



# REGIONAL CLIMATE ACTION PLANNING FRAMEWORK



## TECHNICAL APPENDIX VI

### CAP Monitoring and Reporting

VERSION 1.1: DECEMBER 2020

PREPARED BY



PREPARED FOR

**SANDAG**

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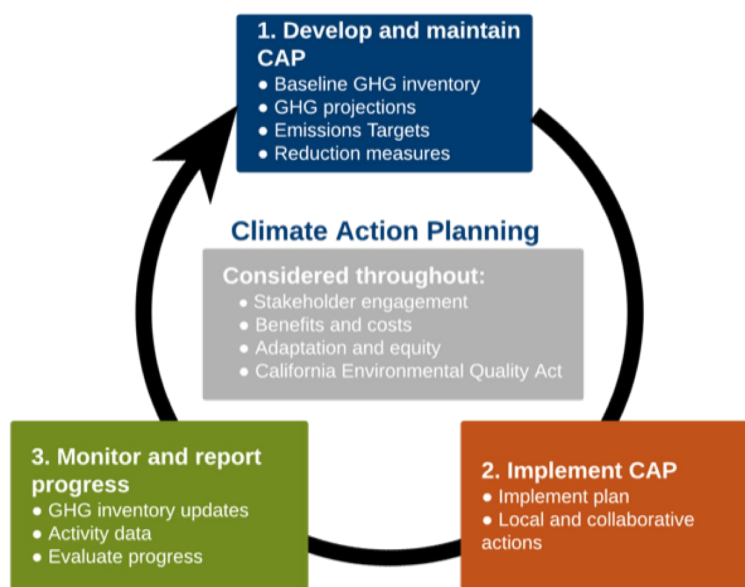
# 1. Introduction

This document is Appendix VI to the SANDAG Regional Climate Action Planning Framework (ReCAP) and is divided into the following sections:

- Section 1 is the introduction;
- Section 2 discusses the objectives and framework for monitoring;
- Section 3 provides a discussion of considerations relate to monitoring, such as data availability and timing, frequency, and state guidance on tracking;
- Section 4 provides a deeper dive into each aspect of the monitoring framework;
- Section 5 provides examples of practices in other jurisdictions and regions for communicating and presenting progress; and
- Section 6 is the conclusion.

Monitoring Climate Action Plans (CAPs) is part of the climate action planning process (Figure 1); however, few jurisdictions have progressed into this phase. Monitoring uses methods and protocols from GHG inventories and GHG reduction measures calculations (see Technical Appendix I, GHG Inventories, Projections, and CAP Target Selection and Technical Appendix II, Methods to Calculate GHG Emissions Impacts of CAP Measures, respectively). Monitoring also informs future CAP updates.

Figure 1 Climate action planning process



## 1.1 Guiding Principles

This document is developed under the following guiding principles:

- **Transparency:** methods are transparent to readers and uncertainty is recognized to the extent possible;
- **Use of accepted methods:** methods are based on generally-accepted best practices and utilize standard economic metrics;
- **Data-driven:** methods incorporate applicable benefits and costs for multiple perspectives, which are supported by relevant and available data;
- **Local relevancy:** data are relevant to the jurisdictions in the San Diego region to the extent possible;
- **Regional consistency:** methods are applied consistently across measures within a CAP and across different CAPs to the extent feasible; and
- **Flexibility and adaptability:** methods are regularly updated to be consistent with best practices.

## 1.2 Summary of updates in Version 1.1

In addition to general edits, the following are the key changes that have been made to Version 1.0 of this appendix:

- In Sections 4.0 and 5.0, subsections have been added on CAP monitoring by regional agencies, presenting Western Riverside Council of Government (WRCOG) and Southern California Association of Governments (SCAG) approaches and a presentation of performance metrics in comparison with SANDAG's ReCAP outputs.
- One Community Choice Aggregator (CCA) has joined the grid as a supplier, Solana Energy Alliance. This is noted in Section 3.2.1 and will affect data needs for monitoring the city-wide electricity emissions factor, as discussed in ReCAP Appendix 1 Section 3.3.
- The integration of equity into climate planning and how cities are approaching monitoring equity (Section 4.5.4) has been added.
- Section 5.0 has been updated with data from the Unincorporated County of San Diego and examples of monitoring.

## 2. CAP Monitoring Objectives and Framework

### 2.1 Objectives for monitoring and reporting

The primary goal of monitoring CAPs is to determine whether an entity is making sufficient progress to achieve the GHG reduction targets set. Objectives for monitoring and reporting on CAP implementation are related both to process and those that measure outcomes. These may include, but are not limited to:

- Track consistency with the CAP measures implementation schedule and identify barriers to implementation;
- Identify activity data, metrics, and performance indicators to track GHG reduction progress by overall GHG inventory, by emissions inventory category, and by reduction measures and actions;
- Determine if changes are needed to achieve the reduction targets by category and by measure;
- Provide feedback to local legislative bodies, as well as to stakeholders and the public, on the status of implementation of CAP measures and progress towards achieving the goals as described in the CAP;
- Report to outside entities, such as the International Council for Local Environmental Initiatives (ICLEI), the Carbon Disclosure Project (CDP), etc.; and
- Identify opportunities to collaborate with other monitoring efforts and entities locally, regionally, and statewide.

### 2.2 Monitoring framework overview

The monitoring framework described in detail in this appendix considers two main aspects of CAP implementation: (1) the status of community-wide GHG emissions and whether emissions are on track to meet reduction targets and (2) progress in implementing the GHG reduction strategies, measures, and actions in the CAP. These two aspects are used to inform the levels of monitoring described in Figure 2.

Figure 2 Levels of CAP monitoring

|                                   |                       |                                                                                                                                            |
|-----------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| GHG Inventory                     | Total Emissions       | How did overall emissions change?<br>Are emissions on track to meet CAP targets?                                                           |
|                                   | Emissions by Category | How did emissions change in each inventory category (e.g., electricity, transportation, etc.)?                                             |
| CAP Strategies, Measures, Actions | Activity              | Was the target activity level achieved or is it on track to be achieved?                                                                   |
|                                   | Emissions             | What is the GHG emissions impact of activity levels?                                                                                       |
|                                   | Other                 | Were supporting activities completed?<br>What co-benefits are associated with activity levels? What are the equity benefits of activities? |

### 3. Considerations that affect CAP monitoring and reporting

There are several considerations that play a role in the monitoring and reporting of CAP progress, including: the frequency of monitoring as specified in the CAP; the timing and availability of data; the relationship with the General Plan (GP), other planning documents, and/or CEQA monitoring needs; and staff resources. Each of these considerations is discussed below.

#### 3.1 Frequency of monitoring

The baseline data collected and identified in an adopted CAP serves as a baseline for monitoring CAP implementation and progress. This data includes inputs for the GHG inventory, as well as activity data related to GHG reduction measures (e.g., number of electric vehicles (EVs), solar photovoltaics [PV] installed, etc.). Most CAPs identify a monitoring program that sets a timeline for updating the GHG emissions inventory and providing updates on CAP implementation progress.

Table 1 summarizes the frequencies of inventory updates and CAP progress reporting as provided in the adopted CAPs in the San Diego region.

**Table 1** Frequency of monitoring identified in CAPs in the San Diego region

| Jurisdiction | Date of recent CAP adoption                                                                                                                                         | Inventory updates                                                                              | Frequency of monitoring and/or reporting CAP progress                                                                                                                                                                                             |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Carlsbad     | Sep-15<br>Amended on May-20 with revised GHG inventory, reduction targets and forecast, and CAP measures, including adding Community Choice Energy as a new measure | Every three years after 2014 (CAP page 5-15)                                                   | Annual monitoring and reporting of each action and performance target progress; present to City Council at public meeting; CAP monitoring and reporting is to be consistent with CEQA Guidelines section 15183.5(b)(1)(D) and (E) (CAP page 5-14) |
| Chula Vista  | Sep-17                                                                                                                                                              | Every two-three years as part of SANDAG Roadmap Program (CAP page 23)                          | Every two years for CAP strategies and actions (CAP page 24) in a publicly-available progress report                                                                                                                                              |
| Del Mar      | Dec-15                                                                                                                                                              | Update once prior to 2020 through SANDAG Roadmap Program schedule (CAP page 5-7) <sup>1</sup>  | Track CAP measures and report annually (or semi-annually or other intervals) to City Council (CAP page 5-7)                                                                                                                                       |
| El Cajon     | July-2019 (rescinded in May 2020, citing financial concerns)                                                                                                        | Every two years from 2016 as part of SANDAG Roadmap Program schedule (CAP page ES-5, page 4-6) | Monitoring report to be prepared on a regular basis, unspecified frequency (CAP page 4-6)                                                                                                                                                         |

<sup>1</sup> The CAP update has been delayed since April 2020 due to reduction in City non-essential spending (including for CAP purposes) by staff, related to COVID-19. It is unknown at this time when a CAP update will be re-considered. See April 17, at [delmar.ca.us/civicalerts.aspx?AID=647](https://delmar.ca.us/civicalerts.aspx?AID=647).

| Jurisdiction   | Date of recent CAP adoption                                                                                                    | Inventory updates                                                                          | Frequency of monitoring and/or reporting CAP progress                                                                                                                                                                    |
|----------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Encinitas      | Jan-18<br>Updated Nov-20, as required by the CAP, to reflect Housing Element Update and adoption of Active Transportation Plan | Every two years from 2016 as part of SANDAG Roadmap Program schedule (CAP page 4-8)        | Annual monitoring and reporting of CAP measure progress through a publicly-available online dashboard; present to Environmental Commission and City Council every two years (CAP page 4-8)                               |
| Escondido      | Dec-13 Draft updated CAP for public review June 2020– no date specified for adoption in 2020                                   | Every two years from 2016 as part of SANDAG Roadmap Program schedule (draft CAP page 4-10) | Annual summaries of CAP progress to City Council and Planning Commission; annual monitoring report ; CAP update every five years, starting 2026 (draft CAP page 4-10)                                                    |
| Imperial Beach | July-2019                                                                                                                      | Regular biennial monitoring report to include an inventory (CAP page 39)                   | Regular biennial monitoring report in 2020 and every two years (CAP page 39)                                                                                                                                             |
| Lemon Grove    | Feb-2020                                                                                                                       | Every two years from 2016 as part of SANDAG Roadmap Program schedule (CAP page 5-7)        | Data tracking will begin two years following CAP adoption (CAP page 5-7)                                                                                                                                                 |
| La Mesa        | March-18                                                                                                                       | Every two years (CAP page 133)                                                             | Evaluate regularly (unspecified interval, CAP page 134)                                                                                                                                                                  |
| National City  | May-11                                                                                                                         | Every three years (CAP page 5-9)                                                           | Continually monitor; review CAP as a whole every three years (CAP page 5-9)                                                                                                                                              |
| Santee         | Dec-2019                                                                                                                       | Starting in 2021, every three years (CAP page 78)                                          | Annually, semi-annually or at other assigned intervals (CAP page 79)                                                                                                                                                     |
| San Diego      | Dec-15                                                                                                                         | Annually (CAP page 42-43)                                                                  | Annually track progress of measures; third-party verification of voluntary disclosure to Carbon Disclosure Project (CAP page 42-43)                                                                                      |
| San Marcos     | Sep-13<br>Updated CAP anticipated to be adopted in 2020                                                                        | Every five years (CAP page 4-21 to 4-23)                                                   | Annual progress report to City Council for measure implementation, progress toward performance criteria, effectiveness of CAP measures, implementation of State measures, and adjustments needed (CAP page 4-21 to 4-23) |
| Solana Beach   | May-17                                                                                                                         | Every two years under the SANDAG Roadmap Program schedule (2016, 2018 etc.) (CAP page 5-4) | In Year 1, initial summary of progress, and annually thereafter (CAP page 5-4)                                                                                                                                           |

| Jurisdiction                       | Date of recent CAP adoption                                                                                                                                                       | Inventory updates                                                                             | Frequency of monitoring and/or reporting CAP progress                                                                                                                                                      |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vista                              | Nov-12<br>Updated CAP anticipated to be adopted in 2021                                                                                                                           | Every five years and report to City Council (CAP page 4-14)                                   | Annual for measures and performance indicators progress and may be submitted to City Council with General Plan status reports (CAP page 4-14).                                                             |
| Unincorporated County of San Diego | Jan-18<br>2018 CAP was rescinded by the County Board of Supervisors Sep-2020 after decision not to further appeal a 4 <sup>th</sup> District Court of Appeals ruling in June 2020 | Every two years, consistent with the SANDAG Roadmap Program schedule (rescinded CAP page 5-6) | From 2019, annual monitoring and reporting to staff, Sustainability Task Force, Board of Supervisors, and public on status of CAP measures, metrics, and progress towards targets (rescinded CAP page 5-6) |

As shown in Table 1, there is a range of frequencies for monitoring and reporting, depending on whether it is for inventories and inventory categories, for individual measures within each category, or for performance indicators. For inventories, monitoring ranges vary from annually to every five years; for individual CAP measures and performance indicators, the range is less, from annually to every three years. In addition, some monitoring programs will track actions taken by the jurisdiction to implement measures, the timeline for implementation, and barriers to implementation and/or schedule. CAPs may or may not provide timelines, but several provide implementation phases or timelines based on short, medium, and long-term actions.

### 3.1.1 Monitoring CAPs through SANDAG's Roadmap Program

As seen in Table 1, several of the region's CAPs refer to SANDAG's Roadmap Program as part of its CAP inventory monitoring in addition to their own monitoring program. Through its Roadmap Program, funded primarily by SANDAG's Local Government Partnership (LGP) agreement with San Diego Gas & Electric (SDG&E), SANDAG has been providing energy engineering technical services to 16 of its member agencies since 2010 (not the City of Chula Vista, the City of San Diego, or Unincorporated County, as each agency has its own LGP). In 2016, SANDAG started providing CAP technical services as part of this program, through which ReCAP was developed. Deliverables include the provision of "ReCAP Snapshots", which include GHG inventories and activity data, to the participating cities. SANDAG has stated that it plans to update the ReCAP Snapshots every two years for the 16 Roadmap jurisdictions in the San Diego region. Jurisdictions can use the ReCAP Snapshots to report on CAP implementation and progress.

