLO County in 2006 provided by the 2006 Disposal Report prepared by San Luis Obispo Couny Integrated Waste Management Authority on 3/6/07, provided by Tom Martin, tmartim@wasteconnections.com.
- Percentages of waste share by type for landfill tonaage provided by CIWMB 2004 Statewide Waste Characterization Study, http://www.ciwmb.ca.gov/Publications/default.asp?pubid=1097.
- Paso Robles landfill reports a methane recovery factor of 50%. Paso Robles total gas generated = 144.48 mmcf/yr. Total gas transferred = 72.24 mmcg/yr.

Notes:
- Waste Type data not collected by landfill. State average waste characterization data is used for residential, commerical, and self haul waste.
- A weighted average methane recovery factor of 58% is used for this calculation to account for the different recovery factor of Paso Robles.

Subtotal Waste	30,540	2.0	

Other

San Luis Obispo County, CA

1 Off-Road Agricultural Equipment

Carbon Dioxide	62,784	4.2	
Nitrous Oxide	236	0.0	
Methane	258	0.0	
Subtotal 1 Off-Road Agricultural Equipment	63,278	4.2	

Source(s):
- CO2, CH4, and N20 emissions calculated using the California Air Resources Board OFFROAD2007 modeling tool.
- The portion of agricultural land per jurisdiction in SLO County calculated by John Demartino, PMC, jdemartino@pmcworld.com using County GIS shape files.

Notes:
- OFFROAD aggregates off-road agricultural equipment emissions for the entire county. Emissions were separted by jurisdiction based on the proportion of agricultural land per jurisdiction. This analysis was completed using GIS shapefiles of land use patterns in the county.
- OFFROAD includes the following agricultural equipment: 2-wheel tractors, agricultural mowers, agricultural tractors, balers, combines, hydro power units, other agricultural equipment, sprayers, swathers, tilers.

Community Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)
3 Heads of Cattle and Sheep			
Methane	83,417	5.5	
Subtotal 3 Heads of Cattle and Sheep	83,417	5.5	

Sources:
- Livestock data obtained from the Department of Agriculture and reported in 'Farming Operations" engineering report by Courtney Ward, July 22, 2008. Cattle heads estimated to be 95,000
- Methane emissions from enteric fermentation and manure were calculated using Intergovernmental Panel on Climate Change (IPCC) 2006 Guidelines for National Greenhouse Gas Inventories. http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_10_Ch10_Livestock.pdf

Notes:
- CH4 is attributed to the 95,000 cattle and 6,210 sheep in SLOCo (2006). Since half of the sheep and half of the cattle are in-county year round and half are here only half of the year. Therefore, we will model (95,000 * 75%) = 71,250 cattle and (6,210 * 75%) = 6,457.5 sheep
- All cows were assumed to be in the Other/Meat category of IPCC cattle categories as SLO county does not raise cattle or calves for dairy uses. The only dairy is on the Cal Poly campus, which is not included in this Inventory. Assumption confirmed by Robert Lilley (rlilley@co.slo.ca.us), Agricultural Commissioner for the County on 3/2/09.
- Tier 1 Enteric fermentation methane emissions factor (kg CH4 per head per year) for Other cattle = 53. For Sheep = 8.
- Tier 1 Manure management methane emission factor (kg per head per year) for Other cattle = 2. For sheep in temperate average temperatures (15-25 Degrees C) = 0.28
- CATTLE: (71,250 heads * 53 kg/head) + (71,250 * 2 kg/head) = 3776250 + 142500 = 3,918,750 kg/year
- SHEEP: (6457.5 * 8) + (6457.5 * .28) = 51660 + 1801.1 = 53,468.1 kg/year
- TOTAL= 3,918,750 + 53,468.1= 3,972,248.1 kg/year

Subtotal Other	146,695	9.7	
Total	1,506,163	100.0	19,615,854

APPENDIX 2B: CACP DETAILED REPORT FOR COUNTY GOVERNMENT OPERATIONS EMISSIONS, 2006

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

Buildings

San Luis Obispo County, CA

1 Cal Fire South/North County Training

Natural Gas	1	0.0	16	0
Subtotal 1 Cal Fire South/North County Training	1	0.0	16	0

Source(s):
- Data provided by Eric Cleveland Battalion Chief of Support Services, County Cal Fire.
Contact info: 805-543-4244- eric.cleveland@fire.ca.gov
- Natural Gas comes from the Gas Co.

Notes:
- Propane comes from Delta Liquid Energy- 764.41 units (do not know units)

1 Child Support Services- County

Natural Gas	11	0.0	189	0
Subtotal 1 Child Support Services- County	11	0.0	189	0

Source(s):
- Contact- Jacquiline Barthelow- Administration- 805-781-5730

Notes:
- Jacquiline signed data request letters to PG&E and the Gas Co.

1 County Building- PPD01 Oceano Airport

Natural Gas	8	0.0	144	1,992
Subtotal 1 County Building- PPD01 Oceano Airport	8	0.0	144	1,992

Source(s):
- Reported by Department of General Services.

Notes:
Building Info: 20,060

1 County Building- PT-39 1103 Toro St. HEALTH

Natural Gas	3	0.0	62	823
Subtotal 1 County Building- PT-39 1103 Toro St. HEALTH		0.0	62	823

Source(s):
- Reported by Department of General Services.

Notes:
- Electric under RKE (dave clew). County pays utilities based on sq. ft.
- Bldg info:

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

2619 sq. ft.

1&2 APCD Roberto Court (4 meters)

Electricity	4	0.0	72	3,494
Natural Gas	4	0.0	72	900
Subtotal 1&2 APCD Roberto Court (4 meters)	8	0.0	144	4,394

Source(s):
- APCD data collected using electricity (PG&E) & gas (Gas Co.) paper bills at APCD Roberto Court. Contact- Melisa Guise

Notes:
- For the month of March the bills were missing the kwh page. Asssumed that the kwh was 0 because the bill was approx. $10. For other months that had 0 kwh, the bill was between $8-$12.
- No gas data for Dec. 2006 (missing). Nov. 2006 had 35 therms. Jan. 2006 had 143 therms. Can maybe take the average between those months.

1&2 Cal Fire Sta 21 Airport

Electricity	6	0.0	102	0
Natural Gas	7	0.0	118	0
Subtotal 1&2 Cal Fire Sta 21 Airport	13	0.0	221	0

Source(s):
- Reported by Eric Cleveland, Battalion Chief, County Cal Fire.

1&2 Cal Fire Sta. 62 Avila Valley

Electricity	3	0.0	42	0
Natural Gas	5	0.0	82	0
Subtotal 1&2 Cal Fire Sta. 62 Avila Valley	7	0.0	124	0

Source(s):
- contact- Eric Cleveland

1&2 County Building DSS PA-35 Grand Ave, Arroyo Grande

Electricity	34	0.1	549	27,859
Natural Gas	12	0.0	209	2,317
Subtotal 1&2 County Building DSS PA-35 Grand Ave, Arroyo Grande		0.1	757	30,176

Source(s):
- Reported by General Services.

Notes:
- Bldg info:
2600 operating hours
19,728 sq. ft.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
1&2 County Building PIC20 Mail Jail & Femail Jail				
Electricity	349	1.0	5,629	204,980
Natural Gas	492	1.4	8,775	81,279
Subtotal 1&2 County Building PIC20 Mail Jail & Femail Jail		2.5	14,404	286,259

Source(s):
- Data from General Services
Contact- David Clew, Utility Coordinator, Department of General Services, 805-781-5221- dclew@co.slo.ca.us

Notes:
- Bldg info:
8760 operating hours
46925 sq. ft. floor area

1&2 County Building- Cogeneration Plant				
Electricity	130	0.4	2,090	0
Natural Gas	411	1.2	7,324	57,389
Subtotal 1&2 County Building- Cogeneration Plant	540	1.6	9,414	57,389

Source(s):
- Reported by Department of General Services.

Notes:
- Bldg info:
Located in basement of PTB00- Old Courthouse
3,120 operating hours

1&2 County Building- DSS PB-08_9415 El Camino Atascadero				
Electricity	11	0.0	177	9,331
Natural Gas	7	0.0	118	1,521
Subtotal 1&2 County Building- DSS PB-08_9415 El Camino Atascadero		0.1	295	10,852

Source(s):
- Reported by Department of General Services.

Notes:
- Bldg info:
4,901 sq. ft.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
1&2 County Building- DSS PR15_ 530 12th St. Paso Robles				
Electricity	18	0.1	290	13,747
Natural Gas	2	0.0	35	533
Subtotal 1&2 County Building- DSS PR15_ 530 12th St. Paso Robles		0.1	325	14,280

Source(s):
- Reported by Department of General Services.

Notes:
- Bldg info:
6,485 sq. ft.

1&2 County Building- DSS PT86 2975 McMillan #160 AB				
Electricity	9	0.0	151	8,209
Natural Gas	4	0.0	69	1,025
Subtotal 1&2 County Building- DSS PT86 2975 McMillan #160 AB		0.0	220	9,234

Source(s):
- Reported by Department of General Services.

Notes:
- Bldg info:
2600 operating hours
4533 sq. ft.

1&2 County Building- PA-28 1106 E. Grand Ave AG HEALTH				
Electricity	11	0.0	178	8,493
Natural Gas	4	0.0	72	951
Subtotal 1&2 County Building- PA-28 1106 E. Grand Ave AG HEALTH		0.0	250	9,444

Source(s):
- Reported by Department of General Services.

Notes:
- Bldg info:
2600 operating hours
2242 sq. ft.

1&2 County Building- PA-34 1092 E. Grand Ave. AG HEALTH				
Electricity	2	0.0	38	2,041
Natural Gas	1	0.0	20	546
Subtotal 1&2 County Building- PA-34 1092 E. Grand Ave. AG HEALTH		0.0	59	2,587

Source(s):

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

- Reported by Department of General Services.

Notes:
- Bldg info:
2600 operating hours
2249 sq. ft.

1&2 County Building- PAC01 South County Regional Ctr

Electricity	6	0.0	97	3,957
Natural Gas	1	0.0	17	207
Subtotal 1&2 County Building- PAC01 South County Regional Ctr		0.0	113	4,164

Source(s):
- Reported by Department of General Services.

Notes:
- Bldg info:
3744 operating hours
10,677 sq. ft.

1&2 County Building- PAC05 Ag ommissioner Arroyo Grande

Electricity	5	0.0	75	3,529
Natural Gas	4	0.0	67	902
Subtotal 1&2 County Building- PAC05 Ag ommissioner Arroyo Grande		0.0	142	4,431

Source(s):
- Reported by Department of General Services.

Notes:
- Bldg info:
2600 operating hours
2,880 sq. ft.

1&2 County Building- PB-16 3518-3556 El Camino Real HEALTH

Electricity	7	0.0	107	5,455
Natural Gas	5	0.0	87	1,326
Subtotal 1&2 County Building- PB-16 3518-3556 El Camino Real HEALTH		0.0	193	6,781

Source(s):
- Reported by Department of General Services.

Notes:
- Bldg info:
600 sq. ft.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
1&2 County Building- PB-18 DSS 9485 El Camino, Atascadero				
Electricity	2	0.0	34	1,682
Natural Gas	1	0.0	21	446
Subtotal 1&2 County Building- PB-18 DSS 9485 El Camino, Atascadero		0.0	55	2,128

Source(s):
- Reported by Department of General Services.

Notes:
- Bldg info:
2600 operating hours
931 sq. ft.

1&2 County Building- PB-19 Assessor/Clerk/Planning				
Electricity	7	0.0	107	5,459
Natural Gas	6	0.0	110	1,794
Subtotal 1&2 County Building- PB-19 Assessor/Clerk/Planning		0.0	216	7,253

Source(s):
- Reported by Department of General Services.

Notes:
- Bldg info:
2600 operating hours
4,650 sq. ft.

1&2 County Building- PB-20 3520 El Camino Real AT HEALTH				
Electricity	7	0.0	107	5,417
Natural Gas	5	0.0	88	1,350
Subtotal 1&2 County Building- PB-20 3520 El Camino Real AT HEALTH		0.0	194	6,767

Source(s):
- Reported by Department of General Services.
Combined with 3556 El Camino

Notes:
- Bldg info:
600 sq. ft.

1&2 County Building- PB-21 Probation Atascadero				
Electricity	3	0.0	52	2,470

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
Natural Gas	6	0.0	102	1,350
Subtotal 1&2 County Building- PB-21 Probation Atascadero		0.0	155	3,820

Source(s):
- Reported by General Services.
Contact- David Clew
Probation pays electricity as it is grant funded (dave clew).

Notes:
- Bldg info:
2600 operating hours
1550 sq. ft.

1&2 County Building- PBG01 Atascadero Hospital

Electricity	2	0.0	30	1,421
Natural Gas	18	0.1	316	3,838
Subtotal 1&2 County Building- PBG01 Atascadero Hospital		0.1	346	5,259

Source(s):
- Reported by Department of General Services.

Notes:
- Bldg info:
8,734 sq. ft.

1&2 County Building- PEN15 Sheriff Substation Los Osos

Electricity	6	0.0	97	4,476
Natural Gas	5	0.0	92	1,216
Subtotal 1&2 County Building- PEN15 Sheriff Substation Los Osos		0.0	189	5,692

Source(s):
- Reported by Department of General Services.

Notes:
- Bldg info:
8760 operating hours
3,200 sq. ft.

1&2 County Building- PIC 23 Info Services Comm Shop

Electricity	5	0.0	75	3,535
Natural Gas	3	0.0	53	773
Subtotal 1&2 County Building- PIC 23 Info Services Comm Shop		0.0	128	4,308

Source(s):
- Reported by Department of General Services.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

Notes:
- Bldg info:
2600 operating hours
2214 sq. ft.

1&2 County Building- PIC02 Maintenance Building

Electricity	6	0.0	99	4,658
Natural Gas	6	0.0	105	1,354
Subtotal 1&2 County Building- PIC02 Maintenance Building		0.0	204	6,012

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
3120 operating hours
50,121 sq. ft.

1&2 County Building- PIC05 Detectives Building

Electricity	24	0.1	388	17,107
Natural Gas	8	0.0	148	1,950
Subtotal 1&2 County Building- PIC05 Detectives Building		0.1	535	19,057

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
8,760 operating hours
9,450 sq. ft.

1&2 County Building- PIC07 Sheriff Storage Building

Electricity	4	0.0	56	2,618
Natural Gas	2	0.0	37	542
Subtotal 1&2 County Building- PIC07 Sheriff Storage Building		0.0	93	3,160

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
8760 operating hours
7136 sq. ft.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
1&2 County Building- PIC17 Garage				
Electricity	5	0.0	77	3,588
Natural Gas	6	0.0	112	1,528
Subtotal 1&2 County Building- PIC17 Garage	11	0.0	189	5,116

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
3120 operating hours
14,277 sq. ft. (additional planned on GAR 700)

1&2 County Building- PIC30 Animal Services				
Electricity	23	0.1	371	15,116
Natural Gas	89	0.3	1,589	16,371
Subtotal 1&2 County Building- PIC30 Animal Services		0.3	1,960	31,487

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
8,760 operating hours
13,499 sq. ft. floor area

1&2 County Building- PIC31 Sheriff Honor Farm				
Electricity	103	0.3	1,669	62,299
Natural Gas	255	0.7	4,542	43,448
Subtotal 1&2 County Building- PIC31 Sheriff Honor Farm		1.1	6,211	105,747

Source(s):
- Reported by General Services
Contact- David Clew

Notes:
Bldg info:
8,760 operating hours
34,807 sq. ft. floor area

1&2 County Building- PIC35 Juvenile Services				
Electricity	72	0.2	1,156	43,868

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
Natural Gas	84	0.2	1,495	15,356
Subtotal 1&2 County Building- PIC35 Juvenile Services		0.5	2,651	59,224

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
8,760 operating hours
22,783 sq. ft. floor area

1&2 County Building- PLC03 Municipal Court Grover Beach

Electricity	4	0.0	70	3,396
Natural Gas	3	0.0	60	824
Subtotal 1&2 County Building- PLC03 Municipal Court Grover Beach		0.0	130	4,220

Source(s):
- Reported by Department of General Services.

