SANDAG

REGIONAL CLIMATE ACTION PLANNING FRAMEWORK

VERSION 1.1: DECEMBER 2020

ABOUT RECAP

In recent years, nearly all of the San Diego region's 19 local governments have adopted a climate action plan (CAP), or are in the process of creating one. Local agency staff members and elected officials communicated that their ongoing efforts to adopt, update, and monitor the implementation of their plans would benefit from regionally consistent approaches, methodologies, and data sources. In response, the San Diego Association of Governments (SANDAG) collaborated with local agency staff and leading climate planning experts to prepare this Regional Climate Action Planning Framework (ReCAP) that identifies best practices and guidance for preparing CAPs and monitoring their implementation over time. This guidance document establishes a technical framework for regionally-consistent climate action planning that preserves policy flexibility for the unique needs and circumstances of each local jurisdiction.

ReCAP guiding principles:

- Transparency – clear methodologies and assumptions
- Data-driven – methodologies are based on relevant and accurate scientific data
- Regional consistency – consistency with other regional planning efforts
- Use of accepted methods – developed using State guidance
- Local relevancy – a helpful resource for local agency staff
- Flexibility and adaptability – reflects the iterative process of climate action planning

LOOK FOR THIS ICON THROUGHOUT THE ReCAP TO KNOW WHICH TECHNICAL APPENDIX TO REFER TO FOR FURTHER INFORMATION.

The ReCAP has six technical appendices that provide detail on all topics covered in the ReCAP.

The appendices are:

I. Greenhouse Gas (GHG) Inventories, Projections, and Target Selection

II. Methods to Calculate GHG Emissions Impacts of CAP Measures

III. Benefit-Cost Analysis for CAP Measures

IV. CAP Implementation Cost Analysis

V. California Environmental Quality Act (CEQA) and Climate Action Planning

VI. CAP Monitoring and Reporting

ReCAP is provided to SANDAG member agencies through the Energy Roadmap Program. Since 2010, the SANDAG Roadmap Program has provided member agencies with voluntary, no-cost energy assessments, known as "Energy Roadmaps." Each Energy Roadmap provides strategies, unique to each local government, to reduce energy use in municipal operations and in the community.

As the Energy Roadmaps were completed for the local jurisdictions in the region, the demand to implement the Energy Roadmaps and assist in the development and implementation of CAPs increased. In 2016, the Roadmap Program was expanded to include no-cost climate action planning services; this supported the development and update of ReCAP, in addition to GHG inventories and monitoring reports, or "ReCAP Snapshots", for the local jurisdictions in the region. For more information, visit **sandag.org/climate**

The Roadmap Program is primarily funded by California utility customers and administered by the San Diego Gas & Electric® Company under the auspices of the California Public Utilities Commission.

WHAT IS A CLIMATE ACTION PLAN?

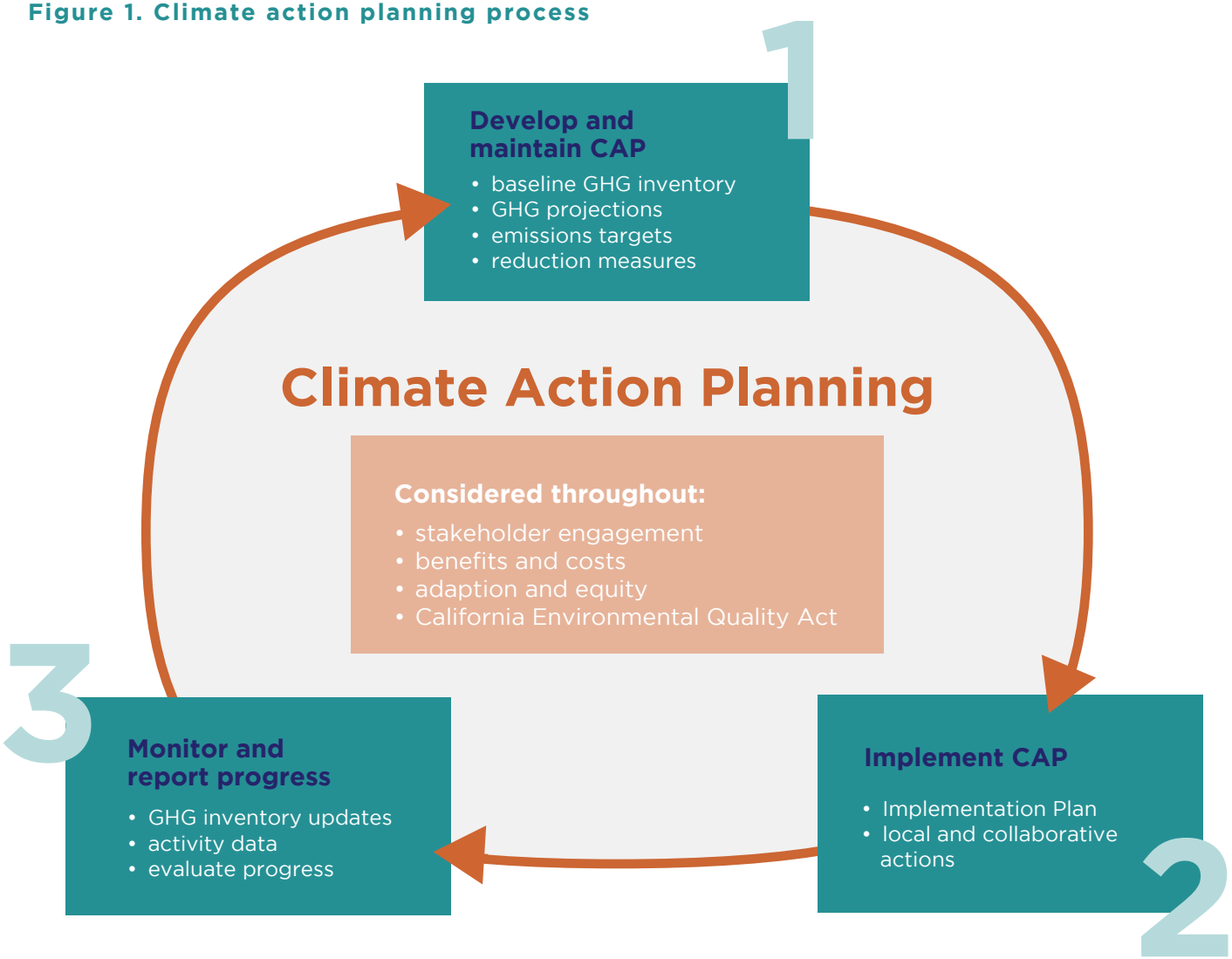
A CAP is a comprehensive policy document that outlines the actions a jurisdiction will take to reduce GHG emissions. CAPs are commonly prepared by jurisdictions to show how local goals and policies align with statewide targets for GHG reductions. CAPs also have been prepared to show how a jurisdiction will mitigate for the GHG emissions of a large-scale plan, like a General Plan. CAPs typically follow a similar format, and specific content within a CAP is tailored to each jurisdiction's individual needs and circumstances.

The main elements of a CAP are:

- GHG inventory and projections
- GHG reduction targets
- GHG reduction measures
- Implementation and monitoring steps

Many CAPs also include sections on climate change vulnerabilities and adaptation measures. Adopting a CAP marks the beginning of an iterative process of implementing, monitoring, and updating the CAP. Figure 1 provides an overview of the climate action planning process; more details on each topic are provided within the ReCAP.

Figure 1. Climate action planning process



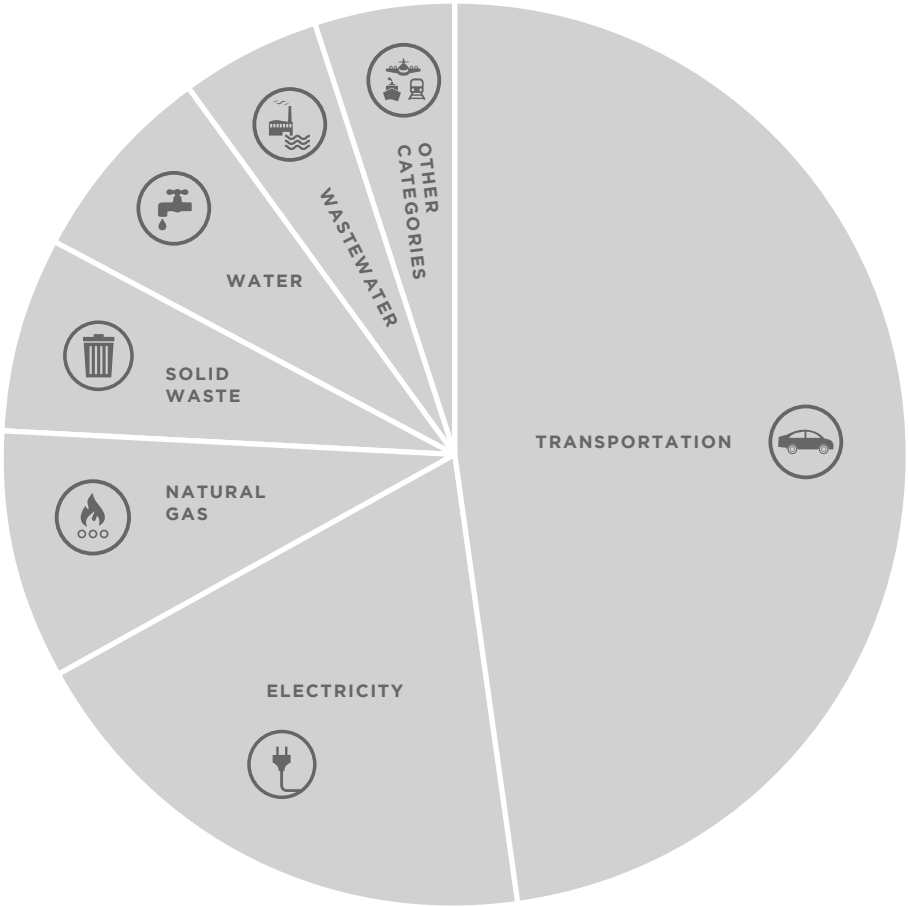
INVENTORIES

A GHG emissions inventory is a snapshot reference of the annual emissions associated with a jurisdiction's community-wide activities. GHG emissions inventories are a critical component of the CAP process used to establish emissions targets/goals and monitor emissions over time.