SANDAG produced the first edition of ReCAP Snapshots on November 2019. The ReCAP Snapshots included GHG inventories for calendar year 2016 and activity data for some CAP strategies for 16 local jurisdictions.<sup>2</sup> The parameters for monitoring are consistent across the jurisdictions in terms of source, data, and frequency of availability. The parameters provided in the ReCAP Snapshots are given in Section 3.2. The latest ReCAP Snapshot reports, as well as the most recent data associated with each of the activities provided in the ReCAP Snapshots, have been provided to each jurisdiction in the form of a spreadsheet. This data is also accessible through SANDAG's [Climate Action Data Portal](#).

SANDAG will produce the second edition of ReCAP Snapshots for calendar year 2018 data in late 2020.

## 3.2 Data needs, availability and sources

### 3.2.1 Overall GHG emissions and emissions by category

Another consideration for monitoring CAP progress is the availability and timing of the necessary data. Some data are available annually, while some are not, which can affect the monitoring process. Monitoring overall GHG emissions and emissions by category requires preparing an updated GHG inventory. Table 2 provides a high-level summary of the data needs, sources, retrieval method, and the frequency and time of data availability for GHG emissions inventories.

More detail on data needs for inventories and inventory categories are provided in Technical Appendix I, GHG Inventories, Projections, and Target Selection.

**Table 2** Frequency of data availability for inventories and inventory categories

| Data needs                                                                                                                             | Data source | Data retrieval method                                        | Frequency and dates of data updates |
|----------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------|-------------------------------------|
| <b>Electricity – Activity</b>                                                                                                          |             |                                                              |                                     |
| Sales - SDG&E bundled customers                                                                                                        | SDG&E       | Request through <a href="#">SDG&amp;E Privacy Greenlight</a> | March for previous calendar year    |
| Sales - SDG&E Direct Access customers. Community Choice Aggregation (CCA) provider loads may be reported here with DA, or with bundled | SDG&E       | Request through <a href="#">SDG&amp;E Privacy Greenlight</a> | March for previous calendar year    |

<sup>2</sup> The City of Coronado has postponed participation in the ReCAP efforts until substantial progress has been made on their CAP. The City of Chula Vista partnered with SANDAG to prepare similar ReCAP Snapshots. SANDAG: [Climate Action](#).

| Data needs                                  | Data source                                                                                   | Data retrieval method                                                                                      | Frequency and dates of data updates                                    |
|---------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Sales or load served by CCAs                | Integrated Resource Plans (IRPs) or Power Source Disclosures by CCA                           | On-line – California Public Utilities Commission Integrated Resource Plans ( <a href="#">IRP</a> ) website | Annual for previous year; timing unknown                               |
| Consumption - self serve photovoltaics (PV) | California distributed generation Statistics                                                  | <a href="#">California Solar Statistics website</a>                                                        | Updated quarterly                                                      |
| Consumption - self serve non-PV             | California Public Utilities Commission (CPUC)                                                 | Self-Generation Incentive Program (SGIP) <a href="#">website</a>                                           | Update frequency unknown                                               |
| Transmission and distribution losses        | California Energy Commission (CEC) Energy Demand Forecast                                     | California Energy Commission (CEC) <a href="#">website</a>                                                 | Unknown                                                                |
| <b>Electricity – Emission factor</b>        |                                                                                               |                                                                                                            |                                                                        |
| SDG&E bundled factor                        | SDG&E Electricity Procurement - CEC Power Disclosure Form                                     | By request from CEC for most recent year. Previous years available <a href="#">online</a>                  | Updated annually; summer-fall for previous calendar year               |
|                                             | Emission Factors for SDG&E Electricity Procurement - EPA eGRID                                | United States Environmental Protection Agency (EPA) <a href="#">website</a>                                | Update frequency unknown; last update - in 2020 for 2018 data          |
|                                             | Emission Factor for SDG&E Market and California Independent System Operator (CAISO) Purchases | <a href="#">CPUC website</a>                                                                               | Update frequency unknown; current regulation effective on January 2015 |
| CCA                                         | CPUC                                                                                          | <a href="#">CPUC website</a>                                                                               | Updated annually; August 1                                             |
| Direct access factor                        | CPUC Decision D.14-12-037                                                                     | <a href="#">CPUC website</a>                                                                               | Update frequency unknown; date of issuance December 2014               |
| <b>Natural gas – Activity data</b>          |                                                                                               |                                                                                                            |                                                                        |
| Consumption - SDG&E bundled customers       | SDG&E                                                                                         | Request through <a href="#">SDG&amp;E Privacy Greenlight</a>                                               | March for previous calendar year                                       |

| Data needs                                                                                        | Data source                                                                   | Data retrieval method                                                        | Frequency and dates of data updates                                                        |
|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Consumption - SDG&E Direct Access customers                                                       | SDG&E                                                                         | Request through <a href="#">SDG&amp;E Privacy Greenlight</a>                 | March for previous calendar year                                                           |
| <b>Natural gas – Emission factor</b>                                                              |                                                                               |                                                                              |                                                                                            |
| All customers                                                                                     | CARB Statewide Inventory                                                      | <a href="#">CARB website</a>                                                 | Updated annually                                                                           |
| <b>Transportation – Activity data</b>                                                             |                                                                               |                                                                              |                                                                                            |
| Weekday Origin-Destination Vehicle Miles Traveled (VMT) provided, must be converted to annual VMT | San Diego Association of Governments (SANDAG)                                 | By email request to SANDAG Service Bureau                                    | Updated every four years                                                                   |
| <b>Transportation - Emission factor</b>                                                           |                                                                               |                                                                              |                                                                                            |
| Emission rate for each vehicle category in San Diego region                                       | CARB – Emissions Model EMFAC                                                  | <a href="#">CARB website</a>                                                 | Updated every three to four years; last updated 2018                                       |
| <b>Solid waste – Activity data</b>                                                                |                                                                               |                                                                              |                                                                                            |
| Annual waste disposal                                                                             | CalRecycle                                                                    | <a href="#">CalRecycle website</a>                                           | Updated annually, usually by Fall                                                          |
| <b>Solid waste – Emission factor</b>                                                              |                                                                               |                                                                              |                                                                                            |
| Mixed waste emission factor                                                                       | EPA WARM Model                                                                | <a href="#">EPA website</a>                                                  | Update frequency unknown; last updated May 2019                                            |
| <b>Water – Activity data</b>                                                                      |                                                                               |                                                                              |                                                                                            |
| Annual water supply – potable water                                                               | Jurisdiction or water district                                                | By email request to water district which may be the same as the jurisdiction | N/A                                                                                        |
| Annual water supplied - recycled water                                                            | Jurisdiction or water district                                                | By email request to water district which may be the same as the jurisdiction | N/A                                                                                        |
| <b>Water – Emission factor</b>                                                                    |                                                                               |                                                                              |                                                                                            |
| Upstream supply and conveyance energy intensity                                                   | CEC or water district                                                         | <a href="#">CPUC website</a>                                                 | N/A; last updated 2006                                                                     |
| Upstream supply and conveyance energy intensity                                                   | San Diego County Water Authority (SDCWA) OR Metropolitan Water District (MWD) | <a href="#">SDCWA website</a> or by request                                  | Urban Water Management Plan voluntary energy intensity reporting; updated every five years |

| Data needs                                              | Data source                         | Data retrieval method                                                                                   | Frequency and dates of data updates                                                                                                       |
|---------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Water treatment and local distribution energy intensity | Jurisdiction or water district      | By request                                                                                              | N/A                                                                                                                                       |
| <b>Wastewater – Activity data</b>                       |                                     |                                                                                                         |                                                                                                                                           |
| Annual wastewater generated                             | Jurisdiction or wastewater district | By email request to wastewater district which may be the same as the jurisdiction                       | N/A                                                                                                                                       |
| <b>Wastewater – Emission factor</b>                     |                                     |                                                                                                         |                                                                                                                                           |
| Wastewater treatment plant emission factor              | Jurisdiction or wastewater district | CARB <a href="#">website</a> on Mandatory GHG Reporting Web or request by individual treatment facility | Upon request or annually reported emissions for facilities under CARB's Cap and Trade Mandatory Greenhouse Gas Reporting Regulation (MRR) |

If carried out using the same methodologies, trends can be established and annual emissions estimates for overall inventories and inventory categories can be compared. However, this type of monitoring does not indicate which measures within each category yield reductions.

### 3.2.2 GHG impacts of CAP measures and actions

CAP measures consist of federal, State, and local measures. Local GHG emissions are affected by a number of policies and activities across multiple levels of government (e.g., State, regional, local), as well as other social, technological, and economic factors. Monitoring activity data accounts for the combined impact of these factors since it is challenging, and in many cases impossible, to separate out the impact of different policies or actions.

Activity data to monitor CAP strategies, measures, or actions can be collected directly (e.g., megawatts [MW] of PV systems) from the local jurisdiction, local or State organizations that monitor data, or through surveys specifically performed by the jurisdictions for this purpose. The availability of activity data is continually evolving; however, the data needs and typical sources for several typical CAP measures have been identified as provided in Table 3. The potential data needs identified in Table 3 can be used to develop performance metrics.

**Table 3 Potential monitoring data needs and data sources by typical CAP measure**

| Measure                                | Data/information needs                                                                    | Data source                                                                                                                                                   |
|----------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| California solar programs and policies | Actual (interconnected) capacity of the behind-the-meter PV systems in a jurisdiction     | <a href="#">California Distributed Generation (DG) Statistics website</a>                                                                                     |
|                                        | Annual electricity generation from behind-the-meter PV systems in the SDG&E planning area | CEC energy demand forecasts (includes historical values); the 2020-2030 forecast, including historical use, is available <a href="#">on the CEC's website</a> |
| PV installation ordinance              | Number of new housing units each year by type (e.g., single-family, multi-family)         | Jurisdiction                                                                                                                                                  |
|                                        | Square footage of new commercial space                                                    | Jurisdiction                                                                                                                                                  |
|                                        | PV system capacity installed due to the ordinance                                         | Jurisdiction                                                                                                                                                  |

| Measure                                                                                     | Data/information needs                                                                                                                                                                                                                                    | Data source                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Effects of CA energy efficiency programs                                                    | Jurisdiction's net energy for load or gross generation, and natural gas use                                                                                                                                                                               | SDG&E (by request?)                                                                                                                                                                                                                      |
|                                                                                             | SDG&E service area's net energy for load or gross generation, and natural gas use                                                                                                                                                                         | SDG&E (by request?)<br>CEC energy demand forecast (includes historical values)                                                                                                                                                           |
|                                                                                             | SDG&E service area's annual electricity and natural gas saving estimates under the State's energy efficiency programs                                                                                                                                     | CPUC Energy Efficiency Potential and Goals Study                                                                                                                                                                                         |
|                                                                                             | Actual energy savings from SDG&E's energy efficiency programs in a jurisdiction                                                                                                                                                                           | SDG&E (by request)<br>CPUC: Energy efficiency evaluation reports are verified savings but lag by several years and are available on the <a href="#">CPUC website</a> ; the latest energy efficiency evaluation reports are for 2010-2012 |
| Residential energy disclosure and conservation ordinance                                    | Number of housing units or percentage of total housing units affected by the energy disclosure and conservation ordinance (e.g., number of building permits, housing units sold)                                                                          | Jurisdiction<br><a href="#">San Diego Association of Realtors monthly historical reports</a>                                                                                                                                             |
|                                                                                             | Estimated energy savings from a residential energy retrofit                                                                                                                                                                                               | Jurisdiction                                                                                                                                                                                                                             |
|                                                                                             | Number of units that complete audits that perform energy retrofits                                                                                                                                                                                        | Jurisdiction                                                                                                                                                                                                                             |
| Require new homes to install solar water heaters                                            | Number of housing units affected by the measure (e.g., new housing units, number of building permits issued)                                                                                                                                              | Jurisdiction                                                                                                                                                                                                                             |
|                                                                                             | Number of housing units affected by the measure by type (e.g., single-family, multi-family)                                                                                                                                                               | Jurisdiction                                                                                                                                                                                                                             |
|                                                                                             | Average annual energy savings upon replacing electric/natural gas water heater with solar water heater                                                                                                                                                    | California DG Statistics                                                                                                                                                                                                                 |
| Require energy efficiency and PV beyond most recent State codes in Title 24 ("reach codes") | Based on parameters of the ordinance, obtain number of residential units (e.g., single or multifamily, low or high rise), commercial average square footage per year from number of permits issued over the past years, or planned in the Housing Element | Jurisdiction                                                                                                                                                                                                                             |
| Require EV charging stations at new construction                                            | Number of new housing units each year by type (e.g., single-family, multi-family.)                                                                                                                                                                        | Jurisdiction (for recent years)                                                                                                                                                                                                          |
|                                                                                             | Square footage of new commercial space each year                                                                                                                                                                                                          | Jurisdiction                                                                                                                                                                                                                             |
|                                                                                             | EV charging and EV parking requirements by type of housing unit and commercial space                                                                                                                                                                      | Jurisdiction's municipal code parking standards<br><br>Center for Sustainable Energy statistics on EVs and AFDs                                                                                                                          |

| Measure                                        | Data/information needs                                                                                                       | Data source                                                                 |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Transition to a more efficient municipal fleet | Amount (e.g., gallons) of fuel purchased by fuel type for municipal fleet                                                    | Jurisdiction                                                                |
|                                                | Number of vehicles by fuel type (e.g., gasoline, diesel, biofuel)                                                            |                                                                             |
|                                                | Number and type of vehicle replaced with alternative fuel vehicle                                                            |                                                                             |
| Increase bicycle lane miles                    | Average round-trip distance for bicycle commuters                                                                            | Jurisdiction<br>SANDAG<br>Literature or case study                          |
|                                                | Workforce or labor force                                                                                                     | Jurisdiction<br>California Employment Development Department                |
|                                                | Current bicycle lane miles by bicycle class                                                                                  | Jurisdiction                                                                |
|                                                | Bicycle lane miles constructed by bicycle class                                                                              | Jurisdiction                                                                |
| Install traffic lights or roundabouts          | Estimated total VMT in San Diego region                                                                                      | EMFAC default estimate                                                      |
|                                                | Estimated total vehicle fuel consumption in San Diego region                                                                 | EMFAC default estimate                                                      |
|                                                | Constructed roundabouts and traffic signal retiming projects                                                                 | Jurisdiction (capital improvement projects or Circulation Element projects) |
|                                                | Equivalent fuel savings per intersection with improved traffic flow                                                          | Jurisdiction<br>SANDAG<br>Literature or case study                          |
| Recycled water program                         | Constructed additional recycled water supply                                                                                 | Jurisdiction<br>Water agency and recycled water provider                    |
|                                                | Tertiary (advanced) water treatment energy intensity                                                                         | Water reclamation facility<br>Literature or case study                      |
|                                                | Recycled water distribution energy intensity                                                                                 | Water reclamation facility<br>Literature or case study                      |
| Water disclosure and conservation ordinance    | Number of housing units or percentage of total major renovation building permits by type (e.g., single-family, multi-family) | Jurisdiction                                                                |
|                                                | Number of existing housing units by type                                                                                     | Jurisdiction                                                                |

| Measure                          | Data/information needs                                                                     | Data source                                                                    |
|----------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
|                                  | Water savings from a typical home replacing water fixtures and fittings                    | Jurisdiction<br>Literature and case studies                                    |
|                                  | Percentage of the units that completed audits that replace the water fixtures and fittings | Jurisdiction                                                                   |
|                                  | Types of “required” efficient plumbing fixtures and fittings                               | Jurisdiction                                                                   |
|                                  | Total or per capita waste disposed                                                         | Jurisdiction and/or Calrecycle                                                 |
| Increase solid waste diversion   | Number and type of new trees planted                                                       | Jurisdiction                                                                   |
| Increase urban tree canopy cover | Carbon sequestration rate by tree species                                                  | California Emissions Estimator Model (CalEEMod)<br>Literature and case studies |
|                                  | Species, planting location, and age of new trees                                           | Jurisdiction                                                                   |
|                                  | Carbon sequestration of the new trees based on specific tree information                   | United States Forest Service <a href="#">CUFR Tree Carbon Calculator</a>       |

The availability of data to monitor non-quantifiable or supporting activities, such as educational outreach, is primarily in the control of the local jurisdiction. This data should include whether or not the jurisdiction has completed the supporting activities committed to in the CAP.

