

# Quick Start Guide for Conducting a Greenhouse Gas Emissions Inventory



## Climate Mitigation for Local Governments: Milestone One

September 2010

# Statewide Energy Efficiency Collaborative

## AN ALLIANCE TO SUPPORT LOCAL GOVERNMENT

This Quick Start Guide is a product of the **Statewide Energy Efficiency Collaborative** (SEEC). SEEC is a new alliance to help cities and counties reduce greenhouse gas emissions and save energy. SEEC is a collaboration between three statewide non-profit organizations and California's four Investor Owned Utilities.

SEEC members are:

- ICLEI – Local Governments for Sustainability USA
- Institute for Local Government
- Local Government Commission
- Pacific Gas and Electric Company
- San Diego Gas and Electric Company
- Southern California Edison Company
- Southern California Gas Company

SEEC provides education and tools for climate action planning, venues for peer-to-peer networking, technical assistance and recognition for local agencies that reduce greenhouse gas emissions and energy use.

The collaborative effort is designed to build upon the unique resources, expertise and local agency relationships of each non-profit organization, as well as those of the four investor owned utilities.



The program is funded by California utility ratepayers and administered by Pacific Gas and Electric Company, San Diego Gas and Electric Company, Southern California Edison, and Southern California Gas Company under the auspices of the California Public Utilities Commission.

# Table of Contents

<b>Table of Contents</b> .....	<b>3</b>
<b>Executive Summary</b> .....	<b>4</b>
<b>The Purpose of Conducting an Inventory</b> .....	<b>4</b>
<b>How You Can Benefit</b> .....	<b>5</b>
<b>Greenhouse Gas Emissions Inventory Quick Start Guide</b> .....	<b>6</b>
<b>Milestone One in 8 Steps</b> .....	<b>6</b>
<b>Expected Project Timeline</b> .....	<b>6</b>
<b>Step 1: Designate and Train Project Coordinator</b> .....	<b>7</b>
Designating Staff .....	7
Training Staff .....	7
<b>Step 2: Define Scope of Study</b> .....	<b>7</b>
Government Operations and Community Inventory Boundaries .....	8
<b>Step 3: Identify Base Year and Sources of Data for Study</b> .....	<b>8</b>
Selecting Inventory Base Year .....	8
Locating Data Sources .....	9
Common Data Needs and Sources .....	9
<b>Step 4: Collect and Sort Information</b> .....	<b>12</b>
Organizing Data .....	13
<b>Step 5: Calculate base year emissions</b> .....	<b>14</b>
Key Terms .....	14
<b>Step 6: Estimate trends through an emissions forecast</b> .....	<b>15</b>
Community Forecast Year .....	15
Government Operations Forecast Year .....	15
<b>Step 7: Present study results</b> .....	<b>16</b>
Narrative Inventory Report .....	16
<b>Step 8: Submit results to ICLEI for Milestone Award</b> .....	<b>17</b>
Timing and Other Considerations .....	17
Award Distribution & Presentation Opportunities .....	17
Media Attention .....	17
Other Reporting Considerations .....	18
<b>Next Steps</b> .....	<b>19</b>
Milestone Two: Setting an Emissions Reduction Target .....	19
Milestones Three through Five: Creating, Implementing, and Evaluating a Climate Action Plan .....	19
<b>Project Resources</b> .....	<b>20</b>

# Executive Summary

## The Purpose of Conducting an Inventory

Each day, local governments operate buildings, vehicle fleets, street lights, traffic signals, water systems, and wastewater plants; local government employees consume resources commuting to work, and generate solid waste which is sent for disposal. Throughout the community, people run air conditioners or furnaces, watch television, and drive to the grocery store. Children sit in classrooms with lights on overhead, while their parents work on computers, operate equipment in factories, and travel on airplanes. Each of these activities directly or indirectly cause the release of carbon dioxide and other greenhouse gases into the atmosphere, which are the cause of global climate change.

Many local governments have decided to gain an understanding of their contribution towards climate change, and have committed to reducing greenhouse gas emissions at the local level. Local governments exercise direct control over their own operations and can lead by example by reducing energy usage in municipal facilities, using alternative fuels in their fleets, and investing in renewable energy sources. They can also influence community-wide activities that contribute to climate change by improving building codes, providing cleaner transportation options, and educating members of the community about their choices as consumers.



This Quick Start Guide is the first in a series to assist local governments to understand and act to reduce their impact on climate change. The greenhouse gas emissions inventory is the first step in a framework developed by ICLEI-Local Governments for Sustainability USA (ICLEI) called the “Five Milestones for Climate Mitigation.” This Five Milestone process involves the following steps:

- Milestone One:** Conduct a baseline emissions inventory and forecast
- Milestone Two:** Adopt an emissions reduction target for the forecast year
- Milestone Three:** Develop a local climate action plan
- Milestone Four:** Implement the climate action plan
- Milestone Five:** Monitor progress and report results

As local governments typically contribute roughly five to ten percent of the total greenhouse gas emissions generated throughout the community, ICLEI recommends developing both local government operations and community-wide greenhouse gas emissions inventories and reduction strategies. Before concerted management and reduction of greenhouse gas emissions can occur within our local governments and communities, careful measurement and analysis must inform the decision-making process. A greenhouse gas emissions inventory should facilitate keen insight into the types and sources of greenhouse gas emissions within your local jurisdiction – in turn leading to better planning and success in managing those emissions.