Notes:
- Bldg info:
2600 operating hours
3,412 sq. ft.

1&2 County Building- PLC05 Public Health Grover Beach

Electricity	3	0.0	50	2,520
Natural Gas	3	0.0	58	773
Subtotal 1&2 County Building- PLC05 Public Health Grover Beach		0.0	107	3,293

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
2600 operating hours
4843 sq. ft.

1&2 County Building- PMA09 Park Ranger Residence

Electricity	0	0.0	0	-377
Propane	0	0.0	6	1,172
Subtotal 1&2 County Building- PMA09 Park Ranger Residence		0.0	6	795

Source(s):
- Reported by Department of General Services.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

Notes:
- CLOSED on 9/21/2006.
- Electricity account closed so monies refunded showing a credit (dave clew).
- Bldg info:
8760 operating hours
1344 sq. ft.

1&2 County Building- PNL02 Morro Bay Clinic

Electricity	2	0.0	35	1,712
Natural Gas	4	0.0	64	896
Subtotal 1&2 County Building- PNL02 Morro Bay Clinic		0.0	99	2,608

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
3120 operating hours
2803 sq. ft.

1&2 County Building- PPD02 Oceano Airport Residnece

Electricity	1	0.0	10	281
Natural Gas	5	0.0	96	1,165
Subtotal 1&2 County Building- PPD02 Oceano Airport Residnece		0.0	106	1,446

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
8,760 operating hours
1140 sq. ft.

1&2 County Building- PPD12 Coastal Dunes

Electricity	29	0.1	472	20,020
Natural Gas	17	0.0	300	2,819
Subtotal 1&2 County Building- PPD12 Coastal Dunes		0.1	772	22,839

Source(s):
- Reported by Department of General Services.

Notes:
info:
Opened on 10/01/2006-- so data only from October of 2006.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

8,760 operating hours

1&2 County Building- PR-04 1030 Vine PR HEALTH

Electricity	7	0.0	118	5,658
Natural Gas	2	0.0	42	603
Subtotal 1&2 County Building- PR-04 1030 Vine PR HEALTH		0.0	160	6,261

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
2600 operating hours
2720 sq. ft.

1&2 County Building- PRE31/32 Paso Robles Courts Modulars

Electricity	14	0.0	225	8,978
Natural Gas	3	0.0	57	808
Subtotal 1&2 County Building- PRE31/32 Paso Robles Courts Modulars		0.1	282	9,786

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
2600 operating hours
4969 sq. ft.

1&2 County Building- PRE33 Public Health Paso Robles

Electricity	11	0.0	174	8,365
Natural Gas	6	0.0	112	1,482
Subtotal 1&2 County Building- PRE33 Public Health Paso Robles		0.1	287	9,847

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
2600 operating hours
4391 sq. ft.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
1&2 County Building- PT-111 1011 Pacific St. HEALTH				
Electricity	10	0.0	158	7,549
Natural Gas	1	0.0	24	393
Subtotal 1&2 County Building- PT-111 1011 Pacific St. HEALTH		0.0	181	7,942

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
2600 operating hours
4860 sq. ft.

1&2 County Building- PT-20 Superior Court				
Electricity	10	0.0	158	8,540
Natural Gas	2	0.0	38	696
Subtotal 1&2 County Building- PT-20 Superior Court		0.0	196	9,236

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
3120 operating hours
6427 sq. ft.

1&2 County Building- PT-65 Family Court Services				
Electricity	1	0.0	23	1,042
Natural Gas	3	0.0	49	711
Subtotal 1&2 County Building- PT-65 Family Court Services		0.0	73	1,753

Source(s):
- Reported by Department of General Services.

Notes:
- Building CLOSED on 6/20/2006 (dave clew)
- Bldg info:
2600 operating hours
4279 sq. ft.

1&2 County Building- PT066 2191 Johnson Ave HEALTH				
Electricity	49	0.1	789	35,613

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
Natural Gas	41	0.1	726	7,643
Subtotal 1&2 County Building- PT066 2191 Johnson Ave HEALTH		0.3	1,514	43,256

Source(s):
- Reported by Department of General Services.

Notes:
Building info:
Lab HVAC operates 8,760 hours
Offices operate 2600 hrs/yr
11,806 sq. ft.

1&2 County Building- PT067 Heath/Ag Depts.- 2156 Sierra Way

Electricity	33	0.1	530	25,950
Natural Gas	9	0.0	165	2,131
Subtotal 1&2 County Building- PT067 Heath/Ag Depts.- 2156 Sierra Way		0.1	695	28,081

Source(s):
- Reported by Department of General Services.

Notes:
Building Info:
2600 operating hours
21,037 sq. ft.

1&2 County Building- PTA86 Veterans Building

Electricity	17	0.0	266	12,387
Natural Gas	14	0.0	258	2,961
Subtotal 1&2 County Building- PTA86 Veterans Building		0.1	524	15,348

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
2,600 operating hours
28,124 sq. ft.

1&2 County Building- PTB00 Government Center

Electricity	702	2.1	11,325	430,446
Natural Gas	100	0.3	1,775	17,587
Subtotal 1&2 County Building- PTB00 Government Center		2.4	13,100	448,033

Source(s):

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

- Reported by Department of General Services.
Contact- David Clew

Notes:
Bldg info:
8760 operating hours
351,653 sq. ft. floor area

1&2 County Building- PTB07 General Services

Electricity	15	0.0	236	11,537
Natural Gas	1	0.0	18	341
Subtotal 1&2 County Building- PTB07 General Services		0.0	254	11,878

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
3120 Operating hours
9,010 sq. ft.

1&2 County Building- PTB10 Kimball Building

Electricity	17	0.0	266	13,172
Natural Gas	14	0.0	243	2,898
Subtotal 1&2 County Building- PTB10 Kimball Building		0.1	510	16,070

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
2600 operating hours
17,167 sq. ft.

1&2 County Building- PTC91 Courts Attorneys

Electricity	5	0.0	84	3,993
Natural Gas	2	0.0	36	542
Subtotal 1&2 County Building- PTC91 Courts Attorneys		0.0	119	4,535

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
2600 operating hours

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

1800 sq. ft.

1&2 County Building- PTD92 Grand Jury

Electricity	2	0.0	26	1,557
Natural Gas	2	0.0	43	622
Subtotal 1&2 County Building- PTD92 Grand Jury	4	0.0	69	2,179

Source(s):
- Reported by Department of General Services.

1&2 County Building- PTF53 Probation SLO

Electricity	25	0.1	409	19,470
Natural Gas	12	0.0	207	2,587
Subtotal 1&2 County Building- PTF53 Probation SLO		0.1	616	22,057

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
3120 operating hours
14,402 sq. ft.

1&2 County Building- PTF66 Health Campus

Electricity	106	0.3	1,715	79,296
Natural Gas	87	0.3	1,556	15,404
Subtotal 1&2 County Building- PTF66 Health Campus		0.6	3,272	94,700

Source(s):
- Reported by General Services
Contact- David Clew

Notes:
Bldg info:
116,337 sq. ft. floor area

1&2 County Building- PTN11 Airport Terminal

Electricity	81	0.2	1,305	51,779
Natural Gas	12	0.0	213	2,769
Subtotal 1&2 County Building- PTN11 Airport Terminal		0.3	1,518	54,548

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
7,300 operating hours
22,332 sq. ft. floor area

1&2 County Building- PTR01 DSS 3433 Higuera St.

Electricity	146	0.4	2,348	106,245
Natural Gas	78	0.2	1,386	14,634
Subtotal 1&2 County Building- PTR01 DSS 3433 Higuera St.		0.7	3,734	120,879

Source(s):
- Reported by Department of General Services.
Data provided by DSS to General Services
Contact- David Clew

Bldg info:
3,120 operating hours
57,498 sq. ft. floor area

1&2 County Building- PWA06 Sheriff Templeton

Electricity	15	0.0	236	10,882
Natural Gas	5	0.0	90	1,268
Subtotal 1&2 County Building- PWA06 Sheriff Templeton		0.1	325	12,150

Source(s):
- Reported by Department of General Services.

Bldg info:
8760 operating hours
6385 sq. ft.

1&2 County Building- PWA07 Ag Commissioner Templeton

Electricity	4	0.0	69	3,285
Natural Gas	18	0.1	323	3,751
Subtotal 1&2 County Building- PWA07 Ag Commissioner Templeton		0.1	392	7,036

Source(s):
- Reported by Department of General Services.

Bldg info:
2600 operating hours
2935 sq. ft.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
1&2 County Building- PYA09 El Chorro Maintenance				
Electricity	4	0.0	61	2,844
Natural Gas	2	0.0	41	646
Subtotal 1&2 County Building- PYA09 El Chorro Maintenance		0.0	102	3,490

Source(s):
- Reported by Department of General Services.
Initial electric service initiated 2/08/2006.

Bldg info:
4368 operating hours
1857 sq. ft.

1&2 County Building- South County Sheriff Sub Station- 1681 Front St., Oceano				
Electricity	11	0.0	178	8,463
Natural Gas	14	0.0	255	2,945
Subtotal 1&2 County Building- South County Sheriff Sub Station- 1681 Front St., Oceano			433	11,408

Source(s):
- Data requested by Mike Matus of Fiscal Services 805-781-4555_ mmatus@co.slo.ca.us
- Data came from PG&E and the Gas Co. from data request letters that PMC created.
- So. County Sheriff's sub station is one of two County buildings whose bills are not paid by General Services.

1&2 County Facility- PGF01 Swimming Pool Windsor Blvd.				
Electricity	3	0.0	41	1,853
Natural Gas	5	0.0	81	886
Subtotal 1&2 County Facility- PGF01 Swimming Pool Windsor Blvd.		0.0	122	2,739

Source(s):
- Reported by Department of General Services.

Facility info:
745 sq. ft.

1&2 County Facility- PKC03 Hardie Park Pool				
Electricity	9	0.0	149	6,611
Natural Gas	24	0.1	432	4,705
Subtotal 1&2 County Facility- PKC03 Hardie Park Pool		0.1	582	11,316

Source(s):
- Reported by Department of General Services.

Facility info:
1,227 sq. ft.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
1&2 County Facility- PM-01 Santa Margarita RA				
Electricity	29	0.1	468	18,171
Propane	2	0.0	25	6,896
Subtotal 1&2 County Facility- PM-01 Santa Margarita RA		0.1	493	25,067

Source(s):
- Reported by Department of General Services.

Facility info:
8,760 operating hours
1,898 acres (82,676,880 sq. ft.)

1&2 County Facility- PMA01 Lopez Park				
Electricity	64	0.2	1,038	39,934
Propane	8	0.0	126	2,204
Subtotal 1&2 County Facility- PMA01 Lopez Park	73	0.2	1,164	42,138

Source(s):
- Reported by Department of General Services.

Site info:
8,760 operating hours
33,802,560 sq. ft floor area (776 acres)

1&2 County Facility- PN-19 Morro Bay Golf Course				
Electricity	42	0.1	680	24,015
Propane	1	0.0	15	1,251
Subtotal 1&2 County Facility- PN-19 Morro Bay Golf Course		0.1	695	25,266

Source(s):
- Reported by Department of General Services.

Facility info:
2,600 operating hours
125 acres (5,445,000 sq. ft.)

1&2 County Facility- PWB09 Templeton Park				
Electricity	12	0.0	201	8,114
Natural Gas	0	0.0	6	206
Subtotal 1&2 County Facility- PWB09 Templeton Park		0.0	207	8,320

Source(s):
- Reported by Department of General Services.

Facility info:

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

4 acres (174,240 sq. ft.)

1&2 County Facility- PYA04 El Chorro Park

Electricity	24	0.1	389	17,773
Natural Gas	5	0.0	98	1,320
Propane	6	0.0	90	1,514
Subtotal 1&2 County Facility- PYA04 El Chorro Park	35	0.1	577	20,607

Source(s):
- Reported by Department of General Services.

Facility info:
8,760 operating hours
290 acres (12,623,400 sq. ft.)

1&2 County Facility- PYA11 Dairy Creek Golf Course

Electricity	54	0.2	873	33,588
Natural Gas	3	0.0	45	713
Subtotal 1&2 County Facility- PYA11 Dairy Creek Golf Course		0.2	918	34,301

Source(s):
- Reported by Department of General Services.

Notes:
- Data includes maintenance, pumping, and on course use. Does not include clubhouse/restaurant, cart barn, or parking lot lights which are under private control. (Dave Clew)

Site info:
2,600 operating hours
224 acres (9,757,440 sq. ft.)

1&2 County Library- Arroyo Grande

Electricity	28	0.1	448	15,848
Natural Gas	7	0.0	129	1,648
Subtotal 1&2 County Library- Arroyo Grande	35	0.1	577	17,496

Source(s):
- Data collected and received by Melody Mullis mmullis@co.slo.ca.us

Bldg info:
1976 operating hours
12,000 sq. ft.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
1&2 County Library- Atascadero				
Electricity	19	0.1	310	14,177
Natural Gas	12	0.0	216	2,563
Subtotal 1&2 County Library- Atascadero	31	0.1	526	16,740

Source(s):
- Data collected and received from Melody Mullis mmullis@co.slo.ca.us

Bldg info:
1976 operating hours
7000 sq. ft.

1&2 County Library- Cambria				
Electricity	4	0.0	61	2,664
Natural Gas	2	0.0	40	600
Subtotal 1&2 County Library- Cambria	6	0.0	101	3,264

Source(s):
- Data collected and received by melody Mullis mmullis@co.slo.ca.us

Bldg info:
1456 operating hours
2331 sq. ft.

1&2 County Library- Cayucos				
Electricity	1	0.0	14	697
Natural Gas	4	0.0	63	835
Subtotal 1&2 County Library- Cayucos	4	0.0	77	1,532

Source(s):
- Data collected and received by Melody Mullis mmullis@co.slo.ca.us

Bldg info:
780 operating hours
1700 sq. ft.

1&2 County Library- Los Osos				
Electricity	6	0.0	97	3,384
Natural Gas	2	0.0	28	441
Subtotal 1&2 County Library- Los Osos	8	0.0	125	3,825

Source(s):
- Data collected and received by Melody Mullis mmullis@co.slo.ca.us

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

Bldg info:
1664 operating hours
3976 sq. ft.