### 3.3 State guidance on tracking and reporting program results

Although there are no standardized forms or formats for CAP monitoring and reporting, General Plans (GPs) and GP updates require a monitoring plan.<sup>3</sup> The California Office of Planning and Research (OPR) updated its GP Guidelines in 2017, providing recommended content for annual progress reports for GPs,<sup>4</sup> as well as how to integrate environmental mitigation monitoring into GP annual reporting.<sup>5</sup> OPR also updated its Environmental Justice Element guidelines in 2020. OPR publishes CEQA mitigation monitoring and reporting guidance which are administrative regulations that are well established in the CEQA guidelines.<sup>6</sup> Therefore, CAP monitoring may have a relationship to how a jurisdiction monitors and reports on the GP. In particular, a CAP is sometimes used to streamline new development project mitigation requirements. In this case, the streamlining checklist (if used) and the mitigation monitoring program for these individual projects may be an element of CAP monitoring.

More on the relationships between GPs, CEQA, and CAP monitoring is provided in Technical Appendix V, CEQA and Climate Action Planning.

Guidance on performance monitoring of GHG reduction measures is provided in the [Monitoring Module User’s Guide](#) of the Statewide Energy Efficiency (2014).<sup>7</sup> This guide distinguishes between bottom-up and top-down methods, where bottom-up approaches are used to monitor individual actions, and how GHG inventories prepared on a regular basis are considered top-down methods. The user guide is designed to help identify and record the most useful data to assess the effectiveness of actions and measures, and to complete the monitoring data tables in the tool that are needed to track the following:

<sup>3</sup> Government Code Section 65400(b)(1)

<sup>4</sup> State of California General Plan Guidelines 2017, page 258 ff, available at [opr.ca.gov](http://opr.ca.gov).

<sup>5</sup> *ibid*, page 277.

<sup>6</sup> CEQA Guidelines, Section 15097 California Code of Regulations, Mitigation Monitoring or Reporting, CCR Title 14, chapter 3, Article 7.

<sup>7</sup> Draft Monitoring Module, User’s Guide. Detailed Guidance Using SEEC ClearPath California, September 2014. This is one of four guides related to the SEEC ClearPath tool. The remaining guides are the Inventory Module User Guide, the Forecast Module User Guide and the Planning Module User Guide.

- Implementation progress (e.g., planned, achieved, gap) by measure and overall;
- Implementation efficacy (e.g., expected carbon dioxide equivalent (CO<sub>2</sub>e) reductions, achieved reductions, gap) by measure and overall;
- Indicators; and
- Cost inputs by measure.

The monitoring module can be populated through monitoring calculators selected by the user by category to produce an implementation details report documenting the following:

- Status data (e.g., category, point of contact, notes);
- Implementation progress to compare monitoring records with a CAP measure;
- Implementation efficacy for each year, comparing the expected reduction with the achieved reduction linked to a specific CAP measure;
- An indicator monitoring report pulled from inventory module records;
- Financial impacts of actions; and
- GHG impacts achieved.

As stated in the user guide, most of the reports and outputs are based on values input by the user from an externally performed evaluation as the tool is not meant to estimate reductions.

### 3.4 Best practices for local jurisdiction staff

Monitoring CAP implementation requires coordination from local jurisdiction staff in order to obtain the necessary data. Ideally, a CAP administrator (or designated staff person) will guide CAP development and implementation; be knowledgeable about the departments and personnel involved in each measure of the CAP and the staff associated with monitoring the relevant GP policies, actions, and reduction measures; and be familiar with the consultants associated with CAP and GP updates and monitoring.

Below are best practices for staff involved in monitoring CAP implementation:

- Understand what data are needed, as well as why and when data are needed.
- Provide baseline data for CAP GHG reduction measures.
- Develop an internal process to collect data at regular intervals. To ensure continuity of data collection and management across departments and over time, the local jurisdiction can establish procedures for data collection and management with responsibilities for each department and staff position, rather than an individual staff member. Data collection and management can be institutionalized and become a part of normal operations. Establishing a formal data collection process for the CAP can be based on the frequency of data availability. Permit tracking systems may be customized to provide information relevant to CAPs.
- Identify the local contacts who have the data for the water, wastewater, and solid waste emissions inventory categories.
- Ensure secure storage and data access for jurisdiction staff or consultants as required. Proof of secure storage is required for SDG&E data due to privacy requirements, and non-disclosure agreements are also required between consultant-utility, jurisdiction-utility, or both. Establishing a process for the provision of the data, including to which authorized person or persons the data should be provided, where the data is physically stored (in terms of which computers and servers), how the data is stored (such as encryption), and password access are all current practices in secure data management.
- Estimate cost and staffing for implementation and monitoring of the CAP to understand resource needs (see Technical Appendix IV, CAP Implementation Cost Analysis).

## 4. CAP Monitoring

### 4.1 Monitoring total GHG emissions

Evaluating total GHG emissions answers two questions in the monitoring and evaluation process: (1) did total emissions increase or decrease; and (2) are total emissions on track to meet adopted CAP targets?

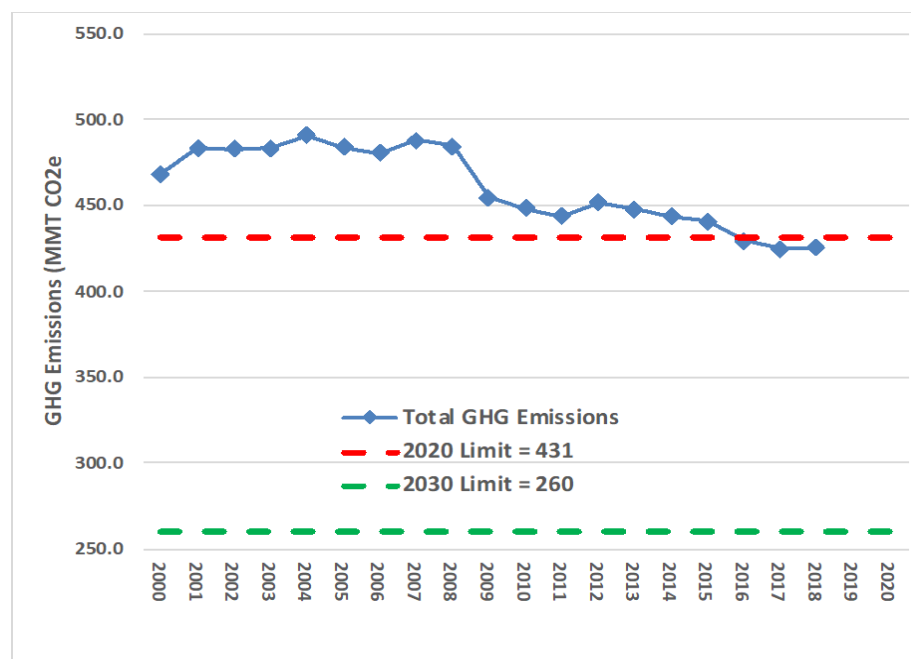
This level of analysis is insufficient to provide insight into the factors that contribute to changes in emissions levels. Analyzing each category of emissions can provide an additional layer of detail. Many CAPs also track GHG emissions from municipal operations, which this appendix does not address.

How often to monitor total emissions and conduct an inventory varies, as shown in Table 1 above. The State produces an annual GHG inventory with data from two to three years prior. That is, the inventory with 2016 emissions data will likely be available in 2018 at the earliest. SANDAG produces a regional inventory every four years as part of the update to its Regional Transportation Plan. The last regional inventory was produced in 2015 for the year 2012 and the next regional inventory will be produced in 2020/2021 for the year 2016. Through the Roadmap Program, SANDAG plans to provide jurisdictions with updated GHG inventories every two years as part of the ReCAP Snapshots; the first edition of ReCAP Snapshots included a 2016 inventory to align with the 2016 regional inventory.

Data availability determines when a GHG inventory can be prepared. Similar to the State, local data collection processes can take up to 18 months from the end of the desired inventory year (e.g., a 2018 inventory will likely be completed in mid-2020, at the earliest).

The results of several years of GHG inventories are needed to indicate the trend of emissions changes. For example, the State inventory shows a decreasing trend in overall GHG emissions (Figure 3) when considering the years 2000 to 2014. California now appears to be on the path to meet its 2020 target. However, from years 2000 to 2007, the average emissions were slightly increasing, and it is only since 2008 that the trend is decreasing. Any individual year may be higher or lower than the previous; therefore, several years of inventories are needed before a trend can be clearly identified.

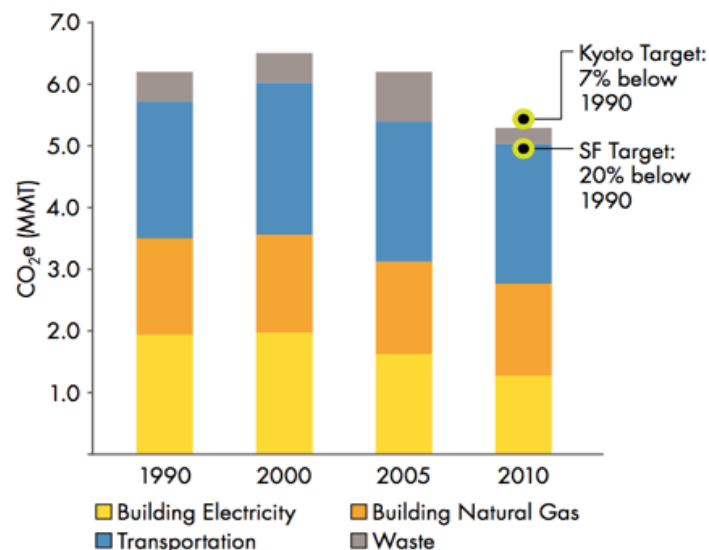
Figure 3 California's GHG inventory and trends



## 4.2 Monitoring GHG emissions by category

Evaluating emissions by category provides an understanding of where emission levels are increasing or decreasing and the effect on overall emissions. However, few cities monitor emissions by category, although emissions inventories can be used to monitor emissions by category. The City of San Francisco monitors total GHG emissions and GHG emissions by category. Figure 4 shows the City of San Francisco's emissions by category from the year 1990 to 2010. In this example, the emissions in the waste category increased between 1990 and 2005 but decreased from 2005 to 2010. The building electricity category appears to have steadily decreased in emissions, while other categories' emissions have remained approximately the same. Overall, the City of San Francisco showed a decrease in its total emissions from 2000 to 2010; however, it appears to not quite have met its reduction target of 20% below 1990 by 2010.

Figure 4 Example of GHG trends in San Francisco inventory categories



Another important consideration is to determine why GHG emissions increased or decreased in a given category and identify barriers to progress. Apart from data uncertainties as a contributor to apparent increases or decreases, a range of other factors could affect emissions. Some factors may be outside the control of the local jurisdiction. The following sections describe some of these factors outside of CAP implementation that may affect emissions in a given year for each category.

### On-road transportation

- The on-road transportation category is complex, and many factors influence GHG emissions by impacting VMT, such as vehicle efficiency, and use of zero emission vehicles. Unlike other inventory categories where activity is measured, and lacking fuel data at the jurisdiction level, VMT cannot be measured directly at the jurisdiction level. Because of this, modeled VMT is used instead.
- Fuel prices affect miles driven and types of vehicles purchased. The types of vehicles registered determines the GHG emissions factor in the State's EMFAC model (see Technical Appendix II, GHG Reduction Calculation Methods for CAP Measures).
- The state of the economy affects miles driven. Miles driven typically decrease during recession years and increase in years with a strong economy. However, GHG emissions may still decrease depending on the type and fuel economy of the vehicles being driven.
- Emerging technologies (e.g., rideshare, bikeshare, microtransit, autonomous vehicles, and connected vehicles) have the potential to dramatically influence GHG emissions. The impacts on VMT, vehicle ownership, single-occupant trips, and roadway capacity is unclear.

## Electricity

- SDG&E's power source mixes can change from year to year. The emission factor is based on the amount of renewable source generation. For example, when the San Onofre nuclear power plant went off-line in 2012, GHG emissions increased because the temporary use of natural gas plants increased the emissions factor of grid power.
- The number of accounts in each class (e.g., residential, non-residential) can change from year to year as new customers enter or leave. This can lead to large changes when dealing with industrial and commercial facilities and can mask real CAP-related reductions in GHG emissions from the electricity and natural gas categories.
- External factors, such as weather (e.g., temperature, humidity), affect electricity consumption.
- The state of the economy affects end-use energy consumption, similar to the miles driven in the on-road transportation category.