## How You Can Benefit

There are several major advantages for local governments who are successful in their climate planning efforts:

- **Money savings:** Developing climate and energy strategies can help your local government slash energy costs to save taxpayer dollars. Conducting a GHG emissions inventory will show you exactly where you're wasting energy and identify opportunities to become more efficient.
- **Climate leadership:** By taking action now to address climate change, your local government and elected officials can be recognized for their leadership on climate and energy issues.
- **Community benefits:** Measures to reduce GHG emissions and energy consumption typically have many co-benefits. They can improve air quality and public health, stimulate the local economy and create green jobs, and make communities more livable and walkable.
- **Regulatory preparedness:** Through legislation such as AB 32 and SB 375, and through the creation of the California Public Utility Commission's Long Term Energy Efficiency Strategic Plan, the State of California has shown national leadership on climate change. Aspects of climate legislation and planning frameworks will impact local governments and planning agencies. Taking action will help you be prepared. For a comprehensive list of current local, state and federal statutes plus state and local regulations affecting air quality management in California, please see <http://www.arb.ca.gov/html/lawsregs.htm>.

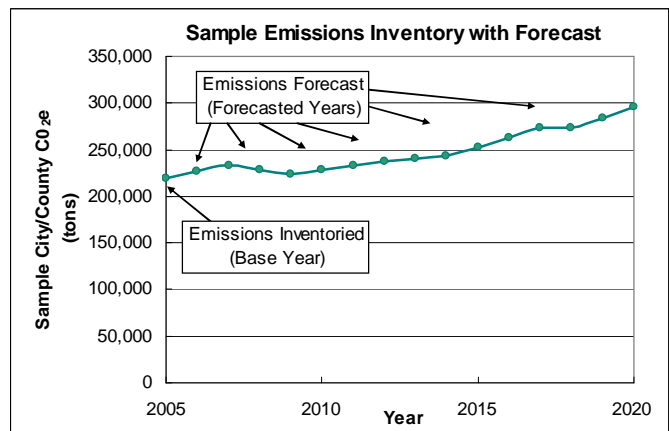
This Guide provides an overview of development of both local government operations and community scale greenhouse gas emissions inventories. By conducting these studies, you are acting now to make government operations more efficient and limit future impacts that threaten the lives and property of residents and businesses within your community. Let us begin!

# Greenhouse Gas Emissions Inventory Quick Start Guide

This Guide is intended to help you quickly gain an understanding of the development of a local greenhouse gas emissions inventory, and will provide tips and helpful resources designed to save you as much time as possible in the inventory process.

## Milestone One in 8 Steps

1. Designate and train a project coordinator
2. Define the scope of the study
3. Identify your base year and sources of data for study
4. Collect and sort information
5. Calculate your base year emissions
6. Estimate trends through an emissions forecast
7. Present your study results in report or other format
8. Submit your results to ICLEI for Milestone Award



## Expected Project Timeline

Conducting a greenhouse gas emissions inventory should require one to four months depending on several factors:

- Size and complexity of a jurisdiction
- Availability of data
- Amount of resources dedicated to the effort
- Creativity and dedication of all involved

A sample timeline is included below. Feel free to use this as your own project timeline, adjusting as necessary. Your inventory could take more or less time than is shown here. For further guidance on staffing, please see Step One in particular. Additionally, expected total hours for each step are included in this guide for your reference.

Tasks	Month 1	Month 2	Month 3	Month 4	Month 5
Designate and train project coordinator					
Define scope of study					
Identify base year and sources of data for study					
Collect and sort information					
Calculate base year emissions					
Estimate trends through an emissions forecast					
Present study results in report or other format					
Submit results to ICLEI for Milestone Award					

## Step 1: Designate and Train Project Coordinator

**Estimated staff time:** 10 to 20 hours

One of the first steps in developing a local greenhouse gas emissions inventory is to designate a project coordinator. The coordinator will be responsible for collecting and managing data, performing emissions calculations, and developing a final report.

### Designating Staff

Below are some considerations to assist you in designating the project coordinator:

- Local governments typically designate a coordinator from within their planning, public works, engineering, environmental/sustainability, or energy offices
- Some local governments hire interns or consultants for some or all of the work
- It is vital to involve a staff liaison, even if using interns or consultants
- The project coordinator should be committed to the issue and project
- No climate science is necessary



### Training Staff

Below are some tips for the project coordinator before embarking on the development of an inventory:

- Use this guide to gain a high-level understanding of the process before you begin
- Create a vision for your final report before you begin, and determine what you would like to convey
- Don't worry about understanding every point in the process before you move ahead; you will learn as you go

## Step 2: Define Scope of Study

**Estimated staff time:** 4 to 12 hours

Your first decision will be whether to study emissions from local government operations or from the community as a whole. As previously noted, local governments exercise direct control over their own actions that cause emissions, and can achieve significant cost savings by internally reducing waste generation, energy and fuel usage. At the same time, because community-wide emissions account for the vast majority of local emissions, a local government can maximize reductions in greenhouse gases only by looking at the community as a whole. For this reason, ICLEI recommends conducting inventories for both government operations and the community as a whole, either separately or concurrently.

