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California's Cross-Cutting and Multi-Generational Efforts to Reduce Greenhouse Gas Emissions in Transportation Planning

OVERVIEW

California is employing a multi-tiered process to address greenhouse gas (GHG) emissions that involves numerous State, regional, and local agencies. The State agencies and metropolitan planning organizations (MPOs) in California have included GHG reduction goals in long-range transportation plans for more than a decade at the direction of State laws. State agencies have established a climate-focused investment framework for investing Federal and State dollars towards reducing GHG emissions, advancing the State's multi-modal network, and mitigating the effects of climate change. At the regional level, MPOs, like the Sacramento Council of Governments (SACOG), create Sustainable Communities Strategies (SCS) to outline strategies and project types to meet the GHG reduction goals set by the State.

BACKGROUND & LEGISLATIVE HISTORY

The following is a list of significant executive orders and legislation that has contributed to the State's regulatory, economic, and policy landscape for addressing GHG emissions.

- **EO S-3-05 (2005):** Served as a catalyst for climate policy in California and required reduction of statewide GHG emissions to a new standard of 80 percent below 1990 levels by 2050.
- **AB 32 (2006):** The [California Global Warming Solutions Act](#) sets GHG emissions reduction targets. The Act requires the State to reduce emissions to 1990 levels by 2020, reduce emissions to 40 percent below 1990 levels by 2030, and reduce emissions by 80 percent below 1990 levels by 2050. AB 32 also requires the California Air Resources Board (CARB) to develop, and update every five years, a Scoping Plan (the [most recent version](#) was released in 2022).
- **SB 375 (2008):** Requires MPOs to include SCSs in their Regional Transportation Plans (RTPs) for the purposes of reducing GHG emissions, aligning land use, housing, transportation, and planning, and creating California Environmental Quality Act (CEQA) incentives for the implementation of projects aligned with strategies.
- **SB 391 (2009):** Requires the California Department of Transportation (Caltrans) to update the State's long-range transportation plan, the California Transportation Plan (CTP), every five years while showing how the State will achieve the statewide GHG reduction to meet the goals of EO S-3-05 and AB 32.
- **EO B-16-12 (2012):** Reaffirms EO S-3-05 and calls for continued reduction of GHG emissions in the transportation sector to 80 percent below 1990 levels by 2050.
- **EO B-30-15 (2015):** Establishes a California GHG target of 40 percent below 1990 levels by 2030.



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- **SB 150 (2017)**: Requires CARB to prepare a report to the California Legislature starting in 2018, and every four years, to monitor the MPO regions' progress in implementing their GHG targets under SB 375.
- **EO N-19-19 (2019)**: Directs the California State Transportation Agency (CalSTA) to leverage more than \$5 billion in annual State transportation spending to help reverse the trend of increased fuel consumption and reduce GHG emissions associated with the transportation sector. EO N-19-19 tasks CARB with accelerating progress toward California's goal of 5 million zero-emission vehicles sales by 2030.
- **EO N-79-20 (2020)**: Establishes targets for the transportation sector to support the State in its goal to achieve carbon neutrality by 2045.
- **AB 1279 (2022)**: Establishes the policy of the State to achieve carbon neutrality as soon as possible, but no later than 2045; maintain net negative GHG emissions thereafter; and ensure that, by 2045, statewide anthropogenic GHG emissions are reduced at least 85 percent below 1990 levels. The bill requires CARB to ensure that Scoping Plan updates identify and recommend measures to achieve carbon neutrality, and to identify and implement policies and strategies that enable carbon dioxide (CO₂) removal solutions and carbon capture, utilization, and storage technologies.

The relevant state agencies include:

- [California State Transportation Agency \(CalSTA\)](#): a cabinet-level agency responsible for coordinating policies and programs of the State's transportation entities to achieve the state's mobility, safety and air quality objectives from its transportation system.
- [California Air Resources Board \(CARB\)](#): a department within the cabinet-level California Environmental Protection Agency; an agency of the government of California that aims to protect public health, reduce air pollution, and fight climate change.
- [California Department of Transportation \(Caltrans\)](#): an executive department of the State of California. The department is part of the cabinet-level California State Transportation Agency and seeks to provide a safe and reliable transportation network that serves all people and respects the environment. Caltrans manages more than 50,000 miles of California's highway and freeway lanes, provides inter-city rail services, permits more than 400 public-use airports and special-use hospital heliports, and works with local agencies.
- [California Transportation Commission \(CTC\)](#): was established in 1978 by State statute to help promote a unified state transportation policy. The CTC is responsible for programming and allocating funds for the construction of highway, passenger rail, transit and active transportation improvements throughout California. The Commission also advises and assists the Secretary of the California State Transportation Agency and the Legislature in formulating and evaluating state policies and plans for California's transportation programs.

