



# **SANBAG CAP Implementation Tools Final Report**

## **CAP Monitoring and Reporting**

OCTOBER 2015





# **SANBAG CAP Implementation Tools Final Reports On CAP Monitoring and Reporting**

*Prepared for:*



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**October 2015**

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## Acronyms and Abbreviations

AB 32	Assembly Bill 32
BAU	business-as-usual
CAP	Climate Action Plan
CAPITT	CAP Implementation Tracker Tool
CARB	California Air Resources Board
CEC	California Energy Commission
CH <sub>4</sub>	methane
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	carbon dioxide equivalent
FTE	full-time-equivalent
GHG	greenhouse gas
kWh	kilowatt-hour
LCFS	low carbon fuel standard
MDAQMD	Mojave Desert Air Quality Management District
MG	million gallons
MMBtu	million British thermal units
MT	metric tons
N <sub>2</sub> O	nitrous oxide
SANBAG	San Bernardino County Associated Governments
SCAG	Southern California Association of Governments
SCS	Sustainable Communities Strategy
SCAQMD	South Coast Air Quality Management District
VMT	vehicle miles traveled

# Chapter I Introduction

The San Bernardino County Regional Greenhouse Gas (GHG) Reduction Plan provided San Bernardino County Associated Governments (SANBAG) and the 21 Participating Cities with an inventory of GHG emissions, targets, and provided reduction strategies for each City, which are the first two steps in a six step process of climate action planning. The Climate Action Plan (CAP) Implementation Tools Project provided vital tools for the Participating Cities to use in the development, adoption, implementation, and monitoring of city specific CAPs, which will fulfill the remaining steps in the climate action planning process. This Final Report on CAP Monitoring and Reporting is one of three Final Reports for the Project and summarizes the Monitoring and Reporting Tools and documents delivered to SANBAG and the Participating Cities during the execution of the Project. The purpose of this report is two-fold: provide SCAG and SANBAG with documentation of the deliverables, and provide additional guidance to SANBAG and the Participating Cities on the use of the documents and tools provided during this Project.

This Final Report is structured in the following way:

- **CAP Implementation Tracking Tool (CAPITT):** How to use the CAP templates in the development of a City Specific CAP
- **CAP Progress Report Template:** How to administer and staff implementation of a CAP
- **Guidance on Monitoring and Reporting:** How to fund the implementation of a CAP



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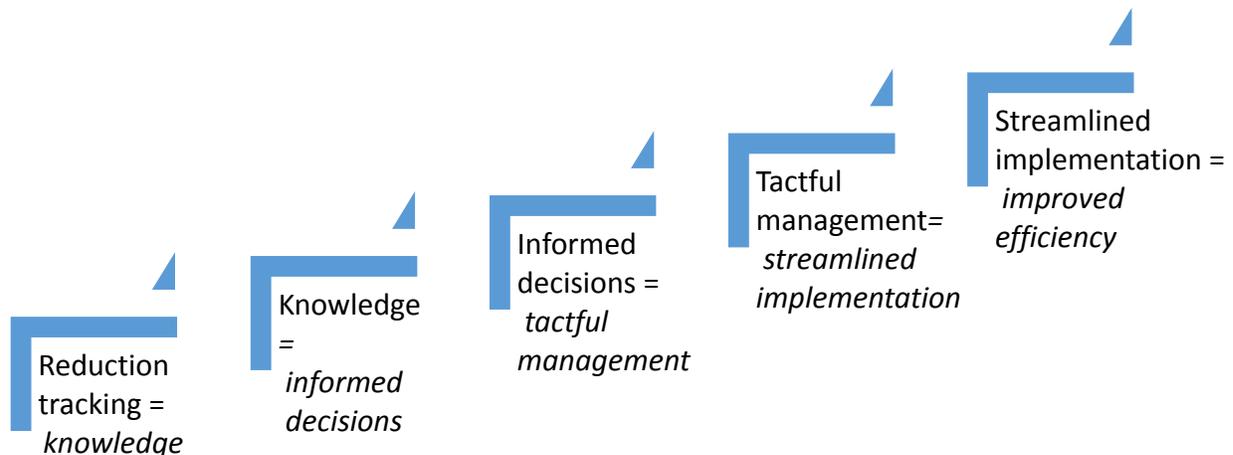
## Chapter 2 CAP Implementation Tracker Tool

The San Bernardino Associated Governments Climate Action Plan Implementation Tracking Tool (CAPITT) is a Microsoft Excel-based tool that helps cities track GHG reductions achieved through implementation of the GHG reduction measures within their CAP, monitor CAP implementation progress, and share findings with stakeholders, partners, and the community.

The draft CAPITT was provided to SANBAG and the Participating Cities in May 2015. To assist the 21 Participating Cities in how to use the CAPITT a live webinar on the CAPITT was conducted on May 27, 2015. The PowerPoint presentation used for that webinar is provided in Appendix A-1 of this final report.

The CAPITT helps derive estimates for annual GHG reductions achieved by State, County, and local reduction measures based on user inputs. Participating Cities can use the tool to track progress toward meeting their individual 2020 GHG reduction targets. The CAPITT supports coordinated climate action planning and efforts to reduce regional GHG emissions within San Bernardino County. This is achieved by inventorying GHG emissions, estimating reductions, monitoring trends over time, sharing findings, and revising actions based on results in order to achieve the reduction targets.

Tracking annual reductions should be done annually in order to demonstrate climate action planning leadership and initiative, assist the State and the Region in meeting the reduction targets outlined under AB 32, demonstrate progress of the CAP, show and communicate results, and adaptively manage the CAP implementation to ensure achievement of the reduction target.



A CAPITT Users Guide was provided to SANBAG and the Participating Cities in September 2015 and is provided in Appendix A-2 of this Final Report.



# Chapter 3 CAP Progress Report Template

The CAP Progress Report Template was provide to SANBAG and the Participating Cities in May 2015. It can be found in Appendix B-1 of this Final Report.

This CAP Progress Report Template is designed to outline the current status of each measure identified in the City’s CAP. Metrics have been established for all measures to more specifically track implementation progress. Sector summaries are provided in the report to identify each measure, the tracking metric, and emission reductions achieved to-date, as available. The CAP Progress Report Template concludes with a summary of actions that need to be taken during the next tracking year to adaptively manage the CAP and encourage additional emissions reduction. An appendix in the CAP Progress Report Template provides detailed implementation notes for each measure.

The template was designed to use in conjunction with the CAPITT. The CAPITT tables and graphs as outputs can easily be pasted into the CAP Progress Report Template. Areas requiring text inserts are identified in the template.

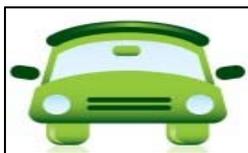
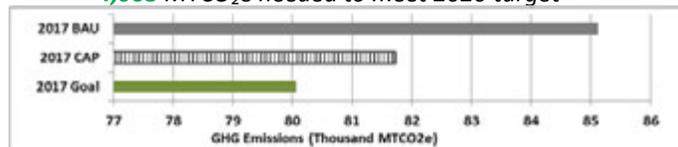
The template should be used by the Participating Cities to produce annual reports on CAP progress toward the reduction targets and highlight any adaptive management of the reduction strategies needed to achieve the targets.



**Building Energy**

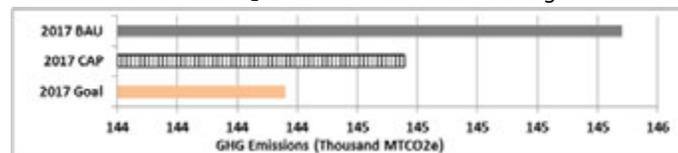
### Greenhouse Gas Emissions

*4% reduction in 2017 BAU emissions*  
*67% of 2017 goal achieved*  
**4,063 MTCO<sub>2</sub>e needed to meet 2020 target**



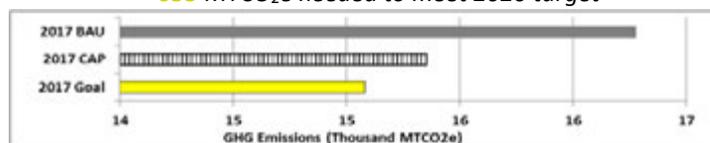
**On-Road Transportation**

*0.5% reduction in 2017 BAU emissions*  
*65% of 2017 goal achieved*  
**397 MTCO<sub>2</sub>e needed to meet 2020 target**



**Off-Road Equipment**

*6% reduction in 2017 BAU emissions*  
*77% of 2017 goal achieved*  
**655 MTCO<sub>2</sub>e needed to meet 2020 target**



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## Chapter 4 Guidance on Monitoring and Reporting

As reported by the Association of Climate Change Officers (ACCO) one of the primary barriers to successful CAP implementation has been insufficient monitoring and reporting of CAP performance. In a survey conducted by OPR only half of the cities stated that they regularly track CAP implementation progress, despite the fact that most CAPs in California outline a monitoring strategy. Primary factors limiting monitoring and reporting are high costs, lack of time, and technical complexity.

Regular monitoring is important to ensure programs are functioning as they were originally intended. The most successful implementation efforts are ones that include a high-quality monitoring plan. Monitoring plans should contain, at minimum, the following items (Jones 2012):

- Time period for implementation
- Clearly defined actor to perform actions
- Funding mechanism
- Description of monitoring technique
- Provisions for tracking change
- Indicators to assess progress

In August 2015 ICF provided an implementation tracking tool ((CAPITT) that allows the Participating Cities to monitor progress of their CAP programs, track GHG emission reductions, and prepare progress reports. Key parameters to include in the tracking tool, such as those described above, are be further defined in the Implementation Chapter Template. Keep in mind that staff responsible for data collection and use of the tracking tool should be trained to ensure accuracy and accountability.

In addition on April 22, 2015 Atkins provided a Screening Table Tracking Tool to track implementation of the GHG Performance Standard (PS) and estimate expected GHG emissions reductions associated with this reduction measure. More on this tracking tool can be found in the Final Report on the Screening Tables.

Updating the GHG inventory is another important part of monitoring. Regular updates to a City's GHG inventory are necessary to evaluate progress, relative to baseline emissions and the future reduction target. The inventory updates also provide a "big-picture" view of progress achieved to-date, and should contain an analysis of GHG emissions trends from year to year to isolate the effect of GHG reduction measures from other external factors that may affect emissions levels. The City of Chula Vista updates their inventory on a semi-annual basis, whereas the cities of New York and Portland update their inventories annually.

To assist the Participating Cities in updating their GHG inventories, Atkins recommends using the State Energy Efficiency Collaborative (SEEC) ClearPath tools. The SEEC ClearPath tools are online GHG

inventory tools for local governments to use to develop GHG inventories, update GHG inventories, and forecast future year GHG emissions. The ClearPath tool is continually updated but does not provide formal notices when changes occur; however, the “App Change Log” on the Tool’s homepage provides a timeline and description of these changes. Atkins has provided a SEEC ClearPath Tool Users Guide to assist Participating Cities in using this online tool (Appendix C-1 of this Final Report). To use the SEEC ClearPath Tool, Participating Cities need to join ICLEI.

Regular reporting is another important aspect of successful implementation of a CAP. The best-in-class reporting processes emphasize transparency, emerging trends, big-picture results, and corrective actions, as needed. Internal reporting to City staff feeds program momentum and can encourage competition among peers (see BP-16). Likewise, external reporting to the community provides accountability and demonstrates the City’s commitment to excellence. Jurisdictions throughout California and the nation use a variety of reporting techniques to communicate program results. For example, the City of Chula Vista identifies actions as either “completed”, “ongoing”, “in progress”, or “on-hold”. Berkeley includes the performance metric, key takeaway messages, and an overview of the measure status. New York reports similar information, but also identifies milestones that will be completed during the next reporting year. In addition to measure specific information, jurisdictions also quantitatively document achieved emissions reductions and evaluate progress towards meeting their GHG reduction and sustainability targets.

To assist Participating Cities in reporting, the CAP Progress Report Template was provided to SANBAG and the Participating Cities in May 2015. It can be found in Appendix B-1 of this Final Report.

# APPENDIX A. I

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User Guide

# San Bernardino Associated Governments

Climate Action Plan  
Implementation Tracking Tool

May 2015

# Table of Contents

- ▶ Tool Overview LY1
- ▶ Greenhouse Gas and Climate Action Plan Basics
- ▶ Before You Begin
- ▶ Tool Configuration
- ▶ Reduction Measure Tracking
- ▶ Review and Share Findings
- ▶ **Get Started!**



**Slide 2**

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**LY1**

Hyperlink once PDF'ed

Laura Yoon, 4/22/2015

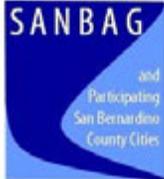
# Tool Overview

# Purpose

The San Bernardino Associated Governments Climate Action Plan Implementation Tracking Tool (CAPITT) is a Microsoft Excel-based tool that helps cities:

- Track greenhouse gas (GHG) reductions achieved by measures from the San Bernardino Greenhouse Gas Regional Plan (Regional Plan)
- Monitor local Climate Action Plan (CAP) implementation progress
- Share findings and progress with stakeholders, partners, and the community

**San Bernardino Associated Governments**  
Climate Action Plan Implementation Tracking Tool (CAPITT)



SANBAG  
and  
Participating  
San Bernardino  
County Cities

May 2015

Developed by  
ICF International



ICF  
INTERNATIONAL

***Note: Please enable macros for this tool to work properly. See the Enable Macros tab.***

**Purpose:**

The Climate Action Plan Implementation Tracking Tool, or "CAPITT," provides a mechanism for the cities participating in the San Bernardino Associated Governments (SANBAG) Climate Action Plan Implementation Tools project (project) to track GHG reductions achieved by the measures outlined in the San Bernardino Regional Greenhouse Gas Reduction Plan (Regional Plan). If a City has a local Climate Action Plan (CAP), this tool can also be used to track the progress of those local CAPs for measures contained in the Regional Plan. The tool can also be used to show progress in meeting the overall 2020 GHG reduction target for each City.



# Functionality

The CAPITT helps derive estimates for annual GHG reductions\* achieved by State, County, and local measures based on user inputs.



Jurisdictions can use the tool to track progress toward meeting their individual 2020 GHG reduction targets.

*\* Note: GHG emissions and reductions are reported in terms of metric tons of carbon dioxide equivalent, or "MTCO<sub>2</sub>e." This is the unit of emissions used throughout the tool.*



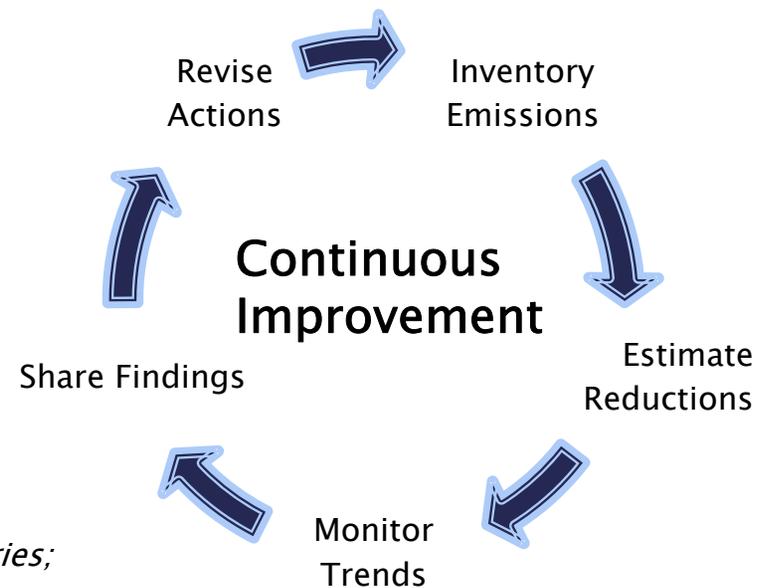
# Continuous Improvement

The CAPITT supports coordinated climate action planning and efforts to reduce regional GHG emissions within San Bernardino County.

This is achieved by:

- ▶ Inventorying GHG emissions\*
- ▶ Estimating GHG reductions
- ▶ Monitoring trends overtime
- ▶ Sharing findings internally and externally
- ▶ Revising actions based on results

*\* Note: The CAPITT does not calculate GHG inventories; the jurisdictions must do their own inventory calculations and update the tool with their new inventories.*



# GHG and Climate Action Plan Basics

# What is a GHG Inventory?

A GHG inventory is an accounting of GHGs emitted to (or removed from) the atmosphere over a specific period of time (typically one calendar year).

- ▶ Primary anthropogenic GHGs include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>)
- ▶ GHG emissions can be either direct or indirect.
  - **Direct** emissions occur within City boundaries or are otherwise under City jurisdiction. *Example: emissions from natural gas combustion to heat buildings*
  - **Indirect** emissions are a result of community activities, but occur outside City boundaries. *Example: emissions from electricity generation*
- ▶ GHG emission sources in the County include the following:
  - Build energy consumption
  - On-road vehicle fuel combustion
  - Off-road equipment fuel combustion
  - Solid waste management
  - Agricultural processes
  - Water conveyance
  - Wastewater treatment



# What are the reduction measures?

## Local Measures:

Energy-1: Energy Efficiency Incentives and Programs to Promote Energy Efficiency for Existing Buildings	Agriculture-1: Methane Capture at Large Dairies
Energy-2: Outdoor Lighting Upgrades for Existing Development	Agriculture-2: Utilize Methane Captured at Dairies
Energy-3: Green Building Ordinance for New Buildings	Land Use-1: Tree Planting Programs
Energy-4: Solar Installations in New Housing Developments	Land Use-2: Promote Rooftop Gardens
Energy-5: Solar Installations for New Commercial/Industrial Development	Water-1: Require Adoption of the Voluntary CALGreen Water Efficiency Measures for New Construction
Energy-6: Onsite Solar Energy for New and Existing Warehouse Space	Water-2: Implement a Program to Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency
Energy-7: Solar Installations for Existing Housing	Water-3: Encourage Water-Efficient Landscaping Practices
Energy-8: Solar Installations for Existing Commercial/Industrial Buildings	Water-4: Senate Bill X7-7—The Water Conservation Act of 2009
Energy-9: Install Co-Generation Facilities	Waste-1: Increased Waste Diversion
On Road-1: SB 375 Sustainable Communities Strategy	Wastewater-1: Methane Recovery
Off-Road Equipment-1: Electric-Powered Construction Equipment	Wastewater-2: Energy Efficiency Equipment Upgrades at Wastewater Treatment Plants
Off-Road Equipment-2: Idling Ordinance	Wastewater-3: Recycled Water
Off-Road Equipment-3: Electric Landscaping Equipment	PS-1: GHG Performance Standard for New Development

# What are the reduction measures?

## State/County Measures:

STATE-1 Renewable Energy Standard/Renewable Portfolio Standard

STATE-2 Title 24 Standards for Non-Residential and Residential Buildings (Energy Efficiency Standards and CALGreen)

STATE-3 AB 1109 (Huffman) Lighting Efficiency and Toxics Reduction Act

STATE-4 AB 1470 (Huffman) Solar Water Heating

STATE-5 Industrial Boiler Efficiency

STATE-6: AB 1493 (Pavley I and II) Greenhouse Reductions from New Passenger Vehicles (STATE-6a) and Executive Order S-1-07 Low Carbon Fuel Standard (On-Road) (STATE-6b)