Local government operations and community inventories can vary in their complexity and usefulness. Several important considerations should be made before embarking on the inventory and forecast:

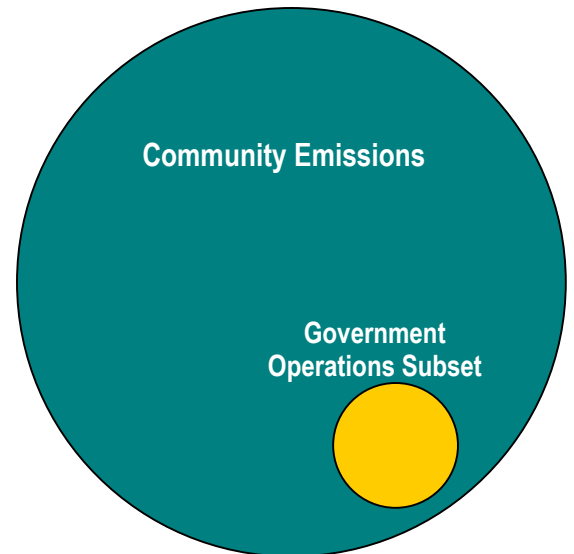
- The depth of analysis desired
- Whether to include both a baseline year and interim year analysis
- Boundaries of the inventory

Besides overall emissions levels, other types of information that you may want to get out of the study could include:

- Energy use comparisons and emissions of various government buildings
- Fuel use comparisons and emissions of different vehicle types in fleet
- Percentage of emissions from local government sources compared to community sources
- Amount of growth in emissions over time if no actions are taken by the local government

### Government Operations and Community Inventory Boundaries

It is important to note that the community-scale inventory is designed to represent the total quantity of greenhouse gas emissions produced by your community as defined by its geographic borders during a chosen year. Emissions from your local government operations are already embedded in the community inventory. For example, aggregate data for commercial energy use by the community includes energy used for municipal buildings and facilities; community vehicle-miles-traveled estimates include miles driven by municipal fleet vehicles; and total tons of solid waste landfilled by the community includes municipal waste. The government operations inventory is in this way a subset of the community-scale inventory.



### **Step 3: Identify Base Year and Sources of Data for Study**

**Estimated staff time:** 8 to 24 hours

#### Selecting Inventory Base Year

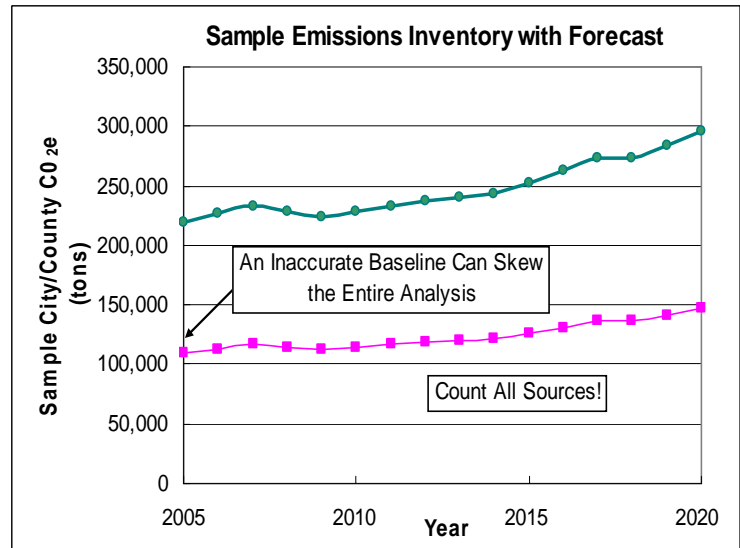
Before you begin collecting data, you must determine what year(s) you wish to study. Some things to consider in this process include the following:

- Completeness is key; select a year for which you have as much data as possible
- 2005 is a commonly accepted baseline year in California – it is the reference year in SB 375 and Executive Order S-3-05
- Consider multiple inventory years: a base year and an interim year (e.g., 2005 and 2010)
- It is not recommended that you “backcast” for previous years’ emissions (e.g., 1990)
- Set a threshold for data quality; the inventory is only as accurate as the data of which it is comprised

Above all, make sure that you are counting all emissions sources. Data gaps will impair the study dramatically and lead to inaccuracies in the forecast. This will, in turn, lead to a misinformed climate action plan and projects.

## Locating Data Sources

- Contact internal and external groups for availability of data
- Use the data chart below and on the following page as a starting point
- Inquire about several years
- Keep a chart with contact names, type of data available, etc. ICLEI provides a standard template for your use.
- Quality of data varies in every situation
- Document important notes regarding data sources
- Ask questions – make sure there is no double counting or missing/incomplete data
- If you are completely stuck on an item, make a fair assumption and document assumptions made in your notes



## Common Data Needs and Sources

On the following pages, please find reference charts listing common types and sources of data needed for an emissions inventory as well as a relevant California agency contact list.