## Water and wastewater

- Water consumption is affected by State and local mandates to conserve.
- Water rates affect water use; therefore, tracking water rates by service agency is useful.
- Weather (especially rainfall) in a given year will impact both water consumption and associated energy and GHG emissions. Drought years may lead to jurisdictions importing more water, which uses more energy and potentially leads to greater GHG emissions. On the other hand, if sufficient water is stored in the region in a drought year, there may be less than expected imports during a drought year.
- Reductions in water use will lead to reductions in wastewater treatment emissions.

## Solid waste

- Changes to disposal rates or recycling rates impact solid waste emissions.

Data needs and frequency of data availability to monitor category emissions are the same data needed for an inventory and are summarized in Table 2. They are described in detail in Technical Appendix I, GHG Inventories, Projections, and Target Selection.

## 4.3 Monitoring CAP measures and actions

CAP measures and/or actions can be monitored by tracking the activities associated with each, and their equivalent GHG emissions. However, solely tracking the level of activity can be misleading if the associated emissions reductions are declining for other reasons. Therefore, monitoring progress in implementing and achieving the goals of CAP strategies, measures, and actions may include:

- Tracking the data inputs used to calculate emissions reductions;
- Tracking associated local jurisdiction activities, which can be qualitative or quantitative; and
- To the extent possible, tracking other related data that might be useful and relevant to any particular strategy, measure, or action.

The way to track these three components is to establish a level of activity for each component. A variety of performance metrics can be established with baseline activity data during CAP development and additional activities can be developed any time thereafter to be used to monitor and report several components of measures and actions.

Activity data are also used to monitor emissions by category or overall emissions. However, the GHGs avoided from given activity levels is also sometimes provided. The next section provides more detail on possible activity data for each level of the monitoring framework.

### 4.3.1 Activity data to monitor CAP categories, strategies, measures, and actions

Activity data is a specific and measurable level of a CAP-related activity within a particular timeframe or target year. Different activity levels may lead to a particular end result or goal. While CAPs always have targets for overall GHG reduction, they may or may not have goals by emissions category. If a category of emissions has several strategies to achieve reductions, strategies may or may not have associated GHG reduction goals or other goals. For local measures within a category and strategy, CAPs generally have specific actions which have been used to quantify GHG reduction estimates in target years, as well as non-quantifiable local actions associated with a measure. To track level of activity, specific activity data can be developed and tracked annually or even more frequently for local measures. Activity data related to staff time, money spent, or number of workshops can also be developed but may not be quantifiable with respect to GHG reductions. Therefore, activity data can be qualitative or quantitative.

The data needs, availability, and sources for CAP measures are provided in Table 3 and are largely the same as those used to identify and develop the CAP measures during CAP development (see Appendix II, GHG Reduction for CAP Measures). The methods for calculating emissions reductions are also provided in Appendix II and are the same as the methods used during the monitoring process. The analysis included in the CAP is for the purpose of planning and estimating GHG reductions even if not all actions can be quantified. In addition, activity data associated with a strategy, category, measure, or action can be used to track factors that may influence the CAP, such as regional gross domestic product (RGDP). An activity that considers trends in overall GHGs per RGDP can show how productive a jurisdiction might be relative to reductions in GHGs. The metric GHGs per unit of RGDP is typically not within the scope of the CAP, but nonetheless provides a useful indicator of change.

Table 4 shows a variety of activity data that may be used to track progress of CAPs by category, strategy, measure, and action. Activities included in the CAP would require collecting data across a number of departments and divisions within a jurisdiction, as well as external entities.

While activity data may be provided in the CAP or developed later through progress reporting, there may also be CAP-related activities provided in a GP implementation or monitoring plan.

**Table 4** Illustrative examples of activity data

| GHG emissions category      | Strategy                  | Measure/policy examples                                                                       | Actions                                                                     | Performance metrics                                                                                                                                     |
|-----------------------------|---------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Electricity and natural gas | Increase renewable energy | Local: require installation of 10 MW additional residential PV or PV on 3,000 homes by 2020   | Adopt ordinance to increase residential PV                                  | Number of educational outreach events<br>Value of rebates and incentives provided per year<br>Zoning amendments to streamline permit applications       |
|                             |                           |                                                                                               | Installation of 1 MW additional residential PV or PV on 3,000 homes by 2020 | MW residential PV installed per year<br>Number of residential PV permits per year<br>Average kW PV/household per year<br>CO <sub>2</sub> e avoided/unit |
|                             |                           | State: implemented regionally; achieve 33% renewables in electricity by 2020, and 50% by 2030 | Amount of renewables in grid energy                                         | % renewables in gross supply by jurisdiction per year<br>CO <sub>2</sub> e avoided/year                                                                 |
|                             | Increase building         | Local: reduce energy use by 15% per unit in 20% of residential housing                        | Adopt a residential energy disclosure ordinance                             | Number of homes disclosing energy use<br>Number of homes conducting energy reduction activities                                                         |

| GHG emissions category | Strategy                                                         | Measure/policy examples                                                 | Actions                                                                                  | Performance metrics                                                                                                                                                                                                                                                                |
|------------------------|------------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | energy efficiency                                                | units by 2020 and 50% of units by 2035                                  |                                                                                          | Energy use per household per year<br>Electricity use per household per year<br>Natural gas use per household per year                                                                                                                                                              |
|                        |                                                                  | State: achieved locally; reduce commercial building energy use          | Establish commercial building energy use per square foot by jurisdiction                 | Commercial building energy use per square foot<br>Incentives and rebates distributed locally by jurisdiction for commercial retrofits                                                                                                                                              |
| On-road transportation | Reduce VMT                                                       | Increase mass transit commute mode share to 10% by 2020 and 25% by 2035 | Work with transit agencies to identify bus routes and priorities to increase frequencies | Number of meetings held with transportation agency per year<br>Number of outreach events to identify community needs for transit and areas<br>Baseline number and frequency of potential buses affecting commuters<br>New frequency by jurisdiction and commute                    |
|                        |                                                                  |                                                                         | Identify smart growth areas for improved transit access                                  | Number of smart growth areas by jurisdiction<br>Outreach to public and employers related to smart growth areas<br>Incentives and rebates available for increased transit access for commuters per year<br>Employer applications and amount for transit rebates/incentives per year |
|                        | Promote alternate fuels (AF) and alternative fuel vehicles (AFV) | Increase AF stations                                                    | Work with SDG&E and CSE to identify locations and implement                              | Number and type of AF stations per year installed                                                                                                                                                                                                                                  |
|                        |                                                                  | Increase EVs in passenger fleet                                         | State: achieved locally                                                                  | Number of EV rebates per year<br>Value of EV rebates per year<br>Estimated EV and other AFV miles driven per year                                                                                                                                                                  |
|                        | Reduce fuel use                                                  | Traffic light retiming or synchronization for 100 signals               | Retime 100 traffic signals by 2020                                                       | Number of signals re-timed to achieve smoother flow                                                                                                                                                                                                                                |
|                        |                                                                  | Install four roundabouts                                                | Identify and install roundabouts at four appropriate junctions by 2020                   | Number of roundabouts installed or planned per year                                                                                                                                                                                                                                |
|                        |                                                                  | Improve fuel economy of vehicles                                        | State: achieved locally                                                                  | Modeled change in fleet fuel economy in region by year                                                                                                                                                                                                                             |

| GHG emissions category | Strategy                                     | Measure/policy examples                                       | Actions                                | Performance metrics                                                               |
|------------------------|----------------------------------------------|---------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------|
| Waste                  | Increase solid waste diversion from landfill | Divert 75% solid waste from landfills by 2020 and 90% by 2035 | Adopt zero waste ordinance             | Total solid waste produced per year<br>Amount and type of waste diverted per year |
|                        |                                              | Compost 90% of organics by 2035                               | Plan and develop composting facilities | Build composting facilities                                                       |

Non-quantifiable CAP measures and actions may also be known as “supporting activities.” The purpose of tracking and monitoring these non-quantified measures and actions is to determine whether a jurisdiction has completed the activities it committed to in the CAP, and, if not, why these activities were not completed. It is also possible that a local jurisdiction could complete the CAP actions without achieving the associated GHG emissions reductions. The opposite could also be true, and the GHG reduction measure and associated level of activity might be met without any action by the local jurisdiction. This information can help local jurisdictions determine how to prioritize their implementation efforts and allocate funds to support CAP implementation.

Regional agencies may track or be able to better and more efficiently track activity data which are available consistently throughout the region. SANDAG initiated this monitoring service as part of the Roadmap Program in 2016 and has provided regionally consistent activity data to 16 of its member jurisdictions in its Climate Action Data Portal, which includes the ReCAP Snapshots as well as other climate action data of regional interest. The ReCAP Snapshots provide high-level activity data, but the Climate Action Data Portal provides additional, more detailed activity data. As an example, the ReCAP Snapshots provide total electricity and natural gas consumption, but the Climate Action Data Portal provides electricity and natural gas consumption per home.

### 4.3.2 Measuring CAP Progress by Regional Agencies

Apart from SANDAG, two regional planning agencies (the Southern California Association of Governments and Western Riverside Council of Governments) have taken on monitoring CAP progress at the regional level. However, each agency does this in different ways, discussed below.

#### **Southern California Association of Governments (SCAG)**

The SCAG region contains six counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura) and 191 cities in an area covering more than 38,000 square miles. Like other metropolitan planning organizations (MPOs), SCAG develops long-range regional transportation plans, including a Sustainable Communities Strategy (SCS) as per Senate Bill 375, growth forecasts, regional housing needs allocations, and a portion of the South Coast Air Quality District’s management plans (AQMP) required to meet state and federal Clean Air Act purposes. In 2011, SCAG started collecting and tracking sustainability efforts, plans, and programs through a collaboration with CivicSpark. Sustainability metrics tracked includes those typically tracked for CAPs.

There have been four versions of this tracking program, with the current version being the fourth.

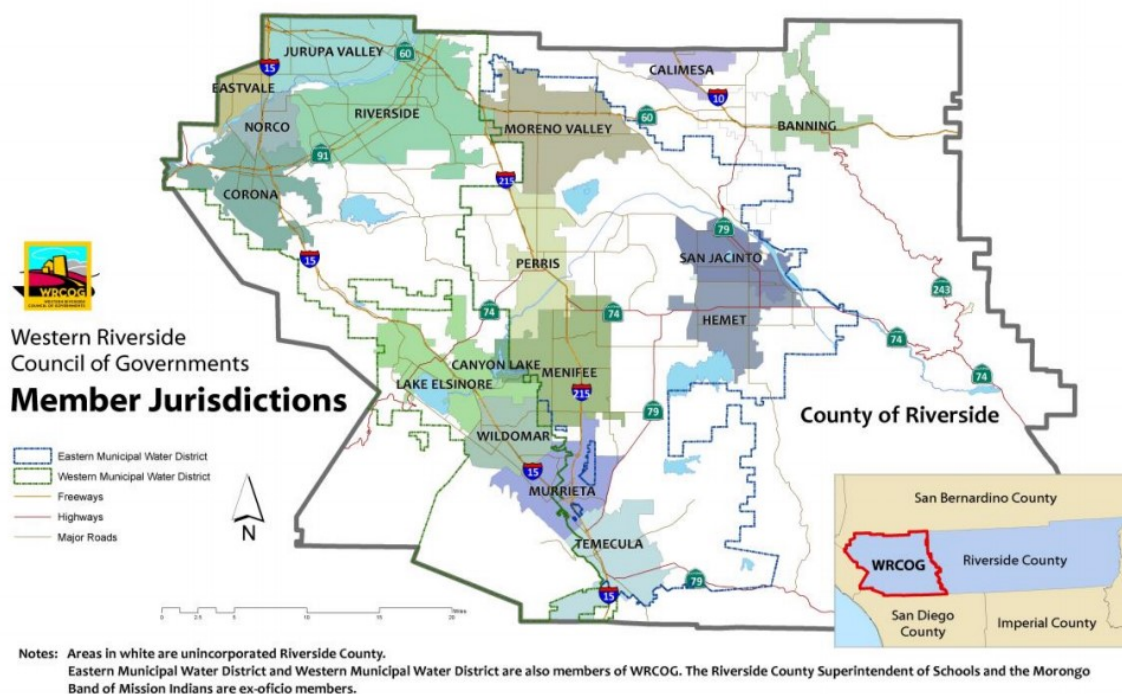
- Version 1.0 quantified the total programs each jurisdiction adopted related to water conservation, transportation, energy efficiency, waste management, green buildings, etc. based on voluntary surveys.
- Version 2.0 identified eight main categories and 25 sustainability indicators for the Green Region Initiative. 25 metric reports and updates to the Sustainability Indicators chart were prepared and ranking systems were developed. Version 2.0 was an interactive GIS map that showed a visual for the policy metrics established during 2015–2016.

- Version 3.0 moved towards an ESRI Story Map in order to convey 2016-17 sustainability policy and performance data side by side. Version 3.0 of the map divided the 25 indicators among ten main categories, along with the descriptions and the category averages from the year prior, as well as various GIS data ranking systems. In 2017–2018, three new indicators (adaptation, affordable housing, and healthy food access) were added.
- Version 4.0 is the current version, with 12 categories and 29 sustainability indicators. Each icon can be clicked on to view sustainability progress in the SCAG region. The aim of tracking is to promote collaboration through the sharing of best practices across the 191 cities and six counties in the SCAG region. The presentation and communication of the 12 categories and indicators are shown in Section 5.6.

## Western Riverside Council of Governments (WRCOG)

WRCOG has initiated many regional collaborative programs, such as the Western Riverside Energy Leader Partnership (WRELP), the HERO Program (an energy efficiency and water conservation financing program), and the Western Riverside County Clean Cities Coalition. The 2014 [Subregional Climate Action Plan](#) (CAP) is another sub-regional planning effort, led by WRCOG, to track GHG reductions.