1&2 County Library- Morro Bay

Electricity	9	0.0	147	6,085
Natural Gas	3	0.0	46	646
Subtotal 1&2 County Library- Morro Bay	12	0.0	193	6,731

Source(s):
- Data collected and received by Melody Mullis mmullis@co.slo.ca.us

Bldg info:
1664 operating hours
6578 sq. ft.

1&2 County Library- Nipomo

Electricity	11	0.0	183	7,868
Natural Gas	2	0.0	29	468
Subtotal 1&2 County Library- Nipomo	13	0.0	211	8,336

Source(s):
- Data collected and received by Melody Mullis mmullis@co.slo.ca.us

Bldg info:
1612 operating hours
5487 sq. ft.

1&2 County Library- San Miguel

Electricity	1	0.0	11	396
Natural Gas	0	0.0	5	168
Subtotal 1&2 County Library- San Miguel	1	0.0	16	564

Source(s):
- Data collected and received by Melody Mullis mmullis@co.slo.ca.us

Bldg info:
780 operating hours
775 sq. ft.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
1&2 County Library- Santa margarita				
Electricity	2	0.0	32	1,530
Natural Gas	1	0.0	23	388
Subtotal 1&2 County Library- Santa margarita	3	0.0	55	1,918

Source(s):
- Data collected and received by Melody Mullis mmullis@co.slo.ca.us

Bldg info:
936 operating hours
900 sq. ft.

2 APCD Atascadero				
Electricity	3	0.0	51	2,412
Subtotal 2 APCD Atascadero	3	0.0	51	2,412

Source(s):
- Data collected at APCD same time as Roberto Court.

2 APCD Grover Beach				
Electricity	0	0.0	1	149
Subtotal 2 APCD Grover Beach	0	0.0	1	149

Source(s):
- Data gathered at APCD same time as Roberto Court.

2 APCD Morro Bay				
Electricity	3	0.0	43	2,048
Subtotal 2 APCD Morro Bay	3	0.0	43	2,048

Source(s):
- Data collected at APCD same time as Roberto Court.

2 APCD Nipomo				
Electricity	2	0.0	33	1,705
Subtotal 2 APCD Nipomo	2	0.0	33	1,705

Source(s):
- Data collected at APCD same time as Roberto Court.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 APCD Shandon/Redhills				
Electricity	1	0.0	23	1,125
Subtotal 2 APCD Shandon/Redhills	1	0.0	23	1,125

Source(s):
- Data collected at APCD same time as Roberto Court.

2 Cal Fire Sta. 14 Morro Toro				
Electricity	1	0.0	13	0
Subtotal 2 Cal Fire Sta. 14 Morro Toro	1	0.0	13	0

Source(s):
- Reported by Eric Cleveland, Battalion chief, County Cal Fire.

2 Cal Fire Sta. 22 Nipomo Mesa				
Electricity	4	0.0	58	0
Subtotal 2 Cal Fire Sta. 22 Nipomo Mesa	4	0.0	58	0

Source(s):
- Reported by Eric Cleveland, Battalion Chief, County Cal Fire.

Notes:
- Propane provided by Delta Liquid Energy- 721.4 units (unknown)
- No energy data for station # 36 Meridian.

2 Cal Fire Sta. 33 Heritage Ranch				
Electricity	5	0.0	73	0
Subtotal 2 Cal Fire Sta. 33 Heritage Ranch	5	0.0	73	0

Source(s):
- Reported by Eric Cleveland, Battalion Chief, County Cal Fire.

Notes:
- Propane from Delta liquid Energy- 865.6 units (unknown)

2 Cal Fire Sta. 43 Creston				
Electricity	5	0.0	76	0
Subtotal 2 Cal Fire Sta. 43 Creston	5	0.0	76	0

Source(s):
- Reported by Eric Cleveland, Battalion Chief, County Cal Fire.

Notes:

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

- Propane provided by Delta Liquid Energy- 220.7 units (unknown)

2 County Building- DSS PT-91 836 Via Estaban

Electricity	34	0.1	549	27,859
Subtotal 2 County Building- DSS PT-91 836 Via Estaban		0.1	549	27,859

Source(s):
- Reported by Department of General Services.
Data provided by DSS to General Services.

Notes:
- Bldg info:
2600 operating hours
1634 sq. ft.

2 County Building- PBG04 Public Health Atascadero

Electricity	24	0.1	384	18,098
Subtotal 2 County Building- PBG04 Public Health Atascadero		0.1	384	18,098

Source(s):
- Reported by Department of General Services.

Notes:
- Bldg info:
8,760 operating hours
11,320 sq. ft.

2 County Building- PIC36 Sheriff EOC Building

Electricity	27	0.1	429	16,486
Subtotal 2 County Building- PIC36 Sheriff EOC Building		0.1	429	16,486

Source(s):
- Reported by Department of General Services.

Notes:
- No gas accounts found (Dave Clew)
- Bldg info:
8760 operating hours
14,160 sq. ft.

2 County Building- PLC02 Grover Courts Modular

Electricity	6	0.0	105	4,848
Subtotal 2 County Building- PLC02 Grover Courts Modular		0.0	105	4,848

Source(s):
- Reported by Department of General Services.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

Notes:
Bldg info:
2600 operating hours
2052 sq. ft.

2 County Building- POB24 Nipomo Park Host

Electricity	3	0.0	55	4,126
Subtotal 2 County Building- POB24 Nipomo Park Host		0.0	55	4,126

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
8760 operating hours

2 County Building- PPD01 Oceano Airport Hangars

Electricity	5	0.0	86	2,498
Subtotal 2 County Building- PPD01 Oceano Airport Hangars		0.0	86	2,498

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
20,076 sq. ft.

2 County Building- PT-101 2995 McMilan Ave HEALTH

Electricity	3	0.0	43	2,245
Subtotal 2 County Building- PT-101 2995 McMilan Ave HEALTH		0.0	43	2,245

Source(s):
- Reported by Department of General Services.

Notes:
- No gas usage.
- Bldg info:
2496 sq. ft.

2 County Building- PT-102 2945 McMillan Ave HEALTH

Electricity	19	0.1	300	14,097
Subtotal 2 County Building- PT-102 2945 McMillan Ave HEALTH		0.1	300	14,097

Source(s):

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

- Reported by Department of General Services.

Notes:
Bldg info:
15,236 sq. ft.

2 County Building- PT-110 3183 Duncan Ave HEALTH

Electricity	7	0.0	111	5,354
Subtotal 2 County Building- PT-110 3183 Duncan Ave HEALTH		0.0	111	5,354

Source(s):
- Reported by Department of General Services.

Notes:
- Building CLOSED on 2/25/2008 (Dave Clew).
- Gas paid by landlord.
- Bldg info:
1960 sq. ft.

2 County Building- PT-20 Info Tech Ahern Building

Electricity	3	0.0	50	1,971
Subtotal 2 County Building- PT-20 Info Tech Ahern Building		0.0	50	1,971

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
2600 operating hours
6427 sq. ft.

2 County Building- PT-40 2925 McMilan Ave HEALTH

Electricity	0	0.0	2	117
Subtotal 2 County Building- PT-40 2925 McMilan Ave HEALTH		0.0	2	117

Source(s):
- Reported by Department of General Services.

Notes:
- Building OPENED on 10/02/2006
- Bldg info:
10,608 sq. ft.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 County Building- PT-48 Public Health Lab Bishop				
Electricity	0	0.0	4	179
Subtotal 2 County Building- PT-48 Public Health Lab Bishop		0.0	4	179

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
2600 operating hours
2761 sq. ft.

2 County Building- PT-68 District Attorney				
Electricity	0	0.0	7	363
Natural Gas	0	0.0	0	137
Subtotal 2 County Building- PT-68 District Attorney	0	0.0	7	500

Source(s):
- Reported by Department of General Services.

Notes:
- Gas usage was zero, meter charge only. Closed on 8/03/2006 (Dave Clew).

2 County Building- PTB11 Kimball Building East Lot				
Electricity	6	0.0	99	4,589
Subtotal 2 County Building- PTB11 Kimball Building East Lot		0.0	99	4,589

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
4004 operating hours
23644 sq. ft.

2 County Building- PTN10 Airport Hangars				
Electricity	3	0.0	52	2,576
Subtotal 2 County Building- PTN10 Airport Hangars	3	0.0	52	2,576

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
3640 operating hours
21,615 sq. ft.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 County Building- PTN10 Airport Large Hangar				
Electricity	0	0.0	2	210
Subtotal 2 County Building- PTN10 Airport Large Hangar		0.0	2	210

Source(s):
- Reported by Department of General Services.

2 County Building- PTN10 Airport Maintenance Building				
Electricity	0	0.0	0	50
Subtotal 2 County Building- PTN10 Airport Maintenance Building		0.0	0	50

Source(s):
- Reported by Department of General Services.

Notes:
- OPENED on 10/09/2006 (Dave Clew)
- Bldg info:
3200 sq. ft.

2 County Building- PTN10 Airport Multi Hangar				
Electricity	4	0.0	61	3,091
Subtotal 2 County Building- PTN10 Airport Multi Hangar		0.0	61	3,091

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
8760 opearting hours

2 County Building- PTN10 Airport- Maintenance Bldg				
Electricity	7	0.0	120	5,633
Subtotal 2 County Building- PTN10 Airport- Maintenance Bldg		0.0	120	5,633

Source(s):
- Reported by Department of General Services.

Notes:
Bldg info:
2600 operating hours
4000 sq. ft.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 County Building- PUG24 Rio Caledonia Adobe				
Electricity	8	0.0	123	3,982
Subtotal 2 County Building- PUG24 Rio Caledonia Adobe		0.0	123	3,982

Source(s):
- Reported by Department of General Services.

Bldg info:
2600 operating hours
5880 sq. ft.

2 County Building- PY03 Rocky Butte				
Electricity	8	0.0	136	6,310
Subtotal 2 County Building- PY03 Rocky Butte	8	0.0	136	6,310

Source(s):
- Reported by Department of General Services.

Bldg info:
8,760 operating hours
360 sq. ft.

2 County Building- RKE 1170 Marsh St.				
Electricity	1	0.0	18	909
Subtotal 2 County Building- RKE 1170 Marsh St.	1	0.0	18	909

Source(s):
- Reported by Department of General Services.

Notes:
- Electricity includes 1103 Toro St. usage.

Bldg info:
2600 operating hours

2 County Facility- PBF01 Heilmann Regional Park				
Electricity	3	0.0	44	2,396
Subtotal 2 County Facility- PBF01 Heilmann Regional Park		0.0	44	2,396

Source(s):
- Reported by Department of General Services.

Bldg info:
102 acres (4,443,120)

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 County Facility- PDA01 Bob Jones Bike Trail				
Electricity	0	0.0	1	64
Subtotal 2 County Facility- PDA01 Bob Jones Bike Trail		0.0	1	64

Source(s):
- Reported by Department of General Services.

Notes:
- OPENED 09/07/2006

2 County Facility- PDA07 Avila Beach Park				
Electricity	1	0.0	19	951
Subtotal 2 County Facility- PDA07 Avila Beach Park	1	0.0	19	951

Source(s):
- Reported by Department of General Services.

Park info:
4004 operating hours
3 acres (130,680 sq. ft.)

2 County Facility- PEN02 Los Osos Park				
Electricity	5	0.0	81	3,041
Subtotal 2 County Facility- PEN02 Los Osos Park	5	0.0	81	3,041

Source(s):
- Reported by Department of General Services.

Facility info:
4756 operating hours
606 sq. ft.

2 County Facility- PGC01 Shamel Park				
Electricity	1	0.0	11	705
Subtotal 2 County Facility- PGC01 Shamel Park	1	0.0	11	705

Source(s):
- Reported by Department of General Services.

2 County Facility- PJB02 Paul Andrews Park				
Electricity	0	0.0	0	96
Subtotal 2 County Facility- PJB02 Paul Andrews Park		0.0	0	96

Source(s):
- Reported by Department of General Services.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

Notes:
- No electricity usage since 2004. Meter bill.

Facility info:
1 acre (43,560 sq. ft.)

2 County Facility- PJB04 Cayucos Pier

Electricity	1	0.0	19	1,372
Subtotal 2 County Facility- PJB04 Cayucos Pier	1	0.0	19	1,372

Source(s):
- Reported by Department of General Services.

Facility info:
4004 operating hours
19,924 sq. ft.

2 County Facility- PKC01 Hardie Park

Electricity	1	0.0	11	680
Subtotal 2 County Facility- PKC01 Hardie Park	1	0.0	11	680

Source(s):
- Reported by Department of General Services.

Facility info:
8,760 operating hours

2 County Facility- POB20 Nipomo Park

Electricity	9	0.0	146	7,024
Subtotal 2 County Facility- POB20 Nipomo Park	9	0.0	146	7,024

Source(s):
- Reported by Department of General Services.

Facility info:
8,760 operating hours
144 acres (6,272,640 sq. ft.)

2 County Facility- PPB28 Campground Oceano

Electricity	14	0.0	231	6,435
Subtotal 2 County Facility- PPB28 Campground Oceano		0.0	231	6,435

Source(s):
- Reported by Department of General Services.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 County Facility- PPB29 Park Oceano				
Electricity	1	0.0	21	721
Subtotal 2 County Facility- PPB29 Park Oceano	1	0.0	21	721

Source(s):
- Reported by Department of General Services.

Park info:
8760 operating hours
12 acres (522,720 sq. ft.)

2 County Facility- PPD01 Oceano Airport Runway Lights				
Electricity	6	0.0	95	3,130
Subtotal 2 County Facility- PPD01 Oceano Airport Runway Lights		0.0	95	3,130

Source(s):
- Reported by Department of General Services.

Facility info:
4004 operating hours
1728 sq. ft.

2 County Facility- PTJ00 Cuesta Park				
Electricity	0	0.0	2	193
Subtotal 2 County Facility- PTJ00 Cuesta Park	0	0.0	2	193

Source(s):
- Reported by Department of General Services.

Facility info:
5 acres (217800 sq. ft.)

2 County Facility- PTN10 Airport				
Electricity	17	0.0	272	8,616
Subtotal 2 County Facility- PTN10 Airport	17	0.0	272	8,616

Source(s):
- Reported by Department of General Services.

Bldg info:
8760 operating hours
57,507 sq. ft.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 County Facility- PTN10 Airport Restaurants/Lights				
Electricity	2	0.0	32	1,421
Subtotal 2 County Facility- PTN10 Airport Restaurants/Lights		0.0	32	1,421

Source(s):
- Reported by Department of General Services.

2 County Facility- PTN10 Airport Runway Lights				
Electricity	49	0.1	795	27,045
Subtotal 2 County Facility- PTN10 Airport Runway Lights		0.1	795	27,045

Source(s):
- Reported by Department of General Services.

Site info:
4004 operating hours

2 County Facility- PTN10 Airport Sign				
Electricity	0	0.0	5	315
Subtotal 2 County Facility- PTN10 Airport Sign	0	0.0	5	315

Source(s):
- Reported by Department of General Services.

Notes:
- 79-792 Unmetered agreement (Dave Clew).

2 County Facility- PTN10 Airport Streetlights				
Electricity	4	0.0	61	3,867
Subtotal 2 County Facility- PTN10 Airport Streetlights		0.0	61	3,867

Source(s):
- Reported by Department of General Services.