Common Data Needs and Sources		
Data Need	Typical/Possible Sources	Notes
<b>Community Data</b>		
Residential, Commercial, and Industrial Utility Usage Data	Utility companies*	Electricity, natural gas, steam usage, etc. (e.g.: kWh, therms, etc.) <ul style="list-style-type: none"> <li>• Sometimes it is possible to get detailed data (e.g.: by zip code, neighborhood, etc.)</li> <li>• Does data align with jurisdictional boundaries?</li> </ul>
Other Residential, Commercial, and Industrial Fuel Usage	US Census and EPA data	Fuel oil, propane, kerosene (e.g.: gallons, cubic feet, etc.) <ul style="list-style-type: none"> <li>• Some estimation may be necessary</li> </ul>
Jurisdiction-Wide Transportation Data	Regional Planning Agency, Metropolitan Planning Organization, Councils of Government, US Census data	Annual VMT** by vehicle and fuel type <ul style="list-style-type: none"> <li>• Estimation may be necessary in rural areas</li> </ul>
Fugitive Emissions (e.g.: leaked refrigerants, landfill emissions)	US Census and US Environmental Protection Agency data, Landfill Operators, Facilities Managers, Fleet Managers	Amount and type of stored, disposed, and purchased refrigerants; Landfill type and features, total tonnage in place, total tonnage added in base year
Process Emissions (i.e., wastewater)	Wastewater Utility	Wastewater facility type and features, total volume of wastewater
<b>Local Government Data</b>		
Building Energy Use Data	Facilities Manager, Utility Bills, Finance Department, Utility Companies*	Electricity, natural gas, steam usage, fuel oil, propane, kerosene, etc. <ul style="list-style-type: none"> <li>• Should be higher data quality than community data</li> </ul>
Vehicle Fleet Data	Fleet Manager, Fuel Tracking System, Finance Department	Annual VMT** by vehicle and fuel type <ul style="list-style-type: none"> <li>• Sometimes possible to get detailed data (i.e.: exact amount and type of fuel per vehicle)</li> </ul>
Streetlights, Outdoor Lighting, Traffic Signals	Facilities Manager, Utility Bills, Finance Department, Parks Department, Utility Companies*	kWh of electricity used
Government Generated Solid Waste	Facilities Manager, Waste Hauler Bills, Finance Department	Tonnage of waste disposed
Employee Commute Data	Employee commute survey	Annual VMT** by vehicle type per employee
Public Transit Data	Public Transit Agency, Finance Department	Annual VMT** by vehicle and fuel type <ul style="list-style-type: none"> <li>• Sometimes possible to get detailed data (exact amount and type of fuel per vehicle)</li> </ul>
<b>Other Data</b>		
Airport, Harbor Data	Airport System, Port Authority	Emissions associated with airport or port operations (if not included in other data)
Employee Work Travel Data	Finance Department, Human Resources	Emissions associated with paid employee travel

\*Confidentiality rules may apply.  
\*\*Vehicle Miles Traveled (VMT)

California Inventory Data Sources / Key Agencies Contacts List	
Organization	Contact
California Public Utilities Commission (CPUC)	<ul style="list-style-type: none"> <li>• <a href="http://www.cpuc.ca.gov/PUC/contactus/">http://www.cpuc.ca.gov/PUC/contactus/</a></li> </ul>
Utilities	Pacific Gas and Electric Company (PG&E) <ul style="list-style-type: none"> <li>• <a href="http://www.pge.com/myhome/customerservice/contact/">http://www.pge.com/myhome/customerservice/contact/</a></li> </ul> San Diego Gas and Electric Company (SDGE) <ul style="list-style-type: none"> <li>• <a href="http://www.sdge.com/contactus/">http://www.sdge.com/contactus/</a></li> </ul> Southern California Edison <ul style="list-style-type: none"> <li>• <a href="http://www.sce.com/ContactUs/">http://www.sce.com/ContactUs/</a></li> </ul> Southern California Gas Company <ul style="list-style-type: none"> <li>• <a href="http://www.socalgas.com/contactUs/">http://www.socalgas.com/contactUs/</a></li> </ul>
Regional Planning Agencies, Councils of Government, and Metropolitan Planning Organizations	ABAG-Association of Bay Area Governments (SF Bay Area COG) <ul style="list-style-type: none"> <li>• <a href="http://www.abag.ca.gov/index.html">http://www.abag.ca.gov/index.html</a></li> </ul> AMBAG-Association of Monterey Bay Area Governments <ul style="list-style-type: none"> <li>• <a href="http://www.ambag.org/">http://www.ambag.org/</a></li> </ul> BCAG-Butte County Association of Governments <ul style="list-style-type: none"> <li>• <a href="http://www.bcag.org/">http://www.bcag.org/</a></li> </ul> COFCG-Council of Fresno County Governments <ul style="list-style-type: none"> <li>• <a href="http://www.fresnocog.org/">http://www.fresnocog.org/</a></li> </ul> Council of San Benito County Governments <ul style="list-style-type: none"> <li>• <a href="http://www.sanbenitocog.org/">http://www.sanbenitocog.org/</a></li> </ul> Coachella Valley Association of Governments <ul style="list-style-type: none"> <li>• <a href="http://www.co.riverside.ca.us/cvag/">http://www.co.riverside.ca.us/cvag/</a></li> </ul> MCAG-Merced County Association of Governments <ul style="list-style-type: none"> <li>• <a href="http://www.mcag.cog.ca.us/">http://www.mcag.cog.ca.us/</a></li> </ul> MTC-Metropolitan Transportation Commission (SF Bay Area MPO) <ul style="list-style-type: none"> <li>• <a href="http://www.mtc.dst.ca.us/">http://www.mtc.dst.ca.us/</a></li> </ul> Kern Council of Governments <ul style="list-style-type: none"> <li>• <a href="http://www.kerncog.org/">http://www.kerncog.org/</a></li> </ul> Kings County Association of Governments <ul style="list-style-type: none"> <li>• <a href="http://kings.ca.us/plan/kcag/">http://kings.ca.us/plan/kcag/</a></li> </ul> Mendocino Council of Governments <ul style="list-style-type: none"> <li>• <a href="http://www.mendocinocog.org/">http://www.mendocinocog.org/</a></li> </ul> Orange County Council of Governments <ul style="list-style-type: none"> <li>• <a href="http://www.occities.org/">http://www.occities.org/</a></li> </ul> SACOG-Sacramento Area Council of Governments <ul style="list-style-type: none"> <li>• <a href="http://www.sacog.org/">http://www.sacog.org/</a></li> </ul> San Bernardino Associated Governments <ul style="list-style-type: none"> <li>• <a href="http://www.sanbag.ca.gov/">http://www.sanbag.ca.gov/</a></li> </ul> SANDAG-San Diego Association of Governments <ul style="list-style-type: none"> <li>• <a href="http://www.sandag.cog.ca.us/">http://www.sandag.cog.ca.us/</a></li> </ul> SBCAG-Santa Barbara County Association of Governments <ul style="list-style-type: none"> <li>• <a href="http://www.sbcag.org/index.htm">http://www.sbcag.org/index.htm</a></li> </ul> SCAG-Southern California Association of Governments <ul style="list-style-type: none"> <li>• <a href="http://www.scaq.ca.gov/">http://www.scaq.ca.gov/</a></li> </ul> SCRTPA-Shasta County Regional Transportation Planning Agency <ul style="list-style-type: none"> <li>• <a href="http://www.scrtpa.org/">http://www.scrtpa.org/</a></li> </ul> SEDD & SPO-Sierra Economic Development District & Sierra Planning Organization