SUSTAINABLE COMMUNITIES & CLIMATE PROTECTION PROGRAM (SB 375)

The strategies included in an SCS are designed to achieve MPO-specific GHG emissions reduction targets set by CARB. SCS strategies can include land use, housing, transportation, pricing, and new mobility



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strategies to demonstrate GHG emissions reduction. The Sustainable Communities & Climate Protection Program ([SB 375](#)) requires all MPOs in the State to develop a SCS. Under SB 375, each MPO is required to demonstrate that its SCS would, if implemented, achieve GHG reduction targets. The Scoping Plan lays out a path for California's economic sectors to achieve carbon neutrality. The Scoping Plan includes a breakdown of emission reduction per sector as provided in Figure 1. A portion of the transportation sector in the Scoping Plan includes the emission reduction targets under SB 375.

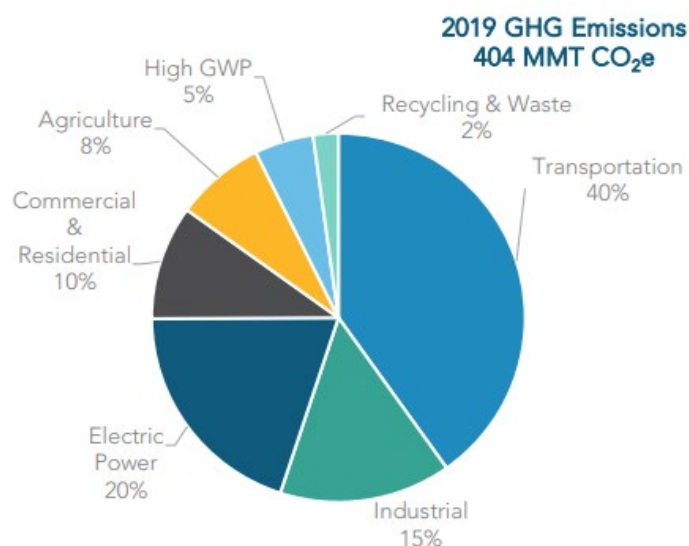


Figure 1: 2019 State GHG emission contributions by Scoping Plan sector

Source: [2022 Scoping Plan](#)

CARB sets regional targets as part of SB 375 to achieve GHG emission reductions from changed land use patterns and improved transportation in support of the State's climate goals, as well as in support of statewide public health and air quality objectives. These targets established by CARB for each MPO region are, by statute, set for years 2020 and 2035. Statute requires CARB to update the regional targets every eight years, with the option of revising them every four years.

MPOs use travel demand models to quantify emissions from various SCS strategies. However, some SCS strategies are not easily captured in the travel demand model, and these can be quantified outside of the model (known as "off-model" strategies). Furthermore, MPOs must clarify how funding allocations and actions support implementation of their SCSs. After the SCS is adopted by an MPO board, MPOs are required to submit their final SCSs and quantification of the GHG emissions reductions to CARB for review. MPOs prepare and submit SCSs for review every four to five years (the same timeframe for the Regional or Metropolitan Transportation Plans (RTP/MTPs)). An MPO's SCS is required by statute to be part of the RTP/MTP and is tied to the update schedules of the Federal plans.

The California Transportation Commission in coordination with Caltrans publish [guidelines](#) to help MPOs in developing their RTP/MTPs, which includes information on SCS. CARB has developed [guidelines](#) for what an SCS should include, how CARB will evaluate the SCSs, and how MPOs should approach GHG quantification.

Assembly Bill (AB) 185 directs CARB, CTC, and California Department of Housing and Community Development (HCD) to meet at least twice per year to coordinate their implementation of policies that jointly affect transportation, housing, and air quality. Coordination on SCS program alignment, SCS



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implementation, and findings from CARB's progress report to the legislature on SB 375 pursuant to SB 150 are often topics at these joint meetings.