Bldg info:
4004 operating hours

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 County Facility- PTN10 Airport Wind Cone				
Electricity	1	0.0	15	872
Subtotal 2 County Facility- PTN10 Airport Wind Cone		0.0	15	872

Source(s):
- Reported by Department of General Services.

Facility info:
4004 operating hours

2 County Facility- PUD15 Swimming Pool K St.				
Electricity	11	0.0	171	6,642
Subtotal 2 County Facility- PUD15 Swimming Pool K St.		0.0	171	6,642

Source(s):
- Reported by Department of General Services.

Facility info:
1,164 sq. ft.

2 County Facility- PUE13 San Miguel Park				
Electricity	0	0.0	5	336
Subtotal 2 County Facility- PUE13 San Miguel Park	0	0.0	5	336

Source(s):
- Reported by Department of General Services.

Park info:
8760 operating hours
948 sq. ft.

2 County Facility- PVA04 Park H St.				
Electricity	0	0.0	3	217
Subtotal 2 County Facility- PVA04 Park H St.	0	0.0	3	217

Source(s):
- Reported by Department of General Services.

Facility info:
4004 operating hours
2 acres (87120 sq. ft.)

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 County Facility- PY-02 Black Mountain				
Electricity	6	0.0	94	4,349
Subtotal 2 County Facility- PY-02 Black Mountain	6	0.0	94	4,349

Source(s):
- Reported by Department of General Services.

Bldg info:
8,760 operating hours
360 sq. ft.

2 County Facility- PY01 Cuesta Peak				
Electricity	5	0.0	88	4,144
Subtotal 2 County Facility- PY01 Cuesta Peak	5	0.0	88	4,144

Source(s):
- Reported by Department of General Services.

Bldg info:
8760 operating hours
396 sq. ft.

2 County Facility- PY05 San Antonio/Casmalia Peak				
Electricity	5	0.0	76	3,564
Subtotal 2 County Facility- PY05 San Antonio/Casmalia Peak		0.0	76	3,564

Source(s):
- Reported by Department of General Services.

Facility info:
8,760 operating hours

2 County Facility- PY08 Tassajara Peak				
Electricity	12	0.0	201	9,450
Subtotal 2 County Facility- PY08 Tassajara Peak	12	0.0	201	9,450

Source(s):
- Reported by Department of General Services.

Facility info:
8,760 operating hours
950 sq. ft.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 County Facility- PYA01 Biddle Park				
Electricity	6	0.0	90	4,221
Subtotal 2 County Facility- PYA01 Biddle Park	6	0.0	90	4,221

Source(s):
- Reported by Department of General Services.

Facility info:
8760 operating hours
47 acres (2,047,320 sq. ft.)

2 County Facility- PZB06 Shandon Park				
Electricity	17	0.1	276	9,823
Subtotal 2 County Facility- PZB06 Shandon Park	17	0.1	276	9,823

Source(s):
- Reported by Department of General Services.

Facility info:
8760 operating hours
12 acres (522,720 sq. ft.)

2 County Library- Creston				
Electricity	1	0.0	23	706
Subtotal 2 County Library- Creston	1	0.0	23	706

Source(s):
- Data collected and received by Melody Mullis mmullis@co.slo.ca.us

Bldg info:
780 operating hours
960 sq. ft.

2 County Library- San Luis Obispo				
Electricity	31	0.1	506	12,755
Subtotal 2 County Library- San Luis Obispo	31	0.1	506	12,755

Source(s):
- Data collected and received by Melody Mullis mmullis@co.slo.ca.us

Bldg info:
1976 operating hours
22814 sq. ft.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 Public Works- 1015 Kansas Ave. SLO				
Electricity	0	0.0	0	0
Subtotal 2 Public Works- 1015 Kansas Ave. SLO	0	0.0	0	0

Source(s):
- Data reported by Mark Hutchinson, Environmental Programs Manager, Department of Public Works mhutchinson@co.slo.ca.us.
- Data collection assistance- Annette Young, Public Works, ayoung@co.slo.ca.us

Acct. # 2254125769

2 Public Works- Arroyo Grande Rd. Yard				
Electricity	5	0.0	74	0
Subtotal 2 Public Works- Arroyo Grande Rd. Yard	5	0.0	74	0

Source(s):
- Data reported by Mark Hutchinson, Environmental Programs Manager, Department of Public Works mhutchinson@co.slo.ca.us.
- Data collection assistance- Annette Young, Public Works, ayoung@co.slo.ca.us

Acct. #2970528278

2 Public Works- House at Salinas Dam				
Electricity	3	0.0	43	0
Subtotal 2 Public Works- House at Salinas Dam	3	0.0	43	0

Source(s):
- Data reported by Mark Hutchinson, Environmental Programs Manager, Department of Public Works mhutchinson@co.slo.ca.us.
- Data collection assistance- Annette Young, Public Works, ayoung@co.slo.ca.us

Acct. #7032991513

2 Public Works- Op Center, SLO				
Electricity	16	0.0	259	0
Subtotal 2 Public Works- Op Center, SLO	16	0.0	259	0

Source(s):
- Data reported by Mark Hutchinson, Environmental Programs Manager, Department of Public Works mhutchinson@co.slo.ca.us.
- Data collection assistance- Annette Young, Public Works, ayoung@co.slo.ca.us

Acct. # 2970528278

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 Public Works- Paso Robles Rd. Yard				
Electricity	8	0.0	123	0
Subtotal 2 Public Works- Paso Robles Rd. Yard	8	0.0	123	0

Source(s):
- Data reported by Mark Hutchinson, Environmental Programs Manager, Department of Public Works mhutchinson@co.slo.ca.us.
- Data collection assistance- Annette Young, Public Works, ayoung@co.slo.ca.us

Acct. #2970528278

2 Public Works- Santa Margarita Maint. Yard				
Electricity	3	0.0	52	0
Subtotal 2 Public Works- Santa Margarita Maint. Yard		0.0	52	0

Source(s):
- Data reported by Mark Hutchinson, Environmental Programs Manager, Department of Public Works mhutchinson@co.slo.ca.us.
- Data collection assistance- Annette Young, Public Works, ayoung@co.slo.ca.us

Acct. # 7032991513

2 Public Works- Section 3 Road Yard, SLO				
Electricity	7	0.0	115	0
Subtotal 2 Public Works- Section 3 Road Yard, SLO		0.0	115	0

Source(s):
- Data reported by Mark Hutchinson, Environmental Programs Manager, Department of Public Works mhutchinson@co.slo.ca.us.
- Data collection assistance- Annette Young, Public Works, ayoung@co.slo.ca.us

Acct. #2970528278

2 Public Works- South Bay Dial-a-Ride Office				
Electricity	1	0.0	21	0
Subtotal 2 Public Works- South Bay Dial-a-Ride Office		0.0	21	0

Source(s):
- Data reported by Mark Hutchinson, Environmental Programs Manager, Department of Public Works mhutchinson@co.slo.ca.us.
- Data collection assistance- Annette Young, Public Works, ayoung@co.slo.ca.us

Acct. #2970528278

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 Public Works- Trailer Office, 2285 Turri Rd. Los Osos				
Electricity	0	0.0	0	0
Subtotal 2 Public Works- Trailer Office, 2285 Turri Rd. Los Osos		0.0	0	0

Source(s):
- Data reported by Mark Hutchinson, Environmental Programs Manager, Department of Public Works mhutchinson@co.slo.ca.us.
- Data collection assistance- Annette Young, Public Works, ayoung@co.slo.ca.us

Acct. #2970528278

2 Public Works- Trailer, Carrisa Plains				
Electricity	0	0.0	7	0
Subtotal 2 Public Works- Trailer, Carrisa Plains	0	0.0	7	0

Source(s):
- Data reported by Mark Hutchinson, Environmental Programs Manager, Department of Public Works mhutchinson@co.slo.ca.us.
- Data collection assistance- Annette Young, Public Works, ayoung@co.slo.ca.us

Acct. #2970528278

Subtotal Buildings	4,972	14.6	83,606	2,171,989

Vehicle Fleet

San Luis Obispo County, CA

1 APCD Fleet				
Gasoline	22	0.1	286	0
Subtotal 1 APCD Fleet	22	0.1	286	0

Source(s):
Fleet data collected at APCD looking through gas purchases from gas card bills and vehicle logs.
Contact- Melisa Guise, APCD Planner

Notes:
- Most gas is purchased from gas credit card at regular pump stations; occasionally fill up at County gas pump, but this is minimal.
- All gas purchased is unleaded

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
1 Cal Fire (County) Fleet				
Gasoline	18	0.1	230	0
Diesel	81	0.2	1,033	0
Subtotal 1 Cal Fire (County) Fleet	99	0.3	1,263	0

Source(s):
- Data provided by Eric Cleveland Battalion Chief of Support Services, County Cal Fire.
Contact info: 805-543-4244- eric.cleveland@fire.ca.gov

Notes:
- Diesel is used only for Fire Engines.
- Gasoline used for trucks.

1 County Fleet (General Services)				
Gasoline	3,014	8.9	38,877	0
Diesel	148	0.4	1,874	0
Subtotal 1 County Fleet (General Services)	3,162	9.3	40,751	0

Source(s):
- Reported by General Services Transportation division.
- Contacts- Ken Tasseff, Deputy Director, 781-5207
Toni fisher, 781-5931- Collected data
Spence Grafft, 788-2459

Notes:
- Vehicles seperated into different vehicle types and fuel type.

1 Library Fleet				
Gasoline	22	0.1	286	6,979
Diesel	58	0.2	739	6,379
Subtotal 1 Library Fleet	80	0.2	1,025	13,358

Source(s):
- Library fleet data received by Melody Mullis of SLO County Library.

Notes:
- Used data from 2007-08. Assumed similar usage in 2006, as the same vehicles were used in 2006 as they were in 07-08.
- The diesel "transit bus" is the book mobile.

Subtotal Vehicle Fleet	3,363	9.9	43,325	13,358

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

Employee Commute

San Luis Obispo County, CA

3 Employee Commute

Gasoline	25,169	74.1	355,393	
Diesel	88	0.3	1,046	
Subtotal 3 Employee Commute	25,257	74.4	356,439	

Source(s):
- Employee commute survey, conducted in July 2008 and adjusted for 2006 employment figures. Survey data obtained from Gary Hicklin, PMP, Technology Supervisor, Ciounty of San Luis Obispo GSA - Information Technology, ghicklin@co.slo.ca.us.
- July 2006, 2007, and 2008 County employment figures obtained from James Caruso, Senior Planner, jcaruso@co.slo.ca.us on March 6, 2008.
- Hybrid fuel economy of a 2006 Toyota Prius, www.fueleconomy.gov

Notes:
- 1,260 County employees successfully responded to the online survey, meaning that all essential entries were given. This is approximately a 50% response rate.
- Survey responses were adjusted for the 2006 employee population, assuming constant distribution of gasoline/diesel consumption by vehicle type. The population of hybrid cars was decreased by 2/3, based on California sales records found at hybridcars.com.
- For more detailed information on the methodology used in this sector, please see the appendices.

Subtotal Employee Commute	25,257	74.4	356,439	

Streetlights

San Luis Obispo County, CA

2 County Streetlights

Electricity	48	0.1	777	0
Subtotal 2 County Streetlights	48	0.1	777	0

Source(s):
- Reported by Public Works.
Contact- Mark Hutchinson, Environmental Programs Manage- mhutchinson@co.slo.ca.us
Annette Young- ayoung@co.slo.ca.us

Notes:
- KWH for 38 streetlights.

2 County Traffic Signals

Electricity	15	0.0	240	0
Subtotal 2 County Traffic Signals	15	0.0	240	0

Source(s):
- Reported by Department of Public Works.

Notes:
- KWH for 20 Traffic Signals.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
Subtotal Streetlights	63	0.2	1,017	0
Water/Sewage				
San Luis Obispo County, CA				
2 County Water Facility- 1675 Cabrillo, Cayucos Water Trmt Plant				
Electricity	52	0.2	833	0
Subtotal 2 County Water Facility- 1675 Cabrillo, Cayucos Water Trmt Plant	52		833	0

Source(s):
- Reported by Public Works.

- System serves County of SLO
Acct.# 2970528278

2 County Water Facility- 2845 Lopez Dr.				
Electricity	1	0.0	15	0
Subtotal 2 County Water Facility- 2845 Lopez Dr.	1	0.0	15	0

Source(s):
- Reported by Public Works.

- System serves Flood Control
Acct.# 2970528278

2 County Water Facility- 9825 Estrada Santa Marg.				
Electricity	11	0.0	175	0
Subtotal 2 County Water Facility- 9825 Estrada Santa Marg.		0.0	175	0

Source(s):
- Reported by Public Works.

- System serves County of SLO
Acct.# 2970528278

2 County Water Facility- Frady Rd Rectifier				
Electricity	0	0.0	2	0
Subtotal 2 County Water Facility- Frady Rd Rectifier	0	0.0	2	0

Source(s):
- Reported by Public Works.

System serves Flood Control
Acct.# 2970528278

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 County Water Facility- G St., Santa Margarita Pump				
Electricity	10	0.0	164	0
Subtotal 2 County Water Facility- G St., Santa Margarita Pump		0.0	164	0

Source(s):
- Reported by Public Works.

System serves County of SLO
Acct.# 2970528278

2 County Water Facility- Hwy 101 Pump				
Electricity	139	0.4	2,235	0
Subtotal 2 County Water Facility- Hwy 101 Pump	139	0.4	2,235	0

Source(s):
- Reported by Public Works.

System serves City of SLO
Acct.# 2970528278

2 County Water Facility- Lopez Dam Intake Bldg				
Electricity	0	0.0	3	0
Subtotal 2 County Water Facility- Lopez Dam Intake Bldg		0.0	3	0

Source(s):
- Reported by Public Works.

System serves Flood Control
Acct.# 2970528278

2 County Water Facility- Lopez Dam, 4304 Lopez Dr.				
Electricity	0	0.0	7	0
Subtotal 2 County Water Facility- Lopez Dam, 4304 Lopez Dr.		0.0	7	0

Source(s):
- Reported by Public Works.

System serves Flood Control
Acct.# 2970528278

2 County Water Facility- Meter Station, Belllo				
Electricity	0	0.0	0	0
Subtotal 2 County Water Facility- Meter Station, Belllo		0.0	0	0

Source(s):
- Reported by Public Works.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

System serves Flood Control
Acct.# 2970528278

2 County Water Facility- Meter Station, Brisco Rd.

Electricity	0	0.0	0	0
Subtotal 2 County Water Facility- Meter Station, Brisco Rd.		0.0	0	0

Source(s):
- Reported by Public Works.

System serves Flood Control
Acct.# 2970528278

2 County Water Facility- Meter Station, Crown Hill & Huasna

Electricity	0	0.0	0	0
Subtotal 2 County Water Facility- Meter Station, Crown Hill & Huasna		0.0	0	0

Source(s):
- Reported by Public Works.

System serves Flood Control
Acct.# 2970528278

2 County Water Facility- Meter Station, Oak Park Blvd

Electricity	1	0.0	23	0
Subtotal 2 County Water Facility- Meter Station, Oak Park Blvd		0.0	23	0

Source(s):
- Reported by Public Works.

System serves Flood Control
Acct.# 2970528278

2 County Water Facility- Meter Station, Vista Del Mar

Electricity	0	0.0	0	0
Subtotal 2 County Water Facility- Meter Station, Vista Del Mar		0.0	0	0

Source(s):
- Reported by Public Works.