STATE-7 Assembly Bill 32 (AB 32) Transportation Reduction Strategies

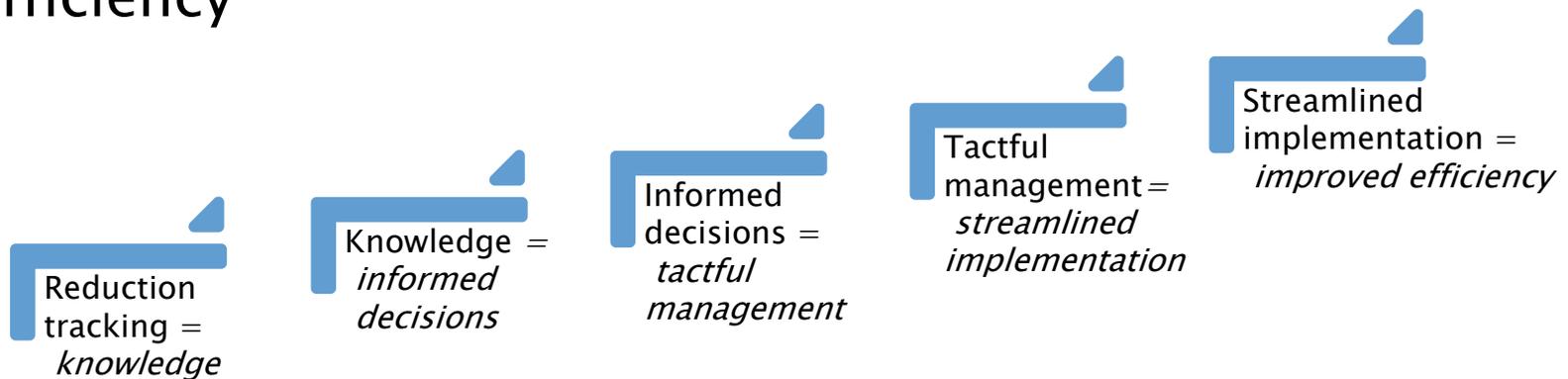
STATE-8 Executive Order S-1-07 Low Carbon Fuel Standard (Off-Road)

STATE-9 AB 32 Methane Capture

County-1 San Bernardino County GHG Reduction Plan Landfill Controls

# Why Track Annual Reductions?

- ▶ Demonstrate climate action planning **leadership** and initiative
- ▶ Assist the State in meeting GHG reduction targets outlined under **Assembly Bill 32**
- ▶ Show and **communicate** results to the public
- ▶ **Adaptively manage** resources and programs to improve efficiency



Before You Begin

# Enable Macros

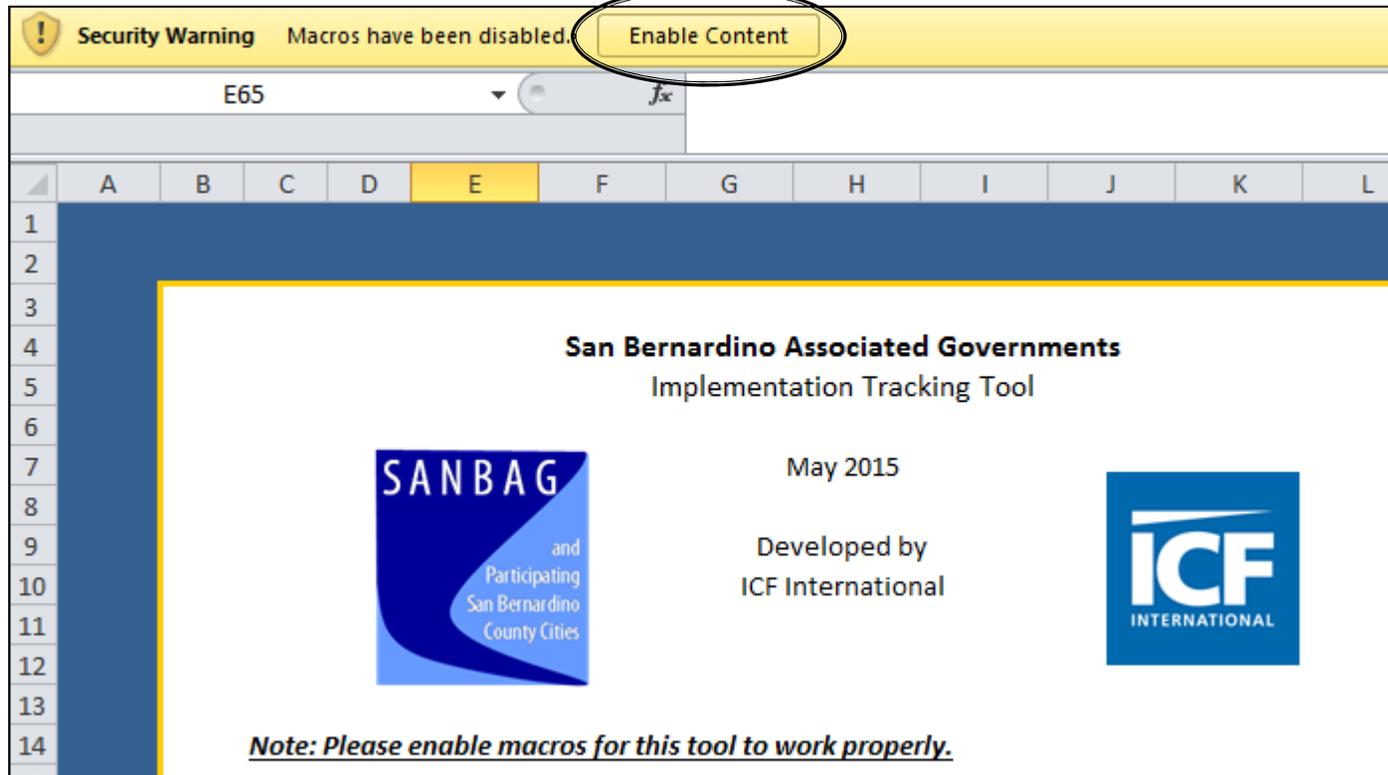
The CAPITT uses macros to carry out essential functions. Complete the following steps to enable macros:

- ▶ Close the tool and reopen Excel.
- ▶ Go to the **File** menu and select **Options**.
- ▶ On the Options panel, choose **Trust Center** and then **Trust Center Settings**.
  - Be sure the “Show the message bar in all applications when content has been blocked” button is selected. Click **OK**.
- ▶ Click **OK** to exit the Options panel.
- ▶ Open the emissions calculator and look for the message bar near the top of the screen that reads “**SECURITY WARNING  
Macros Have Been Disabled.**”
  - Click the button that reads **Enable Content**.

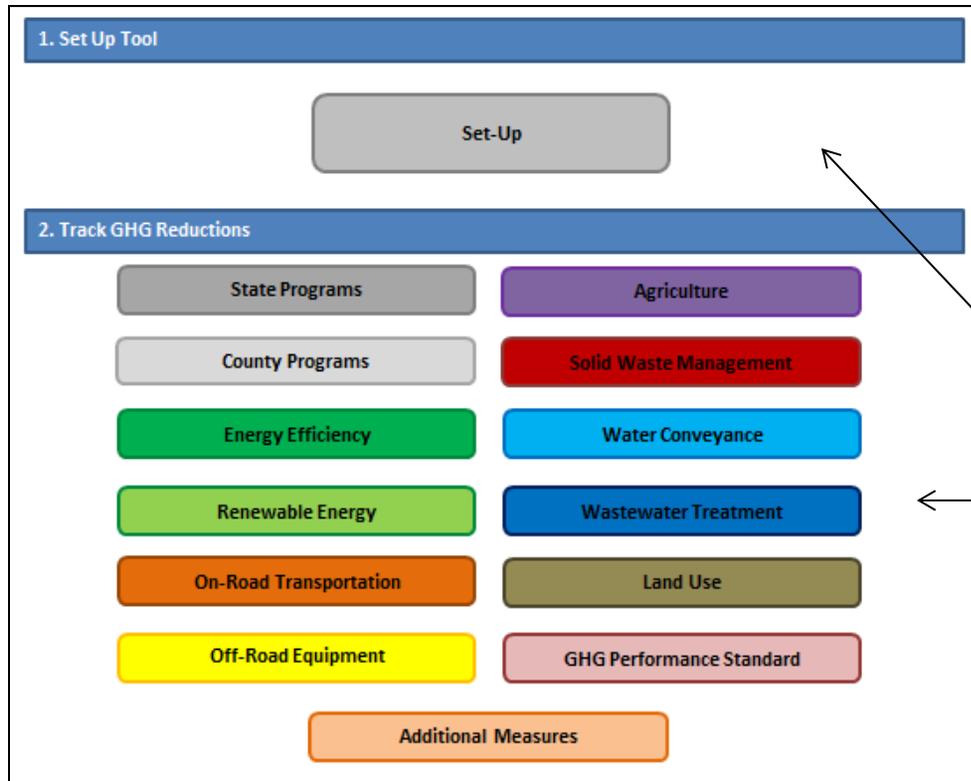


# Enable Macros

Click here to enable  
Macros



# Navigation

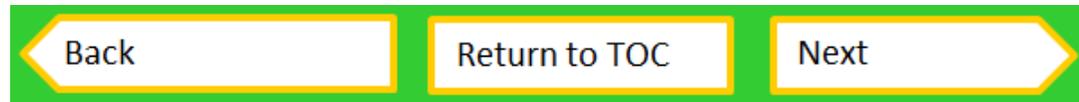


The TOC (Table of Contents) tab is the main navigation portal for the tool.

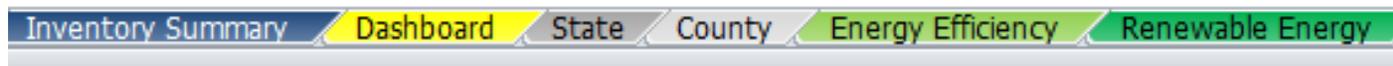
Click on the tab icons within the contents flowchart to be taken directly to that tab.

# Navigation

You can also move throughout the CAPITT using the navigation buttons in the upper right-hand corner of each tab.



Alternatively, click on the tab labels at the bottom of the screen.



# Color Coding

The CAPITT has been designed to facilitate GHG emission reduction quantification based on varying levels of available detail from the user.

Color codes are used throughout the tool to identify required and optional data, as well as whether cells are hard-coded or are calculated values and should not be modified.

User entry - required City input
User entry - optional City input
Hard-coded value from the Regional Plan
Hard-coded calculation factor
Calculated value as part of the tool

You can only modify user entry cells (yellow); all other cells in the tool are locked.



# Tool Configuration

# Set-Up

Use the drop-down menus to select your City and current tracking year

(1) City:

Select your city.

(1) Current year:

Select the latest year for which you are entering data in the tool.

	Population	Housing	Employment
2008			
2009			
2010			
2011			
2012			
2013			
2014			
2015			
2016			
2017			
2018			
2019			
2020			

	Single-Family	Multi-Family
2008		
2009		
2010		
2011		
2012		
2013		
2014		
2015		
2016		
2017		
2018		
2019		
2020		

	State	SCE
2008		
2009		
2010		
2011		
2012		
2013		
2014		
2015		
2016		
2017		
2018		
2019		
2020		

Insert socioeconomic data and the renewable energy mix for each applicable year. Renewable energy data should be provided for both the State and your local utility (e.g. Southern California Edison)



# Set-Up

The **Set-Up** tab also allows users to modify underlying emission factor assumptions.

## Required Inputs

All users are *required* to provide the latest CO<sub>2</sub> electricity emission factors for their utility. Emission factors may be obtained from the following resources:

- **SCE: Corporate Responsibility & Sustainability Report**
- **Bear Valley Electric Service: Utility or USEPA eGRID\***
- **Colton Public Utilities: Utility or USEPA eGRID\***
- **Needles Public Utility Authority: Utility or USEPA eGRID\***

\*USEPA eGRID, <http://www.epa.gov/cleanenergy/energy-resources/egrid/>



# Set-Up

## Optional Inputs

Non-electricity emission factors can be updated by the user if data more specific to your jurisdiction are available, or if more recent information has been released since publication of the Tool.

Insert updated assumptions, if data are available

Off-Road Vehicle Emission Factors			
GHG/Fuel	Value	Unit	Source
CO2			
G4	8.78	kgCO2/gallon	Climate Registry 2014
G2	8.78	kgCO2/gallon	Climate Registry 2014
Diesel	10.21	kgCO2/gallon	Climate Registry 2014

Be sure to identify the source of your new assumption

# Inventory Summary

Insert GHG emissions inventory data (by emissions sector) for your city for the tracking year, if available. Inventory data must be inserted by the user as the CAPITT *does not* perform GHG inventories.

Sector and Scope	2008	2009	2010	2011
Building Energy	62,770			
On-Road Transportation	97,508			
Off-Road Equipment	12,144			
Solid Waste Management	1,744			
Agriculture	9,664			
Water Conveyance	3,045			
Wastewater Treatment	1,262			
<b>Total Emissions</b>	<b>188,137</b>	-	-	-

Update the table annually with inventory data, as available

2008 data are from the Regional Plan

# Inventory Summary

If inventory data are not available for the tracking year, you may update the tool using one of the following methods:

- ▶ **Interpolation:** The CAPITT provides a linear interpolation of annual emissions based on the 2008 inventory and 2020 forecast presented in the Regional Plan. Copy and paste the relevant inventory data from Section 2 to Section 1 to update the inventory summary table.
- ▶ **Short-Term Forecast:** Forecast your last inventory to the current tracking year using socioeconomic data for your city. An example forecast is provided on the next page. Additional guidance for forecasting emissions can be obtained from the Association of Environmental Professionals<sup>1</sup> (AEP) or ICLEI<sup>2</sup>.

<sup>1</sup> AEP Guidance: [http://califaep.org/docs/AEP\\_Next\\_Steps\\_White\\_Paper.pdf](http://califaep.org/docs/AEP_Next_Steps_White_Paper.pdf)

<sup>2</sup> ICLEI Guidance: <http://www.icleiusa.org/tools/ghg-protocol/community-protocol>

ICLEI Inventory and Forecast Tool: <http://www.icleiusa.org/tools/clearpath>



# Inventory Summary

The table to the right shows example socioeconomic metrics that can be used to conduct a short-term forecast of emissions by sector. Consider the following example for residential building electricity consumption.

Sector	Potential Socioeconomic Metric
Building Energy	
Residential	Population or housing
Commercial	Jobs or commercial square footage
On-Road Transportation	Population and jobs*
Off-Road Equipment	Population, jobs, or housing depending on equip. type
Solid Waste Management	Population and jobs **
Agriculture	Acres
Water Conveyance	Urban Water Management Plan projection or population
Wastewater Treatment	Population
* Alternatively, quantify GHG emissions based on traffic model outputs, if available.	
** Account for changes in landfill methane rates	

## Example Short-Term Forecast (for residential electricity consumption)

Last inventory: 2012

Tracking year: 2017

2012 emissions: 25,000

2012 households: 14,000

2017 households: 14,500

$$2017 \text{ emissions} = 2012 \text{ emissions} * \left( \frac{2017 \text{ households}}{2012 \text{ households}} \right)$$

$$\begin{aligned} 2017 \text{ emissions} &= 25,000 * \left( \frac{14,500}{14,000} \right) \\ &= 25,000 * 1.036 \\ &= 25,893 \text{ MTCO}_2\text{e} \end{aligned}$$



# Reduction Measure Tracking

# Layout

There are ten user input tabs; one for each reduction sector (e.g., Renewable Energy), as well as one each for State, County, and additional measures.

All tabs have the same organization:

- ▶ Instructions
  - ▶ CAP Measure Summary
  - ▶ CAP Measure Tracking
  - ▶ CAP Measure Inputs
  - ▶ Detailed Results
- Background sections - no user modification is required
- User input section
- Calculation section - no user modification is required



# Background Sections

## Instructions

Use this page to track GHG reductions achieved by Building Energy measures. The page includes:

CAP Measure Summary: Displays the measure goal as presented in the CAP. No modification to this section is required.

CAP Measure Tracking: Summarizes progress towards meeting the CAP measure reduction goal, based on data for the current tracking year.

CAP Measure Inputs: Provides a template for inserting data to track GHG reductions achieved by the measure as of the current tracking year.

Detailed Results: Presents detailed emissions reductions achieved by the measure as of the current tracking year.

The following color codes are used to indicate required and optional data, as well as whether the measure is on track or needs additional reductions:

**Instructions:** Provides background information on the tab and general direction for user entry

**CAP Measure Summary:**  
Displays the measure descriptions

## CAP Measure Summary

*This section displays the measure goal as presented in the CAP. No modification to this section is required.*

**Energy-1 Energy Efficiency Incentives and Programs to Promote Energy Efficiency for Existing Buildings**

Measure Goal: Promote energy efficiency in existing residential buildings and nonresidential buildings.

## CAP Measure Tracking

*This section summarizes progress towards meeting the CAP measure reduction goal, based on data for the current tracking year.*

CAP Measure:

[Energy-1: Energy Efficiency Incentives and Programs to Promote Energy Efficiency for Existing Buildings](#)

[Residential](#)

[Non-Residential](#)

On track for 2019?

Yes

Yes

Yes

**CAP Measure Tracking:**  
Summarizes GHG reduction progress by measure

Click on the title to jump to the measure input section

“Yes” = on-track  
“No” = additional reductions are needed



# User Input Section

Click here to return to the CAP Measure Tracking section

Insert required and optional data for each year up to the current tracking year (as available)

[Back to top](#) **BEE-2. Aide Public Participation in Energy Efficiency Retrofit Programs for Low-Income Housing Through Outreach Program**

**User Input**

	2009	2010	2011	2012	2013
Required <b>Number of low-income homes retrofitted</b> each year					
Optional <b>Electricity savings per retrofit</b> each year (kWh)					
Optional <b>Natural Gas savings per retrofit</b> each year (therms)					

Optional **User notes:**

Users must insert data for all **required** inputs. *Optional* entries are elective, but will improve GHG quantification accuracy

Use this section to enter general notes about the metrics, inputs, and/or measure status



# User Input Section

Required and optional inputs may be obtained from a variety of internal and external sources. Here a few suggestions:

- ▶ **Energy Efficiency and Renewable Energy:** City clerk, Community Development department, Building department, building permits, utilities (external)
- ▶ **On-Road Transportation:** Public Works department, traffic consultant (external), SCAG, SANBAG\*
- ▶ **Off-Road Equipment:** Public Works department
- ▶ **Agriculture:** Community and Public Services department, dairies (external)
- ▶ **Solid Waste:** Public Works department, CalRecycle (external), waste providers (external)
- ▶ **Water Conveyance:** Public Works department, water agencies (external)
- ▶ **Wastewater Treatment:** Public Works department, treatment facilities (external)
- ▶ **Land Use:** Public Works department, City Clerk

\*Cities may provide reduced vehicle miles traveled (VMT) if data are available from a traffic study or VMT reduction calculation. It is recommended that a qualified traffic engineer be consulted if cities want to obtain citywide VMT reductions.



# Calculation Section

## Icon Legend

	Ahead of target
	On target
	Below target

Results - Retrofits and Emission Reductor	2011	2012	2013
Homes retrofitted to-date	15	35	51
Percent of target met	88%	103%	100%
			
Emissions reduced (MT CO <sub>2</sub> e)	23	59	91
Percent of target met	80%	104%	107%
			
<input type="button" value="Show Calculations"/>			
<input type="button" value="Show Measure Targets"/>			

Shows user input for metric

Calculates progress toward meeting the annual metric goal

Estimates annual GHG reductions and progress toward meeting the reduction goal for the specific measure

Click on the buttons to show calculation details and measure targets

Calculations	2011	2012	2013
Homes retrofitted to-date:	15	35	51
kWh saved	29,310	68,390	99,654
therms saved	2,970	6,930	10,098
Electricity emission reductions (MT CO <sub>2</sub> e)	7	22	37
Natural gas emission reductions (MT CO <sub>2</sub> e)	16	37	54
Total emissions reduced (MT CO <sub>2</sub> e)	23	59	91

Targets	2011	2012	2013
Total number of homes retrofitted	17	34	51
Number of homes retrofitted per year	17	17	17
Emissions reduced from retrofits (MT CO <sub>2</sub> e)	28	57	85



# Additional Measures

Users can add measures to the **Additional Measures** tab to account for measures that were not included in the Regional Plan. The measures and associated reductions will be included in the overall tracking summary on the **Dashboard**.

