Climate Action Resource Guide

For Local Governments

This page contains tools and resources for conducting a greenhouse gas (GHG) inventory and developing a climate action related plan. Climate action planning is an iterative process that can be structured differently to achieve a variety of outcomes. For simplicity, the toolkit is framed around six steps, excluding environmental review. The following information provides links to relevant resources pertaining to each of the steps and is intended to support local governments as they navigate the climate action planning process. Please note: When local governments are developing a climate action plan or general plan with the intent of mitigating community-wide emissions or accomplishing CEQA streamlining, the resources on this webpage are intended to be used in coordination with CEQA Guidelines Section 15183.5(b) and the General Plan Guidelines.*

Getting Started

Before starting the climate action planning process it may be useful to outline your planning document. The Statewide Energy Efficiency Collaborative (SEEC) provides local governments with a detailed Climate Action Plan Template (free login required for all SEEC resources) including a sample baseline inventory spreadsheet. Over 55% of California local governments have already taken initiative on creating a climate action focused plan. To see who else is participating and to see examples of plans, check out the Office of Planning and Research's (OPR) database of California jurisdictions addressing climate change.

ClearPath Tools Suite

The International Council for Local Environmental Initiatives (ICLEI) has developed an interactive web-platform that provides local governments with assistive climate action planning tools. ClearPath provides support for both municipal and community planning (see definitions of these under #1 below). While ClearPath does not create or replace a climate action plan, it can be used for most if not all of the technical calculations necessary for a plan. California local governments can register for free here. For local governments looking to perform their own calculations for development of a comprehensive plan, see the resources below.

*For additional information regarding how climate change should be addressed in general plans or climate action plans with the intent of mitigating community-wide emissions or accomplishing CEQA streamlining please contact Michael McCormick at the Governor's Office of Planning and Research (OPR) at 916-323-9912 or email at michael.mccormick@opr.ca.gov. For other information related to OPR please contact the State Clearinghouse at (916) 445-0613 or state.clearinghouse@opr.ca.gov.

#1 GHG Emissions Inventory

Establishing a baseline inventory of jurisdiction-wide greenhouse gas (GHG) emissions is the first step in climate action planning. This inventory is chosen for a select year, typically the most recent year in which sufficient data is available. This inventory allows local governments to quantify the GHG emissions they produce, identify major sources of emissions, and serve as a static reference to compare future emissions to. The resources listed below provide the methodology necessary for conducting a GHG baseline inventory at both the municipal and community scale. Resources for verifying and reporting these inventories are also included in this section.

Municipal Inventory Scope

Municipal inventories include all emissions associated with local government services and municipal operations which typically include:

- Municipal buildings
- Streetlights and traffic signals
- Water delivery facilities
- Port facilities
- Airport facilities
- Municipal vehicle fleet
- Transit fleet
- Power generation facilities
- Municipal solid waste processing
- Municipal wastewater processing
- Other process and fugitive emissions

The following resources provide a standardized set of guidelines and calculation methodologies for local governments to quantify GHG emission inventories from municipal operations.

- ClearPath inventory module user-guide (login required)
- Local Government Operations Protocol (LGOP)
- Practical guide to conducting a municipal GHG inventory

Community Inventory Scope

The community inventory includes all emissions within the geographic area of a local government's jurisdiction that are not included in the municipal inventory.

- Residential and commercial building energy consumption
- Transportation and mobile sources
- Agriculture operations
- Solid waste disposal operation and processing
- Wastewater treatment and processing

The following resources provide a standardized set of guidelines and calculation methodologies for local governments to quantify GHG emission inventories for a community-wide scale.

- SEEC Excel tool for defining scope of community emissions
- ClearPath inventory module user-guide (login required)

- ICLEI US Community GHG Protocols
- Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC)
- ICLEI Recycling and Composting GHG Protocols

Third-Party Inventory Verification

Local governments are recommended to have their inventories verified to ensure calculation accuracy. The following organizations provide third-party verification for both community and municipal inventories.