Figure 5 WRCOG Subregion



Unlike SCAG, which tracks progress in individual jurisdictions, the WRCOG region has 12 cities which joined efforts to develop the Subregional CAP, with a sub-regional emissions reduction target, sub-regional emissions reduction measures, and actions to assist each member community to achieve compliance with the targets. The Subregional CAP identifies objectives and actions in four categories to set the sub-region on a path to meet their 2020 GHG emission target. The four categories are energy, transportation and land use, solid waste, and water. An annual progress report was mentioned in the Subregional CAP; however, no progress report has yet been produced by WRCOG.

## SANDAG's Regional Climate Action Planning Framework (ReCAP)

SANDAG's model of CAP development and monitoring is different from both WRCOG and SCAG. While SANDAG has not developed its own regional CAP and has not summed the impacts of all of the region's CAPs, based on stakeholder input, SANDAG developed a framework to: a) identify best practices and technical guidance for preparing CAPs and monitoring implementation over time and b) to provide regionally representative activity data that could be monitored consistently over time. Within this framework, GHG inventories and CAP monitoring reports, known as "ReCAP Snapshots", are prepared for the 16 Roadmap cities every two years. The ReCAP Snapshots are provided to each jurisdiction and are available on SANDAG's Climate Action Data Portal. The ReCAP Snapshots for the year 2016 were completed in November 2019, and the ReCAP Snapshots for the year 2018 will be completed by the end of 2020.

SANDAG's ReCAP Snapshots and Climate Action Data Portal will allow anyone with internet access to monitor trends by jurisdiction for all categories of GHG emissions and for regionally consistent activity data. The [Climate Action Data Portal](#) also allows the user to graph activities for each jurisdiction across time to visually display any trends. Unique to all CAP-related monitoring in California, the Climate Action Data Portal provides data and visualization of VMT by jurisdiction that is consistent with the VMT used for CAPs, as well as overall regional VMT by roadway. Jurisdictions may use this data to produce reports for their own purposes and also to develop and monitor additional CAP activity data.

The presentation of activity data by SANDAG is provided in Section 5.7.

### 4.4 Monitoring GHG Impacts of CAP Measures

Estimating a GHG reduction amount associated with the current activity level for any measure may be possible if data is available. Methods used would be the same as used to develop CAP measures as outlined in Appendix II, GHG Reduction Calculation Methods for CAP Measures with the data needs presented in Section 4.3.

However, this GHG reduction amount may not be consistent with the reduction amount estimated in the CAP for this measure due to, for example emission factors being different from what was used in the CAP. Changes in GHG emissions may also have been caused by factors outside of the control of the community, such as economic downturns. Therefore, tracking activity levels as described above can provide a better and primary method to monitor changes. Even so, tracking activity levels may not correspond with GHG reductions. As an example, while electricity use may increase over time, GHG emissions may decrease because the GHGs are associated with fossil-fuel based electricity. To the extent that fossil fuels are replaced by clean renewable sources of generation, usage can increase while GHGs continue to decrease. Because regulatory and state policy is geared towards GHG reductions, the primary goal is to avoid or reduce GHG emissions, best tracked by regular updates to the GHG emissions inventory as described in Appendix I, GHG Inventories, Projections, and CAP Target Selection.

### 4.5 Monitoring Other Factors Affecting CAPs

The primary goal of the CAP is to achieve GHG emissions reductions by implementing the local measures assessed and adopted in the CAP. However, other activity data can help monitor progress, including whether supporting efforts were completed. Other CAP-related metrics like energy consumption per capita, are additional benefits that can result from implementation of CAP measures and actions and are also called "co-benefits." The following sections provide some guidance on other factors which may be monitored. Some of these factors may be quantifiable, while others can be dealt with qualitatively. Together, these factors help to provide broader picture beyond what is just in the CAP and could be part of a larger sustainability effort.

### 4.5.1 CAP Measure Supporting Efforts

Supporting measures assist in the implementation of a CAP measure but are usually not quantifiable. Before primary components of a CAP measure can be implemented, some supporting measures are necessary to implement. For example, the City of San Diego's 2015 CAP Strategy 5 (Climate Resiliency) has an action to "[p]resent to Council a city-wide Urban tree Planting Program." However, before presenting an Urban Tree Planting Program to the Council for approval, the City states under supporting measures that it would collaborate on a regional tree canopy study with other jurisdictions and hire an urban forest manager. Whether the City of San Diego did these supporting measures is one factor to track in an Annual Progress report, for example.

### 4.5.2 Other CAP-related Activities

CAP activities can capture broad macroeconomic themes, such as GHG emissions per dollar of RGDP, or they can be more specific and focus on a particular category of emissions. For example, energy related metrics, including energy per capita or energy per household, could be used to evaluate broader trends related to the CAP but not explicitly included in the CAP.

Activities could be developed to monitor overall efficiencies. For example, because on-road transportation is responsible for a significant portion of overall communitywide emissions, developing CAP activities to assess the overall efficiency of the transportation system in terms of access, mobility, and associated GHG emissions could help a jurisdiction understand what measures and policies could be most effective. For example, moving miles from EVs charged with high levels of renewable electricity to diesel or natural gas buses with low ridership may not be a good trade-off for reducing GHG emissions in a jurisdiction, and activities that enable this kind of evaluation may be valuable in a CAP.

Examples of other levels of activity for communitywide energy and water efficiency measures are given in Figure 6.

Figure 6 Examples of additional potential activity data related to CAPs

|                                                   |                                                                                                                                                                 |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Energy</b><br>(fuel, electricity, natural gas) | Total energy use<br>Total energy per person<br>Energy per household<br>Energy per dollar of GDP                                                                 |
| <b>Electricity</b>                                | Total electricity use<br>Electricity per person<br>Electricity per household<br>Electricity per sq. ft. of commercial area<br>Electricity per industrial output |
| <b>Natural Gas</b>                                | Total natural gas use<br>Natural gas per person<br>Natural gas per household<br>Natural gas per sq. ft. of commercial area<br>Natural gas per industrial output |
| <b>Water</b>                                      | Water per person<br>Water per household<br>Water per commercial customer<br>Water per industrial customer<br>Recycled water per person                          |

These activities are essentially combinations of publicly available datasets and could be quickly developed. Such activity data could be shared publicly to help develop long-term assessments of climate action planning in any jurisdiction and support data transparency initiatives.

## Monitoring the weather

While the region's CAPs do not currently include weather monitoring, tracking annual weather patterns through publicly available sites (e.g., SDG&E's weather stations) can help to explain changes in energy and water use over time.

### 4.5.3 Monitoring Co-Benefits

CAP activities that reduce GHG emissions also can provide other co-benefits. For example, reducing tailpipe emissions from vehicles can improve local air quality, which can have a positive effect on public health. Similarly, installing solar PV or conducting energy efficiency retrofits can reduce costs for users through energy and water utility savings. Last, increasing use of labor-intensive activities, like solar installation and energy efficiency retrofits, can create jobs and positively affect the local economy. At the same time, there may be negative externalities, such as costs associated with adopting new technologies or building infrastructure.

Co-benefits may be identified in a qualitative manner in a CAP. A comprehensive benefit-cost analysis (BCA) of CAP measures would include co-benefits (see Technical Appendix III, Benefit-Cost Analysis for CAP Measures).

#### Local air quality benefits

There is no requirement for CAPs to quantify local air quality benefits from measures. However, if CAPs are part of a larger sustainability effort, such as in the SCAG region, air quality is one co-benefit that can be monitored. Local transportation measures that reduce GHG emissions will also reduce air pollutants, such as particulate matter, oxides of nitrogen, and sulfur dioxide. These air pollutants have a direct effect on smog formation and public health.

#### Public health

To the extent that CAP measures reduce conventional air pollutants, there will be a direct effect on public health. Health metrics are monitored by SCAG as part of its wider sustainability effort through the Green Region Initiative.

#### Cost

The cost of monitoring a CAP includes staff costs to implement the CAP and collect and manage data, as well as consultant costs, if needed. The BCA framework developed by EPIC (provided in Technical Appendix III, Benefit-Cost Analysis for CAP Measures) includes the cost of implementation, which, in turn, includes the costs for monitoring the CAP over its lifetime.

#### Economic impacts and jobs

The City of San Diego and City of Encinitas CAPs have sections on social equity and job creation and describe how this can be used to promote more equitable job growth and economic opportunity. In its chapter on Implementation and Monitoring, the City of San Diego commits to working with other regional organizations (such as Cleantech San Diego and the Center for Sustainable Energy) to monitor and report on annual jobs related to the CAP, which also includes associated wages. Cleantech San Diego monitors the region's clean tech economy as a whole,<sup>8</sup> and this data is available to other jurisdictions in the region. Tracking job changes due to CAP measures can be a part of CAP monitoring.

### 4.5.4 Equity

Some CAPs have developed chapters on social equity within CAPs, and the action on equity at the State level has increased in recent years. However, this is a new and growing area of concern and research, and metrics to monitor equity related to climate are rare. After decades of discussion with community-based environmental justice groups, the State developed a tool, CalEnviroScreen, that evaluates the cumulative pollution burden from several sources together with the vulnerability of communities by census tract. CalEnviroScreen scores each census tract to identify communities suffering from cumulative

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<sup>8</sup> See <http://cleantechsandiego.org/facts/>

impacts of multiple pollutants and people who are vulnerable to pollution's effects. While the CalEnviroScreen indicators have been chosen for a specific purpose, it has provided guidance on how to think about monitoring equity. The latest version of CalEnviroScreen, 3.0, refers to how the CalEnviroScreen communities has been identified in a chapter of the City of San Diego's 2015 CAP.

In 2019, the City of San Diego developed its own Climate Equity Index (CEI), integrating 35 indicators into an index by census tract. The CEI establishes a benchmark for the year 2018 to assess communities of concern in the City. To the extent that data are consistently available, the indicators can be tracked over time, while allowing for comparison of communities relative to one another within the city for that year. Unlike CalEnviroScreen, the CEI is unique in that it relativizes the differences to within the city only. CalEnviroScreen relativizes its index to the entire state; therefore, local nuances will be obscured.

The indicators included in the City of San Diego CEI, which were developed through a stakeholder-driven process, may be considered performance indicators, as they can be tracked over time, although some may only be available at longer intervals such as 10 years. The indicators used in the City of San Diego CEI are shown in Figure 7.

Figure 7 City of San Diego Climate Equity Index Indicators

| Indicator                                       | Description                                                                                                                                                                                     |                                                  |                                                                                                                                                  |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ENVIRONMENTAL INDICATORS</b>                 |                                                                                                                                                                                                 | <b>MOBILITY INDICATORS</b>                       |                                                                                                                                                  |
| <b>Flood Risk*</b>                              | Percent of census tract within the 100-year flood plain and/or predicted to experience inundation during a 100-year storm surge event given a 2-meter rise in sea level                         | <b>Pedestrian Access*</b>                        | A combination of average Walk Score, miles of sidewalk, number of streetlights and pedestrian-vehicle collisions                                 |
| <b>Fire Risk*</b>                               | Percent of the census tract classified under the very high fire hazard severity zone                                                                                                            | <b>Commute Burden*</b>                           | Percent of population with commute time over the regional average (30 minutes for commuting by car and 45 minutes for commuting by mass transit) |
| <b>Tree Coverage*</b>                           | Percent of tree canopy coverage                                                                                                                                                                 | <b>Transportation Cost Burden</b>                | Median household transportation cost as a percentage of median household income                                                                  |
| <b>Urban Heat Island Index</b>                  | Increase in temperature due to urban heat island (UHI) effect                                                                                                                                   | <b>Disability</b>                                | Percent of population with a disability                                                                                                          |
| <b>Proximity to Community Recreation Areas*</b> | Number of recreation areas (parks, open space, beaches, libraries and recreation centers) within 1/2 mile of populated neighborhoods                                                            | <b>Street conditions*</b>                        | Weighted average Overall Condition Index (OCI) score                                                                                             |
| <b>Proximity to Waste Sites*</b>                | Average distance to the nearest waste site (includes hazardous waste generators and facilities, facilities with documented toxic releases, solid waste sites and facilities, and cleanup sites) | <b>Bikeability*</b>                              | Weighted average Bike Score                                                                                                                      |
| <b>Pesticide Use</b>                            | Total pounds of selected pesticides used in production-agriculture per square mile as calculated by CalEnviroScreen 3.0                                                                         | <b>Access to Public Transit*</b>                 | Average distance to the nearest transit stop                                                                                                     |
| <b>Drinking Water Contaminants</b>              | Average concentration of contaminants within drinking water systems as calculated by CalEnviroScreen 3.0                                                                                        | <b>Traffic Density</b>                           | Traffic volume divided by total road length as calculated by CalEnviroScreen 3.0                                                                 |
| <b>Groundwater Threats</b>                      | CalEnviroScreen 3.0 groundwater threat scores for census tracts based on type of pollution site and location to populated neighborhoods                                                         | <b>Electric Vehicle Charging Infrastructure*</b> | Number of publicly available charging stations (includes Level 2 and DC fast chargers)                                                           |
| <b>Impaired Water Bodies</b>                    | Number of pollutants across all water bodies designated as impaired within the census tract as calculated by CalEnviroScreen                                                                    |                                                  |                                                                                                                                                  |
| <b>HEALTH INDICATORS</b>                        |                                                                                                                                                                                                 | <b>SOCIOECONOMIC INDICATORS</b>                  |                                                                                                                                                  |
| <b>Asthma Rates*</b>                            | Rate of emergency department visits due to asthma                                                                                                                                               | <b>Unemployment</b>                              | Unemployment rate (percent of population unemployed)                                                                                             |
| <b>Cancer Fatalities*</b>                       | Percent of total deaths that are cancer-related                                                                                                                                                 | <b>Educational Attainment</b>                    | Percent of population over age 25 with less than a high school education                                                                         |
| <b>Healthy Food Access*</b>                     | Percent of population with low access to healthy food (> 1/2 mile for urban census tracts and >10 miles for rural census tracts)                                                                | <b>Linguistic Isolation</b>                      | Percent of households that are limited English-speaking households                                                                               |
| <b>Low Infant Birth Weight</b>                  | Percent of full term births (37 weeks of gestation) with a birthweight less than 2,500 grams                                                                                                    | <b>Digital Access</b>                            | Percent of households without internet access                                                                                                    |
| <b>Heart Attack Fatalities*</b>                 | Percent of total deaths that are heart attack-related                                                                                                                                           | <b>Median Income</b>                             | Estimated median household income in the past 12 months                                                                                          |
|                                                 |                                                                                                                                                                                                 | <b>Poverty Rate</b>                              | Percent of population with income below 300% of the federal poverty level                                                                        |
| <b>HOUSING INDICATORS</b>                       |                                                                                                                                                                                                 | <b>Change in Income*</b>                         | Five-year annual percent change in median household income                                                                                       |
| <b>Housing Cost Burden</b>                      | Median housing cost as a percent of median income                                                                                                                                               | <b>Energy Cost Burden*</b>                       | Three-year average annual cost of energy as a percent of the median household income                                                             |
| <b>Overcrowdedness</b>                          | Percent of housing units with greater than 1.00 occupants per room                                                                                                                              | <b>Solar Photovoltaic Systems*</b>               | Number of solar photovoltaic systems per capita                                                                                                  |

\*Denotes data needing additional calculation to aggregate at the census tract level.