Local government GHG emissions inventories are based on activities that a jurisdiction has control over, taking place within its boundaries. However, there are emissions associated with federal and special entities (e.g., public universities, tribal nations, airports, port districts, transit agencies) which may be addressed outside of a conventional local inventory. An inventory for a special district may include unique categories of emissions not represented in local inventories.

GHG emissions originate from a variety of sources, all of which are documented, quantified, and analyzed within a GHG inventory. A typical GHG inventory for a local agency captures emissions from transportation, electricity, natural gas, water, wastewater, and solid waste activities. GHG emissions are calculated in metric tons of carbon dioxide equivalent (MT CO_2e). Data and estimates from different organizations (e.g., SANDAG, San Diego Gas & Electric [SDG&E®], local jurisdiction departments) are needed to complete an inventory. Inventories are developed based on the best available data and methods, which change over time and should be accounted for when comparing inventory years.

FOR MORE INFORMATION ON GHG INVENTORIES, SEE TECHNICAL APPENDIX I.



To learn more about each inventory category, click on each icon for data inputs and sources.

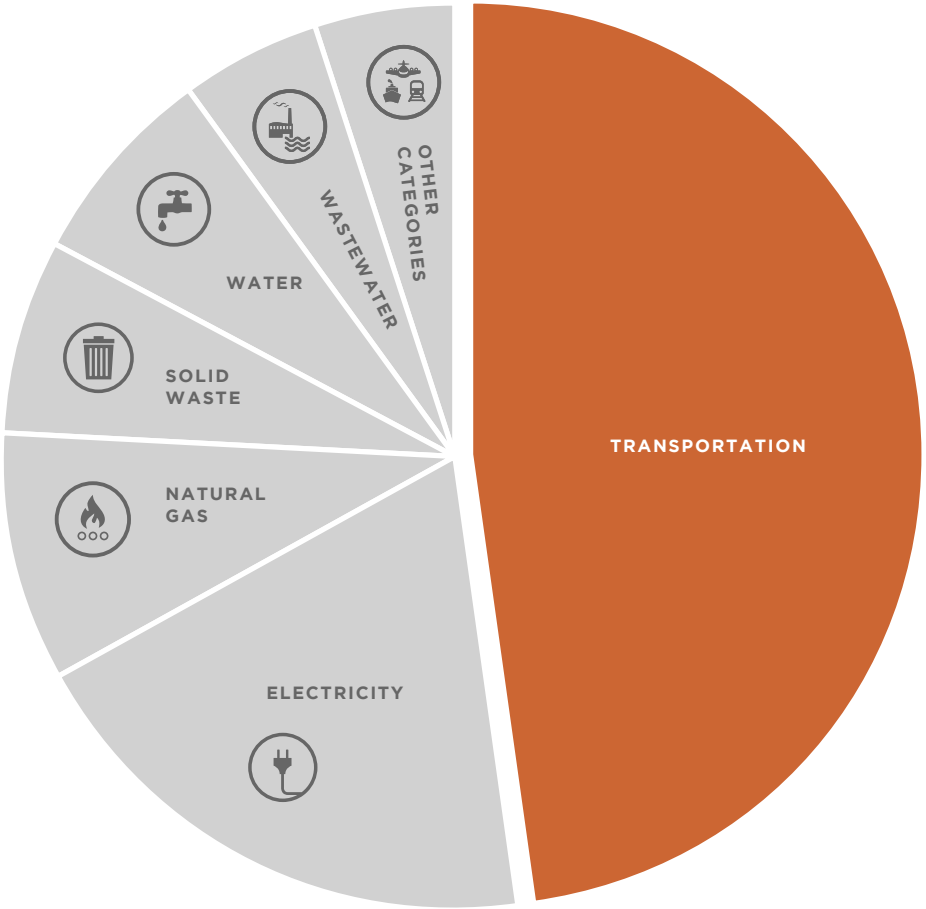
INVENTORIES

A GHG emissions inventory is a snapshot reference of the annual emissions associated with a jurisdiction's community-wide activities. GHG emissions inventories are a critical component of the CAP process used to establish emissions targets/goals and monitor emissions over time.

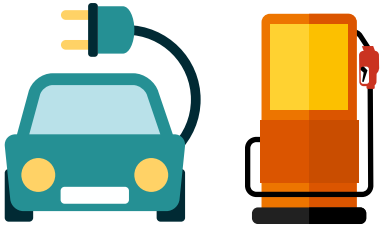
Local government GHG emissions inventories are based on activities that a jurisdiction has control over, taking place within its boundaries. However, there are emissions associated with federal and special entities (e.g., public universities, tribal nations, airports, port districts, transit agencies) which may be addressed outside of a conventional local inventory. An inventory for a special district may include unique categories of emissions not represented in local inventories.

GHG emissions originate from a variety of sources, all of which are documented, quantified, and analyzed within a GHG inventory. A typical GHG inventory for a local agency captures emissions from transportation, electricity, natural gas, water, wastewater, and solid waste activities. GHG emissions are calculated in metric tons of carbon dioxide equivalent (MT CO_2e). Data and estimates from different organizations (e.g., SANDAG, San Diego Gas & Electric [SDG&E®], local jurisdiction departments) are needed to complete an inventory. Inventories are developed based on the best available data and methods, which change over time and should be accounted for when comparing inventory years.

FOR MORE INFORMATION ON GHG INVENTORIES, SEE TECHNICAL APPENDIX I.



- largest source of emissions
- **source**: on-road vehicles



- **emissions based on**: regional vehicle types and fuel types

- **source data measured in**: vehicle miles traveled (VMT)

- **key data input**: SANDAG Regional Travel Demand Model
- Origin-Destination methodology allocates VMT to jurisdictions

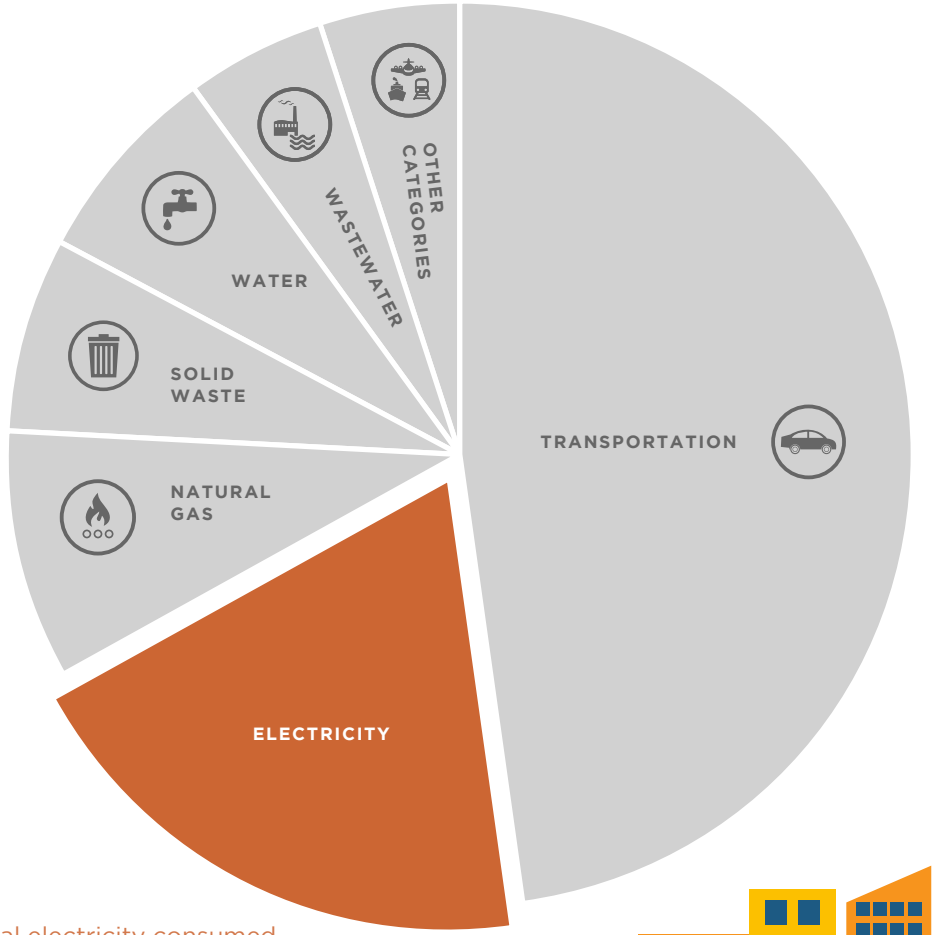
INVENTORIES

A GHG emissions inventory is a snapshot reference of the annual emissions associated with a jurisdiction's community-wide activities. GHG emissions inventories are a critical component of the CAP process used to establish emissions targets/goals and monitor emissions over time.

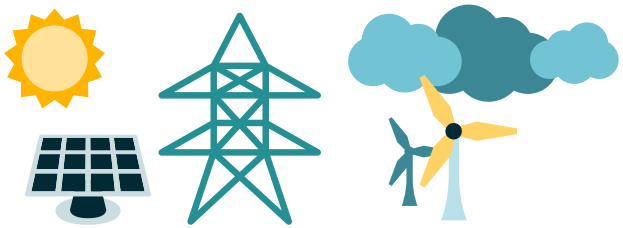
Local government GHG emissions inventories are based on activities that a jurisdiction has control over, taking place within its boundaries. However, there are emissions associated with federal and special entities (e.g., public universities, tribal nations, airports, port districts, transit agencies) which may be addressed outside of a conventional local inventory. An inventory for a special district may include unique categories of emissions not represented in local inventories.

GHG emissions originate from a variety of sources, all of which are documented, quantified, and analyzed within a GHG inventory. A typical GHG inventory for a local agency captures emissions from transportation, electricity, natural gas, water, wastewater, and solid waste activities. GHG emissions are calculated in metric tons of carbon dioxide equivalent (MT CO_2e). Data and estimates from different organizations (e.g., SANDAG, San Diego Gas & Electric [SDG&E®], local jurisdiction departments) are needed to complete an inventory. Inventories are developed based on the best available data and methods, which change over time and should be accounted for when comparing inventory years.

FOR MORE INFORMATION ON GHG INVENTORIES, SEE TECHNICAL APPENDIX I.