- Climate Registry Information System (CRIS)

GHG Inventory Reporting Registries

Reporting your emissions provides many benefits including:

1. Transparency and accountability
2. Recognition as a climate leader
3. Connection with other cities around the world and GHG reduction strategy sharing networks

The following registries provide a global network for reporting and sharing GHG emission inventories.

- Carbonn Climate Registry – Free
- Climate Registry Information System (CRIS) – Part of paid membership package that includes third-party verification

**For tools that can be used to estimate emissions, please visit the Emission Calculators section of this document.*

#2 Target Adoption

After conducting a baseline GHG inventory, local governments are encouraged to identify emission reduction goals and a timeline for meeting these goals. Information on recommended targets is listed in this section.

2030 and 2050 Targets

Local governments are encouraged to align their jurisdiction-wide reduction targets with statewide goals. California's Senate Bill (SB) 32 mandates a statewide GHG emissions reduction of 40% below 1990 levels by 2030. Meeting this target will put California on track for achieving the 2050 target of reducing statewide GHG emissions to 80% below 1990 levels. To achieve these goals, ARB recommends local governments adopt a community-wide goal of reducing GHG emissions to 6 $MTCO_2e$ per capita by 2030 and 2 $MTCO_2e$ per capita by 2050. Another option is setting a mass reduction target for your local government's service population, whichever is preferable.

For more information please visit ARB's AB32 scoping plan webpage and SEEC's quick start guide on setting a GHG reduction target.

#3 Emissions Forecasting

Business-as-usual (BAU) forecasts use assumptions regarding trends and policies to project what annual GHG emissions will likely be in the future if no additional actions are performed. These projections allow local governments to quantify the GHG emissions reductions necessary for meeting adopted targets.

Due to the inherently uncertain nature of forecasting, local governments are encouraged to perform multiple forecasts for a range of potential scenarios. This will allow local governments to look back to their forecasts in coming years to assess which scenario is most realistic, and adjust actions if necessary. The ClearPath tools suite includes a comprehensive forecasting module that can be used to project various growth rates and account for regulatory standards.

Local governments looking to perform their own calculations can use completed climate action plans for guidance such as San Diego County's forecast. Historical data inputs are typically necessary for most calculation methodologies. Listed below are suggested, sector specific data sources for projecting the various components included in a BAU forecast.

Population Growth

Population growth estimates can be calculated using several datasets such as:

- Historical city and county populations provided by the U.S. Census Bureau.
- County specific population projections are provided by the California Department of Finance.
- Metropolitan planning organizations collect data and make projections for number of households and employment.

Electricity and Natural Gas Emission Factors

The carbon intensity of electricity generation depends on your electricity provider and projections are affected by ongoing state legislation. The Clean Energy and Pollution Reduction Act (SB350) currently require electricity providers, investor-owned utilities, and community choice aggregators to increase their procurement of renewable generated electricity to 50% by 2030. Thus the carbon intensity is expected to change relative to the target year.

- Local governments should look to their electricity providers for historical carbon intensity values.
- The ICLEI ClearPath forecasting assistant can be used to project electricity emission factors under RPS.

Electricity and Natural Gas Consumption Growth Rate

Statewide projected electricity and natural gas consumption growth rates for both commercial and residential sectors can be found here:

- Forecasted California Energy Demand 2016-2026 provided by the California Energy Commission.

Transportation Related

Transportation projections are best calculated using emission modeling tools such as the 2014 Emission Factors Model (EMFAC) web application. Please visit the Emission Calculators section of this document for more information.

#4 Strategy Selection

The next step in climate action planning is to determine GHG emissions reduction pathways for meeting the adopted targets. A broad range of strategies are available for reducing GHG emissions. Local governments are recommended to carefully go through a list of strategies to determine which will be the most practical and effective for their region.