The City of Chula Vista is developing a CEI with indicators with clear connections to climate risk and vulnerability and an increased focus on Covid-19-related health indicators. The City of Chula Vista CEI will also provide a snapshot of the status of social equity in 2019, while its component indicators can be tracked over time.

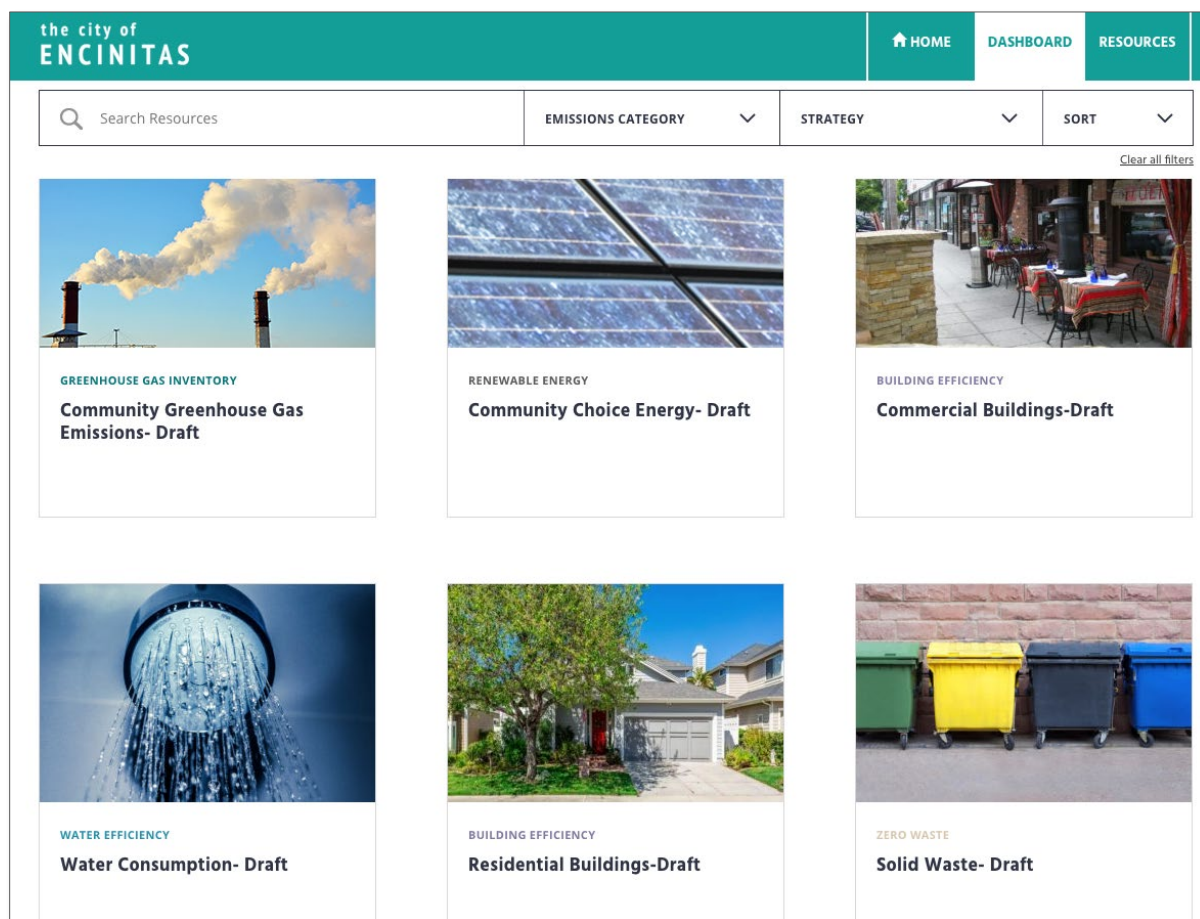
## 5. Communicating and presenting progress

Many CAPs specify that progress reports will be provided to a decision-making body and made available to the public on a regular basis. Some jurisdictions have also chosen to voluntarily report GHG emissions inventories and reduction progress to third parties, such as the CDP. The following sections provide examples of progress reports from jurisdictions within the San Diego region and outside the region. All reports are available online in the form of traditional reports. Dashboards and post-card sized summaries are common, while mapping and interactive features are less common.

### 5.1 City of Encinitas

The City of Encinitas has developed a dashboard called “[Encinitas Environment](#),” which allows visitors to explore the City Encinitas’s CAP goals and progress, including related environmental benefits. Figure 8 shows a screenshot of the City of Encinitas’s dashboard. Each image can be opened for more details on each topic.

Figure 8 City of Encinitas Dashboard<sup>9</sup>



<sup>9</sup> City of Encinitas CAP Dashboard, available at [encinitasenvironment.org](http://encinitasenvironment.org).

## 5.2 City of San Diego

The City of San Diego has a “[Sustainability](#)” webpage which provides tabs and links to a variety of sustainability efforts (Figure 9). One of the links is to the CAP and its associated reports. For example, the CAP Annual Report includes details of progress for each of the five strategies in the CAP (Figure 11). It is accompanied by an Appendix with technical details on the latest GHG inventory, strategy and action updates, methodology differences and revision, analysis of jobs related to the CAP, and, in 2019, the CEI Report. A Report Highlight card is also included (Figure 9). The Sustainability webpage also links to a “Sustainability Progress Report,” a one-page “postcard” that highlights the annual achievements in the CAP progress report (Figure 10).

Figure 9 City of San Diego Sustainability Landing Page and Features

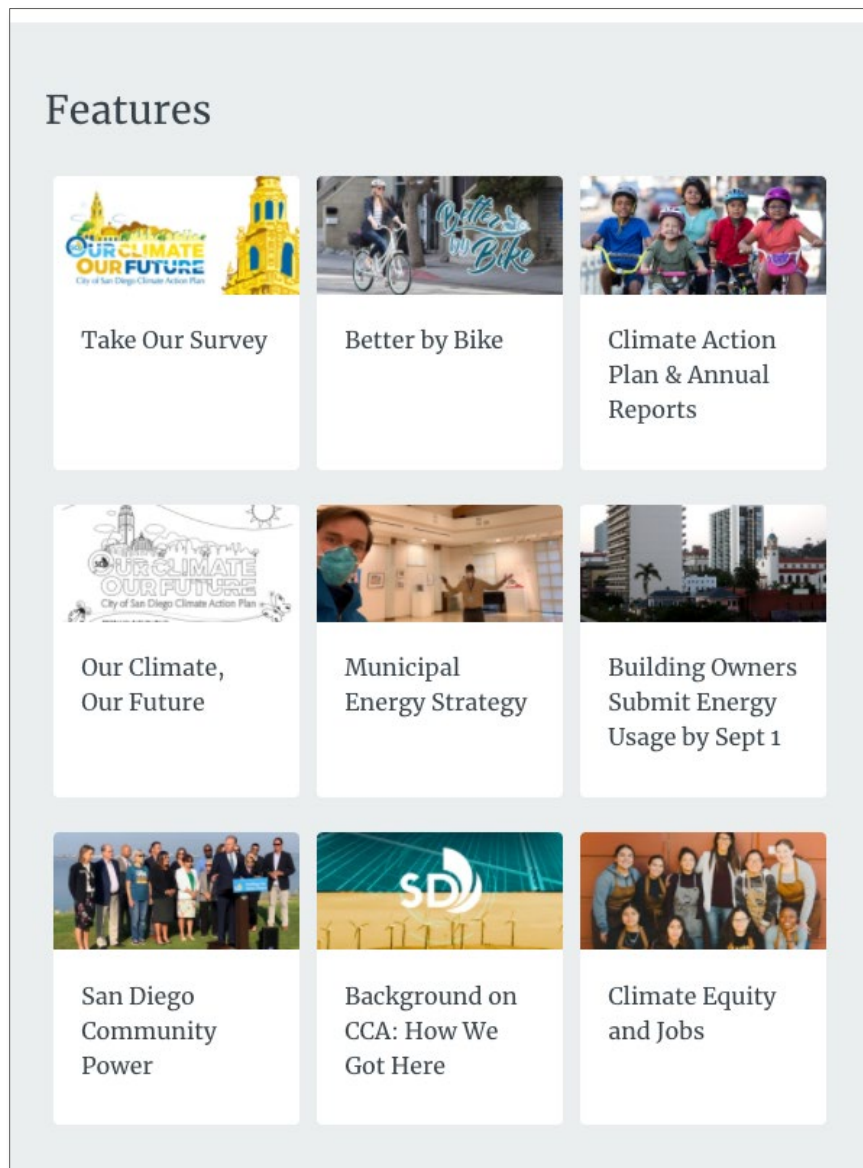
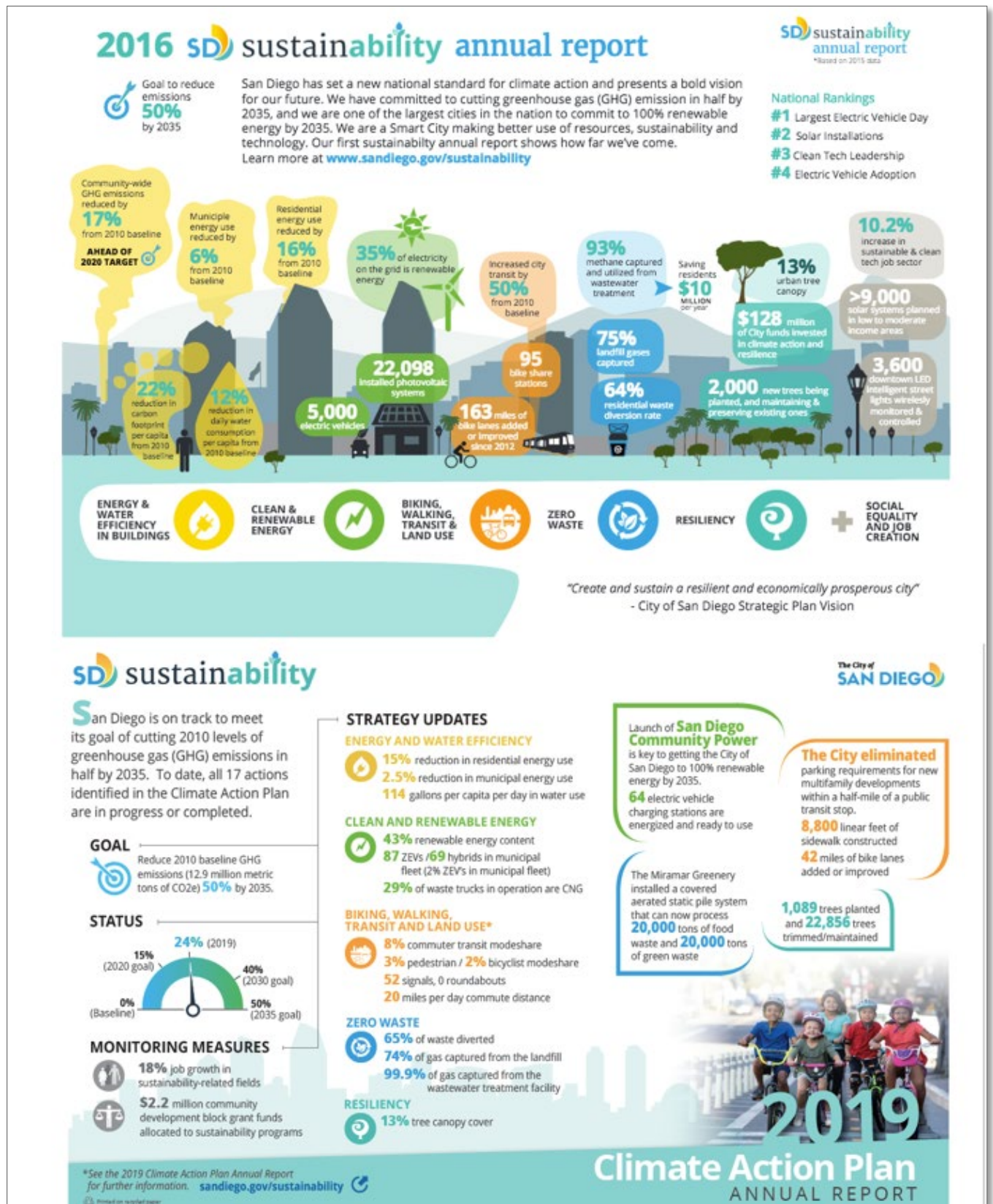


Figure 10 Sustainability Annual Reports, City of San Diego



By comparing annual progress reports over time, local jurisdictions can follow changes in activity levels. For example, residential energy use in the City of San Diego decreased 16% below the 2010 baseline year in 2016, but only 15% below the 2010 baseline year in 2019. The City of San Diego tracks overall GHG emissions through an annual GHG inventory; in 2016, emissions levels were reported to be about 17% below baseline, and in 2019, about 24% below the 2010 baseline. These metrics indicate that the City of San Diego has made some progress in GHG reduction between 2016 and 2019.