Add the measure title and goal to the “Measure Summary” section

New-1	<a href="#">MEASURE TITLE</a>
Measure Goal:	<input type="text"/>
New-2	<a href="#">MEASURE TITLE</a>
Measure Goal:	<input type="text"/>

New-1	<input type="text" value="MEASURE TITLE"/>			
<i>User Input</i>		2009	2010	2011
<i>Optional</i>	<b>GHG Reductions (MTCO<sub>2</sub>e)</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<i>Optional</i>	User notes: <input type="text"/>			

Add the annual GHG reductions in terms of MTCO<sub>2</sub>e to the “Measure Inputs” section.

*Note: The tool does not perform calculations for additional measures.*

# Review and Share Findings

# Review Findings – The Dashboard

The Dashboard summarizes GHG reductions through the current tracking year (e.g., 2017), and compares them to a *tracking year reduction goal* for the tracking year. Progress toward meeting your 2020 reduction target is also displayed.

Results are provided at the following scales:

- 1) Citywide for all measures and sectors
- 2) Citywide by reduction sector (e.g., Building Energy)
- 3) Citywide by individual measure (e.g., Energy-1).

Summary sections use a variety of tables and graphics that can be copied to Word or Excel for external reporting to the public and to stakeholders.



# The Dashboard (City Summary)

2020 BAU Emissions (MTCO <sub>2</sub> e)	285,976
2008 Emissions (MTCO <sub>2</sub> e)	188,539
2017 Emissions (MTCO <sub>2</sub> e)	261,617
2020 Target: 30% below 2020 levels (MTCO <sub>2</sub> e)	200,183
2017 Goal: -5% below 2020 levels (MTCO <sub>2</sub> e)	197,272
<b>2020 Reductions Needed (MTCO<sub>2</sub>e)</b>	<b>85,793</b>
<b>Achieved Reductions (MTCO<sub>2</sub>e)</b>	
State / County Reductions <sup>a</sup>	46,529
Energy Efficiency	1,101
Renewable Energy	2,145
On-Road Transportation	724
Off-Road Equipment	924
Agriculture	0
Water Conveyance	6,349
Solid Waste Generation	262
Wastewater Treatment and Discharge	144
Land-Use	146
GHG Performance Standard	0
Additional Measures	0
Total Local Reductions	11,795
<b>Total- All Reductions (MTCO<sub>2</sub>e)</b>	<b>58,324</b>
2017 GHG Emissions w/ CAP (MTCO <sub>2</sub> e)	203,293
% Below 2008 levels	-8%
% Below 2020 levels	29%
<b>Additional Reductions needed to meet 2020 target (MTCO<sub>2</sub>e)</b>	<b>3,109</b>
<b>Additional Reductions needed to meet 2017 target (MTCO<sub>2</sub>e)</b>	<b>6,020</b>

Target summary based on current tracking year (e.g., 2017) inventory and 2020 forecast

Reduction summary based on total GHG savings for each measure within the individual sectors

Inventory *minus* total reductions achieved

Target summary (reductions *beyond* target or *additional* reductions required)



# The Dashboard (City Summary)

Avoided GHG Emissions for State/County and Local Actions

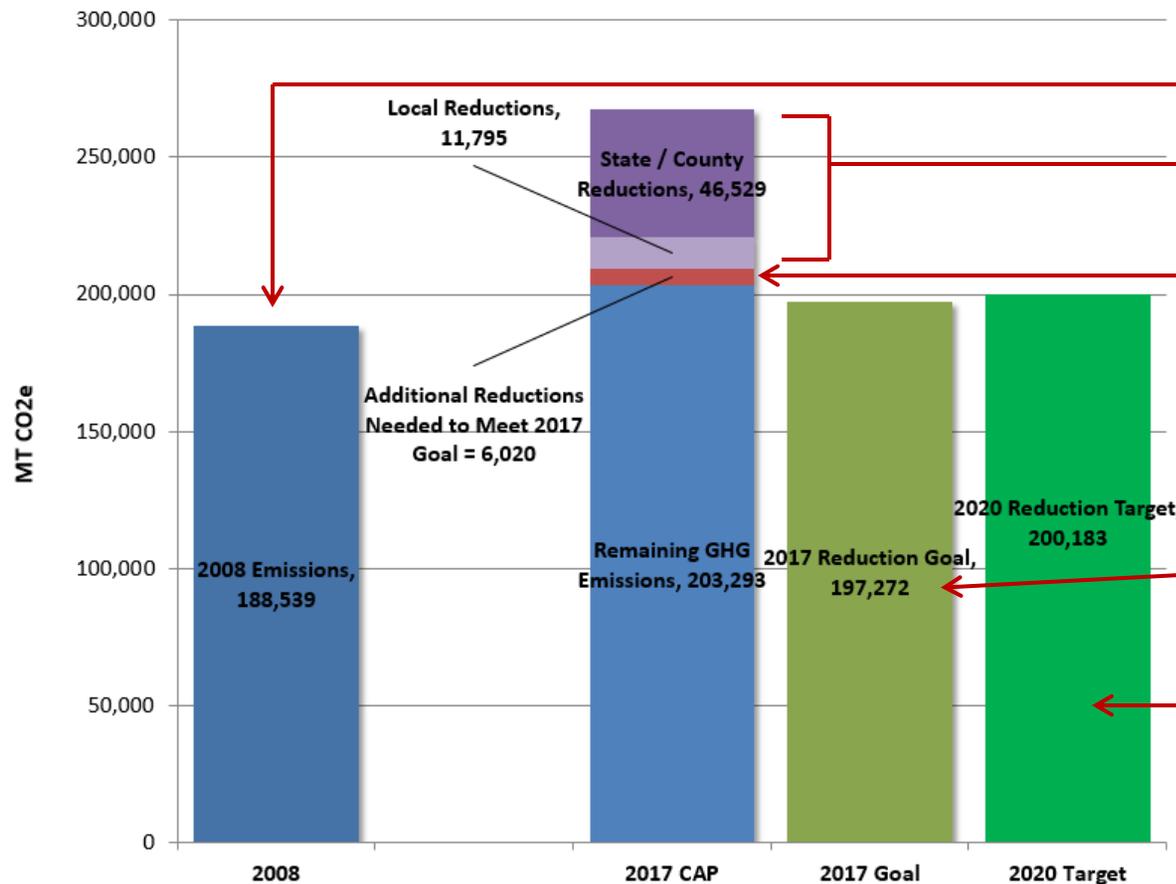


Figure shows:

- 2008 emissions
- State/county and local reductions for the tracking year
- Remaining emissions for the tracking year
- Tracking year reduction goal
- 2020 reduction target

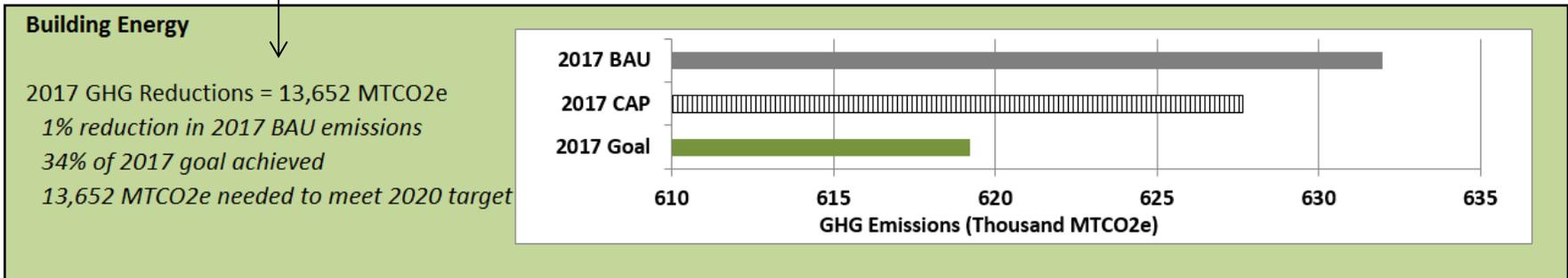


# The Dashboard (Sector Summary)

Text shows the reductions achieved for the current tracking year and the reductions needed to meet the 2020 target

Bars show progress toward meeting the reduction goal for each sector (e.g., building energy) for the current tracking year.

(2b) Summary by Sector



The Dashboard provides summary metrics for each sector in Section 2b.

# The Dashboard (Measure Summary)

Click the sector title to jump to the input tab

Bars show progress toward meeting the 2020 reduction target. Additional reductions, as needed, to meet the target are calculated.

CAP Measure	Reductions as of 2017 (MTCO <sub>2</sub> e)	Percent of 2017 Goal	Reduction Progress		Additional Annual Reductions Needed to 2020 Meet Goal (MTCO <sub>2</sub> e)	
			0%	100% (2020)		
<a href="#">Off-Road Transportation and Equipment</a>						
Off-Road Equipment-1: Electric-Powered Construction Equip	387	39%			320	You need to increase your current rate of reductions.
Off-Road Equipment-2: Idling Ordinance	181	105%			None. Target Met!	You have met your 2020 target for this measure.
Off-Road Equipment-3: Electric	41	94%			6	You are on track to meet your 2020 target for this measure.

Summary of measures by reduction sector

Summary of reductions and target progress for the current tracking year

The Dashboard provides summary metrics for each local measure in Section 2c and each State measure in Section 3.

# Share Findings

Placeholder for Progress Report Template cover or other graphic

Once you have assessed annual measure progress, you can share your results using the *SANBAG CAP Progress Report Template*.

The template mirrors the Tool and includes sections presenting metrics, benchmarks, timelines, goals, and an overall assessment of the progress your City is making towards its 2020 GHG reduction target.



# Get Started!

**Color Codes:**

The following color codes are used throughout the tool to identify required and optional data, as well as whether cells are hard-coded and should not be modified.

User entry - required City input
User entry - optional City input
Hard-coded value from the Regional Plan
Hard-coded calculation factor
Calculated value as part of the tool



Open the CAPITT  
and get started  
from the Intro tab!



# APPENDIX A. 2

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User Guide

# San Bernardino Associated Governments

Climate Action Plan  
Implementation Tracking Tool

September 2015

# Table of Contents

- ▶ Tool Overview
- ▶ Greenhouse Gas and Climate Action Plan Basics
- ▶ Before You Begin
- ▶ Tool Configuration
- ▶ Reduction Measure Tracking
- ▶ Review and Share Findings
- ▶ **Get Started!**



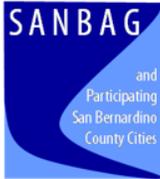
# Tool Overview

# Purpose

The San Bernardino Associated Governments Climate Action Plan Implementation Tracking Tool (CAPITT) is a Microsoft Excel-based tool that helps cities:

- Track greenhouse gas (GHG) reductions achieved by measures from the San Bernardino Greenhouse Gas Regional Plan (Regional Plan)
- Monitor local Climate Action Plan (CAP) implementation progress
- Share findings and progress with stakeholders, partners, and the community

**San Bernardino Associated Governments**  
Climate Action Plan Implementation Tracking Tool (CAPITT)



June 2015

Developed by  
ICF International



***Note: Please enable macros for this tool to work properly. See the Enable Macros tab.***  
*This tool is compatible with Excel 2007 and later versions only.*

**Purpose:**

The Climate Action Plan Implementation Tracking Tool, or "**CAPITT**," provides a mechanism for the cities participating in the San Bernardino Associated Governments (SANBAG) Climate Action Plan Implementation Tools project (project) to track GHG reductions achieved by the measures outlined in the San Bernardino Regional Greenhouse Gas Reduction Plan (Regional Plan). If a City has a local Climate Action Plan (CAP), this tool can also be used to track the progress of those local CAPs for measures contained in the Regional Plan. The tool can also be used to show progress in meeting the overall 2020 GHG reduction target for each City.



# Functionality

The CAPITT helps derive estimates for annual GHG reductions\* achieved by State, County, and local measures based on user inputs.



Jurisdictions can use the tool to track progress toward meeting their individual 2020 GHG reduction targets.

CAPPIT is compatible with Excel 2007 and later versions only.

*\* Note: GHG emissions and reductions are reported in terms of metric tons of carbon dioxide equivalent, or "MTCO<sub>2</sub>e." This is the unit of emissions used throughout the tool.*



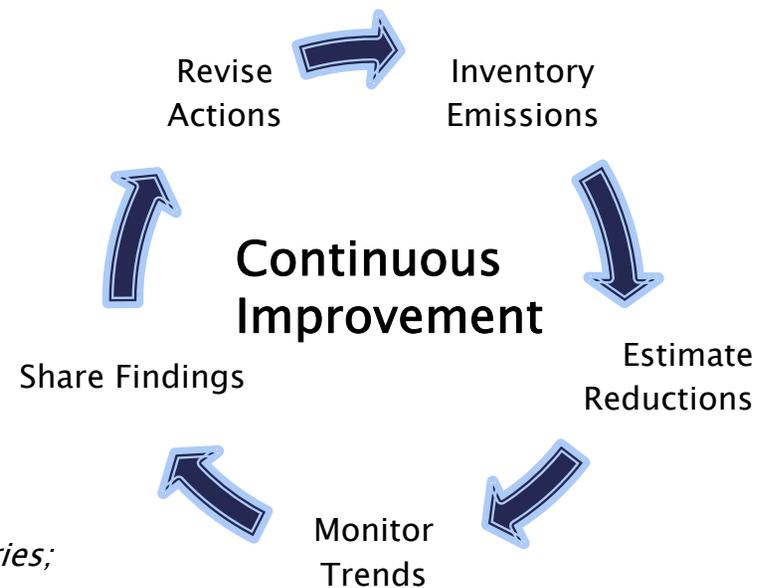
# Continuous Improvement

The CAPITT supports coordinated climate action planning and efforts to reduce regional GHG emissions within San Bernardino County.

This is achieved by:

- ▶ Inventorying GHG emissions\*
- ▶ Estimating GHG reductions
- ▶ Monitoring trends overtime
- ▶ Sharing findings internally and externally
- ▶ Revising actions based on results

*\* Note: The CAPITT does not calculate GHG inventories; the jurisdictions must do their own inventory calculations and update the tool with their new inventories.*



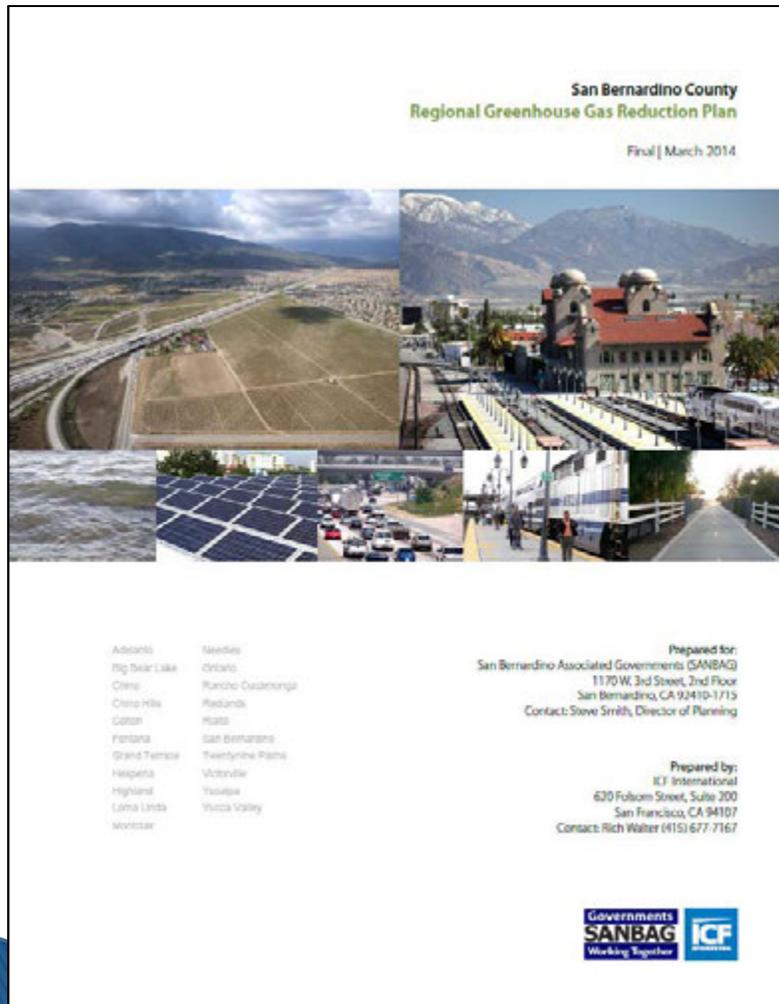
# GHG and Climate Action Plan Basics

# What is a GHG Inventory?

A GHG inventory is an accounting of GHGs emitted to (or removed from) the atmosphere over a specific period of time (typically one calendar year).

- ▶ Primary anthropogenic GHGs include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>)
- ▶ GHG emissions can be either direct or indirect.
  - **Direct** emissions occur within City boundaries or are otherwise under City jurisdiction. *Example: emissions from natural gas combustion to heat buildings*
  - **Indirect** emissions are a result of community activities, but occur outside City boundaries. *Example: emissions from electricity generation*
- ▶ GHG emission sources in the County include the following:
  - Build energy consumption
  - On-road vehicle fuel combustion
  - Off-road equipment fuel combustion
  - Solid waste management
  - Agricultural processes
  - Water conveyance
  - Wastewater treatment

# What is the Regional Plan?



Coordinated effort among SANBAG and the 21 Partnership Cities of San Bernardino County to complete the following:

- ▶ Inventory citywide 2008 GHG emissions
- ▶ Forecast citywide 2020 GHG emissions
- ▶ Develop measures to reduce GHG emissions generated by each City
- ▶ Provide foundational information for local CAP development
- ▶ Advance regional climate action planning and identify opportunities for collaboration and cost savings



# What are the reduction measures?

## Local Measures:

Energy-1: Energy Efficiency Incentives and Programs to Promote Energy Efficiency for Existing Buildings	Agriculture-1: Methane Capture at Large Dairies
Energy-2: Outdoor Lighting Upgrades for Existing Development	Agriculture-2: Utilize Methane Captured at Dairies
Energy-3: Green Building Ordinance for New Buildings	Land Use-1: Tree Planting Programs
Energy-4: Solar Installations in New Housing Developments	Land Use-2: Promote Rooftop Gardens
Energy-5: Solar Installations for New Commercial/Industrial Development	Water-1: Require Adoption of the Voluntary CALGreen Water Efficiency Measures for New Construction
Energy-6: Onsite Solar Energy for New and Existing Warehouse Space	Water-2: Implement a Program to Renovate Existing Buildings to Achieve Higher Levels of Water Efficiency
Energy-7: Solar Installations for Existing Housing	Water-3: Encourage Water-Efficient Landscaping Practices
Energy-8: Solar Installations for Existing Commercial/Industrial Buildings	Water-4: Senate Bill X7-7—The Water Conservation Act of 2009
Energy-9: Install Co-Generation Facilities	Waste-1: Increased Waste Diversion
On Road-1: SB 375 Sustainable Communities Strategy	Wastewater-1: Methane Recovery
Off-Road Equipment-1: Electric-Powered Construction Equipment	Wastewater-2: Energy Efficiency Equipment Upgrades at Wastewater Treatment Plants
Off-Road Equipment-2: Idling Ordinance	Wastewater-3: Recycled Water
Off-Road Equipment-3: Electric Landscaping Equipment	PS-1: GHG Performance Standard for New Development

# What are the reduction measures?

## State/County Measures:

STATE-1 Renewable Energy Standard/Renewable Portfolio Standard

STATE-2 Title 24 Standards for Non-Residential and Residential Buildings (Energy Efficiency Standards and CALGreen)

STATE-3 AB 1109 (Huffman) Lighting Efficiency and Toxics Reduction Act

STATE-4 AB 1470 (Huffman) Solar Water Heating

STATE-5 Industrial Boiler Efficiency

STATE-6: AB 1493 (Pavley I and II) Greenhouse Reductions from New Passenger Vehicles (STATE-6a) and Executive Order S-1-07 Low Carbon Fuel Standard (On-Road) (STATE-6b)