When selecting reductions strategies it is important to consider the following questions:

1. Is the strategy technically feasible and can it realistically be implemented?
2. Does the strategy offer potential co-benefits (e.g. air quality, job opportunities, etc.)?
3. Could the success of this strategy be tracked (e.g. data availability)?

Build a database

Before selecting strategies local governments may want to create a database of all possible options in order to select the most applicable and effective strategies.

For a list of GHG reduction strategies visit:

- California Air Pollution Control Officers Association report: Quantifying GHG Mitigation Measures
- California Energy Commission's Energy Aware Planning Guide
- Institute for Local Governments' Sustainable Practices Framework
- ICLEI's ClearPath library of reduction measures

Community Engagement

Promoting community participation in climate action planning is essential for understanding the public's concern of certain strategies and for assisting the community understands the purpose and need for reducing GHG emissions. Outreach events can give the community a chance to comment on proposed strategies and suggest their own creative measures.

- EPA's eight-step guide to community engagement: https://www.epa.gov/statelocalclimate/engage-community

**CoolCalifornia is currently in the process of developing a tool that assists local governments search for and compare GHG reduction strategies. Stay tuned!*

#5 Funding and Implementation

Staying on top of funding opportunities that can be used to supplement or cover proposed strategies is critical for putting proposed strategies into action. In addition to funding, reviewing best practice guidelines or case studies from other California local government can assist policymakers and planners maximize strategy effectiveness.

Find Funding

The Funding Wizard aggregates sustainable project funding opportunities from all over the web. Forms of funding include grants, loans, rebates, PACE financing, tax incentives, and more. Users can filter funding by project type, funding entity, and applicant type including funding for households and businesses too!

Implementation Guidelines & Best Practices

The following links provide guidelines and best practice case studies for many of the overarching GHG reduction strategy categories found through step #4. These resources can generally include specific on-the-ground steps for policymakers or planners to follow for implementation of both municipal and community focused strategies. **Resources in each category are sorted by date released or last updated.*

- **Complete Streets & Bike/Ped Development**
  - The best complete streets policies of 2015 - SGA/2015
  - Urban Bikeway Design Guide - NACTO/2014
  - Urban Street Design Guide - NACTO/2013
  - Guide to making neighborhoods more walkable and bikeable - ChangeLab/2013

- **Electric Vehicles**
  - The Logistics of Fleet EV Charging Station Deployment - FleetCarma/2017
  - 3 Ways Electric Vehicles Reduce Fleet Operating Costs - FleetCarma/2016
  - Plug-In Electric Vehicle Handbook - DOE/2012

- **Green Building Design**
  - Whole Building Design Guide - NIBS/2017
  - Sustainable Design and Green Building Toolkit for Local Governments - EPA/2013
  - Guide for advancing local green building policies - USGBC/2011
  - High performance school design best practices manual - CHPS/2006

- **Green Business Promotion**
  - Clearing house for financial incentives and support for small businesses - CBIG/2017
  - Resources for environmental permitting and green business incentives - Go-Biz/2017
  - Bay Area Green Business Program Policy Guide - ABAG/2012

- **Mixed-use and Infill Development**
  - Smart growth case studies - EPA/2015
  - Infill development policy roadmap - UCB/2014
  - Guidebook for estimating residential development capacity - LILP,MDP,UM/2005

- **Open Space and Agricultural Land Preservation**
  - Offsetting carbon emissions through open space best practices - ILG/2013

- **Renewable Energy**
  - Solar permitting and financing information - OPR/2016
  - Solar Powering Your Community: A Guide for Local Governments - DOE/2011

- **Residential and Commercial Building Energy Efficiency**
  - Home weatherization guide - ICLEI/2017
  - Best Practice Guidelines for Residential PACE Financing Programs - DOE/2016
  - Local Climate and Energy Program Model Design Guide - EPA/2015
  - Energy Aware Guide - CEC/2011