System serves Flood Control
Acct.# 2970528278

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 County Water Facility- Orcutt Rd North of Lopez Dr.				
Electricity	0	0.0	0	0
Subtotal 2 County Water Facility- Orcutt Rd North of Lopez Dr.		0.0	0	0

Source(s):
- Reported by Public Works.

System serves Flood Control
Acct.# 2970528278

2 County Water Facility- Pozo Rd Pump				
Electricity	6	0.0	99	0
Subtotal 2 County Water Facility- Pozo Rd Pump	6	0.0	99	0

Source(s):
- Data reported by Mark Hutchinson, Environmental Programs Manager, Department of Public Works mhutchinson@co.slo.ca.us.
- Data collection assistance- Annette Young, Public Works, ayoung@co.slo.ca.us

System serves City of SLO
Acct.# 2970528278

2 County Water Facility- Pump House, Cayucos				
Electricity	0	0.0	2	0
Subtotal 2 County Water Facility- Pump House, Cayucos		0.0	2	0

Source(s):
- Reported by Public Works.

System serves County of SLO
Acct.# 2970528278

2 County Water Facility- Pump Well, Center St., Shandon				
Electricity	9	0.0	140	0
Subtotal 2 County Water Facility- Pump Well, Center St., Shandon		0.0	140	0

Source(s):
- Reported by Public Works.

System serves County of SLO
Acct.# 2970528278

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 County Water Facility- reservoir Panel, Park Ave., Cayucos				
Electricity	0	0.0	0	0
Subtotal 2 County Water Facility- reservoir Panel, Park Ave., Cayucos		0.0	0	0

Source(s):
- Reported by Public Works.

System serves County of SLO
Acct.# 2970528278

2 County Water Facility- Turri Rd Monitoring Equipment				
Electricity	9	0.0	153	0
Subtotal 2 County Water Facility- Turri Rd Monitoring Equipment		0.0	153	0

Source(s):
- Reported by Public Works.

System serves County of SLO
Acct.# 2970528278

2 County Water Facility- Water Tank Pipeline, Kings Ave., Morro Bay				
Electricity	0	0.0	2	0
Subtotal 2 County Water Facility- Water Tank Pipeline, Kings Ave., Morro Bay			2	0

Source(s):
- Reported by Public Works.

System serves Flood Control
Acct.# 2970528278

2 County Water Facility- Water Well, Cabrillo Ave., Cayucos				
Electricity	2	0.0	28	0
Subtotal 2 County Water Facility- Water Well, Cabrillo Ave., Cayucos		0.0	28	0

Source(s):
- Reported by Public Works.

System serves County of SLO
Acct.# 2970528278

2 County Water Facility- Well #3, Shandon				
Electricity	10	0.0	167	0
Subtotal 2 County Water Facility- Well #3, Shandon	0	0.0	167	0

Source(s):
- Reported by Public Works.

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

System serves County of SLO
Acct.# 6551914431

2 County WW Facility- 2167 Ridge Rider Rd. Treatment Ponds

Electricity	22	0.1	354	0
Subtotal 2 County WW Facility- 2167 Ridge Rider Rd. Treatment Ponds		0.1	354	0

Source(s):
- Reported by Public Works.

Acct.#2970528278

2 County WW Facility- 2176 Ridge Rider Rd. Treatment Plant

Electricity	8	0.0	131	0
Subtotal 2 County WW Facility- 2176 Ridge Rider Rd. Treatment Plant		0.0	131	0

Source(s):
- Reported by Public Works.

Acct.#2970528278

2 County WW Facility- Crestmont Lift Pump

Electricity	1	0.0	16	0
Subtotal 2 County WW Facility- Crestmont Lift Pump		0.0	16	0

Source(s):
- Reported by Public Works.

Acct.#2970528278

2 County WW Facility- Galaxy, Nipomo, Sewer Pump

Electricity	4	0.0	69	0
Subtotal 2 County WW Facility- Galaxy, Nipomo, Sewer Pump		0.0	69	0

Source(s):
- Data reported by Mark Hutchinson, Environmental Programs Manager, Department of Public Works mhutchinson@co.slo.ca.us.
- Data collection assistance- Annette Young, Public Works, ayoung@co.slo.ca.us

Acct. # 2970528278

Government Greenhouse Gas Emissions in 2006
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	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 County WW Facility- Greystone Sewer Treatment Plant				
Electricity	70	0.2	1,132	0
Subtotal 2 County WW Facility- Greystone Sewer Treatment Plant		0.2	1,132	0

Source(s):
- Reported by Public Works.

Acct.#2970528278

2 County WW Facility- Kathy Lift Pump				
Electricity	3	0.0	42	0
Subtotal 2 County WW Facility- Kathy Lift Pump	3	0.0	42	0

Source(s):
- Reported by Public Works.

2 County WW Facility- Lift Station #1, Oakshores				
Electricity	0	0.0	2	0
Subtotal 2 County WW Facility- Lift Station #1, Oakshores		0.0	2	0

Source(s):
- Reported by Public Works.

Acct.#2970528278

2 County WW Facility- Lift Station #2, Oakshores				
Electricity	1	0.0	9	0
Subtotal 2 County WW Facility- Lift Station #2, Oakshores		0.0	9	0

Source(s):
- Reported by Public Works.

Acct.#2970528278

2 County WW Facility- Lift Station #4, Oakshores				
Electricity	0	0.0	3	0
Subtotal 2 County WW Facility- Lift Station #4, Oakshores		0.0	3	0

Source(s):
- Reported by Public Works.

Acct.#2970528278

Government Greenhouse Gas Emissions in 2006
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	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
2 County WW Facility- Lift Station #5, Oakshores				
Electricity	0	0.0	4	0
Subtotal 2 County WW Facility- Lift Station #5, Oakshores		0.0	4	0

Source(s):
- Reported by Public Works.

Acct.#2970528278

2 County WW Facility- Lift Station #6, Oakshores				
Electricity	0	0.0	4	0
Subtotal 2 County WW Facility- Lift Station #6, Oakshores		0.0	4	0

Source(s):
- Reported by Public Works.

Acct.#2970528278

2 County WW Facility- Los Ranchos Lift Station				
Electricity	5	0.0	78	0
Subtotal 2 County WW Facility- Los Ranchos Lift Station		0.0	78	0

Source(s):
- Reported by Public Works.

Acct.#2970528278

2 County WW Facility- Madbury Lift Pump				
Electricity	2	0.0	37	0
Subtotal 2 County WW Facility- Madbury Lift Pump	2	0.0	37	0

Source(s):
- Reported by Public Works.

2 County WW Facility- Oakshores Disposal Area				
Electricity	32	0.1	523	0
Subtotal 2 County WW Facility- Oakshores Disposal Area		0.1	523	0

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)

Source(s):
- Reported by Public Works.

Acct.#2970528278

2 County WW Facility- Oakshores Effluent Pumps

Electricity	8	0.0	128	0
Subtotal 2 County WW Facility- Oakshores Effluent Pumps		0.0	128	0

Source(s):
- Reported by Public Works.

Acct.#2970528278

2 County WW Facility- Sebastian Way Sewer Pump, Nipomo

Electricity	5	0.0	75	0
Subtotal 2 County WW Facility- Sebastian Way Sewer Pump, Nipomo		0.0	75	0

Source(s):
- Reported by Public Works.

Acct.#2970528278

Subtotal Water/Sewage	413	1.2	6,659	0

Waste

San Luis Obispo County, CA

County Solid Waste — *Disposal Method - Managed Landfill*

Paper Products	152	0.4		0
Food Waste	50	0.1		0
Plant Debris	22	0.1		0
Wood/Textiles	40	0.1		0
Subtotal County Solid Waste	265	0.8		0

Source(s):
- County solid waste data provided by David Clew, County of San Luis Obispo Utility Coordinator, dclew@co.slo.ca.us, (805) 781-5221.

Notes:
- Landfill solid waste composition provided by the California Integrated Waste Management Board, Waste Characterization Report (2004) http://www.ciwmb.ca.gov/Publications/default.asp?pubid=1097

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
Subtotal Waste	265	0.8		0
Other				
San Luis Obispo County, CA				
1 Misc. Equipment- Golf Course Facilities				
Nitrous Oxide	1	0.0		
Subtotal 1 Misc. Equipment- Golf Course Facilities	1	0.0		

Source(s):
- Data received by General Services. Contact- Dave Clue

Notes:
- Data given in gallons used and cost. Used Table G.11 from CARB Local Goverment Operations Protocal (August 2008) for conversion factor. Used other small/large utility (gasoline)= .22 g/ gallon fuel; other large utility (diesel) = .26 g/ gallon fuel.
- Equipment reported includes:
15 riding motors (some stationary diesel)
3 sprayers
12 utility carts
1 sweeper
1 walk behind mower
dump truck
1 aerial lift
6 small pickups
1 full-sized pickup
6 tractors (stationary diesel)
1 brush clipper (stationary diesel)

1 Misc. Equipment- Park Facilities				
Nitrous Oxide	0	0.0		
Subtotal 1 Misc. Equipment- Park Facilities	0	0.0		

Source(s):
- Data received by General Services. Contact- Dave Clue

Notes:
- Data given in gallons used and cost. Used Table G.11 from CARB Local Goverment Operations Protocal (August 2008) for conversion factor. Used other small/large utility (gasoline)= .22 g/ gallon fuel; other large utility (diesel) = .26 g/ gallon fuel.
- Equipment used for County parks includes (23 categories):
38 Chainsaws
28 Blowers
36 Line Trimmers
1 Cement Mixer
1 Chemical Pump
1 fire truck pump
14 push mowers
3 pressure washers
1 power auger
3 gas drills
1 pressure washer with heal element (stationary diesel)
14 hedge trimers
9 edgers

Government Greenhouse Gas Emissions in 2006
Detailed Report

	Equiv CO_2 (tonnes)	Equiv CO_2 (%)	Energy (MMBtu)	Cost ($)
4 pole saws 2 generators 2 log splitters 1 auger 1 jackhammer 1 vaccum 2 golf carts 3 spray rigs 1 rototiller 2 aerators				
1 Misc. Equipment- Unknown gen. services equipment				
Nitrous Oxide	1	0.0		
Subtotal 1 Misc. Equipment- Unknown gen. services equipment		0.0		
Source(s): - Data received by General Services. Contact- Dave Clue				
Notes: - Data given in gallons used and cost. Used Table G.11 from CARB Local Goverment Operations Protocal (August 2008) for conversion factor. Used other small/large utility (gasoline)= .22 g/ gallon fuel; other large utility (diesel) = .26 g/ gallon fuel.				
Subtotal Other	2	0.0		
Total	34,335	101.1	491,045	2,185,347

APPENDIX 2C: DETAILED METHODOLOGY FOR COMMUNITY-WIDE INVENTORY

Detailed Methodology for Community-Wide Inventory

The following is a detailed explanation of data sources and methodology for calculating greenhouse gas (GHG) emissions in each sector of the community-wide analysis. The purpose of this appendix is to prove legitimacy of this Inventory, outline data limitations, and give guidance for future County inventories to maintain methodological consistency.

ELECTRICITY AND NATURAL GAS

Note: *We attempted to collect energy production/consumption data besides that from natural gas and electricity such as propane, solar, and wind, however the data was to unreliable to make an estimate. As an example, we were only able to gather the number of solar arrays permitted by the County in 2006 and not the total number of solar arrays in the County.*

Residential

PG&E and Southern California Gas Company provided residential electricity and natural gas consumption data. Specifically, data was provided by:

Jeremy Howard, Account Executive with PG&E (805-595-6430)

Colby Morrow, Southern California Gas Company & San Diego Gas and Electric Company Air Quality Manager, Customer Programs Environmental Affairs (559-324-0109)

The raw data received from these sources is summarized in the chart below. This raw data was inputted into the CACP software in kWh and therms. CACP Average Grid Electricity, RCI Average, and Fuel CO_2 coefficient sets were amended per PG&E and State guidance (see 'electricity and natural gas coefficients' section).

2006 Residential Energy Emissions	Input Data	Metric Tons CO_2e per year
PG&E Electricity	309,596,296 kWh	65,514
PG&E Natural Gas	149,932 Therms	798
Southern CA Gas Co. Natural Gas	12,496,649 Therms	70,055

Commercial / Industrial

Commercial and industrial electricity and natural gas were combined into one section due to the California 15/15 Rule. The 15/15 Rule was adopted by the California Public Utilities Commission (CPUC) in the Direct Access Proceeding (CPUC Decision 97-10-031) to protect customer confidentiality. The 15/15 Rule requires that any aggregated information provided by the Utilities must be made up of at least 15 customers. A single customer's load must be less than 15 percent of an assigned category. If the number of customers in the complied data is below 15, or if a single customer's load is more than 15 percent of the total data, categories must be combined before the information is released. The Rule further requires that if the 15/15 Rule is triggered for a second time after the data has been screened already using the 15/15 Rule, the customer must be dropped from the information provided.[1]

As a result, PG&E reports for commercial energy consumption also contained industrial consumption. Southern California Gas Company separated commercial and industrial gas usage (shown in the chart below); however, it would have been misleading for an 'Industrial' category to include only these gas emissions; therefore, the Southern CA Gas Company emissions were aggregated with commercial as well.

Data for this sector was provided by:

Jeremy Howard, Account Executive with PG&E (805-595-6430)

Colby Morrow, Southern California Gas Company & San Diego Gas and Electric Company Air Quality Manager, Customer Programs Environmental Affairs (559-324-0109)

Raw data received from these sources is reflected in the table below. CACP Average Grid Electricity, RCI Average, and Fuel CO_2 Coefficient Sets were amended to reflect California standards (See 'electricity and natural gas coefficients' section).

2006 Commercial / Industrial Energy Emissions	Scope	Input Data	Metric Tons CO_2e per year
PG&E Commercial + Industrial Natural Gas	1	215057 Therms	1,144
PG&E Commercial + Industrial Electricity	2	323,627,500 kWh	68,483
SoCal Gas Co. Commercial Natural Gas	1	12,881,770 Therms	72, 214
SoCal Gas Co. Industrial Natural Gas	1	13,224,305 Therms	74,135

[1] This information was provided by Corie Cheeseman, Program Manager with Pacific Gas and Electric Company - Customer Energy Efficiency, 415-973-4999.

Electricity and Natural Gas Coefficients

Electricity and natural gas coefficients are defaulted to national averages in the CACP software. To make the Inventory more accurate and representative of the county's real impact on climate change, tailored coefficient sets for California were obtained. Sources and coefficient values are summarized in the table below.

Average Grid Electricity Set	Unit	CO_2	N_2O	CH_4
PG&E California, 2006	Lbs / MWh	455.81	0.032799794	0.025804

Source: Howard, Jeremy. Account Executive. Pacific Gas and Electric Co. (805.595-6430)

Marginal Grid Electricity Set
13-Western Systems Coordinating Council/CNV

Source: Coefficient set provided by CACP

Average CHP Heat Set
USA total

Source: coefficient set provided by CACP

RCI Average Set		Units	N_2O	CH_4
California Coefficients for Natural Gas*				
Natural Gas	Commercial	kg/mmbtu	0.0001	0.0059
Natural Gas	Industrial	kg/mmbtu	0.0001	0.0059
Natural Gas	Residential	kg/mmbtu	0.0001	0.0059

Source: The "California Coefficients for Natural Gas" coefficient set is based on a PG&E eCO_2 emissions factor of 53.05 kg/MMBtu of delivered natural gas, certified by the California Climate Action Registry and the CEC, and was reported to ICLEI in Dec 2007 by Jasmin Ansar. Criteria air pollutant emissions factors for natural gas are derived from the US EPA's annual report of air pollution emission trends (USEPA, 2001c).