- **source**: total electricity consumed
- **emissions based on**: amount of renewable and non-renewable electricity
- **source data measured in**: kilowatt hours



- **key data input**: SDG&E®, local electricity provider

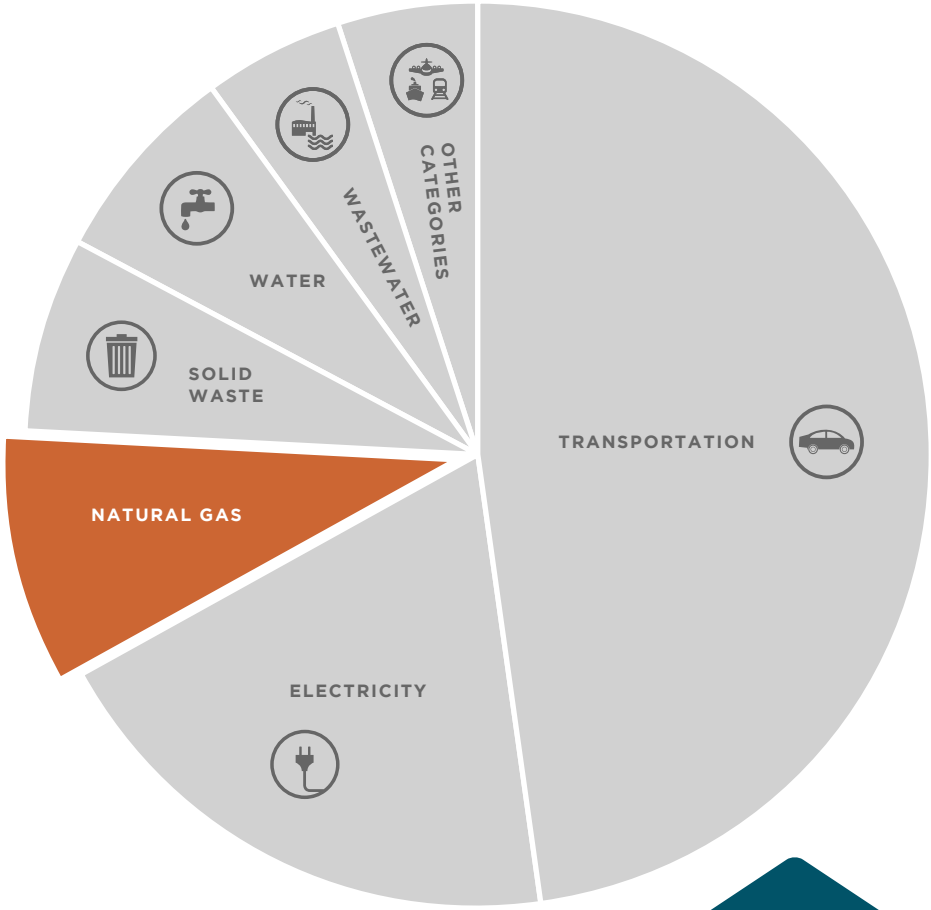
INVENTORIES

A GHG emissions inventory is a snapshot reference of the annual emissions associated with a jurisdiction's community-wide activities. GHG emissions inventories are a critical component of the CAP process used to establish emissions targets/goals and monitor emissions over time.

Local government GHG emissions inventories are based on activities that a jurisdiction has control over, taking place within its boundaries. However, there are emissions associated with federal and special entities (e.g., public universities, tribal nations, airports, port districts, transit agencies) which may be addressed outside of a conventional local inventory. An inventory for a special district may include unique categories of emissions not represented in local inventories.

GHG emissions originate from a variety of sources, all of which are documented, quantified, and analyzed within a GHG inventory. A typical GHG inventory for a local agency captures emissions from transportation, electricity, natural gas, water, wastewater, and solid waste activities. GHG emissions are calculated in metric tons of carbon dioxide equivalent (MT CO_2e). Data and estimates from different organizations (e.g., SANDAG, San Diego Gas & Electric [SDG&E®], local jurisdiction departments) are needed to complete an inventory. Inventories are developed based on the best available data and methods, which change over time and should be accounted for when comparing inventory years.

FOR MORE INFORMATION ON GHG INVENTORIES, SEE TECHNICAL APPENDIX I.



- **source**: total end-use natural gas consumed (or burned)
- **emissions based on:** heat content of fuel
- **source data measured in**: therms
- **key data input**: SDG&E®

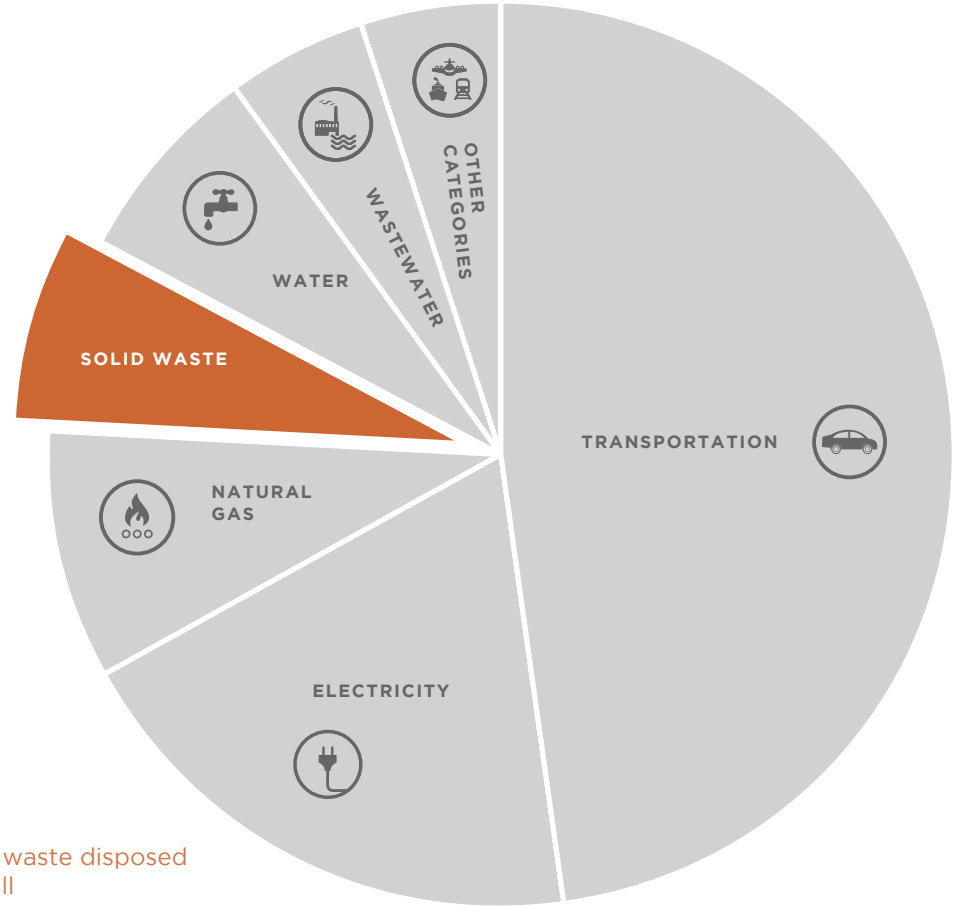
INVENTORIES

A GHG emissions inventory is a snapshot reference of the annual emissions associated with a jurisdiction's community-wide activities. GHG emissions inventories are a critical component of the CAP process used to establish emissions targets/goals and monitor emissions over time.

Local government GHG emissions inventories are based on activities that a jurisdiction has control over, taking place within its boundaries. However, there are emissions associated with federal and special entities (e.g., public universities, tribal nations, airports, port districts, transit agencies) which may be addressed outside of a conventional local inventory. An inventory for a special district may include unique categories of emissions not represented in local inventories.

GHG emissions originate from a variety of sources, all of which are documented, quantified, and analyzed within a GHG inventory. A typical GHG inventory for a local agency captures emissions from transportation, electricity, natural gas, water, wastewater, and solid waste activities. GHG emissions are calculated in metric tons of carbon dioxide equivalent (MT CO_2e). Data and estimates from different organizations (e.g., SANDAG, San Diego Gas & Electric [SDG&E®], local jurisdiction departments) are needed to complete an inventory. Inventories are developed based on the best available data and methods, which change over time and should be accounted for when comparing inventory years.

FOR MORE INFORMATION ON GHG INVENTORIES, SEE TECHNICAL APPENDIX I.



- **source**: waste disposed in landfill
- **emissions based on**: composition of waste and gas capture at landfills
- **source data measured in**: tons
- **key data input**: CalRecycle

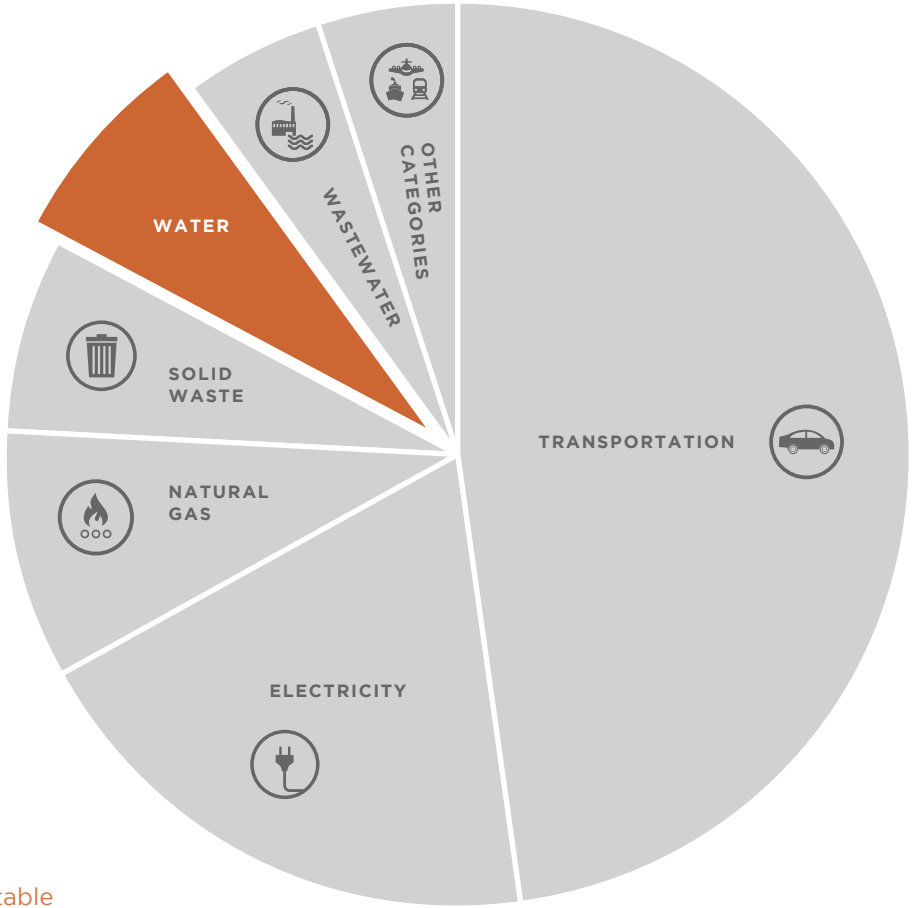
INVENTORIES

A GHG emissions inventory is a snapshot reference of the annual emissions associated with a jurisdiction's community-wide activities. GHG emissions inventories are a critical component of the CAP process used to establish emissions targets/goals and monitor emissions over time.