IMPLEMENTATION AT THE MPO LEVEL

MPOs refer to the State's Scoping Plan to help inform planning activities and investments related to GHG emissions in their SCSs. The Scoping Plan is focused around GHG reductions strategies from electric vehicle (EV) transition and reductions in VMT from shifting land use development patterns and transportation investments. RTP/SCSs can and do include a variety of projects that both increase and decrease GHG emissions, and the net impacts of the included projects and strategies must achieve the SB 375 regional target set by CARB.

If, for some reason, the SCS would not achieve the MPO's GHG emissions reduction targets, the MPO must prepare and adopt an Alternative Planning Strategy (APS). This strategy identifies the obstacles to achievement of the targets and alternative measures necessary to achieve the targets. Forgoing an SCS could change a region's eligibility for some State funding sources. APSs must demonstrate strategies working toward GHG emissions reductions and maintaining air quality conformity even if the region's GHG reduction targets may not be reasonably achieved. An APS also communicates to CARB where investments in technical assistance or other resources might help supplement the local capacity for reaching their targets.

In 2018, SACOG needed to reduce its GHG emissions by 19 percent from 2005 levels by 2035. The [2020 SACOG MTP](#), which covers years 2020-2040, includes a list of policies and actions aimed at reducing GHG emissions across the area's land use and transportation sectors to achieve the 19 percent reduction target.

As seen in Figure 3, SACOG is employing various strategies to reduce GHG emissions. GHG emission reductions are primarily from increased multimodal trips due to investments in transit, bicycle and pedestrian infrastructure and transportation demand management, changes in jobs/housing balance, infill and transit-oriented development, and land use mix that help shorten vehicle trips through access to more destinations closer to where people live and work, and from charging people for driving. Another interesting factor SACOG identifies for reducing emissions is an aging population. As the population ages and individuals leave the workforce, they tend to drive less. SACOG is seeing the 65+ age demographic increase as a share of the total population which results in a growing segment that does not travel as frequently or as far. SACOG also forecasts that increasing lifecycle costs for private vehicle ownership will lead more travelers to multimodal options. A small percentage of GHG reductions are from Intelligent Transportation System & Transportation System Management (ITS & TSM), electric vehicle charging infrastructure, and elective vehicle incentives.

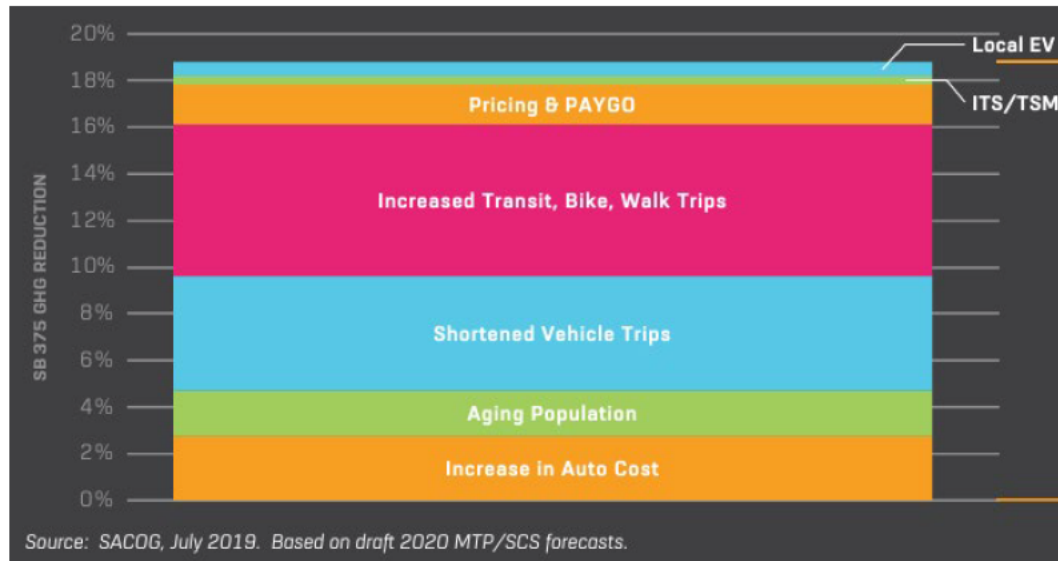


Figure 3: SACOG Key Factors Contributing to 19% GHG Reduction

Source: [SACOG MTP SCS](#)