Fuel CO_2 Set	Unit	CO_2 Coefficient
PG&E and CEC Emission Factor for Natural Gas*	Lbs / therm	11.695523

Source: custom coefficient set created by Ayrin Zahner, ICLEI Program Associate, per coefficients provided by CCAR. Only use for PG&E natural gas, not for SoCal Gas Co or other natural gas providers. The "California Coefficients for Natural Gas" coefficient set is based on a PG&E eCO_2 emissions factor of 53.05 kg/MMBtu of delivered natural gas, certified by the California Climate Action Registry and the CEC, and was reported to ICLEI in Dec 2007 by Jasmin Ansar. Criteria air pollutant emissions factors for natural gas are derived from the US EPA's annual report of air pollution emission trends (USEPA, 2001c).

TRANSPORTATION

Community On-Road VMT

Community on-road vehicle miles traveled (VMT) are miles on locally maintained roads within the unincorporated county. State roads, highways, and interstate routes are not included in this calculation. Local VMT data was obtained from the Caltrans Highway Performance Maintenance System (HPMS) 2006 Report.[2] The raw data obtained from this report is reflected in the table below.

CALTRANS HPMS DATA FOR SAN LUIS OBISPO COUNTY, 2006

County	Jurisdiction	Maintained Miles			Daily Vehicle Miles of Travel (DVMT) (1,000)		
		Rural	Urban	Total	Rural	Urban	Total
San Luis Obispo							
Cities:	Arroyo Grande	0	58.52	58.52	0	200.7	200.7
	Atascadero	4.36	147.29	151.65	1.86	336.32	338.18
	Grover Beach	0	46.96	46.96	0	105.61	105.61
	Morro Bay	0	49.51	49.51	0	115.77	115.77
	Paso Robles	6.55	112.82	119.37	3.89	203.16	207.05
	Pismo Beach	0	45.47	45.47	0	64.25	64.25
	San Luis Obispo	0	121.08	121.08	0	433.36	433.36

[2] 2006 HPMS Data, http://www.dot.ca.gov/hq/tsip/hpms/hpmslibrary/hpmspdf/2006PRD.pdf

CALTRANS HPMS DATA FOR SAN LUIS OBISPO COUNTY, 2006							
County	**Jurisdiction**	**Maintained Miles**			**Daily Vehicle Miles of Travel (DVMT) (1,000)**		
		Rural	**Urban**	**Total**	**Rural**	**Urban**	**Total**
Other:	County (unincorporated)	1,006.33	315.16	1,321.49	773.19	448.12	1,221.31
	State Highway	276.06	87.83	363.89	2,503.50	2,853.60	5,357.10
	State Park Service	20.56	1.7	22.26	1.85	5.78	7.63
	US Forest Service	42.5	0	42.5	1.28	0	1.28
SAN LUIS OBISPO Total		**1356.36**	**986.34**	**2,342.71**	**3285.57**	**4766.67**	**8052.24**

The rural and urban daily vehicle miles of travel (DVMT) were then converted to annual VMT by multiplying by 365 days/year. The HPMS DVMT average includes lessened travel on weekends, which means this methodology is appropriate.

CALTRANS HPMS DATA ADJUSTED FOR ANNUAL VMT PER JURISDICTION , 2006	
City	**Community On-Road Annual VMT**
Arroyo Grande	73,255,500
Atascadero	123,435,700
Grover Beach	38,547,650
Morro Bay	42,256,050
Paso Robles	75,573,250
Pismo Beach	23,451,250
San Luis Obispo	158,176,400
Unincorporated County	445,778,150
Total	980,474,000

Highway VMT

Highway VMT is also given in the Caltrans HPMS report, however it is aggregated by county and not separated by jurisdiction. As such, we calculated unincorporated county VMT by determining the portion of total highway road segments in unincorporated areas versus

incorporated. This was done using Geographic Information Systems (GIS) to clip a map of highway roads in the county by jurisdictional boundary. The analysis concluded that 84.57% of total state and federal highways and roads are included in unincorporated county areas. Using this as an indicator of VMT, we concluded that approximately 1,653 million VMT occurred in unincorporated areas in 2006. This methodology of distributing VMT by road segment length is supported by ICLEI; however, it does assume constant levels of traffic along all roads within the county. The levels of traffic along each road segment in each jurisdiction are unavailable, therefore this methodology is the best available at this time.

This analysis includes the following State Routes:

- US 101
- SR 1
- SR 33
- SR 41
- SR 46
- SR 58
- SR 166
- SR 227

City	Highway maintained miles	Percentage of total maintained highway miles	Highway VMT Annual Totals per jurisdiction
Arroyo Grande	4.3683	1.2147%	23,752,263.77
Atascadero	15.4372	4.2927%	83,937,892.74
Grover Beach	0.9577	0.2663%	5,207,397.79
Morro Bay	5.7539	1.6000%	31,286,318.52
Paso Robles	10.6936	2.9737%	58,145,210.13
Pismo Beach	7.8788	2.1909%	42,840,275.46
San Luis Obispo	10.3831	2.8873%	56,456,745.41
Unincorporated County	304.1360	84.5739%	1,653,707,711.16
Total	359.61	99.9996%	1,955,333,814.98

Transportation Coefficients

By default, the CACP software uses a national average distribution of vehicles by type (passenger vehicle, light truck, heavy truck, etc), national average fuel economies per vehicle type (miles per gallon), and national average emissions coefficients. In order to provide an accurate assessment of the emissions within the county, we obtained county-specific emissions data from the California Air Resources Board EMissions FACtors (EMFAC) software. The

EMFAC2007 model calculates emission rates from all motor vehicles, such as passenger cars to heavy-duty trucks, operating on highways, freeways and local roads in California. In the EMFAC model, the emission rates are multiplied with vehicle activity data provided by the regional transportation agencies to calculate the statewide or regional emission inventories.

The EMFAC analysis was performed by the California Air Resources Board for the county. Specifically, the data was provided by:

- Tom Scheffelin, California Air Resources Board Planning and Technical Support Division, Tscheffe@arb.ca.gov

This data was then manipulated to fit the format of CACP, which uses different vehicle classification categories than EMFAC. For instance, CACP defines "heavy duty truck" as trucks with a gross vehicle weight of over 8,000 pounds, which includes EMFAC classifications for Light Heavy-Duty Trucks (LHDT) 1, LDHT 2, Medium Heavy-Duty Trucks (MHDT), and Heavy Heavy-Duty Trucks (HHDT). Also, for simplicity in re-running this analysis for future Inventories, tailored coefficients and VMT distributions were only applied to five vehicle types, which included the following EMFAC vehicle classifications:

1) **Heavy truck:** LHDT1, LHDT2, HHDT, OB, MHDT
2) **Light truck/SUV/Pickup:** Medium-Duty Truck (MDT)
3) **Passenger Vehicle:** Passenger Car, Light-Duty Truck 1 (LDT1), Light-Duty Truck 2 (LDT2), Motor Home (MH)
4) **Transit Bus:** Urban Bus (UB), School Bus (SB)
5) **Motorcycle:** Motorcycle (MC)

For each of the five vehicle classes above, a weighted average was calculated using the EMFAC coefficients and their portion of total vehicle miles traveled.

WASTE

The methane commitment method embedded in CACP is based on the EPA's WARM model for calculating lifecycle emissions from waste generated within the jurisdictional boundary of the county in 2006. The analysis does not use the waste-in-place method, which calculates emissions from all waste generated in 2006 *and* all waste already existing in the landfill before the baseline year.

The waste sector only takes into account the waste sent to landfill from county residents, businesses, and institutions. It does not calculate emissions from the total amount of waste sent

to County landfills (Paso Robles, Cold Canyon, and Chicago Grade) in 2006 since those landfills accept waste from other counties and incorporated cities.

Additionally, this analysis does not take into account sewage waste. At this time, there is no methodology for calculating a jurisdiction's portion of emissions from a wastewater treatment facility. Additionally, the County does not currently track the number or capacity of active private septic systems. Population is not a viable factor for distributing treatment plant emissions among jurisdictions as different cities have different production rates and water conservation practices or regulations.

Solid waste tonnage data per jurisdiction was provided by:

"2006 Disposal Report" by quarter, prepared by the San Luis Obispo Integrated Waste Management Board on 3/6/07. Document provided by Tom Martin, Waste Connections, Inc. (tmartin@wasteconnections.com).

And, since the composition of waste sent to landfill in 2006 is unknown for the county, we used a statewide average waste composition provided by:

CIWMB 2004 Statewide Waste Characterization Study,
http://www.ciwmb.ca.gov/Publications/default.asp?pubid=1097.

The waste characterization study's distribution of waste by type was then converted into the five categories included in the CACP software, which resulted in the following waste characterization:

- Paper Products: 20.5%
- Food Waste: 12%
- Plant Debris: 9.3%
- Wood/Textiles: 19.2%
- All other waste: 39%

The CACP software does not have the ability to assign an individual methane recovery factor to each landfill, therefore we took a weighted average (58%) based on the portion of waste in each landfill. The landfills have the following methane recover factors:

Methane recovery and indicator inputs, 2006	Methane Recovery	Total gas generated (mmcf/yr)	Total gas transferred (mmcf/yr)	Data Source	Waste Tonnage from County, 2006 (tons)
Chicago Grade	60%	170.21	102.13	Data from APCD 2006 Inventory, Gencalc. Received from Courtney Ward on 10/1/08	26,348
Cold Canyon	60 %	763.1	457.84	Data from APCD 2006 Inventory, Gencalc. Received from Courtney Ward - trklst06	64,138
Paso Robles	50%	144.48	72.24	Data from APCD 2006 Inventory, Gencalc. Received from Courtney Ward - trklst06	14,487

Other- Cattle and Sheep

Emissions were estimated using the number of cattle, calves, and sheep from the San Luis Obispo County Department of Agriculture 2006 Crop Report.[3] The report stated that there were 95,000 heads of cattle and calves and 6,210 heads of sheep in San Luis Obispo in 2006. Half of these cattle are in the county year-round and half are only in the county 50% of the year.

Cattle and sheep emit methane through a digestive process that is unique to ruminant animals called enteric fermentation.[4] Their manure also accounts for a smaller release of methane into the atmosphere. Emissions from cattle are not a built-in function of CACP; however, they were included in this inventory because they are a significant contributor to the county's inventory. Livestock and sheep emissions were calculated outside of CACP and then inputted into the software in the 'other' category. Methane emissions coefficients were obtained from the Intergovernmental Panel on Climate Change (IPCC) 2006 Guidelines for National Greenhouse

[3] San Luis Obispo County Crop Report 2006, http://www.slocounty.ca.gov/Page9918.aspx

[4] US EPA, Ruminant Livestock FAQ, http://www.epa.gov/rlep/faq.html

Gas Inventories, as shown below.[5] Since there are no dairies in San Luis Obispo, all of the cattle were assumed to be in the 'other/meat' category.

Methane emissions coefficients from cattle and sheet, Tier 1, 2006	Cattle in the other/meat category (kg CH_4/head/year)	Sheep (kg CH_4/head/year)
Enteric Fermentation	53	8
Manure Management	2	0.28[6]

Other – Off-road agricultural equipment

Off-road agricultural equipment emissions were calculated using the OFFROAD2007 modeling software developed by the California Air Resources Board. The tool calculates total emissions per off-road category per emission type (CH_4, N_20, CO_2, etc) for the entire county, including incorporated and unincorporated areas.

To separate the aggregate 2006 emissions outputs for off-road agricultural equipment in the County, we used agriculture and crop GIS shape files[7] provided by the County. These shape files were clipped with the jurisdictional boundaries within the county by PMC to yield the following results:

Ag land and off-road ag equipment emissions per jurisdiction, 2006	Ag/OS (acres)	% of total	N_2O (tons/yr)	CH_4 (tons/yr)	CO_2 (tons/yr)
Arroyo Grande	365.10	0.11%	0.0010	0.0156	79.6520
Atascadero	740.20	0.23%	0.0020	0.0316	161.4857
Grover Beach	287.10	0.09%	0.0008	0.0123	62.6352
Morro Bay	1,040.80	0.32%	0.0027	0.0445	227.0661
Paso Robles	2,517.50	0.78%	0.0067	0.1075	549.2303

[5] IPCC 2006 Guidelines for National Greenhouse Gas Inventories, Livestock, http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_10_Ch10_Livestock.pdf

[6] For Sheep in temperate average temperatures (15-25 degrees C)

[7] The County agriculture and crop GIS data was published in September 2007

Ag land and off-road ag equipment emissions per jurisdiction, 2006	Ag/OS (acres)	% of total	N_2O (tons/yr)	CH_4 (tons/yr)	CO_2 (tons/yr)
Pismo Beach	119.90	0.04%	0.0003	0.0051	26.1580
San Luis Obispo	311.20	0.10%	0.0008	0.0133	67.8929
Unincorporated	317,226.40	98.33%	0.8381	13.5494	69,207.6810
Total	322,608.20	100.00%	0.852313918	13.7793	70381.80107

The OFFROAD software calculates emissions from other sources of off-road equipment as well, including recreational vehicles and watercrafts, however these emissions were not included because there was no feasible methodology for separating these emissions per jurisdiction within the county. Population is proven to not be an accurate indicator of consumption rates. To remain consistent with protocol and practice, emissions must be separated in a spatial manner, similar to how highway emissions are determined by road segment length within each jurisdiction. It should also be noted that many location-sources of off-road emissions, such as recreational vehicle emissions, occur in State Parks or Beaches outside of the jurisdiction of each city or the county.

Other - Aircrafts

Aircraft travel was calculated by Courtney Ward in an engineering report prepared for the Air Pollution Control District in 2007 (**Appendix 2E**). This emission category accounts for all aircraft exhaust emissions, excluding agricultural crop dusting. The operating emissions considered were those that occur in San Luis Obispo County below 3,000 ft., the average mixing depth in the U.S., which is also the assumed inversion height. Data for the report was obtained from the San Luis County Airport, Paso Robles Municipal Airport, and Oceano Municipal Airport (references cited in report).

The emissions calculated in the engineering report are CO, HC, VOC, NOx, Sox, PM10, and PM2.5. However, since only CH_4, N_20, and CO_2 are included in the CACP calculation of CO_2 equivalent, the emissions from aircraft takeoffs and landings are not shown as a source of emissions in this report.

2020 FORECAST

The 2020 forecast calculates business-as-usual growth based on population, job, and household growth rates. Employment and population growth rates were obtained from the San Luis Obispo Council of Governments report, "Long Range Socio-Economic Projections (Year 2030)" prepared by Economic Research Associates (ERA) in May 2006, Revised July 2006. Mid-range estimates of growth were used in both instances (Figures 16 and 31). The population growth rates were calculated using US census data adjusted by the County for use in their General Plan update.