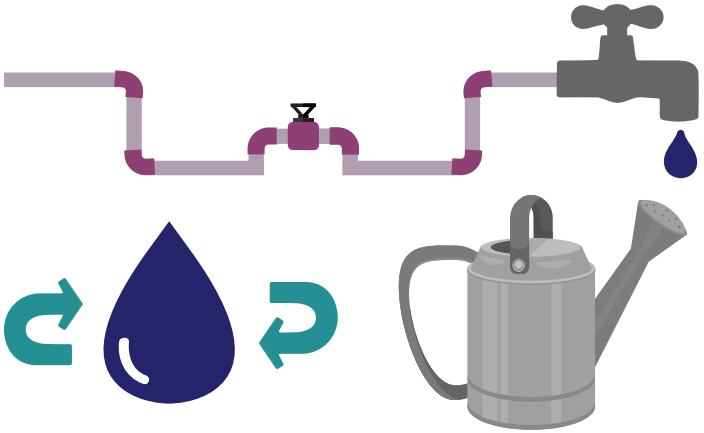
Local government GHG emissions inventories are based on activities that a jurisdiction has control over, taking place within its boundaries. However, there are emissions associated with federal and special entities (e.g., public universities, tribal nations, airports, port districts, transit agencies) which may be addressed outside of a conventional local inventory. An inventory for a special district may include unique categories of emissions not represented in local inventories.

GHG emissions originate from a variety of sources, all of which are documented, quantified, and analyzed within a GHG inventory. A typical GHG inventory for a local agency captures emissions from transportation, electricity, natural gas, water, wastewater, and solid waste activities. GHG emissions are calculated in metric tons of carbon dioxide equivalent (MT CO_2e). Data and estimates from different organizations (e.g., SANDAG, San Diego Gas & Electric [SDG&E®], local jurisdiction departments) are needed to complete an inventory. Inventories are developed based on the best available data and methods, which change over time and should be accounted for when comparing inventory years.

FOR MORE INFORMATION ON GHG INVENTORIES, SEE TECHNICAL APPENDIX I.



- **source**: potable and recycled water
- **emissions based on**: energy used to pump and treat water
- **source data measured in**: gallons
- **key data input**: local water districts



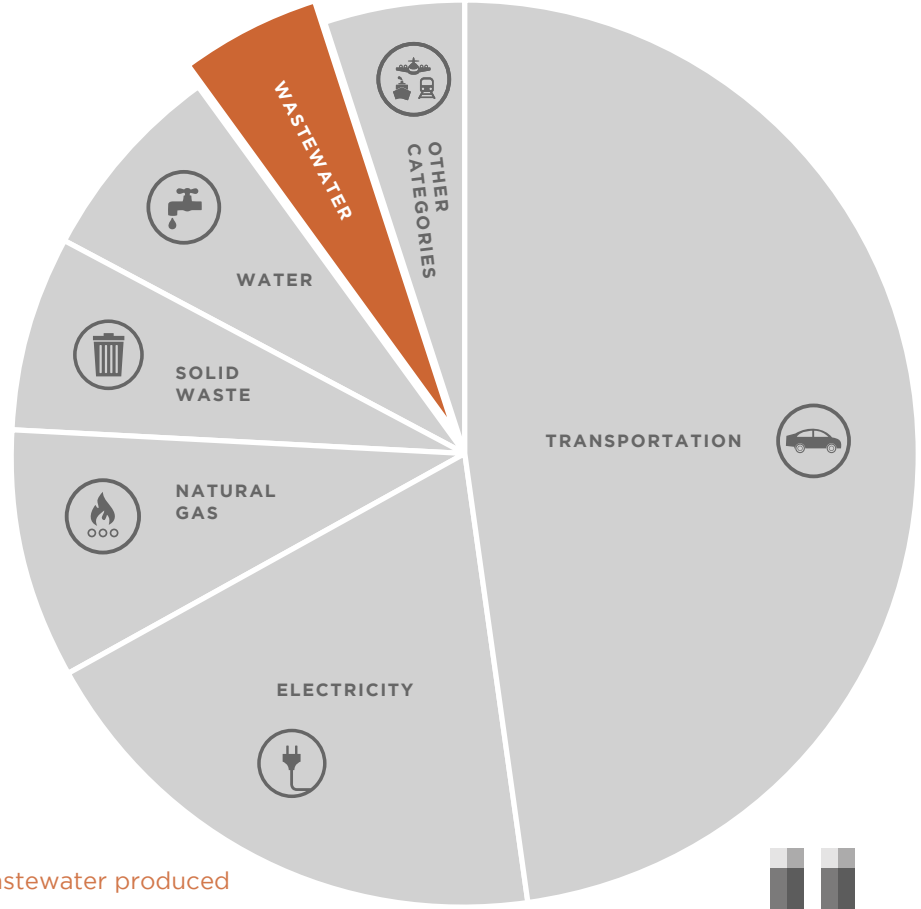
INVENTORIES

A GHG emissions inventory is a snapshot reference of the annual emissions associated with a jurisdiction's community-wide activities. GHG emissions inventories are a critical component of the CAP process used to establish emissions targets/goals and monitor emissions over time.

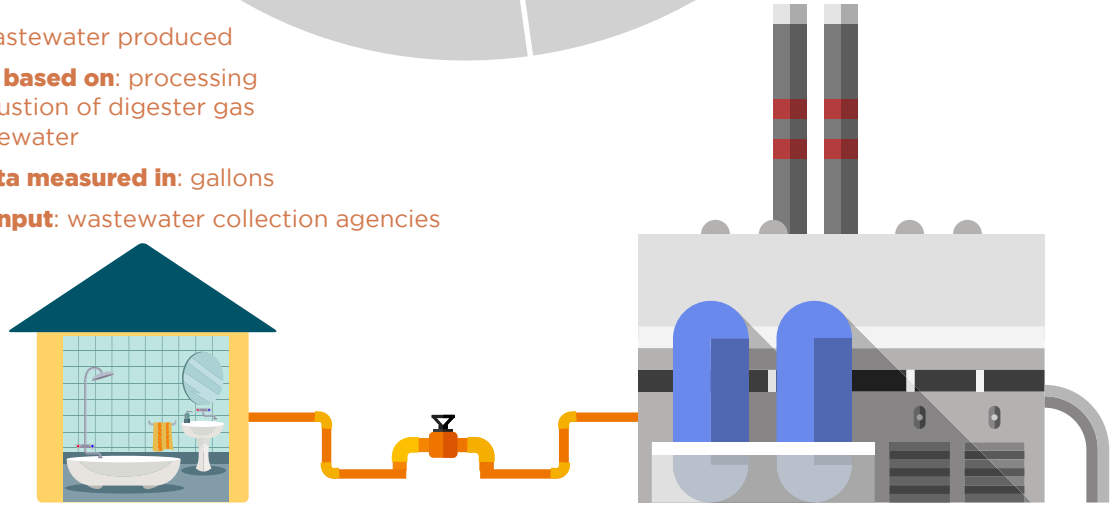
Local government GHG emissions inventories are based on activities that a jurisdiction has control over, taking place within its boundaries. However, there are emissions associated with federal and special entities (e.g., public universities, tribal nations, airports, port districts, transit agencies) which may be addressed outside of a conventional local inventory. An inventory for a special district may include unique categories of emissions not represented in local inventories.

GHG emissions originate from a variety of sources, all of which are documented, quantified, and analyzed within a GHG inventory. A typical GHG inventory for a local agency captures emissions from transportation, electricity, natural gas, water, wastewater, and solid waste activities. GHG emissions are calculated in metric tons of carbon dioxide equivalent (MT CO_2e). Data and estimates from different organizations (e.g., SANDAG, San Diego Gas & Electric [SDG&E®], local jurisdiction departments) are needed to complete an inventory. Inventories are developed based on the best available data and methods, which change over time and should be accounted for when comparing inventory years.

FOR MORE INFORMATION ON GHG INVENTORIES, SEE TECHNICAL APPENDIX I.