### 5.3 County of San Diego

The County of San Diego adopted its latest CAP in February 2018. There are several ways the County reports and communicates progress. One is an Annual Monitoring Report. The Annual Monitoring Report summarizes progress of each CAP measures through 2018. It does not provide a GHG inventory, as there will be no new inventory until 2020 which will document whether the overall GHG goals are being met. Instead, each of the 26 measures are tracked within emissions categories (built environment and transportation, energy, solid waste, and water and wastewater). In the County's CAP, ten measures were required to be quantified in 2018, while 16 others required the development of programs, plans, or ordinances. The Annual Monitoring Report summarizes the action and progress by category and by measure, and the CO<sub>2</sub>e reduction estimates based on the activity level for 2018 (Figure 11). According to the Annual Monitoring Report, an estimated 103,643 MT CO<sub>2</sub>e were reduced in 2018 associated with the activity levels in the CAP measures reported. To put this amount in context, the reduction amount estimated to reach the CAP's 2020 target is 132,205 MT CO<sub>2</sub>e. Therefore, the amount of activity needed to achieve the 2018 reductions is indicative of the activity needed to achieve the target year reductions in year 2020.

Figure 11 Showing Annual Progress, County of San Diego



Secondly, there is a “Quick Look Progress Report” online which links to summary tables (Figure 12) in the Appendix of the Annual Monitoring Report.

Figure 12 Summary Presentation of CAP Progress, County of San Diego

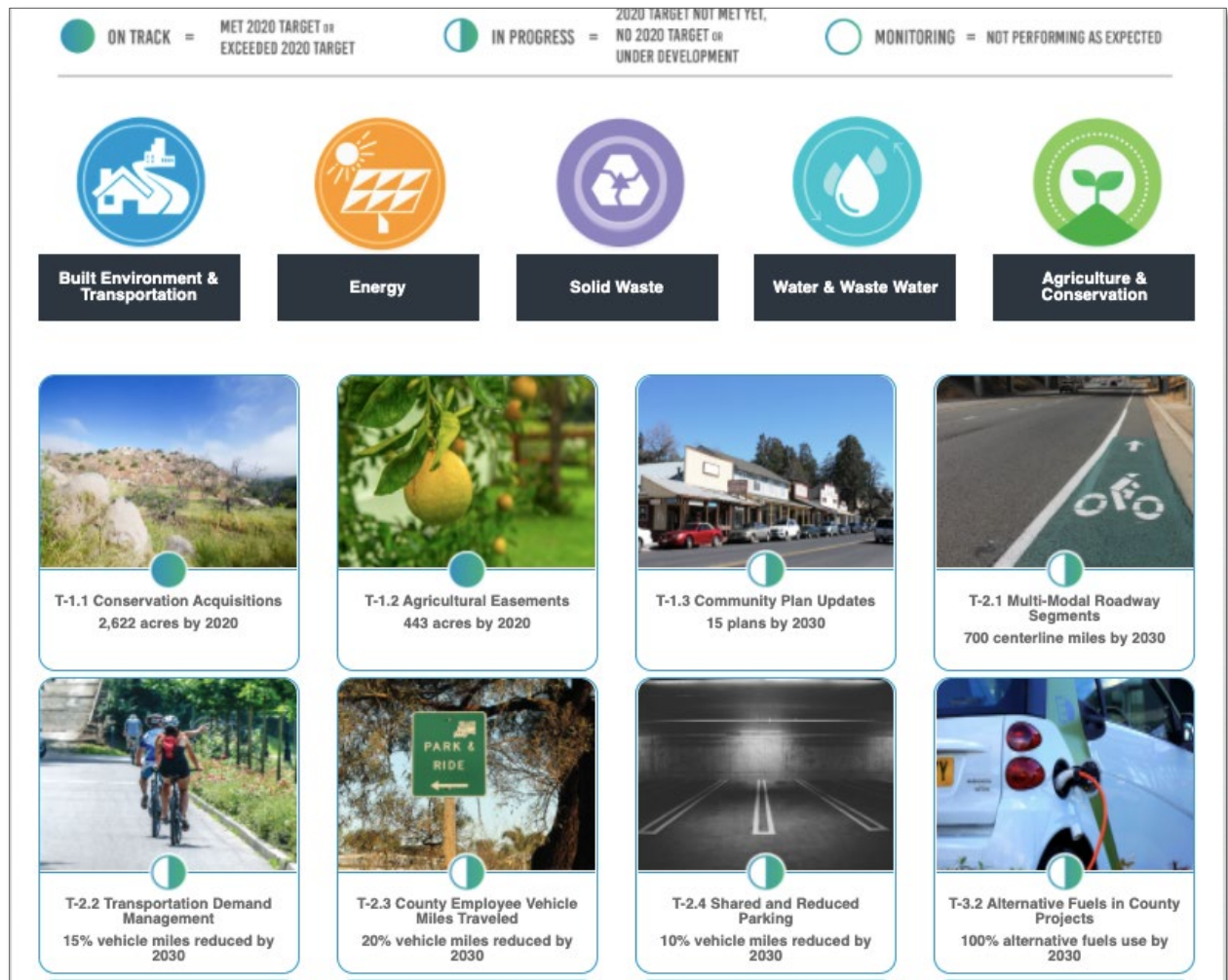
| STRATEGY                                                          | CAP MEASURE                                                         | 2019 STATUS                                                   | 2020 TARGET                                                   | 2030 TARGET                                                                | 2020 IMPLEMENTATION STATUS |
|-------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------|
| <b>T-1</b><br>Reduce Vehicle Miles Traveled (VMT)                 | T-1.1 Acquire Open Space Conservation Land                          | <b>4,897 Acres Acquired</b><br>(6,237 MTCO <sub>2</sub> e)    | 2,622 Acres<br>(3,303 MTCO <sub>2</sub> e)                    | 6,992 Acres<br>(5,771 MTCO <sub>2</sub> e)                                 | On Track                   |
|                                                                   | T-1.2 Acquire Agricultural Easements                                | <b>1,185 Acres Easements</b><br>(761 MTCO <sub>2</sub> e)     | 443 Acres<br>(323 MTCO <sub>2</sub> e)                        | 4,873 Acres<br>(2,330 MTCO <sub>2</sub> e)                                 | On Track                   |
|                                                                   | T-1.3 Update Community Plans                                        | <b>Alpine and Valley Center Plans in Development</b>          | N/A                                                           | 15 Plans Updated<br>(20,923 MTCO <sub>2</sub> e)                           | In Progress                |
| <b>T-2</b><br>Shift Towards Alternative Modes of Transportation   | T-2.1 Improve Roadway Segments as Multi-Modal                       | <b>Ongoing</b>                                                | N/A                                                           | 700 Centerline Miles<br>(604 MTCO <sub>2</sub> e)                          | In Progress                |
|                                                                   | T-2.2 Reduce Emissions from New Non-Residential Development VMT     | <b>Ordinance in Development</b>                               | Adopt and Implement a Transportation Demand Ordinance         | 15% New Non-Residential VMT Reduction<br>(2,180 MTCO <sub>2</sub> e)       | In Progress                |
|                                                                   | T-2.3 Reduce County Employee VMT                                    | <b>Program in Development</b>                                 | N/A                                                           | 20% Employee VMT Reduction<br>(7,473 MTCO <sub>2</sub> e)                  | In Progress                |
|                                                                   | T-2.4 Shared and Reduced Parking in New Non-Residential Development | <b>Ordinance in Development</b>                               | Adopt and Implement a Shared and Reduced Parking Ordinance    | 10% New Non-Residential VMT Reduction<br>(1,392 MTCO <sub>2</sub> e)       | In Progress                |
| <b>T-3</b><br>Decarbonize On-Road and Off-Road Vehicle Fleet      | T-3.2 Use Alternative Fuels in County Projects                      | <b>Ongoing</b>                                                | N/A                                                           | 100% Alternative Fuels in County Construction<br>(364 MTCO <sub>2</sub> e) | In Progress                |
|                                                                   | T-3.3 Develop a Local Vehicle Retirement Program                    | <b>Program in Development</b>                                 | Implement a Local Vehicle Retirement Program                  | 1,600 Vehicles Retired<br>(446 MTCO <sub>2</sub> e)                        | In Progress                |
|                                                                   | T-3.4 Reduce the County's Fleet Emissions                           | <b>13% Emissions Reduction</b><br>(3,370 MTCO <sub>2</sub> e) | 10% Emissions Reduction<br>(2,394 MTCO <sub>2</sub> e)        | 20% Emissions Reduction<br>(3,673 MTCO <sub>2</sub> e)                     | On Track                   |
|                                                                   | T-3.5 Install Electric Vehicle Charging Stations                    | <b>Program in Development; EV Roadmap approved 10/2019</b>    | Adopt and Implement a Program to Install EV Charging Stations | Install 2,040 Level 2 EV Charging Stations<br>(11,987 MTCO <sub>2</sub> e) | In Progress                |
| <b>T-4</b><br>Invest in Local Projects to Reduce Carbon Emissions | T-4.1 Establish a Local Direct Investment Program (LDI)             | <b>Program in Development</b>                                 | Implement an LDI Program                                      | Complete Implementation of LDI Program<br>(176,614 MTCO <sub>2</sub> e)    | In Progress                |

ON TRACK = met 2020 target or exceeded 2020 target IN PROGRESS = 2020 target not met yet, no 2020 target, or under development MONITORING = not performing as expected

Find a detailed description of each CAP measure, target, and implementation approach at [sandiegocounty.gov/sustainability/dashboard](https://sandiegocounty.gov/sustainability/dashboard)

Third, there is an online dashboard version providing a clickable link to each measure, displaying whether a measure implementation is on track (full green circle), in progress (half green circle), or not as expected (white circle) (Figure 13).

Figure 13 Presentation of Progress by CAP Measure, County of San Diego



For all quantifiable measures, estimated GHG reductions are provided. For example, CAP Measure T-1.2 required the purchase of 443 acres of agricultural easements by 2020, and it is reported that 793 acres were acquired, exceeding the activity level target for this measure with an estimated reduction of 509 MT CO<sub>2</sub>e.

## 5.4 City of Seattle

The City of Seattle's Office of Sustainability and Environment webpage provides the history of Seattle's CAP development, with links to the CAP and implementation strategy. The CAP does not have a chapter on monitoring and reporting and there has been no specific annual CAP monitoring. However, its 2014 "Moving the Needle" report tracks and reports on many of the measures included in its 2013 CAP (Figure 14).

Figure 14 City of Seattle 2014 Progress Report



In 2018, Seattle adopted Resolution 31757 to affirm commitment to the Paris Agreement on Climate Change and provided a [report on CAP progress](#), which lists and describes ordinances, projects, and changes in GHGs from 2008 to 2014 only.

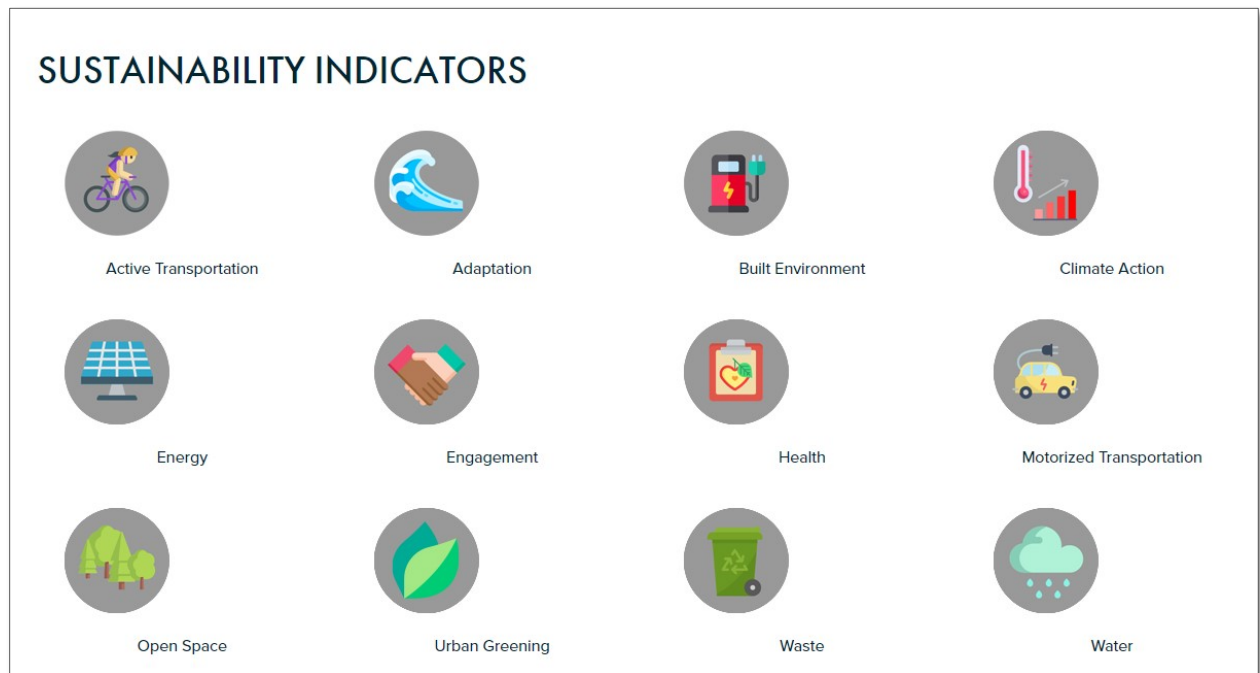
## 5.5 WRCOG Annual Progress Reports

As explained in Section 3.2.1, WRCOG has its own regional CAP (2014) and was expected to produce annual progress reports. However, there are no publicly available annual reports and WRCOG is now in the process of updating its CAP (expected December 2020).