It should be noted that this forecast does not take into consideration any planned or actual efficiency or conservation measures after 2006. For example, the State Renewable Energy portfolio has advanced significantly since 2006, but the forecast calculates 2020 energy emissions by assuming constant emissions factors.

APPENDIX 2D: DETAILED METHODOLOGY FOR COUNTY GOVERNMENT OPERATIONS INVENTORY

Detailed Methodology for County Government Operations GHG Emissions Inventory

The detailed methodology for County government operations is much less complex than the community-wide methodology explanation. Since the County government operations GHG emissions inventory is a facility-scale study, data records are much more reliable and consistent. In addition, the availability of the Local Government Operations Protocol gives us a verified guide for calculating emissions in each sector.

BUILDING

The building sector includes all emissions from natural gas and electricity consumed in County-owned and –operated facilities. It also includes emissions from propane use reported by a few buildings. The kWh of electricity, therms of natural gas, and US gallons of propane were then entered into the CACP software where they were converted to CO_2e. For a complete list of buildings included in this sector, please see the detailed CACP report in **Appendix 2B**.

The building sector used the PG&E verified Average Grid Electricity Set and the CEC Emission Factor for Natural Gas RCI Average Set, as defined in **Appendix 2C**. The analysis did not use the PG&E natural gas coefficient for the fuel CO_2 set because natural gas largely comes from the Southern California Gas Company.

VEHICLE FLEET

The vehicle fleet sector includes gasoline and diesel vehicles from the following County departments:

- Air Pollution Control District (APCD)
- County Cal Fire
- General Services
- Library Fleet (book mobile)
- Public Works

Gasoline and diesel consumption for calendar year 2006 was obtained from billing records. Specific sources of data within each organization are outlined in the notes of **Appendix 2B**.

For the vehicle fleet, we used the default coefficients for gasoline and diesel included in the CACP software. It is likely that using the County EMFAC coefficients would have significantly skewed the numbers under such a micro-scale inventory. The EMFAC coefficients, described in

Appendix 2C, are weighted averages per multiple vehicle types, which are appropriate and more accurate for a large number of vehicles, but not on the scale of a vehicle fleet.

EMPLOYEE COMMUTE

Employees were surveyed in July 2008 through an online system run by the County. The questions, attached as **Appendix 2F**, asked employees about their current commuting patterns. Of those questions, we used the following for our analysis:

- What is your approximate one-way distance to work?
- How has your commute behavior changed in the past 2 years?
- What type of transportation do you take to work each week? Please indicate the number of days for each type of transportation that you use during an average work week. Choices:
  - Drive alone
  - Carpool
  - Vanpool
  - Public transit
  - Motorcycle
  - Bicycle
  - Walk
  - Telecommute
  - Other
- If you drive to work, what type of vehicle do you drive?
- If you drive to work, what type of fuel or energy do you use?

Approximately 1,300 employees responded to the survey with usable information, meaning that all essential questions were answered. Answers with mileage left blank or with highly inconsistent data (ex: saying they walked three days to work, biked two, and drove five) were omitted. In addition, if a respondent did not describe their 'other' category of transportation, the entry was omitted.

To perform this analysis, we took the following steps:

1) Separate entries by what type of vehicle they own and operate (Light truck, motorcycle, passenger car, or blank). Within each new group, separate the entries by diesel or gasoline.

2) For each group of entries with the same vehicle type and fuel, multiply the number of miles to work by 2 (to get round-trip estimate) and then by the number of 'drive alone' days for each entry. Multiply the number of miles to work by the number of 'carpool' days, which assumes another County employee in the car (half of the 'drive alone' emissions). (Note: If a respondent entered that they motorcycle to work, but own a car as well, the motorcycle miles were moved to the motorcycle category). Adjust for hybrids (see below)
3) Add all miles per vehicle type and fuel and multiply by 52.18 work weeks/year.
4) Calculate the multiplier to adjust survey response data to the entire 2006 employee population. In July 2006, there were 2,567 employees. This, divided by the 1,260 survey entries, gives us our multiplier of 2.037302.
5) Multiply the mileage per vehicle per fuel type by the multiplier.
6) Divide the number of hybrid miles by three and add the difference to the 'passenger car' category. This is to account for the large increase in hybrid sales between 2006 and 2008. Source: Hybridcars.com sales statistics.
7) Enter final miles into the CACP software per vehicle type and fuel.

Vehicle Group	2008 Survey results		Adjusted for 2006	
	Annual VMT	Fuel Type		
Light Truck/SUV/Pickup	3,086,462.65	Gasoline	6,288,055.26	Gasoline
	110,621.60	Diesel	225,369.56	Diesel
Motorcycle	127,517.48	Gasoline	259,791.57	Gasoline
Passenger Vehicle	25,226,718.43	Gasoline	51,766,151.53	Gasoline
	80.00	Diesel	162.98	Diesel
	273,684.10	Hybrid	185,859.02	Hybrid
Total	28,825,084.26		58,725,389.93	

The CACP software does not have a method of calculating emissions from hybrid cars. As a result, these emissions were divided by 2.14 based on the difference between average fuel economy of a 2006 Toyota Prius and the average fuel economy included in the 2006 SLO EMFAC data and then entered into the CACP software under 'passenger vehicle' (Source: www.fueleconomy.gov).

This analysis did not take into consideration the question 'how have your commuting patterns changed in the last two years.' The majority of responses was blank and might have

corresponded to a different job location. It was not clear whether respondents were referencing the same commute or whether they had moved homes or jobs.

STREETLIGHTS

Public works provided billing information for the electricity used to operate County streetlights and traffic signals. The total kWh were entered into the CACP software using the verified PG&E Average Grid Electricity Set outlined in **Appendix 2C**.

WATER / SEWAGE

This sector calculates emissions from energy consumption at County-operated wastewater facilities. It does not calculate the total emissions from all water used or treated for the community. Doing so would be including emissions that are accounted for in another jurisdiction, which would cause double-counting. The County is largely not involved with the movement and treatment of water for its residents and businesses, which is why this sector appears insignificant.

Public works provided the electricity consumption for each of the water facilities outlined in **Appendix 2B**. These totals were entered into the CACP software with the PG&E Average Grid Electricity Set outlined in **Appendix 2C**.

WASTE

The San Luis Obispo Utility Coordinator reported solid waste tonnage produced by County operations. The County produced 912 tons of waste in 2006 that was sent to managed landfill. The waste composition was unknown for the County; therefore, we used the California averages provided by the 2004 California Integrated Waste Management Board Waste Characterization Report. A weighted average methane recovery factor of 58% was used in this analysis, as outlined in **Appendix 2C**.

OTHER

The other sector includes miscellaneous equipment from park services, general services, and golf course facilities. Equipment included in these sectors is outlined in the detailed CACP report notes in **Appendix 2B**. There is no automated calculation included in CACP for these sources of emissions, therefore calculations were made outside of CACP and entered into the 'other' category.

Data was given in gallons used per equipment type. A conversion factor of gallons to grams N_20 was obtained from Table G.11 of the California Local Government Operations Protocol (August 2008).

- Small/large utility (gasoline)= .22 g/ gallon fuel;
- Other large utility (diesel) = .26 g/ gallon fuel.

The resulting levels of nitrous oxide are as follows:

- Golf Course Facilities: 2,283 Grams N_20
- Park Facilities: 523 Grams N_20
- Unknown general services: 2,253 Grams N_20

APPENDIX 2E: AIRCRAFT ENGINEERING REPORT BY THE SAN LUIS OBISPO AIR POLLUTION CONTROL DISTRICT, 2007

Area Source Emissions
from

Aircraft Operations
EIC Codes:
81080411400000
81080211400000
81081214000000
81081014000000
81080814000000
81080011400000

Engineering Report

By Courtney Ward

August 12, 2008

Courtney Ward
August 12, 2008

Executive Summary

EIC Code (CES#)
81080411400000 (57331) - Aircraft - Other - Piston - Civil
81080211400000 (57315) - Aircraft - Other - Piston - Commercial
81081214000000 (47589) - Aircraft - Other - Jet - Civil
81081014000000 (47555) - Aircraft - Other - Jet – Commercial
81080814000000 (47571) - Aircraft - Government - Jet - Military
81080011400000 (57323) - Aircraft - Government - Piston - Military

Date Completed: August 12, 2008
Inventoried Year: 2007
Author: Courtney Ward

Table 1. Aircraft Emissions (tpy) for the County of San Luis Obispo (SLO)

Description	CO	HC	VOC	NOx	SOx	PM10	PM2.5
Commercial-Jet (47555)	64.715	13.848	12.852	16.787	3.461	0.735	0.735
Civil-Jet (47589)	192.729	19.747	17.724	2.038	0.810	0.270	0.270
Civil-Piston (57331)	218.334	29.177	24.357	0.763	0.391	0.006	0.006
Military-Jet (47571)	8.930	4.398	4.129	0.675	0.220	0.082	0.082
Military-Piston (57323)	0.18	0.053	0.049	0.007	0.003	0.001	0.001
Totals	**484.888**	**67.223**	**59.111**	**20.270**	**4.885**	**1.094**	**1.094**

Sources

This emission category accounts for all aircraft exhaust emissions (excluding agricultural crop dusting). The operating emissions considered were those that occur in San Luis Obispo County below 3,000 ft., the average mixing depth in the U.S., which is also the assumed inversion height. In the Piston engine the basic unit is the combustion chamber in which fuel and air are mixed, burned, and thus expanded to force a piston and a crank shaft to drive a propeller. The Jet or turboprop engine consists of a compressor, a combustion chamber and a turbine. Air entering the forward end of the engine is compressed and then heated by burning fuel in the combustion chamber.

The Jet and Piston military aircraft categories assess the significant emissions from military aircraft inside San Luis Obispo County. The Army is the primary military presence in the county. The Air Force, Marine, Navy and Coast Guard activity is not significant. The Army is able to use any landing strip in the county and currently has two operating bases, Camp San Luis Obispo and Camp Roberts. Camp San Luis Obispo has minimal activity and is strictly a

helicopter base with no refueling depot. Camp Roberts lies on the San Luis Obispo/Monterey County line with the landing strip and the majority of the air operations occurring in Monterey County. Therefore, the jurisdiction for Camp Roberts falls on Monterey Bay Unified Air Pollution Control District.

Methodology

The number of landing and takeoff operations (LTO) was obtained from the major airports in San Luis Obispo County. The LTO cycle has its equivalent operating time-in-mode (TIM). The TIM is the time for a particular aircraft to go through each of the five modes, approach, taxi in, taxi out, takeoff, and climb out. (see AP-42, Table II-1-3). Composite model emission rates (MER) for each of the various types of aircraft engines now in general use were developed from FAA (Federal Aviation Administration). Emission rates will vary according to engine type and operating mode.

Aircraft emissions are computed using FAA Emissions & Dispersion Modeling System (EDMS 5.0.2). EDMS 5.0.2 provides emission factors for the majority of aircraft. Aircraft-specific TIMs for takeoff, climbout, approach, taxi-idle modes during the LTO's and touch-and-go cycles (T&G's) are provided in EDMS. Average taxi-idle TIMs, which were estimated by the larger airports, are applied to all aircraft for these airports.

Description

The aircraft operations are broken up into five categories: Jet Aircraft – Commercial, Jet Aircraft – Military, Jet Aircraft – Civil, Piston Aircraft – Military, and Piston Aircraft – Civil. These five categories encompass all aircraft engine emissions excluding agricultural aircraft which occurs below 3,000 ft. The California Department of Forestry's firefighting aircraft and the California Highway Patrol is accounted for under Civilian Aircraft.

The Military Aircraft covered in this section include both fixed wing aircraft and helicopters used by the Army. There are relatively few Air Force, Marine, Navy or Coast Guard aircraft operating in SLOC. These categories do not include any government aircraft, such as Police, Fire/Rescue, or California Department of Forestry. The Governmental aircraft are listed under Aircraft - Other - Civil. All of the aircraft used by the military are under the title of Jet Aircraft. This title includes turboprop and turboshaft aircraft.

Procedure

The number of LTOs is obtained from the listed major airports within SLO County:

San Luis County Airport
Paso Robles Municipal Airport
Oceano Municipal Airport

Estimates of aircraft mix for each of the airports is developed based on historical activity and data on home-based aircraft. The 2007 aircraft operations data for the three airports listed above are from the 2007 airport Final Environmental Assessment and Impact Reports found on their

websites. The reports include type of aircraft and engine, and number of operations. The inquiries as to the make up of aircraft were referenced through: Craig Piper, General Services, Assistant Airport Manager San Luis Obispo (805) 781-5205 and Roger Oxborrow, Paso Robles Airport Services Coordinator (805) 237-3877. EDMS questions were referenced through Ralph Lovinelli at FAA (202) 267-3566.

The California Department of Forestry (CDF) maintains a permanent Air Attack Base in Paso Robles. Stationed there are an average of five military – jet aircraft per month consisting of 3 helicopters and two Lockheed C-130 Hercules. There are also two typical firefighting aircraft, one large SP-2H radial piston engine aircraft and a smaller turboprop Cessna Skymaster. These durable aircraft are built strong with large power to weight ratios so that they may take off, land and maneuver close to steep terrain with fire fueled cross winds. They are required by efficiency measures to land fully loaded with fire retardant and fuel which puts added strain on the plane. These extraordinary conditions require rich fuel mixtures and powerful engines which can contribute considerably to emissions. Fuel mixtures cannot be analyzed directly, but a generalized output of emissions can give a reasonable idea of the scope of emissions.