	<ul style="list-style-type: none"> <li>• <a href="http://www.sedd.org/">http://www.sedd.org/</a> SGVCOG-San Gabriel Valley Council of Governments</li> <li>• <a href="http://www.sgvcoq.org/">http://www.sgvcoq.org/</a> SJCOG-San Joaquin Council of Governments</li> <li>• <a href="http://www.sjcoq.org/">http://www.sjcoq.org/</a> SLOCOG-San Luis Obispo Council of Governments</li> <li>• <a href="http://www.slonet.org/~ipslocog/">http://www.slonet.org/~ipslocog/</a> StanCOG - Stanislaus Council of Governments</li> <li>• <a href="http://www.stancog.org/">http://www.stancog.org/</a> WRCOG-Western Riverside Council of Governments</li> <li>• <a href="http://www.wrcoq.cog.ca.us/">http://www.wrcoq.cog.ca.us/</a></li> <li>• Blah</li> <li>• blah</li> </ul>
California Air Resources Board (CARB) & Local Air Districts	<ul style="list-style-type: none"> <li>• <a href="http://www.arb.ca.gov/html/contact.htm">http://www.arb.ca.gov/html/contact.htm</a> California Local Air District Directory</li> <li>• <a href="http://www.arb.ca.gov/capcoa/roster.htm">http://www.arb.ca.gov/capcoa/roster.htm</a></li> </ul>
Federal Agencies	<ul style="list-style-type: none"> <li>US Census Bureau</li> <li>• <a href="http://www.census.gov/">http://www.census.gov/</a></li> <li>EPA - Environmental Protection Agency</li> <li>• <a href="http://www.epa.gov/">http://www.epa.gov/</a></li> <li>EPA Region 9 - West, Southwest And The Pacific Territories</li> <li>• <a href="http://www.epa.gov/oust/regions/region09.htm">http://www.epa.gov/oust/regions/region09.htm</a></li> </ul>

## Step 4: Collect and Sort Information

**Estimated staff time:** 120-200 hours

Typically, data collection requires the longest duration of any step in Milestone One. This is due, mainly, to the necessity of relying on others for information. Often, there will be several days or weeks between making data requests and actually receiving data from others. Utilities, fleet and facility managers, planning agencies, and other entities may need to perform work on their end to gather the information that you request, and they may have limited time to assist you. Be patient during this process, and make requests early and perform other tasks in the interim as you await your data requests to be fulfilled. Remember that you or others will be contacting these same sources in the future for new baseline data, so establishing, documenting, and maintaining relations with key data sources is highly recommended.

## Organizing Data

Keeping all data in a common folder or spreadsheet, and organizing by raw, working, and final data can reduce confusion. Also, ICLEI recommends backing up your data files in case of computer failure or other unforeseen difficulties. Lost data can be a major setback for the project. To assist you in organizing data, ICLEI has prepared a resource called the “Master Data Workbook.” The workbook is designed to store and process:

- Inventory activity data
- Data source contact information
- Emissions calculations
- Inventory report charts and tables
- Notes and background information

Local Government Operations Emissions Inventory Introduction/Master Data Workbook Guide		
<b>Lead Data Gathering Coordinator</b>		
Jurisdiction	-	
Name		
Title		
Department		
Telephone		
Email		
<b>Emissions Inventory Year</b>	2005	
Click on the tab name to go directly to that tab-delete rows and corresponding tabs that do not apply to your jurisdiction		
Master Data Sheet Contents		
Sector	Worksheet	Description
<b>Background and Reporting</b>		
	<a href="#">Inventory Tasks &amp; Timeline</a>	<i>Task and Timeline Outline</i>
	<a href="#">Inventory Data Checklist</a>	<i>Checklist for inventory data by sector</i>
	<a href="#">Inventory Log-All Sectors</a>	<i>Tool for recording information from all conversations and the overall inventory process</i>
	<a href="#">Report Docs</a>	<i>LGOP standard reporting (also in Appendix 2) and final charts and tables used in narrative report</i>
	<a href="#">Emissions Outputs by Record</a>	<i>Final Emissions Outputs by Record from CACP</i>
	<a href="#">Emissions Outputs by Source</a>	<i>Final Emissions Outputs by Source from CACP</i>
<b>Stationary Sources-General</b>		
	<a href="#">SS-Categories</a>	<i>Categories used to separate stationary sources accounts</i>
	<a href="#">SS-All Account Summary</a>	<i>All stationary sources utility accounts in categories and summary table of all stationary sources energy consumption.</i>
	<a href="#">SS-Utility Working Data</a>	<i>Individual PG&amp;E accounts grouped into categories</i>
	<a href="#">SS-Utility Raw Data</a>	<i>Raw PG&amp;E account data</i>
	<a href="#">SS-Other Fuel Raw Data</a>	<i>Other Raw data for fuels not provided by utility</i>
<b>Buildings and Facilities</b>		
	<a href="#">Facilities Final Data</a>	<i>Final energy consumption data for facilities</i>
	<a href="#">Facilities Working Data</a>	<i>Working energy consumption data for facilities-individual accounts grouped into major and minor facilities.</i>
<b>Public Lighting</b>		
	<a href="#">Public Lighting Final Data</a>	<i>Final energy consumption data for public lighting</i>
	<a href="#">Public Lighting Working Data</a>	<i>Working energy consumption data for public lighting-individual accounts grouped into lighting categories.</i>
<b>Water Transport</b>		
	<a href="#">Water Transport Final Data</a>	<i>Final energy consumption data for water transport</i>
	<a href="#">Water Transport Working Data</a>	<i>Working energy consumption data for watertransport-individual accounts grouped into categories.</i>
<b>Wastewater Treatment Facilities</b>		
	<a href="#">WW-Energy Use Final Data</a>	<i>Final energy consumption data for wastewater treatment facilities</i>
	<a href="#">WW-Centralized Treatment Final Data</a>	<i>Completed data and emissions estimates from centralized wastewater facilities (all process N<sub>2</sub>O emissions)</i>
<b>Workbook Intro</b> / <a href="#">Inventory Tasks &amp; Timeline</a> / <a href="#">Inventory Data Checklist</a> / <a href="#">Inventory Log-All Sectors</a> / <a href="#">Report Docs</a> / <a href="#">Emissions Out</a>		