- **source**: wastewater produced
- **emissions based on**: processing and combustion of digester gas from wastewater
- **source data measured in**: gallons
- **key data input**: wastewater collection agencies



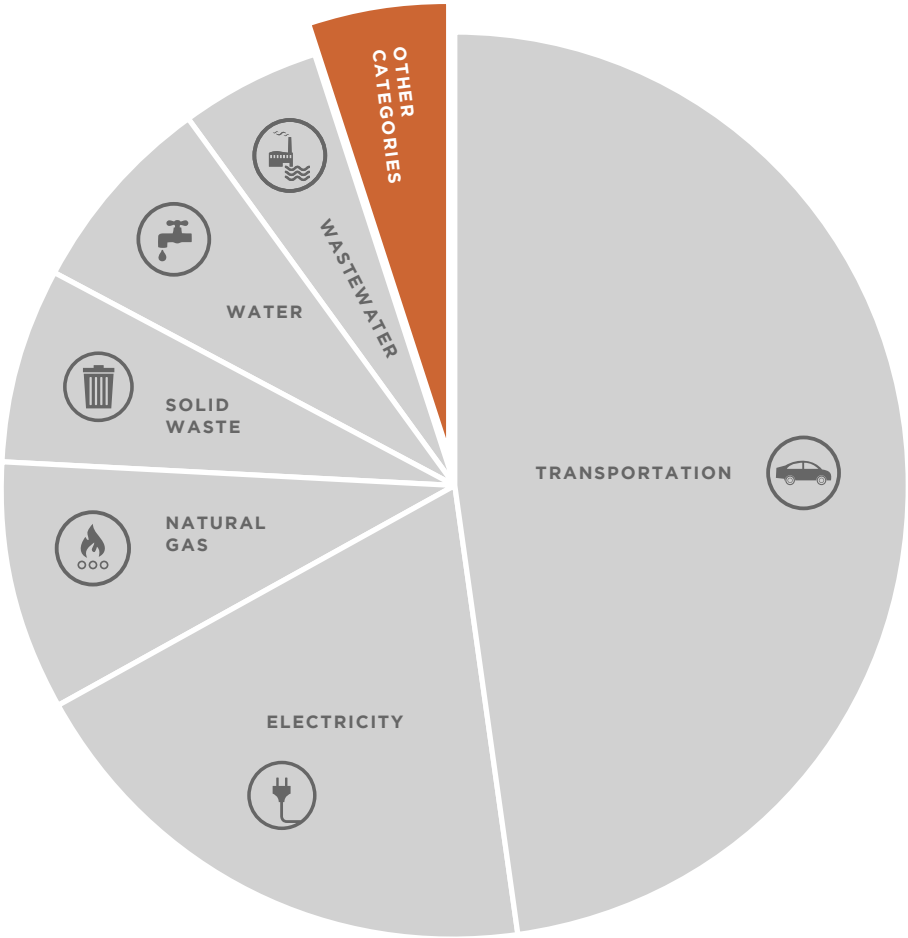
INVENTORIES

A GHG emissions inventory is a snapshot reference of the annual emissions associated with a jurisdiction's community-wide activities. GHG emissions inventories are a critical component of the CAP process used to establish emissions targets/goals and monitor emissions over time.

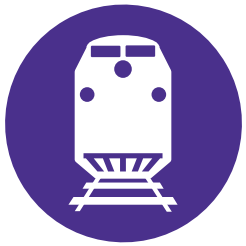
Local government GHG emissions inventories are based on activities that a jurisdiction has control over, taking place within its boundaries. However, there are emissions associated with federal and special entities (e.g., public universities, tribal nations, airports, port districts, transit agencies) which may be addressed outside of a conventional local inventory. An inventory for a special district may include unique categories of emissions not represented in local inventories.

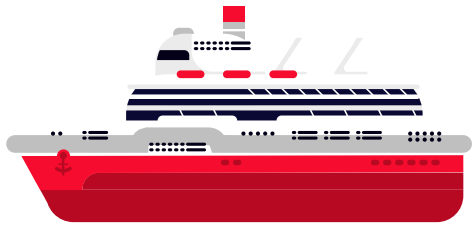
GHG emissions originate from a variety of sources, all of which are documented, quantified, and analyzed within a GHG inventory. A typical GHG inventory for a local agency captures emissions from transportation, electricity, natural gas, water, wastewater, and solid waste activities. GHG emissions are calculated in metric tons of carbon dioxide equivalent (MT CO_2e). Data and estimates from different organizations (e.g., SANDAG, San Diego Gas & Electric [SDG&E®], local jurisdiction departments) are needed to complete an inventory. Inventories are developed based on the best available data and methods, which change over time and should be accounted for when comparing inventory years.

FOR MORE INFORMATION ON GHG INVENTORIES, SEE TECHNICAL APPENDIX I.



Other categories of emissions that are included in the regional inventory and, as appropriate, for local inventories include: industrial, agriculture, off-road equipment and vehicles, civil aviation, rail, land use/wildfire, and marine vessels.





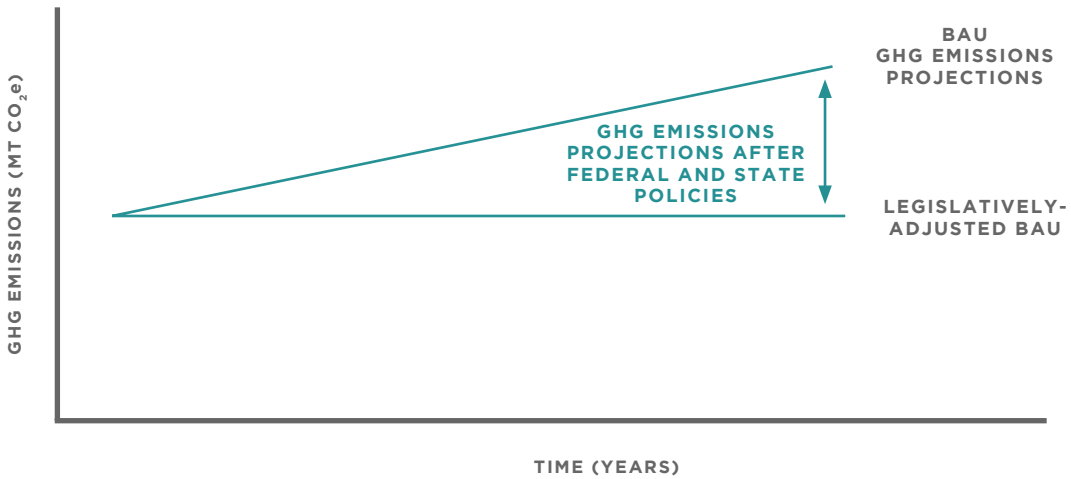
BASELINE YEAR & PROJECTIONS

The baseline year for a CAP is the starting point for tracking activities within the CAP. Emissions targets are calculated in relation to the baseline year emissions. Using the baseline GHG inventory and estimates for population, housing, and job growth from the Regional Growth Forecast, CAPs include emissions projections into the future. First, a business-as-usual (BAU) projection demonstrates emissions growth in the absence of any new policies and programs. Next, emissions reductions from federal and State policies and programs are applied in the future, creating a legislatively-adjusted BAU. An illustration of this is seen in Figure 2.

SANDAG updates the Regional Growth Forecast every four years. Federal and State policies change regularly. Updating projections can allow for a better understanding of these impacts on future GHG emissions.

FOR MORE INFORMATION ON EMISSIONS PROJECTIONS, SEE TECHNICAL APPENDIX I.

Figure 2. BAU & legislatively-adjusted GHG emissions projections



EMISSIONS TARGETS

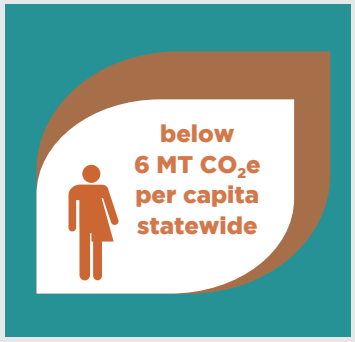
In 2005, California's Governor issued a statewide GHG emissions goal, Assembly Bill 32, to return to 1990 GHG levels by 2020; a statewide GHG reduction goal for 2050 was also issued. More recently, the State Legislature established a statewide target for 2030, the Governor set a carbon neutrality target for 2045, and the California Air Resources (CARB) developed statewide per capita targets for 2030 and 2050, as depicted below. These limits represent California's contribution (or "fair share") to international agreements to reduce GHG emissions to the scientifically-based levels to limit global warming below two degrees Celsius.

State GHG emissions goals *(as of 2020)*

2030

Senate Bill 32

CARB 2017 Scoping Plan

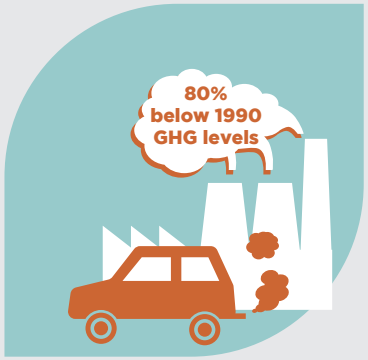


2045

Executive Order B-55-18

2050

Executive Order S-3-05



CARB 2017 Scoping Plan

Target-setting for local climate action plans

CARB's guidance on target-setting for local CAPs preserves local jurisdictions' discretion in selecting emissions targets, yet offers recommended approaches for aligning local targets with the statewide goals. While these goals reference a 1990 baseline, local jurisdictions typically establish emissions targets from a current baseline using accepted methods. The following summarizes voluntary guidance to local governments on establishing GHG emissions targets from CARB's 2017 Scoping Plan:

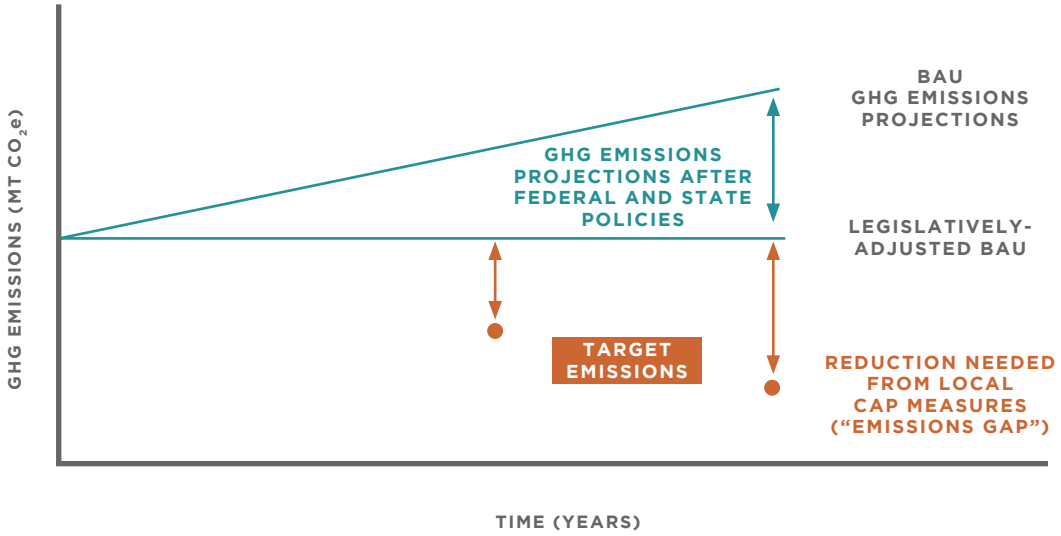
- Evaluate and adopt robust, locally-appropriate emissions goals based on local inventory categories
- Express goals in mass emissions, per capita emissions, and service population emissions
- Show a downward-trending GHG emissions trajectory consistent with the statewide goals

FOR MORE INFORMATION ON EMISSIONS REDUCTION TARGETS, SEE TECHNICAL APPENDIX I.