Emission Summary

Table 2. SLO Airport 2007 Emission Summary (tpy)

Aircraft	Engine	CO	HC	VOC	NOx	SOx	PM10	PM2.5	# Of Operations/yr	LTO/yr
EMB-120	PW118	15.823	0.080	0.076	2.283	0.660	0.056	0.056	7,300	3,650
SF-340-A	CT7-5	5.020	1.384	1.310	2.637	0.446	0.127	0.127	4,380	2,190
DHC-8-400	PW123	1.460	0.013	0.013	0.636	0.123	0.011	0.011	1,000	500
CL600	ALF 502L-2	3.253	0.687	0.631	0.712	0.157	0.045	0.045	730	365
REG'L JET 200	CF34-3B	13.732	2.643	2.503	2.305	0.591	0.193	0.193	2,920	1,460
Embraer ERJ 170	CF34-8E5	4.935	0.084	0.080	5.724	0.814	0.106	0.106	2,000	1,000
CITATION II	JT15D-4 (B,C,D)	8.696	4.968	4.568	0.375	0.147	0.100	0.100	1,512	756
CITATION X	AE3007C (Type 1)	0.824	0.236	0.217	0.845	0.110	0.019	0.019	408	204
Citation VII	TFE731-3	1.816	0.483	0.444	0.213	0.060	0.012	0.012	480	240
Learjet 35/36	TFE731-2-2B	16.851	8.101	7.450	1.281	0.448	0.159	0.159	5,277	2,639
Cessna 441 Conquest 2	TPE331-8	0.370	0.056	0.052	0.082	0.027	0.003	0.003	643	322
DHC-6	PT6A-20	0.631	0.081	0.076	0.069	0.025	0.004	0.004	543	272
Navajo (1)	TIO-540-J2B2	93.436	4.406	3.678	0.036	0.092	0.000	0.000	4,429	2,215
Navajo (2)	TIO-540-J2B2	59.225	2.793	2.331	0.023	0.058	0.000	0.000	2,808	1,404
Piper PA-28 (1)	O-320	25.922	1.385	1.156	0.014	0.031	0.000	0.000	9,307	4,654
N 24A Nomad 24A (1)	250B17B	7.623	3.861	3.690	0.471	0.184	0.087	0.087	4,285	2,143
Cessna 172 Skyhawk (1)	TSIO-360C	63.474	13.417	11.200	0.202	0.125	0.000	0.000	32,867	16,434
Cessna 208 Caravan (1)	PT6A-114	1.048	0.151	0.139	0.178	0.057	0.008	0.008	2,234	1,117
Piper PA-28 (2)	O-320	16.437	0.878	0.733	0.009	0.019	0.000	0.000	5,901	2,951
N 24A Nomad 24A (2)	250B17B	4.834	2.449	2.340	0.299	0.116	0.055	0.055	2,717	1,359
Cessna 172 Skyhawk (2)	TSIO-360C	40.242	8.507	7.100	0.128	0.079	0.000	0.000	20,838	10,419
Cessna 208 Caravan (2)	PT6A-114	0.665	0.096	0.088	0.113	0.036	0.005	0.005	1,417	709
Robinson R22 (1)	TSIO-360C	5.766	0.964	0.805	0.018	0.011	0.000	0.000	2,234	1,117
SD330	PT6A-45R	0.092	0.031	0.030	0.010	0.003	0.001	0.001	48	24
DHC-6	PT6A-20	0.028	0.004	0.003	0.003	0.001	0.000	0.000	24	12
H-46 SEA KNIGHT	T58-GE-8F	0.228	0.222	0.212	0.003	0.002	0.003	0.003	24	12
H-53D Sea Stallion	T64-GE-413	0.628	0.292	0.279	0.062	0.021	0.006	0.006	124	62
H-60 Black Hawk	T700-GE-700	0.532	0.769	0.735	0.046	0.017	0.013	0.013	200	100
Robinson R22 (2)	TSIO-360C	3.655	0.611	0.510	0.011	0.007	0.000	0.000	1,416	708
TOTAL		397.246	59.652	52.449	18.788	4.467	1.013	1.013	118,066	59,033

Note: Divide '# of Operations/yr' by 2 to account for landing and takeoff.

Table 3. Oceano Airport 2007 Emission Summary (tpy)

Aircraft	Engine	CO	HC	VOC	NOx	SOx	PM10	PM2.5	# of Operations per month	LTO/yr
Cessna 172 Skyhawk (1)	TSIO-360C	0.576	0.133	0.102	0.002	0.001	0.000	0.000	25	150
Cessna 150	O-200	0.033	0.002	0.001	0.000	0.000	0.000	0.000	1	6
Cessna 170 (1)	O-201	0.033	0.002	0.001	0.000	0.000	0.000	0.000	1	6
Piper Aeronca (PA-28) (1)	O-320	0.033	0.002	0.001	0.000	0.000	0.000	0.000	1	6
Cessna 172 (1)	TSIO-360C	1.383	0.294	0.245	0.004	0.003	0.000	0.000	60	360
PiperPA28B	O-320	0.033	0.002	0.001	0.000	0.000	0.000	0.000	1	6
Beech 95 (1)	PT6A-20	0.014	0.002	0.002	0.001	0.001	0.000	0.000	1	6
Cessna 172 (2)	TSIO-360C	0.046	0.010	0.008	0.000	0.000	0.000	0.000	2	12
Lancair	IO-360-B	0.164	0.010	0.009	0.001	0.000	0.000	0.000	7	42
Piper Aeronca (PA-28) (2)	O-320	0.167	0.009	0.007	0.000	0.000	0.000	0.000	5	30
Eagle II (Cessna 421 Golden)	TIO-540-J2B2	0.506	0.024	0.020	0.000	0.001	0.000	0.000	2	12
Cessna 170 (2)	O-201	0.033	0.002	0.001	0.000	0.000	0.000	0.000	1	6
Piper Cub (Antonov 12 Cub)	T56 series I	0.077	0.034	0.032	0.104	0.019	0.002	0.002	20	120
Beech 95 (2)	TIO-540-J2B2	0.567	0.015	0.013	0.000	0.001	0.000	0.000	1	6
Piper Archer	O-320	0.067	0.004	0.003	0.000	0.000	0.000	0.000	2	12
Piper Cherokee (1)	O-320	0.067	0.004	0.003	0.000	0.000	0.000	0.000	2	12
Piper Arrow	O-320	0.266	0.014	0.012	0.000	0.000	0.000	0.000	8	48
Cessna 172 Skyhawk (2)	O-320	0.176	0.009	0.008	0.000	0.000	0.000	0.000	5	30
Piper Cherokee (2)	O-320	0.033	0.002	0.001	0.000	0.000	0.000	0.000	1	6
Europa Turbo	PT6A-62	0.180	0.053	0.049	0.007	0.003	0.001	0.001	6	36
TOTAL		**4.454**	**0.627**	**0.519**	**0.119**	**0.029**	**0.003**	**0.003**	**152**	**912**

Note: Divide '# of Operations per month' by 2 to account for landing and takeoff and multiply by 12 to convert units.

Table 4. Paso Robles Airport 2007 Emission Summary (tpy)

Aircraft	Engine	CO	HC	VOC	NOx	SOx	PM10	PM2.5	# Of Operations/yr	LTO/yr
Cessna 150	O-200	6.962	0.369	0.308	0.009	0.009	0.000	0.000	2,500	1250
Piper PA-28	O-360	32.448	1.148	0.958	0.146	0.045	0.000	0.000	9,000	4500
Cessna 182	O-470	19.800	1.220	1.018	0.099	0.032	0.000	0.000	10,000	5000
Cessna 206	IO-520	14.952	0.612	0.511	0.074	0.021	0.000	0.000	5,000	2500
Beechcraft King-Air C-90	PT-6	1.159	0.178	0.164	0.113	0.041	0.006	0.006	1,000	500
Bell 206 JetRanger	250B17B	0.638	0.157	0.144	0.017	0.010	0.004	0.004	500	250
Cessna 525 Citation	FJ-44	3.420	1.821	1.674	0.079	0.042	0.033	0.033	500	250
Lear 60	P&W 305A	0.668	0.113	0.104	0.131	0.029	0.005	0.005	200	100
Grumman S-2T	TEP-331	1.270	0.233	0.223	0.100	0.031	0.005	0.005	500	250
Lockheed Hercules C-130	T-56	0.241	0.105	0.101	0.320	0.059	0.006	0.006	100	50
Lockheed Neptune P2V	R-3350	0.992	0.831	0.794	0.258	0.060	0.015	0.015	200	100
Miscellaneous	Varies	0.638	0.157	0.144	0.017	0.010	0.004	0.004	500	250
TOTAL		**83.188**	**6.944**	**6.143**	**1.363**	**0.389**	**0.078**	**0.078**	**30,000**	**15000**

Note: Divide '# of Operations per month' by 2 to account for landing and takeoff.

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Appendix

EDMS ID	Aircraft	Engine	Baseline Condition	2010 No Action Alternative	2010 Proposed Action	2023 Proposed Action
AC1	EMB-120	PW118	7,300	6,800	2,552	--
AC2	SF-340-A	CT7-5	4,380	4,081	1,456	--
AC3	DHC-8-400	PW123	--	1,672	1,336	--
AC4	CL600	ALF 502L-2	730	836	1,602	3,000
AC5	REG'L JET 200	CF34-3B	2,920	3,351	4,008	7,500
AC6	Embraer ERJ 170	CF34-8E5	--	--	2,406	4,500
GA1	CITATION II	JT15D-4 (B,C,D)	1,512	1,610	1,610	1,891
GA2	CITATION X	AE3007C (Type 1)	408	435	435	510
GA3	Citation VII	TFE731-3	480	511	511	600
GA4	Learjet 35/36	TFE 731-2-2B	5,277	5,620	5,620	6,599
GA5	Cessna 441 Conquest2	TPE331-8	643	685	685	804
GA6	DHC-6	PT6A-20	543	578	578	679
ME1	Navajo	TIO-540-J2B2	4,429	4,627	4,627	5,430
ME2	Navajo	TIO-540-J2B2	2,808	3,082	3,082	3,620
SE1	Piper PA-28	O-320	9,307	9,722	9,722	11,411
SE2	N 24A Nomad 24A	250B17B	4,285	4,476	4,476	5,254
SE3	Cessna 172 Skyhawk	TSIO-360C	32,867	34,332	34,332	40,297
SE4	Cessna 208 Caravan	PT6A-114	2,234	2,334	2,334	2,739
SE5	Piper PA-28	O-320	5,901	6,476	6,476	7,607
SE6	N 24A Nomad 24A	250B17B	2,717	2,981	2,981	3,502
SE7	Cessna 172 Skyhawk	TSIO-360C	20,838	22,869	22,869	26,865
SE8	Cessna 208 Caravan	PT6A-114	1,417	1,555	1,555	1,826
HE1	Robinson R22	TSIO-360C	2,234	2,333	2,333	2,739
MY1	SD330 Sherpa	PT6A-45R	48	97	97	97
MY2	DHC-6	PT6A-20	24	49	49	49
MY3	H-46 SEA KNIGHT	T58-GE-8F	24	49	49	49
MY4	H-53D Sea Stallion	T64-GE-413	124	250	250	250
MY5	H-60 Black Hawk	T700-GE-700	200	405	405	405
LH1	Robinson R22	TSIO-360C	1,416	1,554	1,554	1,826
	Air Carriers		15,330	16,739	13,360	15,000
	General Aviation		99,316	105,780	105,780	124,200
	Military		420	850	850	850
	Total		115,066	123,009	119,990	140,050

I. SLO Airport Operations (See Appendix F-25 of Final Environmental Assessment and Impact Report).

TABLE 1E
General Aviation Pilot Survey

Survey No.	Aircraft	Aircraft Based at	Hangar/ Tiedown	Base at Oceano if Hangars available?	Ops Per Month at Oceano	Percent of Local Ops
1	Ultralight	Oceano	Tiedown	--	10	3.0%
2	Cessna 172	Camarillo	Tiedown	Y	25	0.0%
3	Cessna 150	Camarillo	Tiedown	N	1	0.0%
4	Cessna 170	Corona	Tiedown	N	1	25.0%
5	Piper Aeronca	Oceano	Hangar	--	1	0.0%
6	Ultralight	Oceano	Tiedown	--	4	5.0%
7	Cessna 172	Santa Barbara	Tiedown	N	60	0.0%
8	Piper PA28B	Santa Barbara	Tiedown	N	1	0.0%
9	Beech 95	Redlands	Tiedown	Y	1	0.0%
10	Cessna 172	Santa Maria	Tiedown	N	2	10.0%
11	Lancair 360	Lompoc	Hangar	Y	7	10.0%
12	Globe Swift	Lompoc	Tiedown	Y	2	10.0%
13	Piper Aeronca	Oceano	Hangar	--	5	0.0%
14	Eagle II	Paso Robles	Hangar	N	2	0.0%
15	Cessna 170	Paso Robles	Hangar	N	1	0.0%
16	Piper Cub	Oceano	Hangar	--	20	10.0%
17	Beech 95	Van Nuys	Tiedown	N	1	0.0%
18	Piper Archer	Santa Clara	Hangar	N	2	0.0%
19	Piper Cherokee	Bakersfield	Hangar	N	2	0.0%
20	Piper Arrow	SLO Co.	Hangar	Y	8	0.0%
21	Cessna 172	Santa Barbara	Hangar	N	5	0.0%
22	Piper Cherokee	Santa Monica	Hangar	N	1	0.0%
23	Europa Turbo	Ramona	Tiedown	N	6	30.0%

II. Oceano Airport Operations (See Chapter 1 of Oceano Airport Masterplan).

APPENDIX 2F: COUNTY EMPLOYEE COMMUTE SURVEY, 2008

County Employee Commute Survey, 2008

Thanks for taking part in this survey. Please take a few minutes to answer these 11 short questions. Please complete this survey by September 9, 2008.

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1) How would you characterize your typical work week?

- ☐ Five 8-hour days a week
- ☐ Four 10-hour days a week
- ☐ 1 day off every two weeks ("9/80")
- ☐ Part-time: Three days a week or less
- ☐ Other: _____

2) What is your approximate one-way distance to work?

Enter distance (in miles): _____

3) How has your commute behavior changed in the past 2 years?

- ☐ I drive an additional day per week
- ☐ I drive one or fewer days per week
- ☐ I carpool more frequently
- ☐ I carpool less frequently
- ☐ I bike/walk more frequently
- ☐ I bike/walk less frequently
- ☐ I changed my work schedule
- ☐ No Change

4) What type of transportation do you take to work each week? Please indicate the number of days for each type of transportation that you use during an average work week.

Drive Alone	☐1 day	☐2 days	☐3 days	☐4 days	☐5 days
Carpool	☐1 day	☐2 days	☐3 days	☐4 days	☐5 days
Vanpool	☐1 day	☐2 days	☐3 days	☐4 days	☐5 days
Public transit	☐1 day	☐2 days	☐3 days	☐4 days	☐5 days
Motorcycle	☐1 day	☐2 days	☐3 days	☐4 days	☐5 days
Bicycle	☐1 day	☐2 days	☐3 days	☐4 days	☐5 days
Walk	☐1 day	☐2 days	☐3 days	☐4 days	☐5 days
Telecommute	☐1 day	☐2 days	☐3 days	☐4 days	☐5 days

Other

5) If you drive to work, what type of vehicle do you drive?

- ☐ Compact/Sub-Compact car (Civic, Corolla, Focus, Neon, Cavalier, Jetta or similar)
- ☐ Mid-size car (Accord, Camry, Passat, Monte Carlo, Sable, Sebring or similar)
- ☐ Full-size car (Impala, Intrepid, Taurus, Crown Victoria, Bonneville, Town Car or similar)
- ☐ Small Truck/SUV/Pickup (RAV4, Chev S10, Pickup (4 cylinder), PT Cruiser or similar)
- ☐ Medium-Small Truck/SUV/Pickup (minivan,Sonoma Pickup Truck or similar)
- ☐ Medium-Large Truck/SUV/Pickup (Durango, Safari Cargo Van, Ford F150 or similar)
- ☐ Large Truck/SUV/Pickup (Suburban, Expedition, Navigator, Ford E250/350/450 or similar)
- ☐ Motorcycle

6) If you drive to work, what type of fuel or energy do you use?

- ☐ Gasoline
- ☐ Diesel
- ☐ Biodiesel
- ☐ Hybrid
- ☐ Electric
- ☐ Other (Specify): _____

7) How often do you use a vehicle to leave the work site at lunch or on breaks each week?

- ☐ Once per week
- ☐ Twice a week
- ☐ Three times per week or more
- ☐ Never

8) If you use a carpool or vanpool, how many share the car/van with you?

Enter # of people: _____

9) The things most important to me when using alternative transportation are:

- ☐ Avoiding traffic
- ☐ Parking costs
- ☐ Travel time
- ☐ Convenience/Flexibility
- ☐ Cost of gas and wear and tear on my car
- ☐ Other: _____

10) Do you participate in the County's Commute + program?

- ☐ Yes
- ☐ No

11) What is your zip code?

Zip Code: _____