STATE-7 Assembly Bill 32 (AB 32) Transportation Reduction Strategies

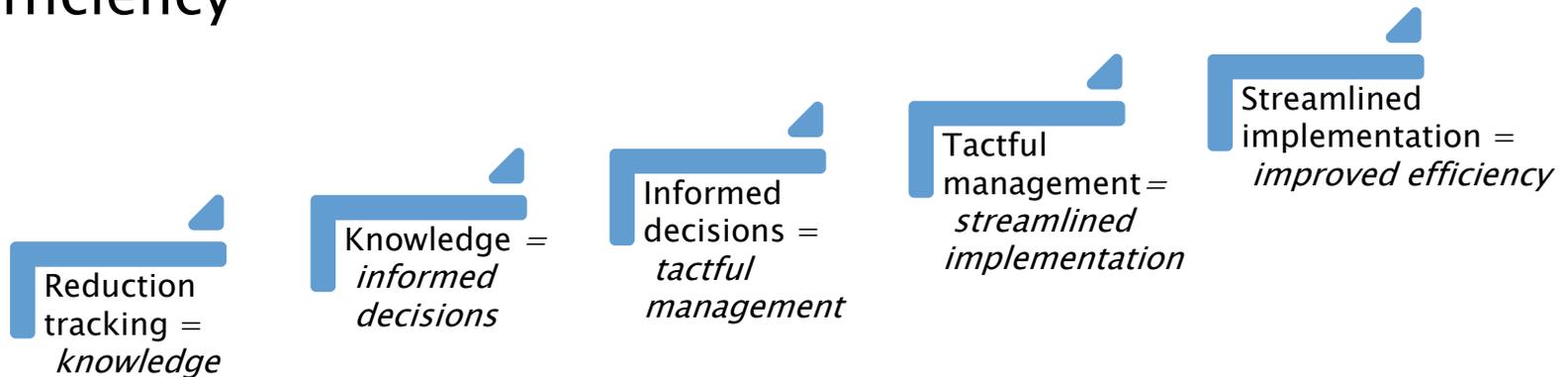
STATE-8 Executive Order S-1-07 Low Carbon Fuel Standard (Off-Road)

STATE-9 AB 32 Methane Capture

County-1 San Bernardino County GHG Reduction Plan Landfill Controls

# Why Track Annual Reductions?

- ▶ Demonstrate climate action planning **leadership** and initiative
- ▶ Assist the State in meeting GHG reduction targets outlined under **Assembly Bill 32**
- ▶ Show and **communicate** results to the public
- ▶ **Adaptively manage** resources and programs to improve efficiency



Before You Begin

# Enable Macros

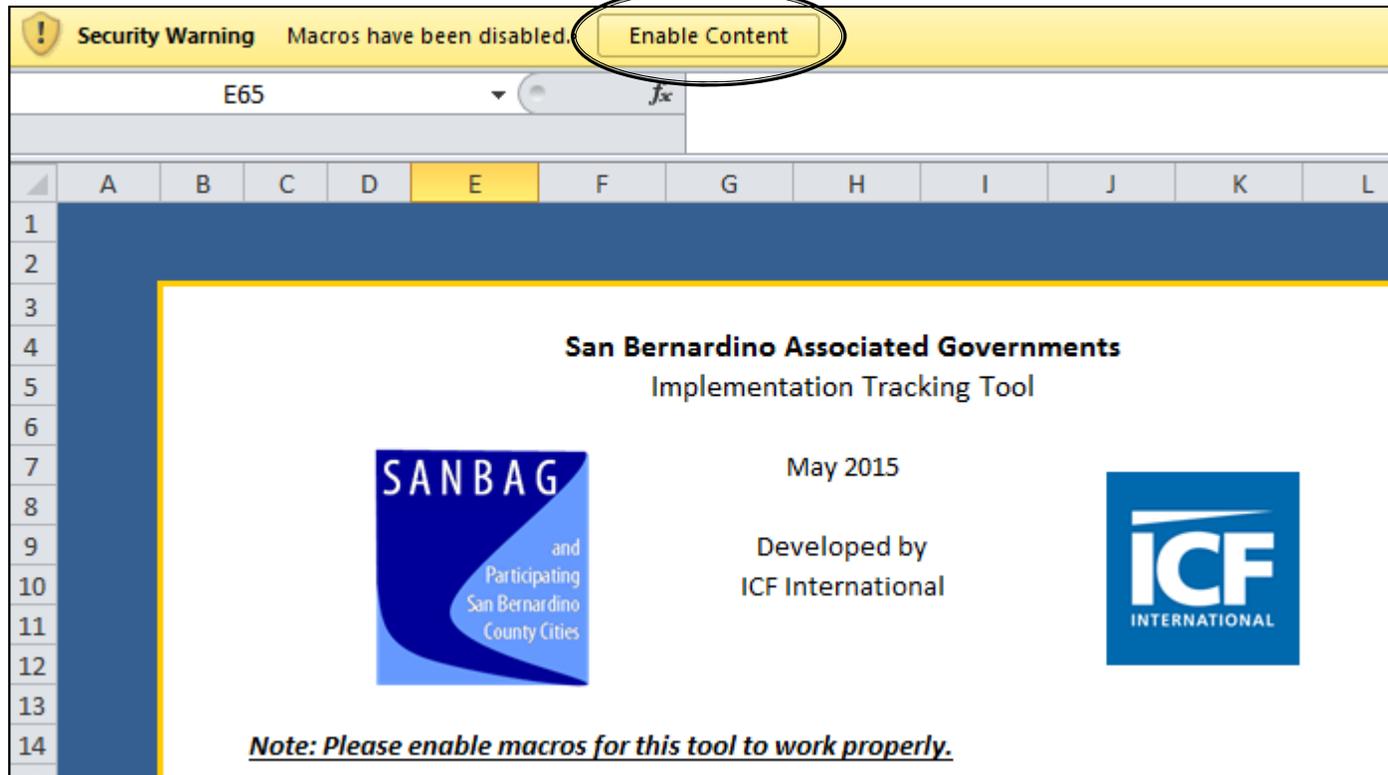
The CAPITT uses macros to carry out essential functions. Complete the following steps to enable macros:

- ▶ Close the tool and reopen Excel.
- ▶ Go to the **File** menu and select **Options**.
- ▶ On the Options panel, choose **Trust Center** and then **Trust Center Settings**.
  - Be sure the “Show the message bar in all applications when content has been blocked” button is selected. Click **OK**.
- ▶ Click **OK** to exit the Options panel.
- ▶ Open the emissions calculator and look for the message bar near the top of the screen that reads “**SECURITY WARNING  
Macros Have Been Disabled.**”
  - Click the button that reads **Enable Content**.



# Enable Macros

Click here to enable  
Macros



The screenshot shows a Microsoft Excel spreadsheet with a yellow security warning banner at the top. The banner contains a warning icon, the text "Security Warning Macros have been disabled", and a button labeled "Enable Content". An arrow points from the text "Click here to enable Macros" to the "Enable Content" button. Below the banner, the spreadsheet grid is visible, with column E selected. A large blue-bordered area contains the following content:

**San Bernardino Associated Governments**  
Implementation Tracking Tool

May 2015

Developed by  
ICF International

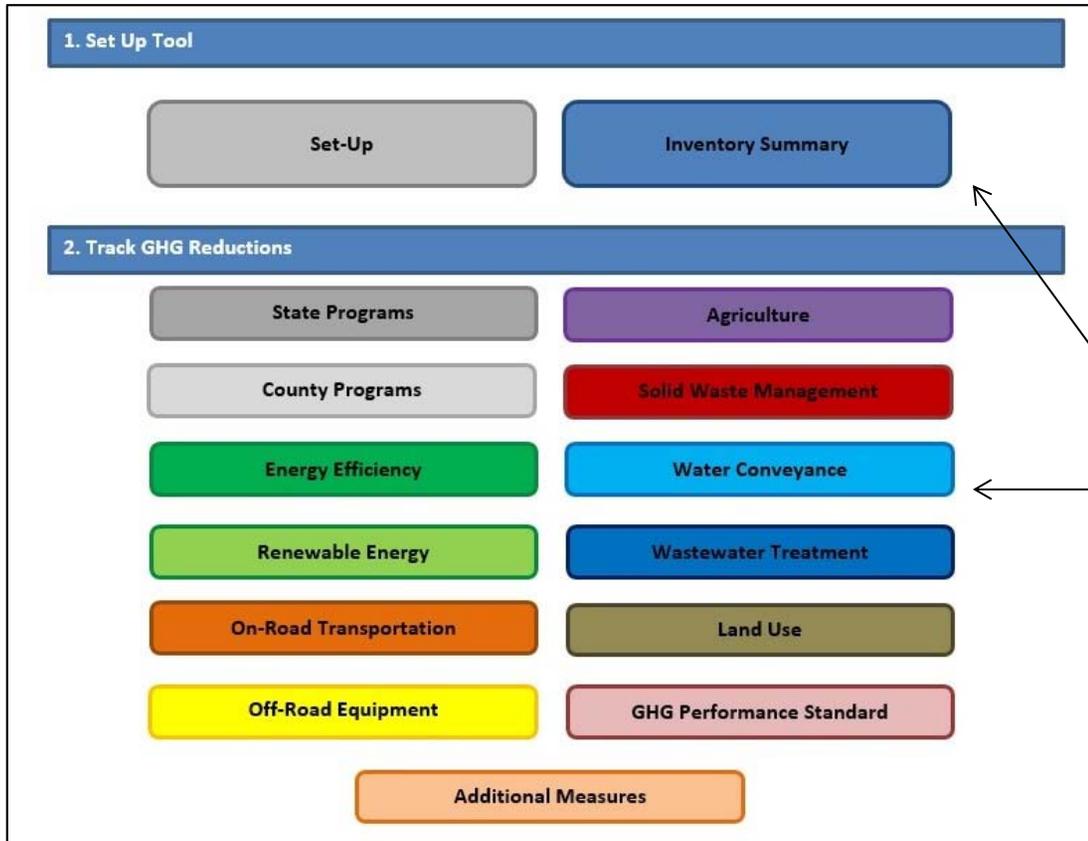
**SANBAG**  
and  
Participating  
San Bernardino  
County Cities

**ICF**  
INTERNATIONAL

***Note: Please enable macros for this tool to work properly.***



# Navigation

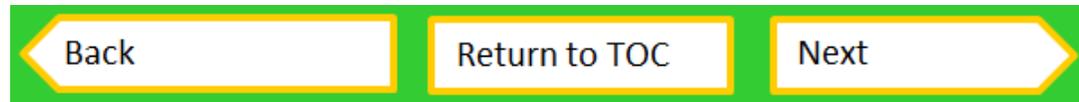


The TOC (Table of Contents) tab is the main navigation portal for the tool.

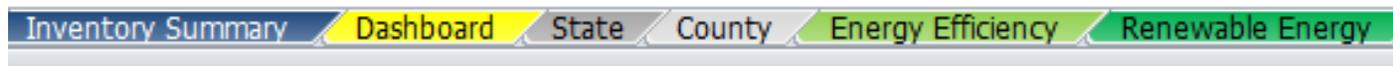
Click on the tab icons within the contents flowchart to be taken directly to that tab.

# Navigation

You can also move throughout the CAPITT using the navigation buttons in the upper right-hand corner of each tab.



Alternatively, click on the tab labels at the bottom of the screen.



# Color Coding

The CAPITT has been designed to facilitate GHG emission reduction quantification based on varying levels of available detail from the user.

Color codes are used throughout the tool to identify required and optional data, as well as whether cells are hard-coded or are calculated values and should not be modified.

User entry - required City input
User entry - optional City input
Hard-coded value from the Regional Plan
Hard-coded calculation factor
Calculated value as part of the tool

You can only modify user entry cells (yellow); all other cells in the tool are locked.



# Tool Configuration

# Set-Up

Use the drop-down menus to select your City and current tracking year

<b>(1) City:</b> <i>Select your city.</i>	<input type="text"/>
<b>(1) Current year:</b> <i>Select the latest year for which you are entering data in the tool.</i>	<input type="text"/>

	Population	Housing	Employment
2008			
2009			
2010			
2011			
2012			
2013			
2014			
2015			
2016			
2017			
2018			
2019			
2020			

	Single-Family	Multi-Family
2008		
2009		
2010		
2011		
2012		
2013		
2014		
2015		
2016		
2017		
2018		
2019		
2020		

	State	SCE
2008		
2009		
2010		
2011		
2012		
2013		
2014		
2015		
2016		
2017		
2018		
2019		
2020		

Insert socioeconomic data and the renewable energy mix for each applicable year. Renewable energy data should be provided for both the State and your local utility (e.g. Southern California Edison)



# Set-Up

The **Set-Up** tab also allows users to modify underlying emission factor assumptions.

## Required Inputs

All users are *required* to provide the latest CO<sub>2</sub> electricity emission factors for their utility. Emission factors may be obtained from the following resources:

- **SCE: Corporate Responsibility & Sustainability Report**
- **Bear Valley Electric Service: Utility or USEPA eGRID\***
- **Colton Public Utilities: Utility or USEPA eGRID\***
- **Needles Public Utility Authority: Utility or USEPA eGRID\***

\*USEPA eGRID, <http://www.epa.gov/cleanenergy/energy-resources/egrid/>



# Set-Up

## Optional Inputs

Global Warming Potentials (GWPs) for CH<sub>4</sub> and N<sub>2</sub>O along with non-electricity emission factors can also be updated by the user if data more specific to your jurisdiction are available, or if more recent GWPs and emission factors have been released since publication of the Tool.

Insert updated assumptions,  
if data are available

Global Warming Potentials			
GHG	Value	Unit	Source
CH4	28	unitless	IPCC AR5, Chapter 8, Table 8.7: <a href="#">http:</a>
N2O	265	unitless	IPCC AR5, Chapter 8, Table 8.7: <a href="#">http:</a>

Building Energy			
GHG/Entity/Year	Value	Unit	Source
<b>Natural Gas</b>			
CO2	53.06	kg CO2/MMBtu	Climate Registry 2015, Table 12.1: <a href="#">ht</a>
CH4	0.00475	kg CH4/MMBtu	Climate Registry 2015, Table 12.9.2: <a href="#"></a>
N2O	0.00009	kg N2O/MMBtu	Climate Registry 2015, Table 12.9.2: <a href="#"></a>

Be sure to  
identify the  
source of your  
new assumption

# Inventory Summary

Insert GHG emissions inventory data (by emissions sector) for your city for the tracking year, if available. Inventory data must be inserted by the user as the CAPITT *does not* perform GHG inventories.

Sector and Scope	2008	2009	2010	2011
Building Energy	62,770			
On-Road Transportation	97,508			
Off-Road Equipment	12,144			
Solid Waste Management	1,744			
Agriculture	9,664			
Water Conveyance	3,045			
Wastewater Treatment	1,262			
<b>Total Emissions</b>	<b>188,137</b>	-	-	-

Update the table annually with inventory data, as available

2008 data are from the Regional Plan

# Inventory Summary

If inventory data are not available for the tracking year, you may update the tool using one of the following methods:

- ▶ **Interpolation:** The CAPITT provides a linear interpolation of annual emissions based on the 2008 inventory and 2020 forecast presented in the Regional Plan. Copy and paste the relevant inventory data from Section 2 to Section 1 to update the inventory summary table.
- ▶ **Short-Term Forecast:** Forecast your last inventory to the current tracking year using socioeconomic data for your city. An example forecast is provided on the next page. Additional guidance for forecasting emissions can be obtained from the Association of Environmental Professionals<sup>1</sup> (AEP) or ICLEI<sup>2</sup>.

<sup>1</sup> AEP Guidance: [http://califaep.org/docs/AEP\\_Next\\_Steps\\_White\\_Paper.pdf](http://califaep.org/docs/AEP_Next_Steps_White_Paper.pdf)

<sup>2</sup> ICLEI Guidance: <http://www.icleiusa.org/tools/ghg-protocol/community-protocol>

ICLEI Inventory and Forecast Tool: <http://www.icleiusa.org/tools/clearpath>



# Inventory Summary

The table to the right shows example socioeconomic metrics that can be used to conduct a short-term forecast of emissions by sector. Consider the following example for residential building electricity consumption.

Sector	Potential Socioeconomic Metric
Building Energy	
Residential	Population or housing
Commercial	Jobs or commercial square footage
On-Road Transportation	Population and jobs*
Off-Road Equipment	Population, jobs, or housing depending on equip. type
Solid Waste Management	Population and jobs **
Agriculture	Acres
Water Conveyance	Urban Water Management Plan projection or population
Wastewater Treatment	Population
* Alternatively, quantify GHG emissions based on traffic model outputs, if available.	
** Account for changes in landfill methane rates	

## Example Short-Term Forecast (for residential electricity consumption)

Last inventory: 2012

Tracking year: 2017

2012 emissions: 25,000

2012 households: 14,000

2017 households: 14,500

$$2017 \text{ emissions} = 2012 \text{ emissions} * \left( \frac{2017 \text{ households}}{2012 \text{ households}} \right)$$

$$\begin{aligned} 2017 \text{ emissions} &= 25,000 * \left( \frac{14,500}{14,000} \right) \\ &= 25,000 * 1.036 \\ &= 25,893 \text{ MTCO}_2\text{e} \end{aligned}$$



# Reduction Measure Tracking

# Layout

There are ten user input tabs; one for each reduction sector (e.g., Renewable Energy), as well as one each for State, County, and additional measures.

All tabs have the same organization:

- ▶ Instructions
  - ▶ CAP Measure Summary
  - ▶ CAP Measure Tracking
  - ▶ CAP Measure Inputs
  - ▶ Detailed Results
- *Background sections - no user modification is required*
- *User input section*
- *Calculation section - no user modification is required*



# Background Sections

## Instructions

Use this page to track GHG reductions achieved by Building Energy measures. The page includes:

CAP Measure Summary: Displays the measure goal as presented in the CAP. No modification is required.

CAP Measure Tracking: Summarizes progress towards meeting the CAP measure reduction goal, based on data for the current tracking year.

CAP Measure Inputs: Provides a template for inserting data to track GHG reductions achieved by the measure.

Detailed Results: Presents detailed emissions reductions achieved by the measure as of the current tracking year.

The following color codes are used to indicate required and optional data, as well as whether the measure is on track.

**Instructions:** Provides background information on the tab and general direction for user entry

**CAP Measure Summary:**  
Displays the measure descriptions

## CAP Measure Summary

*This section displays the measure goal as presented in the CAP. No modification to this section is required.*

**Energy-1 Energy Efficiency Incentives and Programs to Promote Energy Efficiency for Existing Buildings**

Measure Goal: Promote energy efficiency in existing residential buildings and nonresidential buildings.

## CAP Measure Tracking

*This section summarizes progress towards meeting the CAP measure reduction goal, based on data for the current tracking year.*

CAP Measure:

On track for 2019?

[Energy-1: Energy Efficiency Incentives and Programs to Promote Energy Efficiency for Existing Buildings](#)

[Residential](#)

[Non-Residential](#)

Yes

Yes

Yes

Click on the title to jump to the measure input section

“Yes” = on-track

“No” = additional reductions are needed

**CAP Measure Tracking:**  
Summarizes GHG reduction progress by measure



# User Input Section

Click here to return to the CAP Measure Tracking section

Insert required and optional data for each year up to the current tracking year (as available)

[Back to top](#) **Energy-2: Outdoor Lighting Upgrades for Existing Development**

**User Input**

Required **Percentage of residential outdoor lights that are LED**

Required **Percentage of commercial outdoor lights that are LED**

Required **Number of LED traffic signals installed per year**

Optional **Annual Measure Savings (+) or Costs (-)**

	2009	2010	2011	2012	2013	2014	2015	2016
Required Percentage of residential outdoor lights that are LED								
Required Percentage of commercial outdoor lights that are LED								
Required Number of LED traffic signals installed per year								
Optional Annual Measure Savings (+) or Costs (-)								

Note: **savings** are indicated as positive values in black text; **(costs)** are indicated as negative values in red text and parenthesis.