SB 375 PROGRESS REPORTS (SB 150)

In late 2022, CARB released its second Progress Report on the SB 375 program, the [2022 Progress Report - California's Sustainable Communities and Climate Protection Act](#). CARB produces the SB 150 report to track the progress of regional plans and actions to support MPO's implementation of their GHG targets. Table 1 showcases targets and achieved progress for the four largest MPOs. While the State is on track in total to meet the GHG reductions under the Scoping Plan, 2019 data indicate that nearly all regions experienced challenges achieving the SB 375 2020 targets set by CARB as shown in Figure 2. Some relevant factors identified in the Final 2022 Progress Report include the metrics and methodology, the effect of slower population growth on a per capita target, the impact of the pandemic, and the need for more implementation of SCS strategies.

Table 1: Comparison of 2019 GHG Per Capita Levels to SB 375 Target for four largest MPOs in California

Sources: [SB 375 Final Targets 2018](#)
[Draft 2022 Progress Report](#)

MPO	CARB Estimated Change in GHG per Capita 2005-2019	2020 Target	2035 Target
Metropolitan Transportation Commission/Association of Bay Area Governments	-1%	-10%	-19%
Sacramento Area Council of Governments	-5%	-7%	-19%
San Diego Association of Governments	-3%	-15%	-19%



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Southern California Association of Governments	-4%	-8%	-19%
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California has made policy efforts to expand access to affordable homes in convenient locations, and to provide safe and useful travel choices, but these actions have not yet been sufficient to reverse the increase in per capita transportation GHG emissions in California's 18 MPO regions. This finding was documented in both the 2018 Progress Report and again in the 2022 Progress Report. Increases in per capita GHG emissions and per capita VMT (Figure 2) are observed in nearly all MPO regions, though the rate of increase has slowed compared to the 2018 Progress Report.

The Progress Report outlined two overarching conclusions: 1) fulfilling SB 375 requires a stronger focus on implementation, resources provision, investment opportunities, and capacity building; and 2) SCS implementation requires better alignment across State, regional, and local actions. The report also identified the need for the State to secure additional resources to provide needed support, guidance, targeted funding, and policy tools to make it easier and less costly to implement this reprioritization.