## 5.6 SCAG Regional Monitoring of CAPs

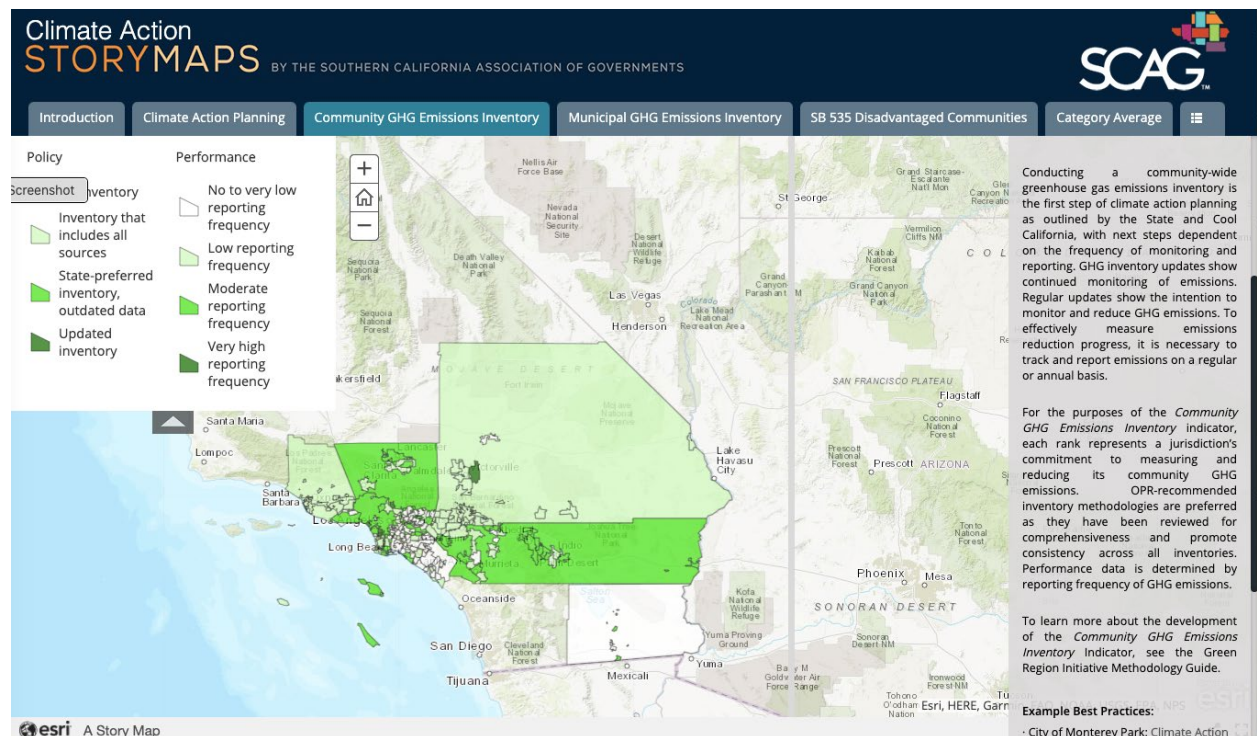
SCAG's Green Region Initiative sustainability tracker, Version 4.0, is a storymap of sustainability indicators, with 12 categories and 29 indicators (Figure 15). Each icon can be clicked on to view sustainability progress in the SCAG region. The aim is to promote collaboration through the sharing of best practices across the 191 cities and six counties in the SCAG region. The 12 categories are shown in Figure 15 below. Green Region Initiative indicators are connected to maps; each topic has a stand-alone map on SB 535 Disadvantaged Communities and a consolidated map which incorporates all of the indicator maps and the SB 535 map. In each iteration of the storymap, new indicators may be added. For example, in 2019, a new EV Streamlining Permitting indicator was added to the Motorized Transportation category to showcase region-wide compliance with Assembly Bill (AB) 1236.

Figure 15 SCAG Tracking of Sustainability and CAP Indicators



The Climate Action icon leads to a map showing each jurisdiction's status of GHG inventories, whether the inventory is updated or outdated, and the frequency of reporting (Figure 16).

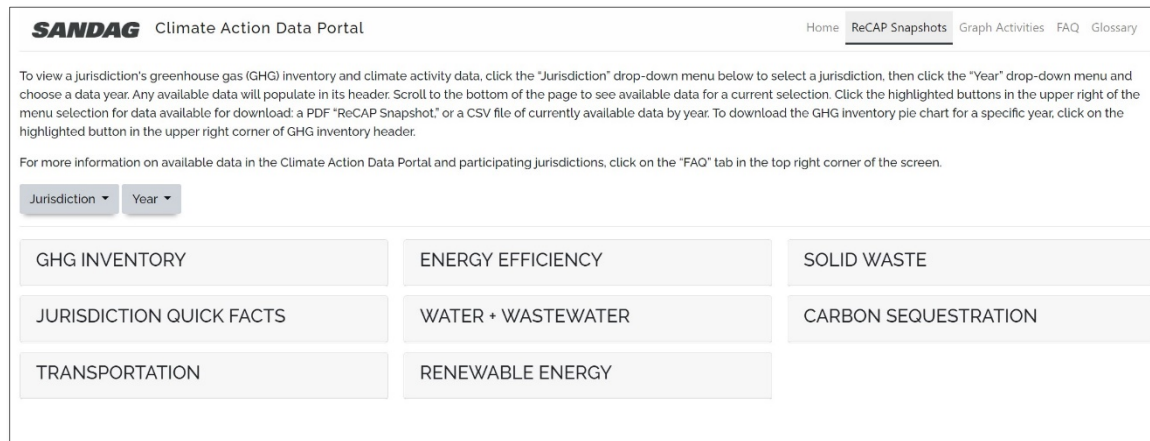
Figure 16 SCAG Climate Action Story Map



## 5.7 SANDAG ReCAP Snapshots and Climate Action Data Portal

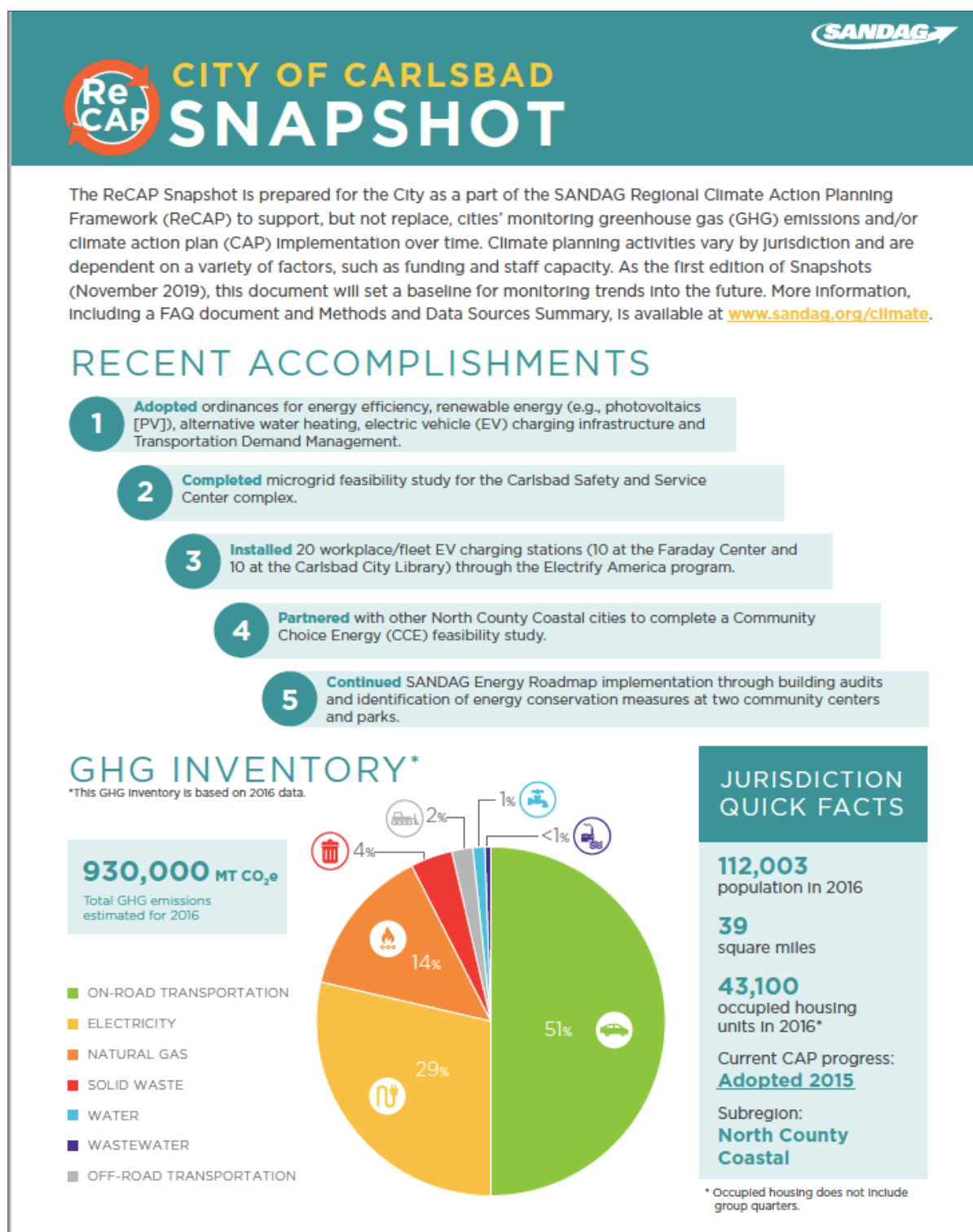
SANDAG's [Climate Action Data Portal](#) is user-friendly and allows the user to access climate activity data and graphs for any of the 16 Roadmap jurisdictions (Figure 17).

Figure 17 Regional communication of CAP progress by jurisdiction, in the San Diego Region, SANDAG Climate Action Data Portal, 2020



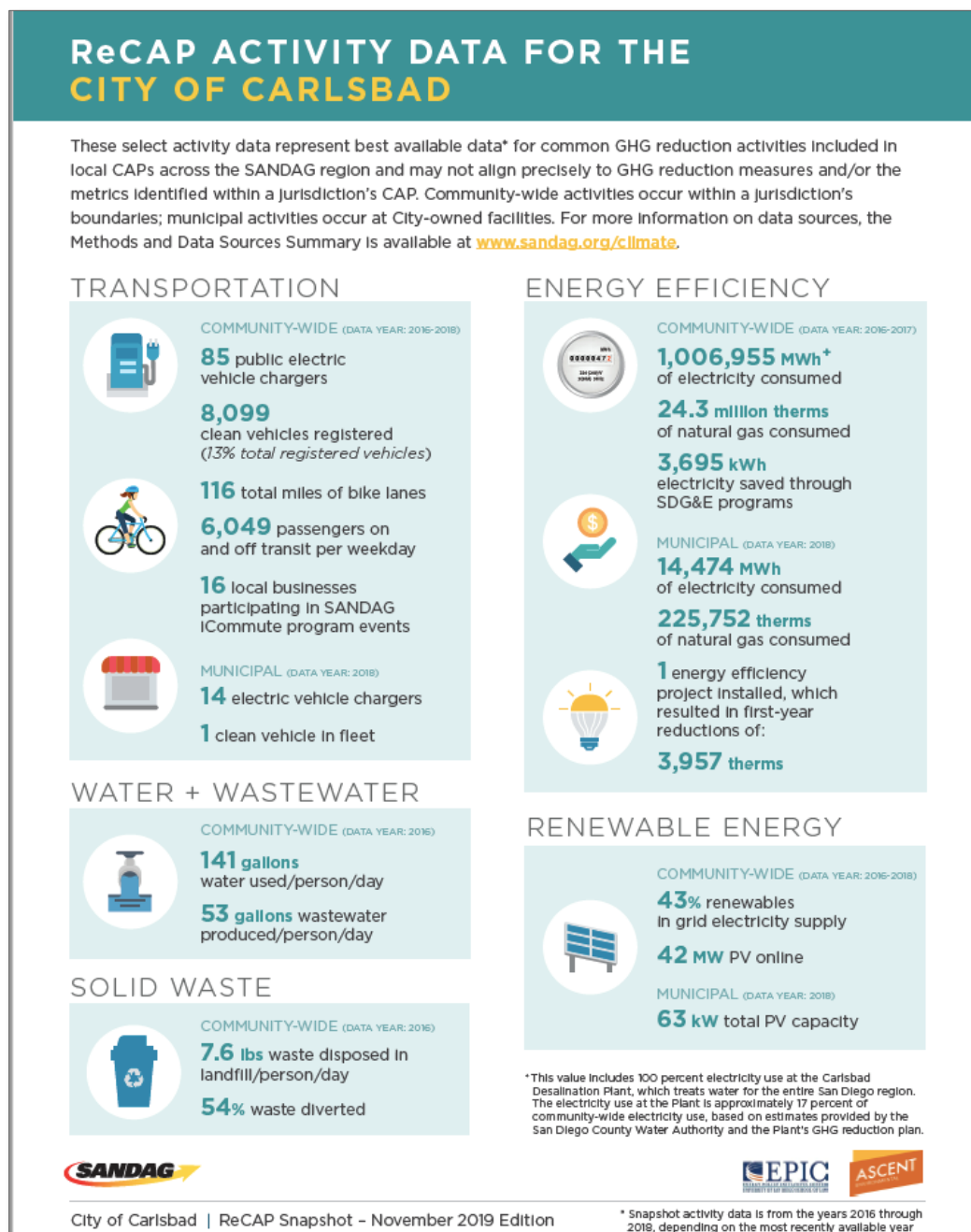
An example of a ReCAP Snapshot is provided in Figure 18.

Figure 18 ReCAP Snapshots for 2016 data, by jurisdiction, available for download at SANDAG's Climate Action Data Portal, 2020



Activity data common to all jurisdictions are provided on the second page of the ReCAP Snapshot (Figure 19).

Figure 19 ReCAP Snapshot activity data by jurisdiction, available for download at SANDAG's Climate Action Data Portal, 2020



An example of the graphing capabilities for the user through the Climate Action Data Portal, for any of the 16 jurisdictions, is shown in Figure 20.

**Figure 20** Interactive charts of activity data by jurisdiction, SANDAG Climate Action Data Portal, 2020



The activity data included in each ReCAP Snapshot are both provided to each jurisdiction and are available for download from the Climate Action Data Portal.

## 6. Conclusion

This appendix to the SANDAG ReCAP discussed:

- The purpose of monitoring and reporting on CAP progress;
- Considerations related to monitoring, such as frequency of data availability, and data sources;
- Limitations of data related to monitoring;
- State guidance available for monitoring and reporting for local CAPs, and best practices for local staff;
- The CAP monitoring framework, including GHG inventories, GHG emissions categories, CAP reduction measure activity, CAP reduction measure GHG emission reductions, and non-quantifiable measures;
- Identifying and tracking activity data related to CAP measures and actions both at the jurisdiction level and the regional level;
- Tracking metrics outside the CAP framework but of relevance to CAPs, such as co-benefits; and,
- Communicating results and formats used in reporting progress, with examples from jurisdictions and regional agencies.