**Other Information**

Optional **Responsible Agency or Department**  
Community Development & Housing (example provided, please edit as necessary)

Optional **Potential or Actual Funding Source(s)**  
Home Energy Renovation Opportunity (HERO) (example provided, please edit as necessary)

Optional **Implementation Timeframe** (e.g. 2012-2018)

Optional **User notes:**

Users must insert data for all *required* inputs. *Optional* entries are elective, but will improve GHG quantification accuracy. Monetary costs and savings data may be entered here\*, along with additional implementation information.

Use this section to enter general notes about the metrics, inputs, and/or measure status

\* Inputs for costs and savings are only available for local measures (not county, state, or regional measures)



# User Input Section

Required and optional inputs may be obtained from a variety of internal and external sources. Here a few suggestions:

- ▶ **Energy Efficiency and Renewable Energy:** City clerk, Community Development department, Building department, building permits, utilities (external)
- ▶ **On-Road Transportation:** Public Works department, traffic consultant (external), SCAG, SANBAG\*
- ▶ **Off-Road Equipment:** Public Works department
- ▶ **Agriculture:** Community and Public Services department, dairies (external)
- ▶ **Solid Waste:** Public Works department, CalRecycle (external), waste providers (external)
- ▶ **Water Conveyance:** Public Works department, water agencies (external)
- ▶ **Wastewater Treatment:** Public Works department, treatment facilities (external)
- ▶ **Land Use:** Public Works department, City Clerk

\*Cities may provide reduced vehicle miles traveled (VMT) if data are available from a traffic study or VMT reduction calculation. It is recommended that a qualified traffic engineer be consulted if cities want to obtain citywide VMT reductions.



# Calculation Section

## Icon Legend

	Ahead of target
	On target
	Below target

Results - Retrofits and Emission Reducior	2011	2012	2013
Homes retrofitted to-date	15	35	51
Percent of target met	88%	103%	100%
			
Emissions reduced (MT CO <sub>2</sub> e)	23	59	91
Percent of target met	80%	104%	107%
			
<input type="button" value="Show Calculations"/>			
<input type="button" value="Show Measure Targets"/>			

Shows user input for metric

Calculates progress toward meeting the annual metric goal

Estimates annual GHG reductions and progress toward meeting the reduction goal for the specific measure

Click on the buttons to show calculation details and measure targets

Calculations	2011	2012	2013
Homes retrofitted to-date:	15	35	51
kWh saved	29,310	68,390	99,654
therms saved	2,970	6,930	10,098
Electricity emission reductions (MT CO <sub>2</sub> e)	7	22	37
Natural gas emission reductions (MT CO <sub>2</sub> e)	16	37	54
Total emissions reduced (MT CO <sub>2</sub> e)	23	59	91

Targets	2011	2012	2013
Total number of homes retrofitted	17	34	51
Number of homes retrofitted per year	17	17	17
Emissions reduced from retrofits (MT CO <sub>2</sub> e)	28	57	85



# Additional Measures

Users can add measures to the **Additional Measures** tab to account for measures that were not included in the Regional Plan. The measures and associated reductions will be included in the overall tracking summary on the **Dashboard**.

Add the measure title and goal to the “Measure Summary” section →

<b>New-1</b>	<a href="#">MEASURE TITLE</a>
<b>Measure Goal:</b>	
<b>New-2</b>	<a href="#">MEASURE TITLE</a>
<b>Measure Goal:</b>	

<b>New-1</b>	<a href="#">MEASURE TITLE</a>		
<b>User Input</b>			
Optional	<b>GHG Reductions</b> (MTCO <sub>2e</sub> )	2009	2010
Optional	<b>Other Tracking Metric</b> (user-defined unit)		
Optional	<b>Annual Measure Savings (+) or Costs (-)</b>		
<i>Note: savings are indicated a</i>			
<b>Other Information</b>			
Optional	<b>Responsible Agency or Department</b>		
Optional	<b>Potential or Actual Funding Source(s)</b>		
Optional	<b>Implementation Timeframe</b> (e.g. 2012-2018)		

← Add the annual GHG reductions in terms of MTCO<sub>2e</sub> to the “Measure Inputs” section. You can also add other tracking metrics (such as energy savings) and \$ costs/savings if available.

*Note: CAPITT does not perform calculations for additional measures.*



# Review and Share Findings

# Review Findings – The Dashboard

The Dashboard summarizes GHG reductions through the current tracking year (e.g., 2017), and compares them to a *tracking year reduction goal* for the tracking year. Progress toward meeting your 2020 reduction target is also displayed.

Results are provided at the following scales:

- 1) Citywide for all measures and sectors
- 2) Citywide by reduction sector (e.g., Building Energy)
- 3) Citywide by individual measure (e.g., Energy-1).

Summary sections use a variety of tables and graphics that can be copied to Word or Excel for external reporting to the public and to stakeholders.



# The Dashboard (City Summary)

2020 BAU Emissions (MTCO <sub>2</sub> e)	285,976
2008 Emissions (MTCO <sub>2</sub> e)	188,539
2017 Emissions (MTCO <sub>2</sub> e)	261,617
2020 Target: 30% below 2020 levels (MTCO <sub>2</sub> e)	200,183
2017 Goal: -5% below 2020 levels (MTCO <sub>2</sub> e)	197,272
<b>2020 Reductions Needed (MTCO<sub>2</sub>e)</b>	<b>85,793</b>
<b>Achieved Reductions (MTCO<sub>2</sub>e)</b>	
State / County Reductions <sup>a</sup>	46,529
Energy Efficiency	1,101
Renewable Energy	2,145
On-Road Transportation	724
Off-Road Equipment	924
Agriculture	0
Water Conveyance	6,349
Solid Waste Generation	262
Wastewater Treatment and Discharge	144
Land-Use	146
GHG Performance Standard	0
Additional Measures	0
Total Local Reductions	11,795
<b>Total- All Reductions (MTCO<sub>2</sub>e)</b>	<b>58,324</b>
2017 GHG Emissions w/ CAP (MTCO <sub>2</sub> e)	203,293
% Below 2008 levels	-8%
% Below 2020 levels	29%
<b>Additional Reductions needed to meet 2020 target (MTCO<sub>2</sub>e)</b>	<b>3,109</b>
<b>Additional Reductions needed to meet 2017 target (MTCO<sub>2</sub>e)</b>	<b>6,020</b>

Target summary based on current tracking year (e.g., 2017) inventory and 2020 forecast

Reduction summary based on total GHG savings for each measure within the individual sectors

Inventory *minus* total reductions achieved

Target summary (reductions *beyond* target or *additional* reductions required)



# The Dashboard (City Summary)

Avoided GHG Emissions for State/County and Local Actions

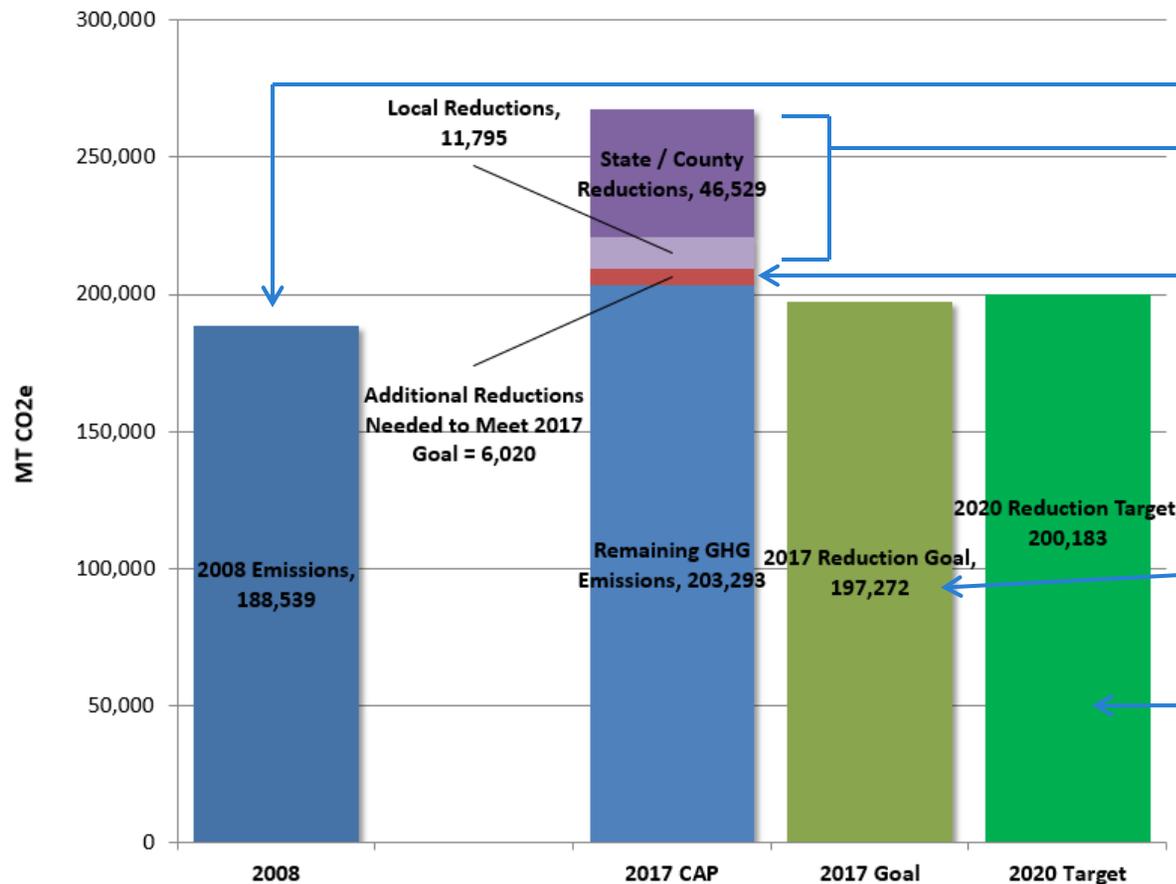


Figure shows:

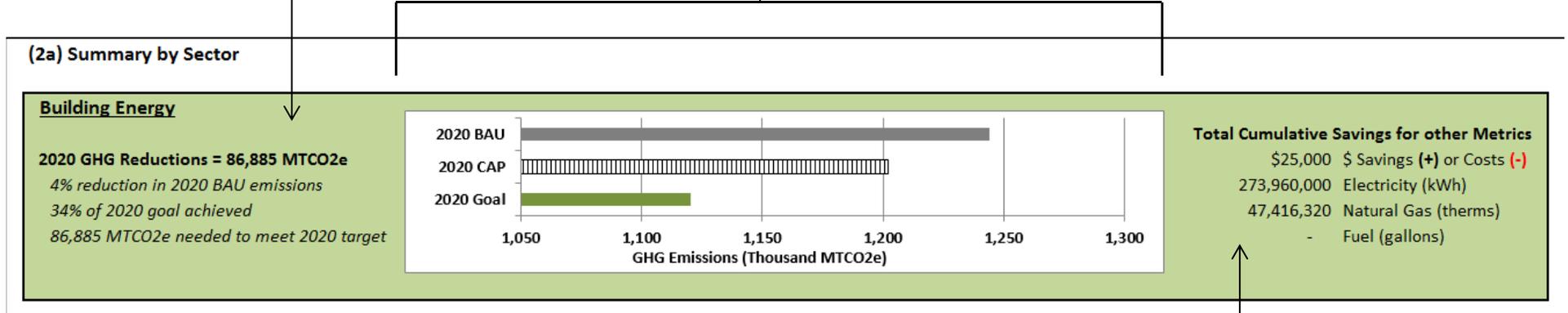
- 2008 emissions
- State/county and local reductions for the tracking year
- Additional reductions needed to meet tracking year goal
- Tracking year reduction goal
- 2020 reduction target



# The Dashboard (Sector Summary)

Text shows the reductions achieved for the current tracking year and the reductions needed to meet the 2020 target

Bars show progress toward meeting the reduction goal for each sector (e.g., building energy) for the current tracking year.



Cumulative savings for other metrics (such as monetary savings, electricity, or natural gas) are summarized here.

The Dashboard provides summary metrics for each sector in Section 2a.



# The Dashboard (Measure Summary)

Bars show progress toward meeting the 2020 reduction target. Additional reductions, as needed, to meet the target are calculated.

Click the sector title to jump to the input tab

CAP Measure	Reductions as of 2017 (MTCO <sub>2</sub> e)	Percent of 2017 Goal	Reduction Progress		Additional Annual Reductions Needed to 2020 Meet Goal (MTCO <sub>2</sub> e)	
			0%	100% (2020)		
<a href="#">Off-Road Transportation and Equipment</a>						
Off-Road Equipment-1: Electric-Powered Construction Equip	387	39%			320	You need to increase your current rate of reductions.
Off-Road Equipment-2: Idling Ordinance	181	105%			None. Target Met!	You have met your 2020 target for this measure.
Off-Road Equipment-3: Electric	41	94%			6	You are on track to meet your 2020 target for this measure.

Summary of measures by reduction sector

Summary of reductions and target progress for the current tracking year

The Dashboard provides summary metrics for each local measure in Section 2b and each state measure in Section 3.

# The Dashboard (Measure Summary)

Additional information shown includes total measure savings or costs (\$), energy savings (kWh and therms), and other savings (fuel, water, etc.)

CAP Measure	Total Measure Savings		Total Cumulative Savings in Energy / Fuel / Other Quantity			
	(+) or Costs (-)	Electricity (kWh)	Natural Gas (therms)	Fuel (gallons)	Other	Unit
<u>County Measures</u>						
County-1 San Bernardino County GHG Reduction Plan Landfill Controls	(\$20,000)	-	-	-	79,665	thousand ft <sup>2</sup> methane
<u>Energy Efficiency</u>						
Energy-1: Energy Efficiency Incentives and Programs to Promote Energy Efficiency for Existing Buildings	\$30,000	2,608,200	75,918	-	-	-
Energy-2: Outdoor Lighting Upgrades for Existing Development	\$15,000	1,064,340	-	-	-	-

Summary of measures by reduction sector

# Share Findings

## Contents

Update the contents list to only include those emission sectors specific to your jurisdiction. For example, if there are no agriculture measures in your CAP, exclude the "Agriculture" section.



- A message from Mayor [Insert Name] Page
- Overview Page
- Energy Efficiency Page
- Renewable Energy Page
- On-Road Transportation Page
- Off-Road Equipment Page
- Agriculture Page
- Solid Waste Generation Page
- Water Conveyance Page
- Wastewater Treatment and Discharge Page
- Land Use Page
- GHG Performance Standard Page
- State Measures Page
- County Measures Page
- Looking Ahead Page
- Appendix - Progress Details Page

*Include a quote from the community or a government official regarding the year's CAP activities and success*

Once you have assessed annual measure progress, you can share your results using the *SANBAG CAP Progress Report Template*.

The template mirrors the Tool and includes sections presenting metrics, benchmarks, timelines, goals, and an overall assessment of the progress your City is making towards its 2020 GHG reduction target.

# Get Started!

## Color Codes:

The following color codes are used throughout the tool to identify required and optional data, as well as whether cells are hard-coded and should not be modified.

User entry - required City input
User entry - optional City input
Hard-coded value from the Regional Plan
Hard-coded calculation factor
Calculated value as part of the tool



Open the CAPITT  
and get started  
from the Intro tab!



## APPENDIX B. I

[THIS PAGE INTENTIONALLY LEFT BLANK]

CITY OF [INSERT NAME]

# CLIMATE ACTION PLAN PROGRESS REPORT

[MONTH YEAR]

*Include a background image or other graphic*

**Commented [SB1]:** Note to cities: italicized text is used for internal guidance for how to complete the template. This text should be removed when you complete the template.

## Contents

Update the contents list to only include those emission sectors specific to your jurisdiction. For example, if there are no agriculture measures in your CAP, exclude the "Agriculture" section.



Include images that showcase CAP activities or implementation events. Examples are provided above.

A message from Mayor [Insert Name]	Page
Overview	Page
Energy Efficiency	Page
Renewable Energy	Page
On-Road Transportation	Page
Off-Road Equipment	Page
Agriculture	Page
Solid Waste Generation	Page
Water Conveyance	Page
Wastewater Treatment and Discharge	Page
Land Use	Page
GHG Performance Standard	Page
State Measures	Page
County Measures	Page
Looking Ahead	Page
Appendix – Progress Details	Page

*Include a quote from the community or a government official regarding the year's CAP activities and success*

## A Message from Mayor [Insert Name]



*Include an image of the Mayor*

[Click and type]

*Include a letter or statement from the Mayor that briefly describes the achievements to-date and outlines encouragement and/or next steps for the future.*

### CAP Highlights

#### *The First Year*

- [Click and type]

*Use bullets to outline action-oriented achievements during the reporting year. For example,*

- *1,000 single-family homes were retrofitted to be more energy efficient*

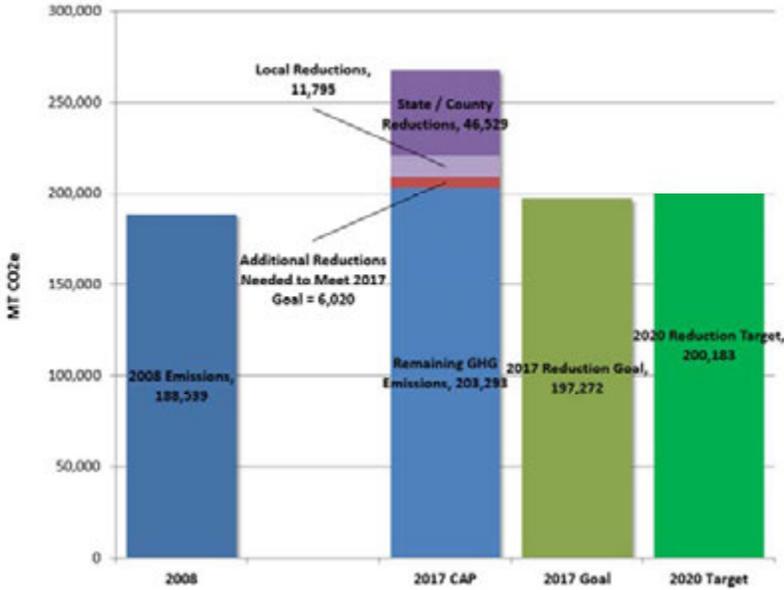
## Overview

*Provide an overview of the climate action plan, the GHG reduction target, annual GHG emissions progress, and the contents of the report. This section should also summarize overall progress toward meeting the 2020 GHG reduction target, including tables and figures which can be inserted from the San Bernardino Associated Governments Climate Action Plan Implementation Tracking Tool (CAPITT). Include information on whether a new GHG inventory was conducted for the tracking year, or whether emissions were scaled or interpolated using the 2020 BAU forecast or prior year inventory data. Below is an example introductory section that can be incorporated directly into your progress report or modified to preference.*

The City of [Insert name] adopted a Climate Action Plan (CAP) in [Month Year] to reduce greenhouse gas (GHG) emissions generated by community activities. The CAP builds on analysis from the *San Bernardino Regional Greenhouse Gas Reduction Plan* (Regional Plan). The Regional Plan was a collaborative effort among the San Bernardino Associated Governments (SANBAG) and 21 Partnership Cities of San Bernardino County to develop regional GHG inventories and reduction measures to more effectively address GHG emissions and climate change in San Bernardino County.

The CAP establishes a GHG reduction target of achieving [Target] emissions levels by 2020. This ambitious target is consistent with larger statewide objectives outlined under Assembly Bill 32 and represents the City's commitment to reducing GHG emissions generated within the community. The emissions target will not be achieved overnight, nor will it be met through a single action. Rather, the CAP outlines [Number] measures that will work in conjunction with State initiatives to improve energy efficiency, encourage resource conservative, and support sustainable practices that will lower GHG emissions and enhance community resiliency to climate change.

The City has made significant progress towards achieving these goals. As shown in Figure 1, the City needs to reduce GHG emissions by [Number] metric tons carbon dioxide equivalent (MTCO<sub>2</sub>e) to achieve its 2020 GHG reduction target. In the [Number] of years since the CAP was adopted, the City is [Percentage] of the way there. The City has begun implementation of [Number] measures and is ahead or on-track to meet individual measure goals for [Number] measures. All emissions reduction sectors also are tracking GHG reductions, relative to the 2008 baseline (see Figure 2), with the majority of reductions achieved by the [Name] sector ([Percentage]) (see Figure 3). The programs started since adoption of the CAP will continue achieving GHG reductions and provide a strong foundation for new initiatives in the coming years.