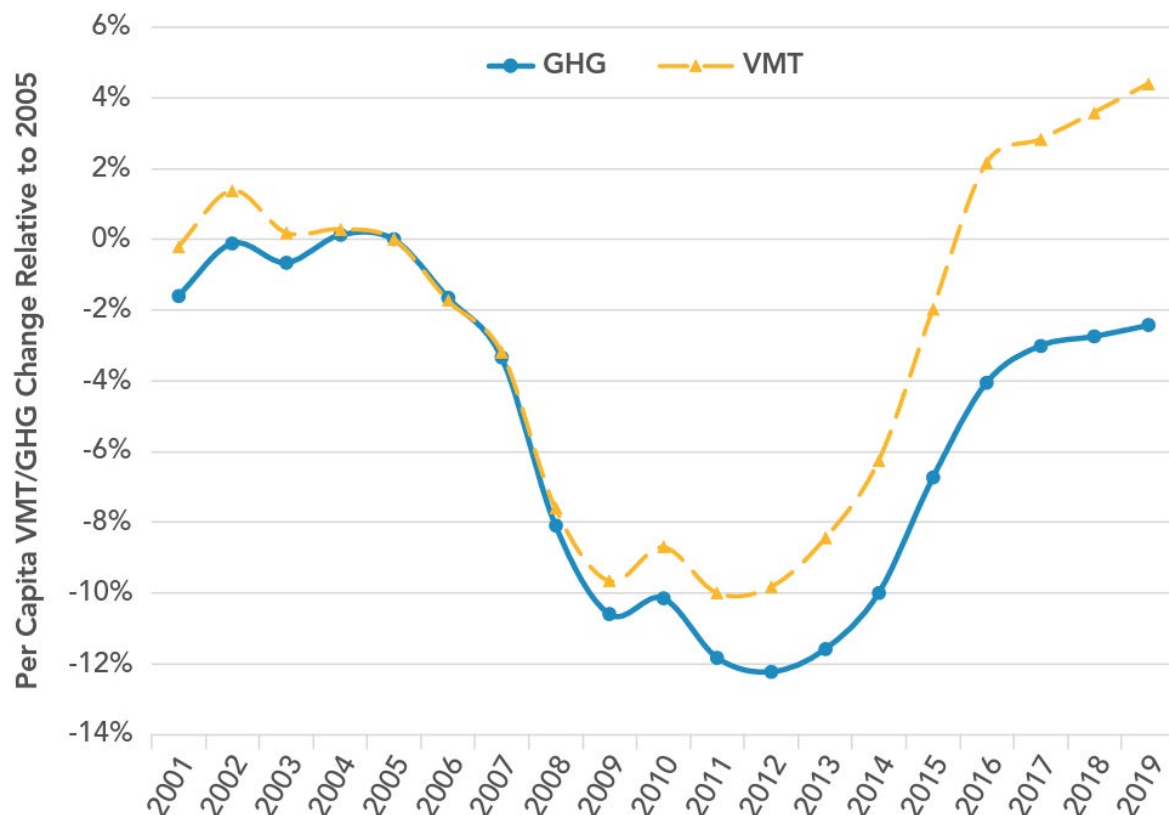


Figure 2: Light-Duty VMT and GHG Per Capita Relative to 2005 (California's 18 MPO Regions Aggregated)

Source: [2022 Progress Report - California's Sustainable Communities and Climate Protection Act](#)



CLIMATE ACTION PLAN FOR TRANSPORTATION INFRASTRUCTURE (CAPTI)

In 2022, CalSTA created the [Climate Action Plan for Transportation Infrastructure \(CAPTI\)](#), an investment framework detailing the State's strategy for allocating funding for transportation projects. CalSTA adopted CAPTI in 2021 and released an associated [annual progress report](#) in late 2022. CAPTI builds on executive orders EO N-19-19 (2019) and EO N-79-20 (2020) 2020 targeted at reducing GHG emissions in transportation. The framework includes 10 multidisciplinary guiding principles set out to reduce vehicle miles traveled (VMT), elevate the accessibility of multimodal options, and achieve equitable outcomes throughout the transportation planning process.

The CAPTI investment guidelines serve as a framework for State funding programs and local and regional agencies to increase project competitiveness with regards to funding and support. The CAPTI framework includes 31 activities with one-to three-year time horizons. As of the 2022 annual report, Caltrans reported 88 percent of actions to be complete or underway.

There is a new prioritization process based on CAPTI that guides transportation investments. While SB 375 set targets for MPO regions, Caltrans has outlined goals and targets for GHG emissions reductions and Federal transportation planning requirements in the State's long-range CTP. The most recent version, [CTP 2050](#), was released in 2021.

CAP-AND-TRADE AND CALIFORNIA CLIMATE INVESTMENTS

California's [Cap-and-Trade program](#) funds [California Climate Investments](#) and puts billions of dollars to work reducing GHG emissions, strengthening the economy and improving public health and the environment, especially in disadvantaged communities. The cap-and trade program set a declining statewide limit on sources responsible for 85 percent of California's greenhouse gas emissions. Fewer allowances are created each year and the cap declines. The program's objective is to establish a price signal to promote investment in cleaner fuels and efficient use of energy. Entities covered by the program include sources that emit more than 25,000 MTCO₂e per year (e.g., electricity generators, refineries, and large industrial facilities). Some entities can be allocated allowances, buy additional allowances at auction, purchase allowances from others, or purchase offset credits.

Cap-and-Trade funds are made available through competitive grants programs run by various State agencies and are leveraged by MPOs and local governments to support transportation and land use planning that reduce GHG emissions and vehicle miles travelled. Funding programs support a wide variety of projects including affordable housing and infill development, conservation of natural and working lands, zero-emission transportation technologies, and transit and active transportation infrastructure.

NEXT STEPS

CARB will re-evaluate the SB 375 GHG reduction targets for MPOs in 2026 and continue to review SCSs and monitor regional progress. CalSTA will continue to report on the 31 actions outlined in the CAPTI



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through annual reports and focus discretionary funding to climate-focused transportation projects through the CAPTI investment framework. Looking forward to the 2035 GHG targets, the State and MPOs will continue to seek opportunities for cohesion, coordination, and implementation amid Federal, State, and regional emissions reduction guidance and efforts. A new version of the CTC's RTP guidelines are set to be published in late 2023.