CLOSING THE GAP

Once emissions targets have been established, the next step in the climate action planning process is to identify strategies to reduce GHG emissions to target levels. Federal, State, and local activities have a role to play in achieving GHG emissions targets for a local jurisdiction. Before developing local strategies, the GHG reduction impact of federal and State policies and programs is quantified at the local level. While other agencies are responsible for implementing federal and State strategies, the local GHG reduction impact should be included in local CAPs. The difference between the legislatively-adjusted BAU and the emissions targets is known as the "emissions gap," as shown in Figure 3. Jurisdictions typically consider several GHG reduction measures within many categories and must determine which suite of measures will "close the gap" while aligning with other priorities for the community.

Figure 3. Emissions gap to meet CAP targets



GHG REDUCTION STRATEGIES & MEASURES

There are many considerations for selecting local reduction measures, including:

- GHG reduction potential
- ability, time, and cost to implement
- available funding
- equity
- community priorities
- co-benefits (positive external impacts)
- ability to monitor

A summary of CAP measures is available in Technical Appendix II.

While there are similarities in GHG reduction strategies across local CAPs, the measures within each CAP are uniquely crafted based on local needs and conditions.

To read about California's 2030 vision (as set forth in CARB's 2017 Scoping Plan) and sample local CAP measures, click on the icons to reveal more information.

FOR MORE INFORMATION ON METHODS TO CALCULATE GHG REDUCTION MEASURES, SEE TECHNICAL APPENDIX II.

TRANSPORTATION

ELECTRICITY

NATURAL GAS

SOLID WASTE

WATER

WASTEWATER

OTHER CATEGORIES

Strategies

cleaner fuels, increased vehicle fuel economy, reduced VMT growth

California's 2030 Vision

high density and transit-oriented housing, walkable and bikable communities, on-road gasoline demand reduced by half, zero-emission bus fleet, five million affordable electric cars on the road, 18% carbon intensity reduction in fuels

San Diego Forward: The Regional Plan

5 Big Moves: *complete multimodal corridors, high-speed and high-capacity transit service, mobility hub development, shared and flexible fleet services, modernizing transportation system through technology*

Example Local CAP Measures

promote public transit, increase active transportation, advance smart growth, provide infrastructure for electric and alternative fuel vehicles

GHG REDUCTION STRATEGIES & MEASURES

There are many considerations for selecting local reduction measures, including:

- GHG reduction potential
- ability, time, and cost to implement
- available funding
- equity
- community priorities
- co-benefits (positive external impacts)
- ability to monitor

A summary of CAP measures is available in Technical Appendix II.

While there are similarities in GHG reduction strategies across local CAPs, the measures within each CAP are uniquely crafted based on local needs and conditions.

To read about California's 2030 vision (as set forth in CARB's 2017 Scoping Plan) and sample local CAP measures, click on the icons to reveal more information.

FOR MORE INFORMATION ON METHODS TO CALCULATE GHG REDUCTION MEASURES, SEE TECHNICAL APPENDIX II.

TRANSPORTATION

ELECTRICITY

NATURAL GAS

SOLID WASTE

WATER

WASTEWATER

OTHER CATEGORIES

Strategies

reduce electricity use, cleaner electricity sources

California's 2030 Vision

at least 60% renewable electricity, double energy-efficiency in buildings

SANDAG Roadmap Program

implement energy-saving opportunities in municipal facilities, promote community-wide energy-saving programs

Example Local CAP Measures

benchmark buildings, establish more stringent building efficiency standards, set renewable and zero-carbon renewable electricity goals, install solar photovoltaics, establish Community Choice Aggregation / Community Choice Energy program

GHG REDUCTION STRATEGIES & MEASURES

There are many considerations for selecting local reduction measures, including:

- GHG reduction potential
- ability, time, and cost to implement
- available funding
- equity
- community priorities
- co-benefits (positive external impacts)
- ability to monitor

A summary of CAP measures is available in Technical Appendix II.

While there are similarities in GHG reduction strategies across local CAPs, the measures within each CAP are uniquely crafted based on local needs and conditions.

To read about California's 2030 vision (as set forth in CARB's 2017 Scoping Plan) and sample local CAP measures, click on the icons to reveal more information.

FOR MORE INFORMATION ON METHODS TO CALCULATE GHG REDUCTION MEASURES, SEE TECHNICAL APPENDIX II.

TRANSPORTATION

ELECTRICITY

NATURAL GAS

SOLID WASTE

WATER

WASTEWATER

OTHER CATEGORIES

Strategies

increase natural gas end-use efficiency

California's 2030 Vision

reduce fugitive methane emissions and system leaks, increase production and use of renewable gas, replace natural gas end-use with electricity

Example Local CAP Measures

establish more stringent building efficiency standards, install alternative powered water heaters, increase renewable energy use

GHG REDUCTION STRATEGIES & MEASURES

There are many considerations for selecting local reduction measures, including:

- GHG reduction potential
- ability, time, and cost to implement
- available funding
- equity
- community priorities
- co-benefits (positive external impacts)
- ability to monitor

A summary of CAP measures is available in Technical Appendix II.

While there are similarities in GHG reduction strategies across local CAPs, the measures within each CAP are uniquely crafted based on local needs and conditions.

To read about California's 2030 vision (as set forth in CARB's 2017 Scoping Plan) and sample local CAP measures, click on the icons to reveal more information.

FOR MORE INFORMATION ON METHODS TO CALCULATE GHG REDUCTION MEASURES, SEE TECHNICAL APPENDIX II.

TRANSPORTATION

ELECTRICITY

NATURAL GAS

SOLID WASTE

WATER

WASTEWATER

OTHER CATEGORIES

Strategies

reduce amount of solid waste going to landfills, increase methane capture from landfills, increase recycling

California's 2030 Vision

75% organic waste diversion from landfills, increase use of landfill gas, reduce amount of edible food sent to landfills, develop a packaging reduction goal

Example Local CAP Measures

adopt zero waste policy, increase composting, encourage waste recycling, divert construction waste, re-use captured methane

GHG REDUCTION STRATEGIES & MEASURES

There are many considerations for selecting local reduction measures, including:

- GHG reduction potential
- ability, time, and cost to implement
- available funding
- equity
- community priorities
- co-benefits (positive external impacts)
- ability to monitor

A summary of CAP measures is available in Technical Appendix II.

While there are similarities in GHG reduction strategies across local CAPs, the measures within each CAP are uniquely crafted based on local needs and conditions.

To read about California's 2030 vision (as set forth in CARB's 2017 Scoping Plan) and sample local CAP measures, click on the icons to reveal more information.

FOR MORE INFORMATION ON METHODS TO CALCULATE GHG REDUCTION MEASURES, SEE TECHNICAL APPENDIX II.

TRANSPORTATION

ELECTRICITY

NATURAL GAS

SOLID WASTE

WATER

WASTEWATER

OTHER CATEGORIES

Strategies

reduce water use, diversify water supply sources

California's 2030 Vision

develop and implement new water use targets beyond 20% reduction of existing goal, minimize water system leaks, develop a long-term water conservation regulation, update appliance efficiency regulations

Example Local CAP Measures

conserve water, adopt outdoor landscape ordinance, collect rainwater, increase use of recycled water

GHG REDUCTION STRATEGIES & MEASURES

There are many considerations for selecting local reduction measures, including:

- GHG reduction potential
- ability, time, and cost to implement
- available funding
- equity
- community priorities
- co-benefits (positive external impacts)
- ability to monitor

A summary of CAP measures is available in Technical Appendix II.

While there are similarities in GHG reduction strategies across local CAPs, the measures within each CAP are uniquely crafted based on local needs and conditions.

To read about California's 2030 vision (as set forth in CARB's 2017 Scoping Plan) and sample local CAP measures, click on the icons to reveal more information.

FOR MORE INFORMATION ON METHODS TO CALCULATE GHG REDUCTION MEASURES, SEE TECHNICAL APPENDIX II.

TRANSPORTATION

ELECTRICITY

NATURAL GAS

SOLID WASTE

WATER

WASTEWATER

OTHER CATEGORIES

Strategies

reduce amount of wastewater, capture/re-use of methane

California's 2030 Vision

recover methane from wastewater treatment facilities

Example Local CAP Measures

increase methane capture at wastewater treatment plants

GHG REDUCTION STRATEGIES & MEASURES

There are many considerations for selecting local reduction measures, including:

- GHG reduction potential
- ability, time, and cost to implement
- available funding
- equity
- community priorities
- co-benefits (positive external impacts)
- ability to monitor

A summary of CAP measures is available in Technical Appendix II.

While there are similarities in GHG reduction strategies across local CAPs, the measures within each CAP are uniquely crafted based on local needs and conditions.

To read about California's 2030 vision (as set forth in CARB's 2017 Scoping Plan) and sample local CAP measures, click on the icons to reveal more information.

FOR MORE INFORMATION ON METHODS TO CALCULATE GHG REDUCTION MEASURES, SEE TECHNICAL APPENDIX II.

TRANSPORTATION

ELECTRICITY

NATURAL GAS

SOLID WASTE

WATER

WASTEWATER

OTHER CATEGORIES

California's 2030 Vision

15-20 million MT CO_2e reductions from natural and working lands restoration; 40% reduction in methane and other "super pollutants"; Sustainable Freight; transitioning to zero emissions where feasible, and near-zero emissions with renewable fuels everywhere else; cap-and-trade; firm limit on 80% of emissions

Example Local CAP Measures

increase urban tree canopy cover, conserve open space

CONSIDERING COSTS

A benefit-cost analysis and implementation cost analysis can help guide the selection of GHG reduction measures during CAP development, or inform CAP implementation.The main questions addressed in these cost analyses are:

- For each CAP measure, what is the benefit or cost to reduce one MT CO_2e?
- What are the financial impacts to participants (e.g., home and business owners) associated with each CAP measure?
- What is the budgetary impact to the local jurisdiction to implement CAP measures?

Benefit-cost analysis perspectives

A benefit-cost analysis assesses the cost effectiveness and financial impacts of CAP measures. This benefit-cost analysis approach for CAPs has been adapted from the California Standard Practice Manual, which is used by the California Public Utilities Commission to evaluate the cost-effectiveness of energy efficiency programs.