Copy the summary graphic from the tracking tool Dashboard (Section 1). An example is shown above.

**Figure 1. Climate Action Plan Progress toward the 2020 GHG Reduction Target ([Year] -[Year] )**

GHG reductions are quantified based on an updated GHG emissions inventory for [Year] (this example assumes a new inventory was completed for the tracking year. If a new inventory was not performed, indicate whether emissions were estimated by linearly interpolating 2008 and 2020 BAU emissions or forecasting a prior year's inventory based on socioeconomic data. For more information, refer to the CAPITT User Guide). Table 1 summarizes annual GHG emissions in the City between 2008 and [Year]. Since 2008, emissions have [declined/increased] [Percentage], from [Number] to [Number] MTCO<sub>2</sub>e. This is equivalent to removing approximately [Number] from the road each year.<sup>1</sup>

**Table 1. City of [Insert name] Annual Greenhouse Gas Emissions from 2008 to [Year]**

Sector	2008	2009	2010	2011	2012	2013	2014	2015	2016
Building Energy									
On-Road Transportation									
Off-Road Equipment									
Solid Waste Management									
Agriculture									
Water Conveyance									
Wastewater Treatment									

<sup>1</sup> United States Environmental Protection Agency GHG Equivalency Calculator. Available at <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>.

## **Total Emissions**

---

*Copy the inventory summary table from the tracking tool Inventory Summary tab (Section 1).*

This progress report outlines the current status of each measure identified in the City's CAP. Metrics have been established for all measures to more specifically track implementation progress. The sector summaries on the following pages identify each measure, the tracking metric, and emission reductions achieved to-date, as available. The progress report concludes with a summary of actions that need to be taken during the next tracking year to adaptively manage the CAP and encourage additional emissions reduction. The appendix provides detailed implementation notes for each measure.



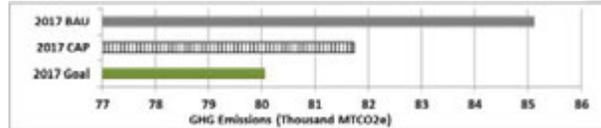
**Building Energy**

**Greenhouse Gas Emissions**

*4% reduction in 2017 BAU emissions*

*67% of 2017 goal achieved*

*4,063 MTCO<sub>2</sub>e needed to meet 2020 target*



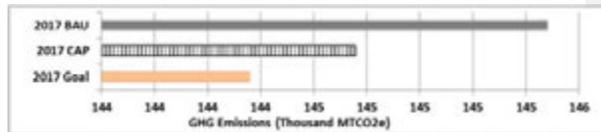
**On-Road Transportation**

**Greenhouse Gas Emissions**

*0.5% reduction in 2017 BAU emissions*

*65% of 2017 goal achieved*

*397 MTCO<sub>2</sub>e needed to meet 2020 target*



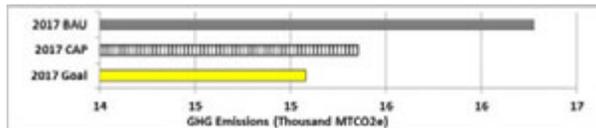
**Off-Road Equipment**

**Greenhouse Gas Emissions**

*6% reduction in 2017 BAU emissions*

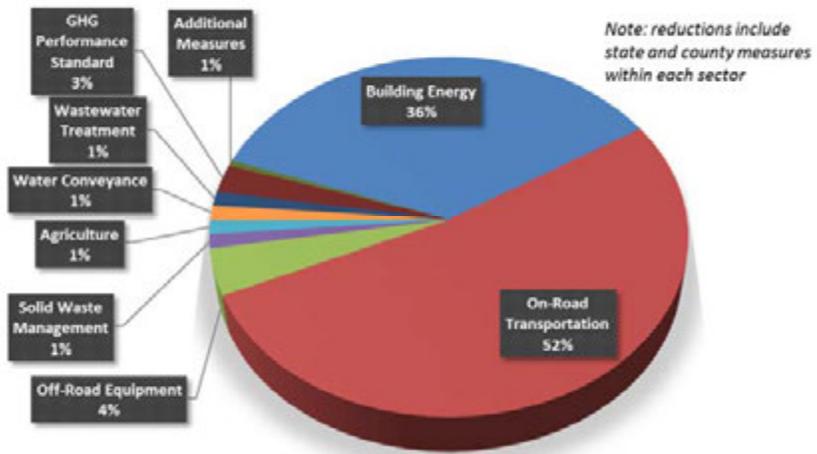
*77% of 2017 goal achieved*

*655 MTCO<sub>2</sub>e needed to meet 2020 target*



Copy the summary graphic from the tracking tool. An example is shown above.

Figure 2. A Year of Progress: [City's] GHG Reductions by Sector



Copy the pie chart from the tracking tool Dashboard (Section 1). An example is shown above.

Figure 3. [Year] Greenhouse Gas Reductions by Sector

## Energy Efficiency



Insert image. An example is provided above.

Summarize the sector, including adopted measures and anticipated community co-benefits. Below is an example introductory section that can be incorporated directly into your progress report or modified to preference.

The CAP identifies [Number] measures to improve energy efficiency throughout the community. These measures include financing for energy audits and retrofits, outdoor lighting upgrades, and education and outreach. Emission reductions achieved by the measures represent [Percentage] of total reductions achieved in [Year] by the CAP. Equally important, the measures provide a number of community co-benefits, including improved energy security, cost savings, and job creation.

### [Year] Highlights

Use action-oriented bullets to identify key accomplishments for the sector. For example, "The Dark Sky Ordinance was passed that will require all commercial buildings within the City to reduce light pollution during the nighttime hours." The accomplishments should include activities related to policy development, education, outreach, or emissions reduction.

- [Click and type]

### Progress Update

Insert information for each measure from the tracking tool Dashboard. An example is shown in italics.

Measure	Tracking Metric(s)	Status	Metrics		Reductions (MTCO <sub>2</sub> e)		Additional Annual Reductions Needed <sup>a</sup>
			Target	Achieved	Target	Achieved	
<i>Energy-1. Energy efficiency incentives and programs to promote energy efficiency for existing buildings</i>	<i>Homes retrofitted</i>	<i>In progress</i>	<i>139</i>	<i>100</i>	<i>33</i>	<i>30</i>	<i>1</i>
	<i>Commercial square footage retrofitted</i>	<i>Complete</i>	<i>70,000</i>	<i>75,000</i>	<i>50</i>	<i>52</i>	<i>None, target met</i>
<i>Energy-2. Outdoor lighting upgrades for existing development</i>	<i>Percentage of residential outdoor LED lights</i>	<i>Not Started</i>	<i>50%</i>	<i>-</i>	<i>3,000</i>	<i>-</i>	<i>1,500</i>
	<i>Percentage of commercial outdoor LED lights</i>	<i>In progress</i>	<i>50%</i>	<i>25%</i>	<i>4,000</i>	<i>2,000</i>	<i>1,000</i>
	<i>Number of LED traffic signals</i>	<i>In progress</i>	<i>92</i>	<i>75</i>	<i>50</i>	<i>43</i>	<i>10</i>

MTCO<sub>2</sub>e = carbon dioxide equivalent

<sup>a</sup> Calculated as the number of additional annual reductions needed to achieve the 2020 GHG reduction target for the specific measure.

## Renewable Energy



Summarize the sector, including adopted measures and anticipated community co-benefits.

Insert sector image.

### [Year] Highlights

Use action-oriented bullets to identify key accomplishments for the sector. The accomplishments should include activities related to policy development, education, outreach, or emissions reduction.

- [Click and type]

### Progress Update

Insert information for each measure from the tracking tool Dashboard.

Measure	Tracking Metric(s)	Status	Metrics		Reductions (MTCO <sub>2</sub> e)		Additional Annual Reductions Needed <sup>a</sup>
			Target	Achieved	Target	Achieved	

MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent

<sup>a</sup> Calculated as the number of additional annual reductions needed to achieve the 2020 GHG reduction target for the specific measure.

## On-Road Transportation



Summarize the sector, including adopted measures and anticipated community co-benefits.

Insert sector image.

### [Year] Highlights

Use action-oriented bullets to identify key accomplishments for the sector. The accomplishments should include activities related to policy development, education, outreach, or emissions reduction.

- [Click and type]

### Progress Update

Insert information for each measure from the tracking tool Dashboard.

Measure	Tracking Metric(s)	Status	Metrics		Reductions (MTCO <sub>2</sub> e)		Additional Annual Reductions Needed <sup>a</sup>
			Target	Achieved	Target	Achieved	

MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent

<sup>a</sup> Calculated as the number of additional annual reductions needed to achieve the 2020 GHG reduction target for the specific measure.

## Off-Road Equipment



Summarize the sector, including adopted measures and anticipated community co-benefits.

Insert sector image.

### [Year] Highlights

Use action-oriented bullets to identify key accomplishments for the sector. The accomplishments should include activities related to policy development, education, outreach, or emissions reduction.

- [Click and type]

### Progress Update

Insert information for each measure from the tracking tool Dashboard.

Measure	Tracking Metric(s)	Status	Metrics		Reductions (MTCO <sub>2</sub> e)		Additional Annual Reductions Needed <sup>a</sup>
			Target	Achieved	Target	Achieved	

MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent

<sup>a</sup> Calculated as the number of additional annual reductions needed to achieve the 2020 GHG reduction target for the specific measure.

## Agriculture



Summarize the sector, including adopted measures and anticipated community co-benefits.

Insert sector image.

### [Year] Highlights

Use action-oriented bullets to identify key accomplishments for the sector. The accomplishments should include activities related to policy development, education, outreach, or emissions reduction.

- [Click and type]

### Progress Update

Insert information for each measure from the tracking tool Dashboard.

Measure	Tracking Metric(s)	Status	Metrics		Reductions (MTCO <sub>2</sub> e)		Additional Annual Reductions Needed <sup>a</sup>
			Target	Achieved	Target	Achieved	

MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent

<sup>a</sup> Calculated as the number of additional annual reductions needed to achieve the 2020 GHG reduction target for the specific measure.

## Solid Waste Generation



Summarize the sector, including adopted measures and anticipated community co-benefits.

Insert sector image.

### [Year] Highlights

Use action-oriented bullets to identify key accomplishments for the sector. The accomplishments should include activities related to policy development, education, outreach, or emissions reduction.

- [Click and type]

### Progress Update

Insert information for each measure from the tracking tool Dashboard.

Measure	Tracking Metric(s)	Status	Metrics		Reductions (MTCO <sub>2</sub> e)		Additional Annual Reductions Needed <sup>a</sup>
			Target	Achieved	Target	Achieved	

MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent

<sup>a</sup> Calculated as the number of additional annual reductions needed to achieve the 2020 GHG reduction target for the specific measure.

## Water Conveyance



Summarize the sector, including adopted measures and anticipated community co-benefits.

Insert sector image.

### [Year] Highlights

Use action-oriented bullets to identify key accomplishments for the sector. The accomplishments should include activities related to policy development, education, outreach, or emissions reduction.

- [Click and type]

### Progress Update

Insert information for each measure from the tracking tool Dashboard.

Measure	Tracking Metric(s)	Status	Metrics		Reductions (MTCO <sub>2</sub> e)		Additional Annual Reductions Needed <sup>a</sup>
			Target	Achieved	Target	Achieved	

MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent

<sup>a</sup> Calculated as the number of additional annual reductions needed to achieve the 2020 GHG reduction target for the specific measure.

## Wastewater Treatment



Summarize the sector, including adopted measures and anticipated community co-benefits.

Insert sector image.

### [Year] Highlights

Use action-oriented bullets to identify key accomplishments for the sector. The accomplishments should include activities related to policy development, education, outreach, or emissions reduction.

- [Click and type]

### Progress Update

Insert information for each measure from the tracking tool Dashboard.

Measure	Tracking Metric(s)	Status	Metrics		Reductions (MTCO <sub>2</sub> e)		Additional Annual Reductions Needed <sup>a</sup>
			Target	Achieved	Target	Achieved	

MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent

<sup>a</sup> Calculated as the number of additional annual reductions needed to achieve the 2020 GHG reduction target for the specific measure.

## Land Use



Summarize the sector, including adopted measures and anticipated community co-benefits.

Insert sector image.

### [Year] Highlights

Use action-oriented bullets to identify key accomplishments for the sector. The accomplishments should include activities related to policy development, education, outreach, or emissions reduction.

- [Click and type]

### Progress Update

Insert information for each measure from the tracking tool Dashboard.

Measure	Tracking Metric(s)	Status	Metrics		Reductions (MTCO <sub>2</sub> e)		Additional Annual Reductions Needed <sup>a</sup>
			Target	Achieved	Target	Achieved	

MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent  
<sup>a</sup> Calculated as the number of additional annual reductions needed to achieve the 2020 GHG reduction target for the specific measure.

## GHG Performance Standard



Summarize the sector, including adopted measures and anticipated community co-benefits.

Insert sector image.

### [Year] Highlights

Use action-oriented bullets to identify key accomplishments for the sector. The accomplishments should include activities related to policy development, education, outreach, or emissions reduction.

- [Click and type]

### Progress Update

Insert information for the GHG Performance Standard from the tracking tool Dashboard.

Measure	Tracking Metric(s)	Status	Metrics		Reductions (MTCO <sub>2</sub> e)		Additional Annual Reductions Needed <sup>a</sup>
			Target	Achieved	Target	Achieved	
GHG Performance Standard							

MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent  
<sup>a</sup> Calculated as the number of additional annual reductions needed to achieve the 2020 GHG reduction target for the specific measure.

## State Measures



*Describe the State measures included in your CAP. Indicate whether GHG reductions were quantified based on updated data or scaled from the 2020 BAU forecast.*

*Insert sector image.*

## Progress Update

*Insert information for each measure from the tracking tool Dashboard.*

Measure	Reductions (MTCO <sub>2e</sub> )
STATE-1 Renewable Energy Standard/Renewable Portfolio Standard	
STATE-2 Title 24 Standards for Non-Residential and Residential Buildings (Energy Efficiency Standards and CALGreen)	
STATE-3 AB 1109 (Huffman) Lighting Efficiency and Toxics Reduction Act	
STATE-4 AB 1470 (Huffman) Solar Water Heating	
STATE-5 Industrial Boiler Efficiency	
STATE-6: AB 1493 (Pavley I and II) Greenhouse Reductions from New Passenger Vehicles (STATE-6a) and Executive Order S-1-07 Low Carbon Fuel Standard (On-Road) (STATE-6b)	
STATE-7 Assembly Bill 32 (AB 32) Transportation Reduction Strategies	
STATE-8 Executive Order S-1-07 Low Carbon Fuel Standard (Off-Road)	
STATE-9 AB 32 Methane Capture	

## County Measures



*Describe the County measures included in your CAP. Indicate whether GHG reductions were quantified based on updated data or scaled from the 2020 BAU forecast.*

*Insert sector image.*

## Progress Update

*Insert information for each County measure from the tracking tool Dashboard.*

Measure	Reductions (MTCO <sub>2</sub> e)
<i>County-1 San Bernardino County GHG Reduction Plan Landfill Controls</i>	

## Looking Ahead

*Summarize goals and objectives for the future based on the tracking year's performance. Include any recommendations for improving existing measures and adaptively managing the CAP. Include any new actions and measures to further reduce GHG emissions. Work towards future goals and targets (e.g., 2030, 2050) may also be discussed. An example introduction to this section is provided below.*

While the City has made significant progress towards its 2020 GHG reduction target as of "[Tracking Year]", much work still remains to be done. Climate change and our understanding of local effects are constantly evolving. Adaptively managing the CAP to respond to new information is therefore necessary to ensure programs are functioning effectively and the City continues to advance as a climate change leader. This section identifies improvements or modifications to existing GHG reduction measures based on experience gained over the past year. New actions to further reduce GHG emissions are also identified. Finally, the section introduces long-range GHG reduction goals and begins to explore paths for the City to reduce emissions beyond 2020.

## Improvements or Modifications to Measures

*Summarize improvements or modifications to existing GHG reduction measures based on experience gained over the past year.*

## New Actions

*Identify new actions and measures to further reduce GHG emissions.*

## Long-Range GHG Reduction Goals

*As appropriate, introduce long-range GHG reduction goals and explore paths for the City to reduce emissions beyond 2020 (e.g., 2030, 2050).*

## Appendix – Progress Details

Provide additional details on measure implementation. An example is provided in italics in the below table.

This appendix details progress made by the City in implementing each of the GHG reduction measures identified in the CAP. Specifics on policy adoption, education and outreach activities, stakeholder coordination, and other supporting initiatives are provided.

Measure	[Year] Progress Details
<b>Energy Efficiency</b>	
<i>Energy-1. Energy efficiency incentives and programs to promote energy efficiency for existing buildings</i>	<p><i>The City adopted a low-income weatherization program and developed an incentive program Southern California Edison (SCE) to help fund residential energy-efficiency projects. Six awards were given in 2017, totaling \$10,000 worth of energy-efficiency upgrades.</i></p> <p><i>The GreenUp competition occurred in March. The program is an energy-efficiency competition among local businesses. Participating businesses received a store decal to display during the competition. The winning business, Doggie Goods, received a plaque.</i></p> <p><i>The City launched a new website that provides information on federal, state, and local tax credits and rebates for residential and commercial energy-efficiency improvements.</i></p>

# APPENDIX C. I

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# User's Guide for GHG Emissions Monitoring

Gathering input data, inputting data into the SEEC  
ClearPath Tool, and exporting emissions data

APRIL 2015





# **User's Guide for GHG Emissions Monitoring**

## **Gathering input data, inputting data into the SEEC ClearPath Tool, and exporting emissions data**

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**April 2015**

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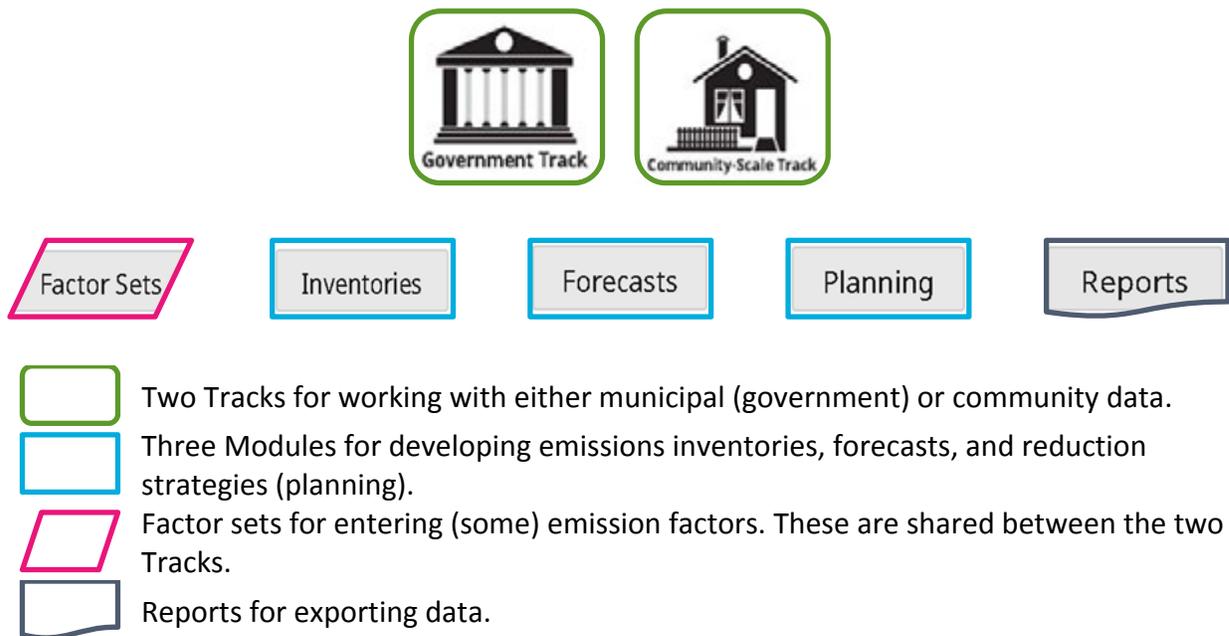
## Acronyms and Abbreviations

ABAU	adjusted business-as-usual
ADC	Alternative Daily Cover
BAU	business-as-usual
CAGR	compound annual growth rate
CARB	California Air Resources Board
CEC	California Energy Commission
CH <sub>4</sub>	methane
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	carbon dioxide equivalent
FTE	full-time-equivalent
GHG	greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
kWh	kilowatt-hour
LCFS	low carbon fuel standard
MG	million gallons
MMBtu	million British thermal units
mpg	miles per gallon
MT	metric tons
N <sub>2</sub> O	nitrous oxide
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SEEC	Statewide Energy Efficiency Collaborative
Tool	ClearPath Tool
VMT	vehicle miles traveled

# CHAPTER I Introduction

This Guide is to assist the Participating Cities in the use of the State Energy Efficiency Collaborative (SEEC) ClearPath Tool (Tool) for estimating, tracking, and reporting greenhouse gas (GHG) emissions inventories. The Tool is continually updated but does not provide formal notices when changes occur; however, the “App Change Log” on the Tool’s homepage provides a timeline and description of these changes. Therefore, the Guide should be updated as needed and used with that understanding. Also note that the Tool was developed by ICLEI, who also has a User’s Guide, but is not specific to the City’s information.