- **Transit Oriented Development**
  - Transit Street Design Guide - NACTO/2017
  - Mapping tool for estimating job access to transit - EPA/2016
  - Smart Mobility Plan - Caltrans/2010

- **Transportation Demand Management**
  - Parking Management Strategies Guide - VTPI/2017
  - Ride Sharing Options Toolkit - DOT/2010
  - Smart growth parking policy best practices - MTC/2007

- **Urban Forestry**
  - Urban forestry toolkit - ICLEI/2006
  - Guidelines for Developing and Evaluating Tree Ordinances - ISA/2001
  - Ten-Year Urban Forestry Action Plan - USFS&USDA/2015

- **Waste Diversion**
  - Comprehensive list of recycled building material suppliers - EPA/2017
  - Sample environmentally preferable procurement policies - CalRecycle/2015
  - International Landfill gas to energy projects guide- EPA/2012
  - Environmentally Preferable Purchasing Best Practices Manual - DGS/2005

- **Water Reuse**
  - Best Practices for Developing Indirect Potable Reuse Projects - CWB/2014

#6 Monitoring and Tracking

The key to long-term success in climate action planning is to regularly monitor and track the progress of GHG emissions reduction strategies. Regularly conducting new emission inventories (step#1) is the best method to establish whether a local government is on track for meeting planned reduction targets (step #2). However, it is also important to monitor both the level of implementation and efficacy of the individual reduction strategies selected.

The first step to tracking individual strategies is to determine strategy-specific metrics that reflect GHG reduction progress. When determining the best tracking metric for each strategy it is important to consider data availability since this is most often a limiting factor. The following resources provide recommended tracking metrics for common GHG reduction strategies:

- CAPCOA report: Quantifying GHG Mitigation Measures
- ICLEI's ClearPath software monitoring module

Secondly local governments are encouraged to create a repository for quantitatively tracking strategy progress and assign staff to regularly update this repository. Tracking can be performed in a simple Excel spreadsheet or using one of the user-friendly monitoring tools that have been created to assist local governments:

- Track progress of the reduction strategies recommend by ICLEI using ClearPath

- Track energy usage in buildings using the ENERGY STAR Portfolio Manager

Emission Calculators and Modeling Tools

Many useful emission estimation tools are provided for free from various state agencies and organizations. These tools can be used for conducting baseline inventories, forecasting future scenarios, and monitoring ongoing GHG reductions. Listed below includes tools for quantifying GHG emissions specific to various sources.

Web Databases

- On-road vehicle population, activity, and emissions by region: EMFAC 2014 Web Database
- Off-road vehicle emission factors: Off-Road Certification Database
- Statewide electricity consumption by entity: CEC Electricity Consumption Web Database

Calculators

- GHG emissions reductions from green buildings: GreenPoint Rated Climate Calculator
- GHG emissions from household and business operations: Carbon Footprint Calculator

Modeling Programs

- Parcel to city level urban forestry impacts from carbon sequestration and tree shading: i-Tree
- GHG emissions associated with building construction and operations of various land use projects: CalEEMod
- GHG emissions from solid waste management practices: Waste Reduction Model (WARM)

Mapping Tools

- EPA tools: Access to Jobs and Workers via Transit, National Walkability Index, and Smart Location
- Cal-Adapt: Modeling the effects of climate change on California lands
- CARB - Facility level emissions reported under the Cap-and-Trade Program
- Citilabs - Community accessibility and walkability planning tools - Paid membership required

Additional Resources

- State of local climate action in California – ICLEI 2016 Report

- Facility level GHG reporting guidelines – ARB Regulation Report

- Guidelines for corporations looking to conduct a GHG inventory – Corporate Standard

- International network of mayors, city representatives, and committees for climate action – C40 Cities

- Local government guide to the Paris climate agreements – ICLEI 2016 Report