PERSPECTIVES	DEFINITIONS
1. Administrator	Costs to the jurisdiction to administer and implement the CAP
2. Participant	Benefits and costs to those who participate in or comply with a CAP measure
3. Non-participant	Costs to subsidize participant activities through taxes, fees, and utility surcharges
4. Measure	Combined benefits and costs to the administrator, participants, and non-participants
5. Society	Measure perspective plus the benefit and cost of impacts to public health, the economy, and the environment

FOR MORE INFORMATION ON BENEFIT-COST ANALYSES, SEE TECHNICAL APPENDIX III.

Implementation cost analysis

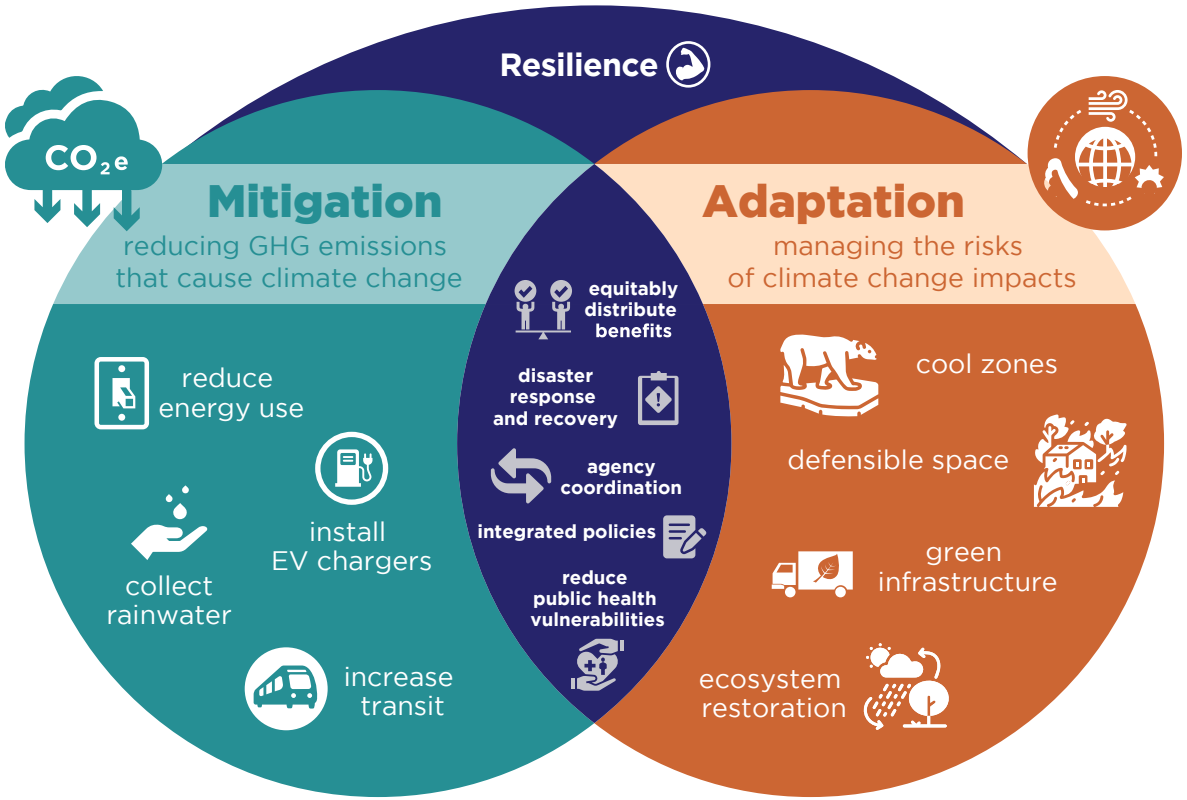
A CAP implementation cost analysis provides information on the budgetary impact to a local jurisdiction to implement a CAP. The process to prepare the implementation cost analysis requires identifying staffing needs and other resources to carry out the CAP measures and actions.

The data is typically collected in a way that considers existing versus new or expanded programs, funded versus unfunded costs, costs by department, costs by CAP measure, and costs over time.

FOR MORE INFORMATION ON CAP IMPLEMENTATION COST ANALYSES, SEE TECHNICAL APPENDIX IV.

CLIMATE RESILIENCE

In the San Diego region, the focus of climate action planning to date has been on mitigation; actions to reduce GHG emissions in an effort to lessen the impacts of climate change. However, the ongoing impacts of cclimate change present equally pressing issues that jurisdictions in the region have begun to address through adaptation planning. Adaptation planning identifies the vulnerabilities specific to a jurisdiction, focusing on ongoing and anticipated future climate-related impacts such as sea-level rise, increased temperature, and wildfire risk, and develops actions to manage the risk and reduce vulnerability. *By considering both mitigation and adaptation throughout the climate action planning process, local jurisdictions can increase the capacity of their communities to adapt and plan for, respond to, and recover from the impacts of climate change, making progress towards a more resilient future.*



Climate equity

Jurisdictions that are developing, implementing, or updating CAPs, adaptation plans, or other resilience-related documents need to meaningfully address climate impacts on vulnerable populations, as well as the intersections of environmental and social (e.g., racial, gender, socio-economic, age) equity within their communities. Because of this intersectionality, the benefits of mitigation and adaptation planning must be distributed equitably. The harmful impacts of climate change are disproportionately experienced by disadvantaged communities and people of color. Ignoring this burden will not allow for a regionally resilient future.

Senate Bill 1000 directs jurisdictions to identify and develop polices for disadvantaged communities when two or more General Plan elements are updated, but that is just the first step.

CO-BENEFITS

The GHG reduction measures included in a CAP often have co-benefits, or positive external impacts, beyond GHG emissions reductions. These benefits are typically referenced throughout a CAP and highlighted using tables, figures, or icons. Co-benefits should be considered in tandem with the results of a benefit-cost analysis. Examples of potential co-benefits include, but are not limited to, those seen in Figure 4. As co-benefits are often tied to specific GHG reduction measures, metrics for co-benefits can be monitored over time and included when reporting on CAP progress.

Figure 4. CAP measure co-benefits

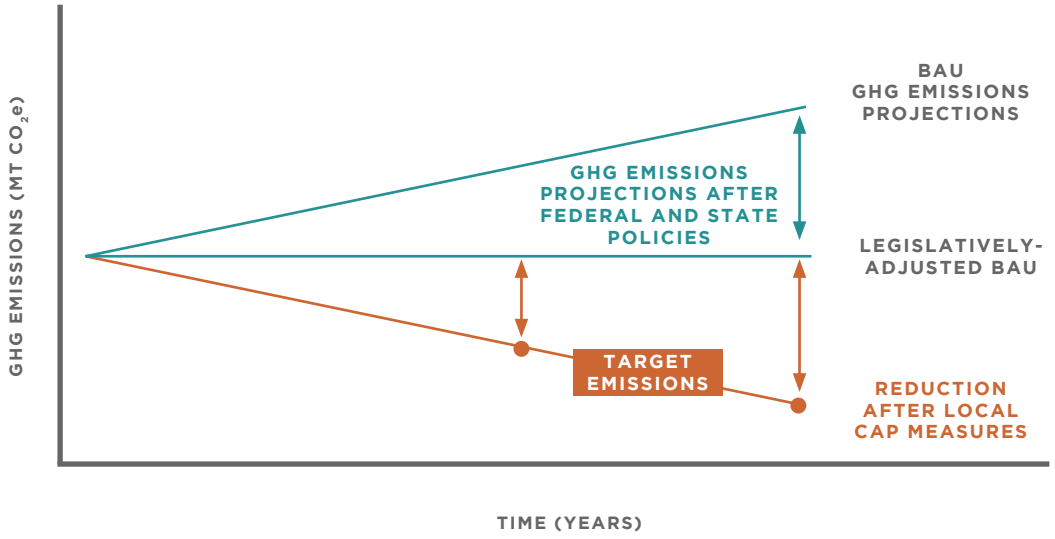
- Improved air quality
- Reduced energy use
- Increased natural habitat
- Improved public health
- Reduced traffic congestion
- Improved access to low-cost transportation options
- Enhanced safety
- Improved water quality
- Reduced heat island effects
- Enhanced community character
- Increased local green jobs
- Improved resilience to climate impacts

FOR MORE INFORMATION ON CAP CO-BENEFITS, SEE THE CAP OUTLINE IN TECHNICAL APPENDIX V.

COMMUNICATING RESULTS

Communicating to the public and decision-makers about the relative contribution of State, federal, regional, and local strategies for meeting a CAP's emissions targets is a critical part of the local climate planning process. While there are different ways to present information about reduction measures, one commonly used graph is a wedge chart, shown in Figure 5. The wedge chart combines many of the GHG analyses of a CAP into one diagram. The wedge chart is helpful to see the relative impact of various GHG reduction measures and how each contributes toward reaching the locally-established GHG emissions target(s). The uncertainty of projecting into the future should be taken into consideration and communicated appropriately. These charts are based on the best available data at the time and should be updated during CAP reporting.