The Tool currently has three modules: an Inventory Module, a Forecast Module, and a Planning Module. There are two tracks to the Tool: Government Track and Community-Scale Track. The general structure of the Tool is shown below.



This Guide is structured in the following way:

- **Prepare Data:** How to get data needed for SEEC ready
- **Getting Started:** How to obtain and sign into an account
- **Community Track:** How to input factor sets, inventories, forecasts, and planning
- **Government Track:** How to input factor sets, inventories, forecasts, and planning
- **General Tips:** Known issues and tips to assist the User; additional tips are also included throughout the document
- **Naming Convention:** Current naming “rules” for the City’s account
- **Getting Help:** How to get help with the Tool from ICLEI

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## CHAPTER 2 Prepare Data

Before getting started with the Tool, you need to get all the input data ready. The best way to prepare it is to summarize all the data into a working sheet (provided together with this document).

There are nine tabs in the working sheet as shown below.



**Factor Sets:** Includes global warming potential, SCE electricity, statewide water-related electricity, waste characterization factor sets, unit conversions, and transportation factors. Sources of the factor sets are also listed in this tab. Those data may be updated every several years, so you need to check the sources for potential new updates.

**Database:** With the exception of the off-road emissions sector, this tab is used to store and calculate all demographic data (including population, households, total jobs, agricultural jobs, manufacturing jobs, building permits, and median income), growth rate for forecasting, and community input data. This tab also summarizes community (residential, commercial & industrial) energy use data and solid waste data.

**Off-Road:** Used to calculate off-road emissions. Annual emissions of carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O) are available at the county level from the State's OFFROAD model. To estimate values for each city, relevant indicator data are used to estimate the proportion of county-level emissions attributable to the city. Indicators for each off-road equipment sub-category are:

- a. *Agriculture Equipment:* City portion based on % agriculture jobs in the city relative to the county
- b. *Construction Equipment:* City portion based on % building permits issued in the city relative to the county
- c. *Industrial Equipment:* City portion based on % manufacturing jobs in the city relative to the county
- d. *Lawn and Garden Equipment:* City portion based on % households in the city relative to the county
- e. *Light Commercial Equipment:* City portion based on % (non-manufacture or agriculture) jobs in the city relative to the county
- f. *Recreational Equipment:* City portion based on % population in the city relative to the county, weighted by median income.

**Water:** Used to summarize community water consumption and electricity usage data by category.

**Planning:** Used to summarize input data for the Tool's planning module. Transportation data are calculated in the On-Road Transportation tab, and energy data are calculated in the Database tab.

**Municipal Energy:** Used to summarize municipal electricity and natural gas usage by category.

**Vehicle Fleet:** Used to summarize vehicle fleet data by fuel type, including annual fuel usage, annual vehicle miles traveled (VMT), VMT breakdown by vehicle type, and average miles per gallon (mpg).

**Employee Commute:** Used to summarize employee commute data. All the data are calculated from the employee commute survey except for number of employees, which is provided by the City’s human resources department.

**Municipal SW:** Used to calculate municipal solid waste volumes.

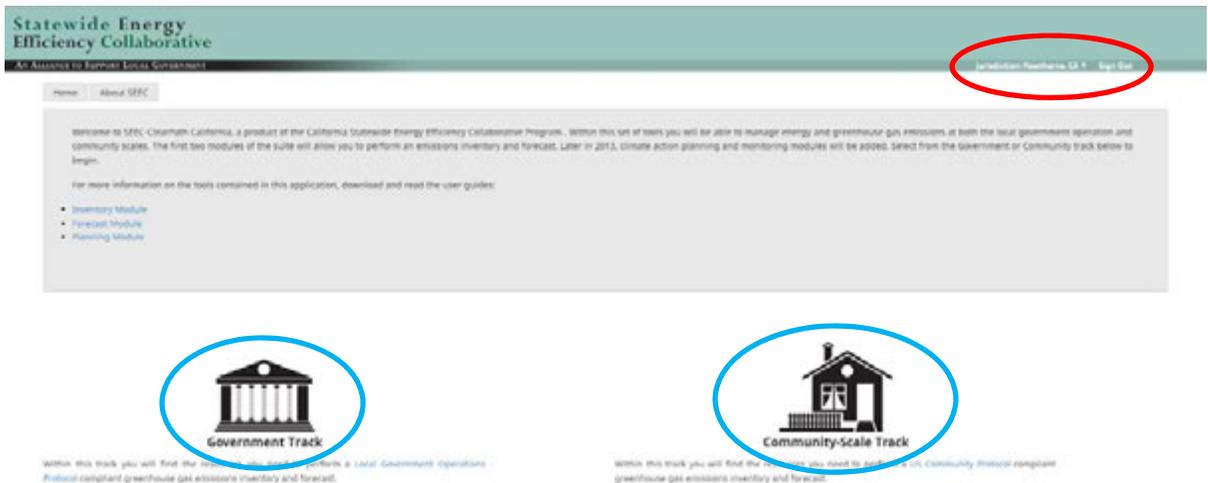
**On-Road Transportation:** Used to calculate transportation data. Raw data are from EMFAC 2014. CO<sub>2</sub> emission factor (grams of CO<sub>2</sub> emitted per mile) and mpg are calculated.

Raw data are from various sources, and you need to do some calculation to make them meet the Tool’s input form. Below is a summary of the data sources.

Data	Data Source
Community Electricity	Southern California Edison (SCE)
Municipal Electricity	SCE
Community Natural Gas	SCE
Municipal Natural Gas	SCE
Community Water	Padre Dam Municipal Water District
Vehicle Miles Traveled	Southern California Association of Governments (SCAG)
Demographic Data	SCAG
Vehicle Fleet	City
Employee Commute	City (Employee Survey)
Off-Road Emissions	OFFROAD Model
Community Solid Waste	CalRecycle
Municipal Solid Waste	City

## CHAPTER 3 Getting Started

While gathering and preparing the input dataset, you can start to input data into the SEEC Tool and get emissions output data. To use the Tool, you must have an account. Once an account has been set up, sign in. If you have access to more than one account, go to the desired jurisdiction (identified by the red circle for choosing the jurisdiction, below) and click on the Government or Community Track (blue circles).



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## CHAPTER 4 Community-Scale Track

There are currently three modules in the Tool: Inventories, Forecasts, and Planning. Factor sets are explained within each module as needed.

### INVENTORIES

Before you develop an Inventory, you will need to enter factor sets.

#### Factor Sets

Two sections of factor sets need to be added for the community inventory: Waste Characterization and Grid Electricity. Name the factor sets using the [Naming Rules](#) (Chapter 7) and enter the corresponding data provided in the working sheet Factor Sets tab. Factor sets should be created for each individual year, so select the year before saving the factor sets (see the red rectangular below). If the same information will be used in multiple inventory years, the same data must be entered but with the different years selected.

Name	
SDG&E_2005	
Year	2005 ▼
CO2 lbs/MWh	546.5
CH4 lbs/GWh	30
N2O lbs/GWh	11
Notes	
<input type="text"/>	

#### TIPS

- Be aware of the unit for each factor. Waste Characterization is in percentage, not proportion.
- Waste Characterization percentages do not need to sum to 100 (they can be greater than or less than 100%). In most cases, the total will be less than 100% because only the organic waste is classified in the factor set.
- Grid Electricity units are different for CO<sub>2</sub> and CH<sub>4</sub>/N<sub>2</sub>O.

## New Inventory

To create a new inventory, name the inventory using the [Naming Rules](#) (Chapter 7), choose the year of inventory, the status, and whether the inventory is Official. An Official inventory may be used for forecasting and only one inventory may be “Official” per year.

If the City is interested in participating in the Carbon Climate Registry (CCR), you can choose to publish your data to this reporting platform. The CCR collects and reports the climate action developments (i.e. GHG reduction commitments, emissions inventories, and climate mitigation/adaptation actions) of local governments from around the world in an effort to improve and ensure data consistency, transparency, accountability and comparability.

Finally, select the Global Warming Potential set to use. For Participating Cities, Intergovernmental Panel on Climate Change (IPCC) 4<sup>th</sup> Assessment should be used.

### TIPS

- These parameters can be changed later by selecting “Edit Parameters” from the Inventories page.
- Be aware that if any parameters are changed, **all subsequent data must be re-saved**. This means that if you change from IPCC 2<sup>nd</sup> Assessment to 4<sup>th</sup> Assessment, for example, **you must go into each sector’s inventory record and resave the information**. While the output on the screen will use the newly selected parameters, the database will not (therefore, your output from the Reports section will be different from what is on the screen). This also affects the Forecasts and Planning Modules.
- The “Official” box may be deselected randomly. You will need to go into Edit Parameters and reselect the box. It appears this selection is needed only for certain output reports.
- The significance of an “In Progress” versus “Complete” inventory is unknown, except for informational purposes.

## Edit Records

Name each new record according to the [Naming Rules](#).

### TIPS

- **Do not enter any commas.** This issue may be resolved by the Tool developer over time, but currently entering commas may cause different outputs.
- Direct Entry Record—Deselect or select No, unless you have already calculated emissions data and are inputting CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O instead of activity/use data.

## **Residential Energy, Commercial Energy & Industrial Energy**

### EMISSIONS FROM GRID ELECTRICITY

1. Choose Factor Set—Only factor sets that have been created for the inventory year will appear. For example, if inputting data for a 2005 inventory, only factor sets created for 2005 under Grid Electricity will appear.

2. Input Electricity Used (combine Bundled and Direct use into one total) and choose the appropriate units.

**Optional:**

Residential—Enter households and population.

Commercial—Enter floor area, workforce size, and number of establishments.

**EMISSIONS FROM STATIONARY FUEL COMBUSTION (NATURAL GAS CONSUMPTION)**

Create a record for each fuel (natural gas, propane, etc.) for which you have data. The “Emissions from Stationary Fuel Combustion” selects default emission factors depending on the fuel type entered. Note that this currently does not show you the emission factors used either in the Tool or the output report.

1. Choose Fuel Type and input Fuel Used and choose the appropriate units.

**Optional:**

Enter households and population.

***Transportation & Mobile Sources*****ON ROAD TRANSPORTATION**

1. The Factor Sets can be disregarded because the “On-Road Factor” calculation method is used.
2. Calculation Method: On-Road factor
3. Enter Fuel Type: Gasoline or Diesel
4. Enter VMT for each type of fuel.
5. Fuel Use: Do not enter
6. Enter CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub> On-Road Average Emissions Factor.

**Optional:**

Population (not recommended unless the number of drivers by fuel type is known).

How to get county emissions data for on-road transportation factors using EMFAC:

1. <http://www.arb.ca.gov/emfac/>
2. Region: County, San Bernardino
3. Calendar Year: Inventory Year
4. Season: Annual Average
5. Vehicle Category: EMFAC2014 Categories
  - All
6. MY: Agg
7. Speed: Agg
8. Fuel: All

### EMISSIONS FROM OFF ROAD MOBILE SOURCES

Countywide CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions can be exported from California Air Resources Board's (CARB's) OFFROAD model. In order to get the city-level emissions, divide the emissions into six sub-categories based on equipment type (Agricultural, Construction, Industrial, Lawn & Garden, Light Commercial, and Recreational) and create a record for each one. If a sub-category has no emissions, create a record and put in zero to make the inventory consistent.

For all categories: Enter CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions; do not enter Fuel Type, Fuel Use, or Percent Biofuel.

### **Water & Wastewater**

Three sections on wastewater and one section on water need to be entered.

### EMISSIONS FROM THE COMBUSTION OF DIGESTER GAS

1. Calculation Type: Population Based
2. Population Served: Enter population
3. Do not enter other fields.

### EMISSIONS FROM THE SUPPLY OF POTABLE WATER

Water needs to be separated into eight sub-categories according to function: single-family, multi-family, commercial, government, construction, irrigation, hotel, and fire. Furthermore, construction and irrigation need to be further sub-divided according to water type: conventional potable water and recycled water. In order to make the inventory consistent, a record should still be created if a sub-category has no energy use or emissions. This should result in 10 record entries for this section.

1. Include in Note:
  - Water usage data from Padre Dam Municipal Water District.
  - Conversion from million gallons (MG) to kilowatt-hours (kWh) uses California Energy Commission (CEC) 2006 Refining Estimates for Water-Related Energy Use in California for Southern California (CEC 2006).
  - Conventional water conversion uses assumptions for indoor vs. outdoor water use.
  - Recycled water conversion Fire use assumes conventional, outdoor.
  - Fire uses assumptions that all is for outdoor use and does not use energy for supply/conveyance.
2. Choose the CA factor set, not SCE
3. Electricity Used: Enter Water\_kwh (or '0' if no electricity used)
4. Natural Gas Used: Blank
5. Volume of Water Delivered: Enter Water\_MG with Million Gallons per Year (or '0' if no water delivered)
6. Population data: Enter Population

**NITRIFICATION/ DENITRIFICATION PROCESS N<sub>2</sub>O EMISSIONS FROM WASTEWATER TREATMENT**

1. Does your facility employ Nitrification/Denitrification? No
2. Population: Enter Population
3. Industrial-Commercial Multiplier: Enter 1.25 to account for commercial/industrial discharge.

**PROCESS N<sub>2</sub>O FROM EFFLUENT DISCHARGE TO RIVERS AND ESTUARIES**

1. Do you have daily N load data from your effluent discharge? No
2. Population: Enter Population
3. Industrial-Commercial Multiplier: Enter 0.75
4. Is your facility predominantly aerobic or anaerobic systems? Anaerobic
5. Does your facility employ Nitrification/Denitrification? No

***Solid Waste*****WASTE GENERATION**

This sector will need two entries: Landfilled and Alternative Daily Cover (ADC). Be aware that they use different factor sets.

**LANDFILLED**

1. Choose the Cal Recycle factor set
2. Is this a previously calculated Value? No
3. Total Waste Generated: Enter SolidWaste\_Landfilled tons
4. Does the receiving landfill have Methane Collection? Yes
5. Do not enter: CH<sub>4</sub> Released (for Previously Calculated records)

**Optional:**

Number of Households and/or Number of Businesses (Jobs\_Total).

**ALTERNATIVE DAILY COVER**

1. Choose the ADC factor set
2. Is this a previously calculated Value? No
3. Total Waste Generated: SolidWaste\_ADC tons
4. Does the receiving landfill have Methane Collection? Yes
5. Do not enter: CH<sub>4</sub> Released (for Previously Calculated records)

**Optional:**

Number of Households, or Number of Businesses (Jobs\_Total).

## FORECASTS

### Factor Sets

Forecasts are made based on compound annual growth rate (CAGR). There is a section in factor sets named Forecast Growth Rates. Add each of the indicator’s growth rates as a factor set. For Participating Cities, total jobs, population, service population, and countywide off-road emissions growth rates are needed for each city. This information is provided in the working sheet Database tab. Be aware the growth rates are proportions, not percentages. Note also that each category record must be forecast. That is, if you do not assign a forecast growth rate, the Tool does not forecast any emissions for that category. Therefore, you may add a Zero Growth factor set, in case any one of the sectors stays the same through the projected years.

Name	
CAGR_Jobs_2013-2035	
1990-1994	<input type="text"/>
1995-1999	<input type="text"/>
2000-2004	<input type="text"/>
2005-2009	<input type="text"/>
2010-2014	0.002721364
2015-2019	0.002721364
2020-2024	0.01335877
2025-2029	0.01335877
2030-2034	0.01335877
2035-2039	0.01335877
2040-2044	<input type="text"/>
2045-2049	<input type="text"/>
Notes	
<input type="text"/>	

Name	
ZeroGrowth	
1990-1994	<input type="text"/>
1995-1999	<input type="text"/>
2000-2004	<input type="text"/>
2005-2009	<input type="text"/>
2010-2014	0
2015-2019	0
2020-2024	0
2025-2029	0
2030-2034	0
2035-2039	0
2040-2044	<input type="text"/>
2045-2049	<input type="text"/>
Notes	
<input type="text"/>	

### New Forecast

Name the forecast according to the Naming Rules, and choose “Use start values from inventory.” Choose an inventory and the end year from the menu. For Participating Cities, 2008 baseline

inventory should be used as start value for forecasts, and 2035 is the forecast end year. The image below shows how the City of Santee used the forecast tool to set up their forecasting through 2035.

## Edit Forecast

\* Name  
Santee\_2013-2035\_Community\_BAU

Use start values from inventory  
 Manually enter start values

Inventory  
Santee\_2013\_Community

\* End year  
2035

Save

You may change the forecast parameters later by selecting Edit Parameters from the Forecast home page.

## Edit Records

Records are separated into the same sectors as inventories and need to be named according to the [Naming Rules](#). Under each sector, start values of energy in million British thermal units (MMBtu) or activity data and CO<sub>2</sub>e in MT are shown.

### Residential Energy

Residential electricity and natural gas use the households growth rate for forecasting. Choose households growth rate factor set from the menu, and leave Carbon Intensity Factor blank. Check “Official” box next to Name to make record appear on forecasts and planning charts.

### Commercial Energy

Commercial electricity and natural gas use the jobs growth rate for forecasting. Choose jobs growth rate factor set from the menu, and leave Carbon Intensity Factor blank. Check “Official” box next to Name to make record appear on forecasts and planning charts.

### Transportation & Mobile Sources

Off-road emissions in inventories are calculated based on proportions of each city to countywide emissions, and emissions for each sector are aggregated under the forecast scenario. Because off-road emissions are entered directly (no fuel consumption is entered), the start value is “0.” You must enter “1” for the forecast to run. Note that the CO<sub>2</sub> start value should not be blank or zero if off-road emissions were entered for the Inventory. Choose off-road emissions growth rate factor set and leave Carbon Intensity Factor blank.

For on-road transportation, both gasoline and diesel are using VMT total growth rate. Choose service population growth rate factor set and leave Carbon Intensity Factor blank.

Check “Official” box next to Name to make record appear on forecasts and planning charts.

### **Water & Wastewater**

The water & wastewater sector uses service population growth rate for forecasting. Choose service population growth rate factor set from the menu, and leave Carbon Intensity Factor blank. Check “Official” box next to Name to make record appear on forecasts and planning charts.

### **Solid Waste**

The solid waste sector uses service population growth rate for forecasting. Choose service population growth rate factor set from the menu, and leave Carbon Intensity Factor blank. Check “Official” box next to Name to make record appear on forecasts and planning charts.