## Step 5: Calculate base year emissions

**Estimated staff time:** 16 to 40 hours

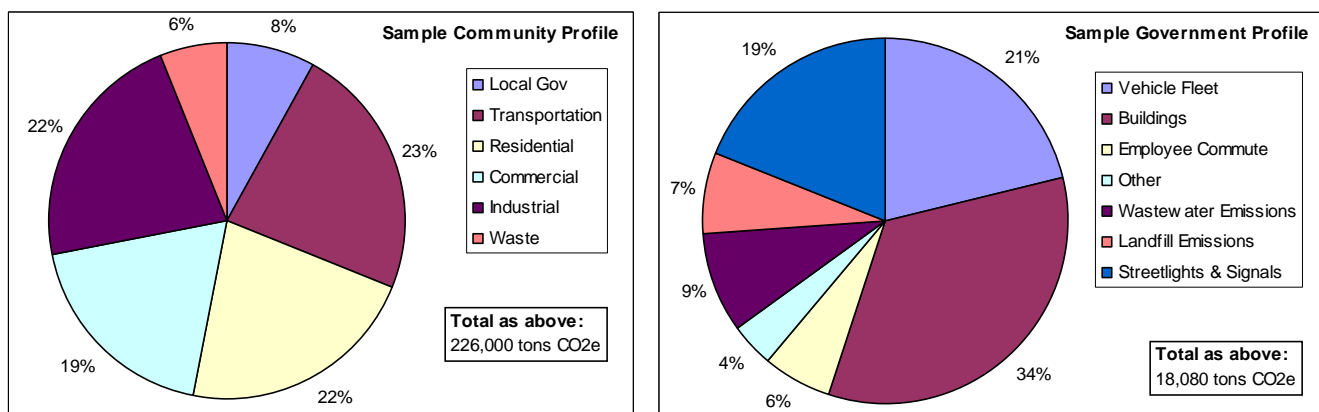
Once you have collected all necessary data, you will input it in one of ICLEI's tools that will allow you to calculate and report emissions by source and by sector, which are available on the SEEC website at [www.californiaseec.org](http://www.californiaseec.org).

### Key Terms

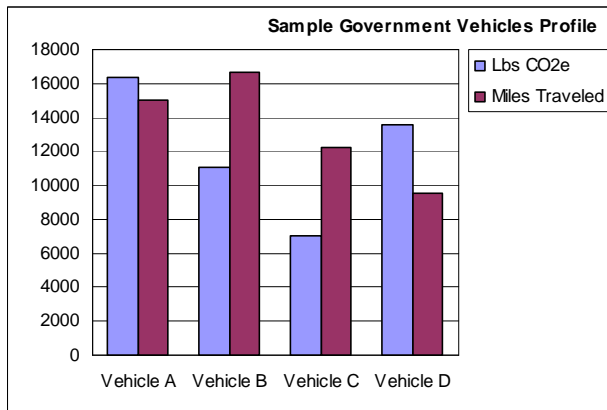
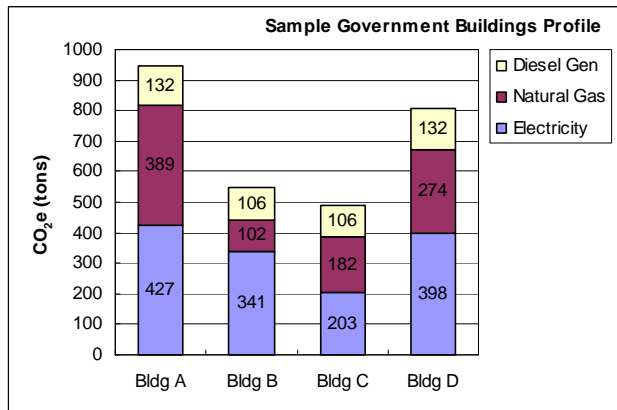
**CO<sub>2</sub>e** (carbon dioxide equivalent) is the standard measurement used for greenhouse gas accounting. There are several gases that naturally contribute to the greenhouse effect, each with a unique efficacy, including CO<sub>2</sub>, CH<sub>4</sub> (methane), and others. Quantities of these gases can be converted to a functionally equivalent amount of CO<sub>2</sub> (CO<sub>2</sub>e) as a reference. In this way, it is possible to combine the effects of various greenhouse gas emissions into a single figure.