Figure 5. Sample CAP wedge chart



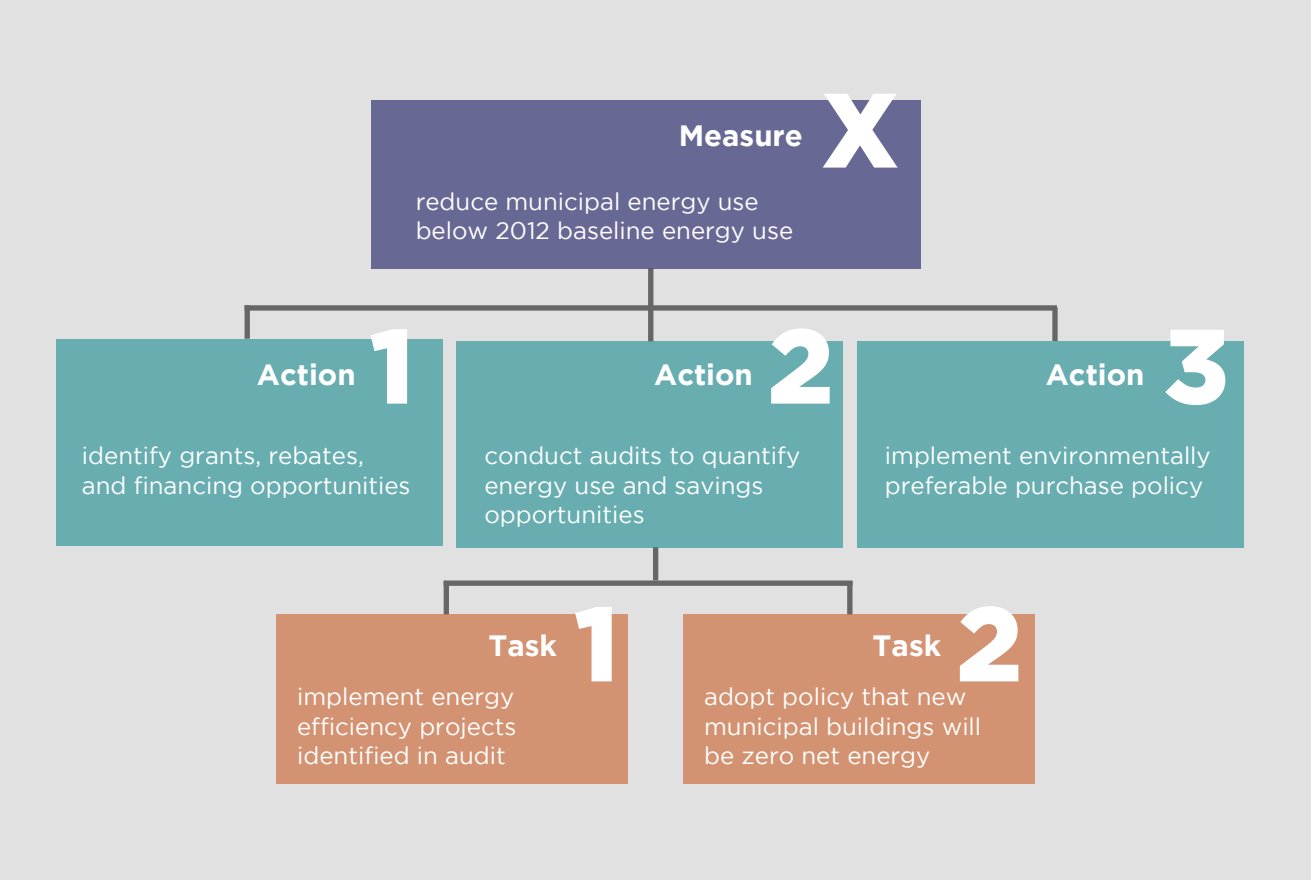
Path to 2030

The State GHG reduction target for 2030 is far more aggressive than the 2020 target. Many local jurisdictions have met 2020 GHG emissions targets, largely due to the GHG emissions reductions that come from State and federal programs. However, based on the latest information, achieving the GHG reductions to meet 2030 targets requires more local actions. Until there are new reductions from State and federal policies, local jurisdictions should expect to need more GHG reductions from local CAP measures to meet the 2030 targets and work toward 2050 goals.

IMPLEMENTATION

CAP implementation involves coordination on a wide range of activities across many agencies and departments. While implementation is considered during CAP development, many jurisdictions undertake the development of an implementation plan following CAP adoption. An implementation plan lays out the process for implementing each GHG reduction measure of the CAP, including the timeframes, staff roles and responsibilities, costs, and potential funding opportunities. Definitions for the different steps, as seen in Figure 6, are available in Technical Appendix V. An implementation plan should remain adaptive to changes in the future, such as new funding, changes in costs, advances in technology, or time-sensitive opportunities.

Figure 6. Implementation steps for a sample CAP measure



CAP implementation oversight

Based on the staffing resources described in an implementation plan, many jurisdictions have identified a position responsible for overseeing and coordinating CAP implementation. This position is typically responsible for working across departments, gathering the necessary data to update the GHG inventory and prepare monitoring reports, collaborating with other jurisdictions on implementation of best practices, and other tasks related to local climate planning.

A SAMPLE CAP IMPLEMENTATION PLAN OUTLINE IS INCLUDED IN TECHNICAL APPENDIX V.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

CEQA is constantly evolving. There are many CEQA-related components of climate action planning, including CEQA compliance for preparation of a CAP, use of "qualified" CAPs for subsequent project-level streamlining, mechanisms for streamlining, and case law.

While each CAP is unique to the jurisdiction, there are two primary types of CAPs: policy document or CEQA-qualified (also known as a "qualified CAP"). Each method approaches the details of a CAP differently. No matter the type of CAP prepared, an adopted CAP provides a jurisdiction with a list of actions to achieve the GHG emission targets outlined within their CAP.

A SAMPLE CAP OUTLINE IS INCLUDED IN TECHNICAL APPENDIX V.

Policy document CAP

A CAP prepared as a policy document sets GHG emissions targets and establishes a range of reduction measures. Once adopted by decision-makers, a policy document CAP is a demonstration of commitment to reduce GHG emissions. A policy document CAP still contains action items and steps to achieve the emissions targets, as well as an outline of how progress will be measured. A jurisdiction with a policy document CAP typically implements measures through future actions.

Qualified CAP

A qualified CAP refers to a CAP that meets the requirements of CEQA Guidelines Section 15183.5, including certification of a CEQA document. Unlike a policy document CAP, future development projects may take advantage of CEQA streamlining provisions by demonstrating consistency with the adopted qualified CAP. This is often established with a checklist that determines consistency with the jurisdiction's land use and GHG reduction measures. A CEQA checklist can help save time, as projects are processed more quickly using the checklist, and can also reduce the number of environmental documents associated with development projects.

FOR MORE INFORMATION ON CEQA AND CLIMATE ACTION PLANNING, SEE TECHNICAL APPENDIX V.

MONITORING

Monitoring CAP implementation is a key part of the iterative climate planning process. Regular monitoring allows a jurisdiction to evaluate progress toward reaching their GHG emissions target, alter strategies or goals based on performance, and reassess future emissions projections. Early in the development of a CAP, staff should consider what data will be necessary to best monitor the CAP after it is adopted. CAP implementation can be monitored by overall emissions and by reduction strategies, measures, and actions.

GHG inventories may not reflect the impacts of all local CAP measures. Monitoring local activity may provide a way to demonstrate progress on specific measures.

TO VIEW GHG INVENTORY AND CLIMATE ACTION MONITORING DATA, VISIT THE SANDAG CLIMATE ACTION DATA PORTAL:
climatedata.sandag.org

FOR MORE INFORMATION ON CAP MONITORING AND REPORTING, SEE TECHNICAL APPENDIX VI.

GHG INVENTORY

Monitor total emissions

Question How did overall emissions change? Are emissions on track to meet CAP targets?

Results Comparison with baseline year emissions to more recent year, visualizing emissions trends, comparison with State and local targets

Data needs Updated GHG inventory

Monitor emissions by category

Question How did emissions change inventory category?

Results Which categories are achieving reductions faster/slower

Data needs Updated GHG inventory by category

CAP STRATEGIES, MEASURES, AND ACTIONS

Monitor activity

Question Was the target activity level achieved or is it on track to be achieved?

Results Effectiveness of measures, changes in activity from baseline

Data needs Updated activity data (e.g., electricity reduced, solar PV capacity installed, number of electric vehicle chargers installed)

Monitor emissions

Question What is the GHG emissions impact of activity levels?

Results Effectiveness of measures, changes in activity from baseline

Data needs Data used to calculate GHG impact of activity level

Monitor other metrics

Question Were supporting activities completed? What co-benefits are associated with activity levels? What are the equity benefits of these supporting activities?

Results Effectiveness of supporting activities, identify new actions

Data needs List of supporting activities, efforts, and actions

ONGOING COLLABORATION

The region's unique geography lends itself well to collaboration; it consists of a single county, a single metropolitan planning organization (SANDAG), a single investor-owned utility (SDG&E®), and has a relatively small number of local jurisdictions, with 18 cities and the County of San Diego. ReCAP provides technical methodologies and guidance for local jurisdictions preparing and implementing CAPs in the San Diego region. The methodologies presented in ReCAP represent the best available science at this time. As new information and data become available, the ReCAP will be updated accordingly. Efforts to reduce GHG emissions and prepare for climate impacts are not confined to local jurisdictional boundaries. Collaboration allows the San Diego region to continue its leadership in addressing climate change.

There are a number of options for local agency staff to elevate their CAP efforts for recognition. Locally, the San Diego Regional Climate Collaborative highlights work being done in the San Diego region to State and federal leaders. Statewide, the Beacon Program, sponsored by the Institute for Local Government and the Statewide Energy Efficiency Collaborative, honors voluntary efforts by local governments to reduce GHG emissions, save energy, and adopt policies that promote sustainability. There also are a number of climate-focused conferences throughout California that serve as platforms to share work on local CAPs.

MOVING FORWARD

Data availability

Each step of the climate action planning process requires the best available data to prepare, implement, and monitor a CAP. It is important to recognize that data availability varies; while monitoring data for one CAP reduction measure may be available annually, comprehensive GHG inventory data may be available on a less frequent basis. Streamlining access to data and clearly communicating assumptions behind data and forecast years is important and will continue to build regional consistency in climate action planning.

California's energy & climate policy

The State of California continues to extend and update its policies around GHG reduction targets, clean energy, zero-emission vehicles, sustainable communities, and much more. The 2017 CARB Scoping Plan outlines a strategy for GHG reductions through 2030; however, the State continues to look toward the 2050 goal and identify new and/or expanded policies and programs to meet future GHG reductions. Changing policies at both the federal and State level will have an impact on CAP development, especially when calculating projections and legislatively-adjusted BAU.

Advanced technology

This ReCAP was developed recognizing the importance of remaining flexible and adaptive to take advantage of new technologies, funding opportunities, and respond to community needs that allow each jurisdiction to successfully implement their CAP. Technology continues to change rapidly and can have dramatic impacts on how businesses and residents travel, use energy, and produce GHG emissions.

Some technologies that will likely have an impact on CAP development and implementation include:

- autonomous vehicles
- transition from gasoline to zero-emission vehicles
- ridesharing, such as Uber/Lyft
- battery energy storage
- renewable electricity

TECHNICAL APPENDICES PREPARED FOR SANDAG BY

EPIC
ENERGY POLICY INITIATIVES CENTER
UNIVERSITY OF SAN DIEGO SCHOOL OF LAW

ASCENT ENVIRONMENTAL

SANDAG
sandag.org/climate