### **Export Records**

Forecasts can only be exported by sub-sectors. Go into each record and click on “Export” next to the “Save” button. The report shows CO<sub>2</sub>e and usage in MMBtu of each year from forecast baseline year to end year. No input or activity data are shown in the report. Charts in various file formats can be exported by clicking on the button  located on the top right of the Projected CO<sub>2</sub>e Values chart.

## **PLANNING**

Planning scenario is used to develop an adjusted business-as-usual (ABAU) emissions inventory based on a business-as-usual (BAU) forecast when taking reduction strategies into consideration. Reduction strategies should be entered first and then applied to the planning scenario.

### **New Planning Scenario**

Name the planning scenario and choose a forecast from the menu.

### **New Reduction Strategy**

After the planning scenario has been created, return to the planning section to enter new reduction strategies. There are existing reduction strategy calculators for residential and commercial electricity and natural gas, on-road transportation, and water conservation. There are also user defined calculators for each sector.

Use the User Defined calculators for each State reduction strategy, which are: User-Defined Residential Energy, User Defined—Transportation, User Defined—Water and Wastewater, and User-Defined Commercial Energy. The inputs needed for these strategies are provided in the working sheet Planning tab. Choose IPCC 4th Assessment for each strategy.

### **User-Defined Residential Energy**

Four records need to be created for this reduction strategy. Natural Gas and Electricity should be separated, and since reduction rates during 2013–2020 and 2021–2035 are different, records also

need to be created for each time period. Choose Electricity or Natural Gas from Affected Forecast Series menu, and choose Reduce Electricity Use for electricity strategies. Increase of households per year should be entered into Primary Driver, and Unit Energy Savings is calculated by kWh or therms per household multiplied by the percentage of savings. Enter 100 as Effective Useful Life where there is a value appearing in outputs, and check the Cumulative box.

### ***User-Defined Commercial Energy***

Four records need to be created for this reduction strategy. Natural Gas and Electricity should be separated, and since reduction rates during 2013–2020 and 2021–2035 are different, records also need to be created for each time period. Choose Electricity or Natural Gas from Affected Forecast Series menu, and choose Reduce Electricity Use for electricity strategies. Increase of jobs per year should be entered into Primary Driver, and Unit Energy Savings is calculated by kWh or therms per job multiplied by the percentage of savings. Enter 100 as Effective Useful Life where there is a value appearing in outputs, and check the Cumulative box.

### ***User Defined—Transportation***

Four records need to be created for this reduction strategy. Gasoline and diesel should be separated, and since reduction rates during 2013–2020 and 2021–2035 are different, records also need to be created for each time period. Choose Gasoline or Diesel from Affected Forecast Series menu, and choose Change Carbon Intensity from the menu below. Enter 1 as the default number for Primary Driver, and the Percent Change in Carbon Intensity. Enter 100 as Effective Useful Life where there is a value appearing in outputs, and check the Cumulative box.

### ***User Defined—Water and Wastewater***

Two records need to be created for water conservation: one is to change carbon intensity, and the other is to reduce energy used.

Choose Water Supply Energy from the Affected Forecast Series menu, and choose Change Carbon Intensity from the menu below. Enter the Percent Change in Carbon Intensity provided in the working sheet Planning tab. The Tool asks for a reduction, so a positive number entered means reduction. Enter 100 as Effective Useful Life where there is a value appearing in outputs, and check the Cumulative box.

Choose Water Supply Energy from the Affected Forecast Series menu, and choose Reduce Energy Use from the menu below. Enter the Reduction in Water Supply Energy provided in the working sheet Planning tab. Enter 100 as Effective Useful Life where there is a value appearing in outputs, and check the Cumulative box.

## **Emissions Reduction Goals**

After the reduction strategies have been created, return to the planning scenario to enter emissions reductions goals. Create records for each goal. Be aware that for reduction percentage, a positive number means decrease, and a negative number means increase. Although not specifically defined,

start year for each goal is the planning start year. Once created, these goals will show up on both the municipal and community tracks.

## Edit Planning Scenario

In the “Add a new reduction measure” menu, choose and add each strategy that applies to the current scenario, define start year and end year for each strategy, and check the “Active” box. After you finish adding all strategies, click on “Save” at the bottom, and the chart will be updated automatically. 

## Export Records

The chart in various file formats can be exported by clicking on the button located on the top right of the Projected CO<sub>2</sub>e Values with Reductions Applied chart. Three kinds of reports can be exported:

- **Scenario Basics:** Shows annual CO<sub>2</sub>e emissions from planning start year to end year in larger scale sub-sectors: Residential Energy, Commercial Energy, Transportation & Mobile Sources, Solid Waste, and Water & Wastewater.
- **Scenario Details:** Shows annual CO<sub>2</sub>e change due to each reduction strategy. Note that the change only shows the effect of each reduction strategy, not including the growth rate of each year.
- **Reduction Measures:** Shows the input of each strategy, either percentage of carbon intensity reduction or usage reduction value.

## REPORTS

All the inventory outputs can be exported. Choose an inventory and click on Export to save a copy of the report and make further analysis.

Detailed Report is the most complete and useful inventory report option. It shows the input and emission output of each record.

## CHAPTER 5 Government Track

### INVENTORY

#### Factor Sets

Government track shares the same factor sets with community track. However, additional transportation factor sets will need to be created for the municipal vehicle fleet and specified for each inventory year. Fleet Average data is provided in the working sheet Factor Sets tab.

#### New Inventory

To create a new inventory, name the inventory using the [Naming Rules](#) (Chapter 7), choose the year of inventory, the status, and whether the inventory is Official. An official inventory may be used for forecasting and only one inventory may be “Official” per year.

If the City is interested in participating in the Carbonn Climate Registry (CCR), you can choose to publish your data to this reporting platform.

Finally, select the Global Warming Potential set to use. For Participating Cities, IPCC 4<sup>th</sup> Assessment should be used.

#### TIPS

- These parameters can be changed later by selecting “Edit Parameters” from the Inventories page.
- Be aware that if any parameters are changed, **all subsequent data must be re-saved**. This means that if you change from IPCC 2<sup>nd</sup> Assessment to 4<sup>th</sup>, for example, you must go into each sector’s inventory record and re-save the information. While the output on the screen will use the newly selected parameters, the database will not (therefore your output from the Reports section will be different from what is on the screen). This also affects the Forecasts and Planning Modules.
- The “Official” box may be deselected randomly. You will need to go into Edit Parameters and re-select the box. It appears this selection is needed only for certain output reports.
- The significance of an “In Progress” versus “Complete” inventory is unknown, except for informational purposes.

#### Edit Records

You must name each new record created.

#### TIP

- **Do not enter any commas.** This issue may be resolved by the Tool developer over time, but currently entering commas will cause different outputs.

## ***Buildings & Facilities***

### EMISSIONS FROM GRID ELECTRICITY

1. Choose Factor Set: SCE (inventory year)
2. Enter electricity usage in kWh, and leave the other fields blank.

### EMISSIONS FROM STATIONARY FUEL COMBUSTION

Create a record for each fuel (natural gas, propane, etc.) for which you have data.

1. Choose Fuel Type, input Fuel Use, and choose the appropriate units.

## ***Streetlights & Traffic Signals***

### EMISSIONS FROM GRID ELECTRICITY

City-owned and utility (SCE)-owned streetlights and traffic signals should be separated into two records.

1. Choose Factor Set: SCE (inventory year)
2. Enter electricity usage in kWh, and leave Number of Streetlights blank.

## ***Vehicle Fleet***

### FLEET VEHICLE EMISSIONS

Each fuel type should have one record.

1. Choose fuel type and fill in annual fuel use
2. If there are VMT and VMT percentage of each vehicle type available, enter them; otherwise leave them blank

## ***Employee Commute***

### EMPLOYEE COMMUTE

1. Choose fuel type and enter all the following fields.

## ***Solid Waste Facilities***

### WASTE GENERATION

1. Choose Factor Set: Cal Recycle
2. Enter Total Waste Landfilled in tons.
3. Does the receiving landfill have Methane Collection? Answer Yes.

## ***Water & Wastewater Treatment Facilities***

### EMISSIONS FROM GRID ELECTRICITY

1. Choose Factor Set: SCE (inventory year)
2. Enter electricity usage in kWh, and leave the other fields blank

## FORECASTS

### Factor Sets

Municipal forecasts are based on staffing changes over time. There is a section in factor sets named Forecast Growth Rates. Create a municipal growth factor set using the staffing change rate. Be aware the growth rates are proportions, not percentages. The starting and ending values will be the 2013 and 2020 number of full-time-equivalent (FTE) employees for CAGR 2013–2020 and the 2020 and 2035 number of FTE employees for CAGR 2020–2035. If there is no change in the number of employees, then enter a growth rate of “0” and still do forecasting with these growth rates.

Note also that each category record must be forecast. That is, if you do not assign a forecast growth rate, the Tool does not forecast any emissions for that category. Therefore, if any sectors stays the same through the projected years (e.g. there is no change in the number of employees), the Zero Growth factor set which was created during the Community Inventory can be used.

Growth rates for building & facilities and streetlights & traffic signals under ABAU are represented by change in carbon intensity factors. The growth rate forecast for this will be called RPS\_SDGE\_33percent, which were modeled by the SEEC ClearPath software.

Growth rates for vehicle fleet and employee commute under ABAU are represented by change in carbon intensity factors. The growth rate forecast for this will be called LCFS (low carbon fuel standard).

Name	
LCFS	
1990-1994	<input type="text"/>
1995-1999	<input type="text"/>
2000-2004	<input type="text"/>
2005-2009	<input type="text"/>
2010-2014	-0.010368573
2015-2019	-0.010368573
2020-2024	<input type="text"/>
2025-2029	<input type="text"/>
2030-2034	<input type="text"/>
2035-2039	<input type="text"/>
2040-2044	<input type="text"/>
2045-2049	<input type="text"/>

## New Forecast - BAU

Name the BAU forecast, and choose “Use start values from inventory”. Choose an inventory and the end year from the menu. For Participating Cities, 2008 inventory is used as start value for forecasts, and 2035 is the forecast end year.

You may change the forecast parameters later by selecting Edit Parameters from the Forecast home page.

## Edit Records

Records are separated into the same sectors as inventories. Under each sector, start values of energy in MMBtu or activity data and CO<sub>2</sub>e in MT are shown.

### ***Buildings & Facilities***

Electricity Energy Equivalent uses the Muni Growth rate for forecasting. Choose Muni\_Growth factor set from the menu, and leave Carbon Intensity Factor blank. Check “Official” box next to Name to make record appear on forecasts and planning charts.

### ***Streetlights & Traffic Signals***

Electricity Energy Equivalent uses the Muni Growth rate for forecasting. Choose Muni\_Growth factor set from the menu, and leave Carbon Intensity Factor blank. Check “Official” box next to Name to make record appear on forecasts and planning charts.

### ***Vehicle Fleet***

Gasoline and Diesel uses the Muni Growth rate for forecasting. Choose Muni\_Growth factor set from the menu, and leave Carbon Intensity Factor blank. Check “Official” box next to Name to make record appear on forecasts and planning charts.

### ***Employee Commute***

Gasoline uses the Muni Growth rate for forecasting. Choose Muni\_Growth factor set from the menu, and leave Carbon Intensity Factor blank. Check “Official” box next to Name to make record appear on forecasts and planning charts.

### ***Solid Waste***

Waste Generated uses the Muni Growth rate for forecasting. Choose Muni\_Growth factor set from the menu, and leave Carbon Intensity Factor blank. Check “Official” box next to Name to make record appear on forecasts and planning charts.

## **Water & Wastewater Treatment Facilities**

Electricity Energy Equivalent uses the Muni Growth rate for forecasting. Choose Muni\_Growth factor set from the menu, and leave Carbon Intensity Factor blank. Check “Official” box next to Name to make record appear on forecasts and planning charts.

## **New Forecast - ABAU**

Unlike the community inventory, municipal ABAU needs to be developed under Forecasts instead of Planning scenario.

Name the ABAU forecast scenario, and choose “Use start values from inventory”. Choose an inventory and the end year from the menu. For Participating Cities, 2008 inventory is used as start value for forecasts, and 2035 is the forecast end year.

You may change the forecast parameters later by selecting Edit Parameters from the Forecast home page.

## **Edit Records**

For Buildings & Facilities and Streetlights & Traffic Signals, choose Muni\_Growth as Growth Rate, and RPS\_SCE\_33percent as Carbon Intensity Factor.

For Solid Waste and Water & Wastewater Treatment Facilities, follow the same method as BAU.

For Vehicle Fleet and Employee Commute, choose Muni\_Growth as Growth Rate, and LCFS as Carbon Intensity Factor.

## **REPORTS**

All the inventory outputs can be exported. Choose an inventory and click on Export to save a copy of the report and make further analysis.

Detailed Report is the most complete and useful inventory report option. It shows the input and emission output of each record.

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## CHAPTER 6    **General Tips**

1. Do not put commas into any data input.
2. Resave each record after making any changes to the factor sets, input data, or even internal system changes.
3. Start values of forecasts come from inventories. If making any changes to the inventory that is used as start value source for forecasts, go to each record in forecasts, check the start values and re-save them. Alternatively, delete the forecast record and create a new one. The front page will have the most current data (the saved data may not).
4. Do not mix up percentage with proportion. If not specifically pointed out as “percentage” or “%,” it should be proportion, for example, forecast growth rates in factor sets should be proportion.
5. Always be aware of the track and year you are in.
6. Strictly follow naming rules.
7. Be aware of the unit for each input data. Generally, electricity is in kWh, natural gas is in therms, and fuel use is in gallons.
8. The exported inventory reports are not consistent in format through all the years and cities, so do not assume that the same kind of output appears in the same columns.
9. The Tool is continually updated but does not provide formal notices when changes occur; however, the “App Change Log” on the Tool’s homepage provides a timeline and description of these changes. Therefore, use caution with the Tool and be aware that some of the notes and tips may not apply over time.

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# CHAPTER 7 Naming Rules

## COMMUNITY-SCALE TRACK

	Section	Name	Example
Factor Sets	Waste Characterization	SOURCE_WasteType_YEAR_YEARproxy	CalRecycle_Landfill_2005_2004proxy
	Grid Electricity	SOURCE_YEAR	SCE_2005
	Forecast Growth Rates	CAGR_INDICATOR_YEAR-YEAR	CAGR_Jobs_2012-2035 CAGR_Muni_2012-2035
Inventory	New Inventory	CITY_YEAR_TRACK	Santee_2005_Community
	Residential Energy	Residential_FuelType_YEAR	Residential_Electricity_2005 Residential_NatGas_2005
		Commercial Energy	Commercial_FuelType_YEAR
	Transportation & Mobile Sources	On-Road_FuelType_YEAR	On-Road_Gasoline_2005
		Offroad_SECTION_YEAR	Offroad_Construction_2005
	Water & Wastewater	Water_Conventional/Recycled_YEAR	Water_Conventional_2005
		Wastewater_TreatmentProcess_YEAR	Wastewater_Digester_2005
	Solid Waste	SolidWaste_WasteType_YEAR	SolidWaste_Landfilled_2005
Landfill_SWISNUMBER_active/closed_YEAR		Landfill_19AQ0010_closed_2005	
Forecasts	New Forecast	CITY_YEAR-YEAR_TRACK_BAU	Santee_2013-2035_Community_BAU
	Residential Energy	Residential_Energy_YEAR-YEAR	Residential_Energy_2013-2035
	Commercial Energy	Commercial_Energy_YEAR-YEAR	Commercial_Energy_2013-2035
	Transportation & Mobile Sources	Transportation_YEAR-YEAR	Transportation_2013-2035
	Water & Wastewater	Water&Wastewater_YEAR-YEAR	Water&Wastewater_2013-2035
	Solid Waste	SolidWaste_YEAR-YEAR	SolidWaste_2013-2035
Planning	New Planning	CITY_YEAR-YEAR_TRACK_AdjustedBAU	Santee_2013-2035_Community_AdjustedBAU
	Reduction Strategies	Not standard. Should include section, protocol, start year, and end year.	State_Title24_Res_Electricity_2021-2035

## GOVERNMENT TRACK

	Section	Name	Example
Factor Sets	Transportation	FleetAverage_YEAR	FleetAverage_2005
Inventory	New Inventory	CITY_YEAR_TRACK	Santee_2005_Municipal
	Buildings & Facilities	Bldg&Fac_FuelType_YEAR	Bldg&Fac_Electricity_2005
	Buildings & Facilities	Bldg&Fac_Parks_Electricity_YEAR	Bldg&Fac_Parks_Electricity_2005
	Streetlights & Traffic Signals	Streetlight&TC_OWNER_FuelType_YEAR	Streetlight&TC_City-owned_Electricity_2005 Streetlight&TC_SCE-owned_Electricity_2005
	Vehicle Fleet	Fleet_CityORContract_FuelType_YEAR	Fleet_City_Gas_2005
	Employee Commute	EmpComm_FuelType_YEAR	EmpComm_Gas_2005
	Solid Waste Facilities	Waste_Generated_YEAR	Waste_Generated_2005
	Solid Waste Facilities	Waste_Landfill_SWISNUMBER_active/closed_YEAR	Landfill_19AQ0012_closed_2005
	Water & Wastewater Treatment Facilities	WaterPumping_Electricity_YEAR	WaterPumping_Electricity_2005
	Forecasts	New Forecast	CITY_YEAR-YEAR_TRACK_BAU
CITY_YEAR-YEAR_TRACK_ABAU			Santee_2012-2035_Municipal_ABAU
Buildings & Facilities		Bldg&Fac_YEAR-YEAR	Bldg&Fac_2013-2035
Streetlights & Traffic Signals		Streetlight&TC_YEAR-YEAR	Streetlight&TC_2013-2035
Vehicle Fleet		Fleet_YEAR-YEAR	Fleet_2013-2035
Employee Commute		EmpComm_YEAR-YEAR	EmpComm_2013-2035
Solid Waste		Waste_YEAR-YEAR	Waste_2013-2035

## CHAPTER 8 Getting Help

ICLEI provides office hours to answer questions on SEEC Tool. The office hours are held every second and fourth Thursday of the month from 11:00 a.m. to 12:00 p.m. Drop in any time during the session and get your questions answered. You can connect to the meeting directly with the information below.

1. Click the meeting link at the start time

<https://global.gotomeeting.com/join/163296605>

2. Use your microphone and speakers (VoIP) - a headset is recommended.

Or, call in using your telephone.

Dial +1 (872) 240-3212

Access Code: 163-296-605

Audio PIN: Shown after joining the meeting

Meeting ID: 163-296-605

There are also general user guides provided by ICLEI.

- Quick-Start Guide:

[http://californiaseec.org/resources-guidance/clearpath-quick-start-guide/at\\_download/file](http://californiaseec.org/resources-guidance/clearpath-quick-start-guide/at_download/file)

- Inventory Module:

[https://s3.amazonaws.com/CEMS\\_Docs/SEEC+ClearPath+CA++Inventory+Module+User+Guide.pdf](https://s3.amazonaws.com/CEMS_Docs/SEEC+ClearPath+CA++Inventory+Module+User+Guide.pdf)

- Forecast Module:

[https://s3.amazonaws.com/CEMS\\_Docs/SEEC+ClearPath+CA++Forecast+Module+User+Guide.pdf](https://s3.amazonaws.com/CEMS_Docs/SEEC+ClearPath+CA++Forecast+Module+User+Guide.pdf)

- Planning Module:

[https://s3.amazonaws.com/CEMS\\_Docs/SEEC+ClearPath+CA++Planning+Module+User+Guide.pdf](https://s3.amazonaws.com/CEMS_Docs/SEEC+ClearPath+CA++Planning+Module+User+Guide.pdf)

- Monitoring Module:

[https://s3.amazonaws.com/CEMS\\_Docs/SEEC+ClearPath+Monitoring+Module+User+Guide.pdf](https://s3.amazonaws.com/CEMS_Docs/SEEC+ClearPath+Monitoring+Module+User+Guide.pdf)

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