Two more important terms to know here are **activity data** and **emissions factors**. Examples of activity data include measurable amounts of electricity consumption (kWh), fuel consumed (gallons of diesel or other fuel), etc. An emissions factor is a fraction that conveys the quantity of emissions resulting from a specific use and a given amount of activity data. Two examples of emissions factors are CO<sub>2</sub> emissions/kWh generated by an electric utility and CO<sub>2</sub>/gallon of fuel used in a particular vehicle. Emissions factors can vary greatly depending on the systems involved. For example, grid electricity is “cleaner” or “dirtier” in different areas of the US, and vehicles can be “cleaner” or “dirtier” as well. Also, grid average electricity emissions factors can be utility specific, regional, state, or national in nature. ICLEI recommends that you check with your electric utility to obtain the most specific factors possible. To calculate emissions precisely, you need the most accurate **activity data** and **emissions factors**. A basic emissions calculation is as follows: Activity Data x Emissions Factor = Emissions Produced. ICLEI's resources contain a great number of pre-collected emissions factors used in the inventory process. The set covers a vast array of fuels and systems, allowing your team to largely bypass this detail and focus on the activity data.

Once calculated, you will be enabled to report community and local government emissions by each sector, as follows:



In addition, the inventory will allow insight to the sources of emissions within sectors, as illustrated below:



## Step 6: Estimate trends through an emissions forecast

**Estimated staff time:** 4 to 16 hours

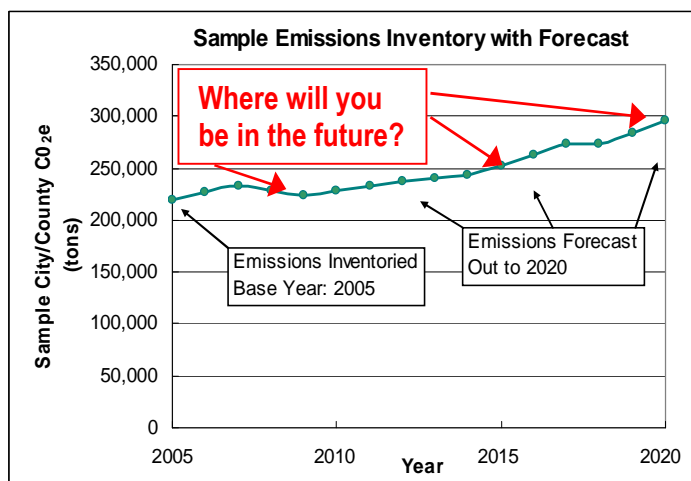
### Community Forecast Year

Before you choose a year for which to forecast emissions, you should consider the planning horizon that you will select for your greenhouse gas reduction targets and climate action plan. Selecting your reduction targets will be discussed in more detail in the next Quick Start Guide in this series, but most jurisdictions have chosen a 15-20 year timeframe between their base and mid-range target years to provide ample time to reach their goal.

### Government Operations Forecast Year

You may wish to have a different target year for your local government analysis. You may find that setting an earlier government target year than that chosen for the community will allow your local government to showcase its achievements and encourage its community to reduce GHG emissions by example.

Once you have selected your forecast year(s), you will develop a “business as usual” forecast for your greenhouse gas emissions. The business as usual forecast will account for changes within the local government and the community as a whole that are likely to impact greenhouse gas emissions if no actions are taken to reduce them. This forecast is crucial in providing a better understanding of the total reductions in emissions that will be necessary by a given year in order to reach a particular reduction target. The primary drivers of such change include:



- Population growth or loss
- Anticipated upgrades to local building codes and standards
- Planned changes in land use
- Planned changes in transportation infrastructure and network

ICLEI also provides guidance on how to incorporate anticipated changes in federal, state and regional policies that will impact greenhouse gas emissions. For instance, while fuel efficiency standards are largely out of local government control, they have significant implications for future greenhouse gas emissions. Examples include the California Low Carbon Fuel Standard and Federal CAFE standards. Policy measures such as this should also be accounted for in the business as usual forecast if enough certainty exists about the future state of that particular measure.

## Step 7: Present study results

**Estimated staff time:** 12 to 40 hours

In conveying the results of the government operations inventory, community inventory, and emissions forecast, it is helpful to create a narrative report that can be shared with other local government staff, elected officials, and the public at large. It is also useful to develop a presentation that summarizes the findings of the inventory for use at public meetings, discussions at the staff level, and meetings with elected officials.

### Narrative Inventory Report

A detailed report is essential for:

- Documenting the approach, methodology, and any assumptions made in creating the inventories and forecast
- Documenting limitations of the study and any important caveats
- Documenting both major results and sector-specific results or other findings and opportunities
- Setting the stage for Milestone Two – Setting a greenhouse gas reduction target, and Milestone Three – Creating a Climate Action Plan

ICLEI has created standardized inventory report templates that may save you a considerable amount of time. These templates are harmonized with inventory development tools such as the Master Data Workbook. Ultimately, the report should be easy to read and reference, and it should include any details others would need to know to replicate the study in future years.

The report may also be summarized for inclusion in press releases, news articles, and other media materials, which will allow your local government to gain recognition for completing this process.

## Step 8: Submit results to ICLEI for Milestone Award

**Estimated staff time:** 2 to 8 hours

If your local government is a member of ICLEI, the last step in the process of developing an emissions inventory is to gain recognition for your efforts. ICLEI Milestone Awards are a great way to recognize the efforts of local governments, reinforce political support for climate planning activities, and garner attention for climate programs. In order to receive ICLEI's Milestone One Award for Climate Mitigation, ICLEI members must submit three things:

- A greenhouse gas emissions inventory report summarizing the results and major findings of the government operations and community-wide inventories
- Corresponding data that led to the findings in the inventory report
- Forecasted emissions for government operations and the community as a whole (included in report)

ICLEI staff can provide members with assistance through this process. Once the Milestone Award is approved, ICLEI staff will email a congratulations letter to the primary elected official liaison and primary staff liaison. The letter outlines steps completed to achieve the milestone, requirements for the next milestone, and ICLEI resources available. ICLEI staff will also discuss separately with you the appropriate timing and method of presenting the award to your local jurisdiction.

### Timing and Other Considerations

It makes sense to maximize the benefits from receiving a Milestone Award. Getting an award near budget time or an election cycle could be invaluable for keeping your climate program well-funded and appreciated by decision-makers. Getting an award on Earth Day or a similar event can help to raise community-wide awareness of the jurisdiction's sustainability initiatives and demonstrate collaboration with other community entities. Consider carefully how to get the most benefit from your award, and discuss your ideas with ICLEI staff.

### Award Distribution & Presentation Opportunities

While creative ideas are always welcome, ICLEI has identified three basic opportunities for presenting milestone awards:

1. Receive your award in a group award process at national or regional events
2. Receive your award locally at a city council meeting, special ceremony, or other event
3. Request your award by mail from ICLEI

### Media Attention

ICLEI staff will work with members' primary and media liaisons to provide media assistance as it is useful to local circumstances. ICLEI resources include a template press release and tips for getting media attention. Avenues for announcing awards include ICLEI regional newsletters, your jurisdiction's newsletters, radio, and print media.

## Other Reporting Considerations

CEQA (California Environmental Quality Act) is a State statute requiring public agencies to evaluate the environmental impacts of discretionary development plans and projects in their jurisdictions. The state Office of Planning and Research updated CEQA guidelines to require analysis of climate change in CEQA documents, which came into effect in March 2010. The guidelines direct lead agencies to make a "good faith effort" to describe emissions, and emissions inventories have become a common feature of CEQA documents. Some local and regional agencies have developed their own more stringent guidelines that specifically require emissions inventories. For General Plan Environmental Impact Reports, these inventories usually apply to community-wide emissions as a whole.

In addition to incorporating ICLEI's Milestone 1 into CEQA analysis, many jurisdictions are finding that climate change impacts are "significant" under CEQA and identifying emissions reductions targets and Climate Action Plans (ICLEI Milestones 2 and 3) as mitigation measures to reduce climate change impacts to less-than-significant levels.

# Next Steps

Completing Milestone One is a major accomplishment. Kudos! There is still much to be done, however, and more Milestones to achieve. Next steps are included here to help keep your planning efforts on track.

## Milestone Two: Setting an Emissions Reduction Target

The inventory provides an emissions baseline that can be used to inform Milestone Two of ICLEI’s Five-Milestone process—setting emissions reduction targets for local government operations and the community. In selecting a target, it is important to strike a balance between scientific necessity, ambition, and what is realistically achievable. By referencing a long-term goal that is in accordance with current scientific understanding, a jurisdiction can demonstrate that it intends to do its part towards addressing greenhouse gas emissions. Regardless of the chosen long-term emissions reduction target (e.g., 15-year, 40-year), ICLEI recommends that project staff also establish interim targets. Near-term targets facilitate additional support and accountability, and help to ensure continued momentum around local climate protection efforts.



## Milestones Three through Five: Creating, Implementing, and Evaluating a Climate Action Plan

All of these steps lead to the development and ongoing implementation of a Climate Action Plan. Your local Climate Action Plan should include all of the actions your jurisdiction has already implemented since the base year and all measures your jurisdiction plans to implement in the future to meet its GHG emissions reduction target. The Climate Action Plan needn’t be a long document and it can be incorporated into another document your local government already produces (e.g., master plan, air quality plans). After publishing your Climate Action Plan, it’s time to get to work. Implementing emissions reduction measures is, of course, the most important part of the Milestone process, and by laying the groundwork through the inventory, reduction target, and climate action planning process, you will have the ability to select and prioritize the very best emissions reduction measures. Finally, by periodically updating inventories, creating new baselines, and adding new measures to the climate action plan, you will be able to track and report your local government’s progress in climate protection and demonstrate reductions in emissions. Good luck!

# Project Resources

ICLEI has created many tools to assist local governments with the development of a greenhouse gas emissions inventory. The following tools should be saved as resources and supplemental information to this report:

- The Local Government Operations Protocol (LGOP) is the U.S. national standard guidebook on how to quantify and report local government greenhouse gas emissions. The LGOP is available here: <http://www.icleiusa.org/programs/climate/ghg-protocol/local-government-operations-protocol>.
- The “Master Data Workbook” contains most or all of the raw data (including emails), data sources, emissions, notes on inclusions and exclusions, and reporting tools, and is available on the SEEC website here: [www.californiaseec.org](http://www.californiaseec.org).
- The “Data Gathering Instructions” provides information on the types of emissions and data collection methodology for each inventory sector, and is available on the SEEC website here: [www.californiaseec.org](http://www.californiaseec.org).
- The “Clean Air & Climate Protection Software” (CACP 2009) is available to ICLEI members and is used to calculate emissions based on energy use and other data gathered.
- ICLEI’s greenhouse gas emissions inventory report template can help you easily summarize the findings of your inventory, and is available on the SEEC website here: [www.californiaseec.org](http://www.californiaseec.org).
- Press release templates are available to ICLEI members and can help you generate media interest in your local government climate protection efforts. Visit [www.icleiusa.org](http://www.icleiusa.org) for more information.