

California Air Resources Board
Final Staff Report
Proposed Update to the SB 375 Greenhouse Gas Emission Reduction
Targets

October 2017



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List of MPO Acronyms Used Throughout this Report
AMBAG – Association of Monterey Bay Area Governments
Butte CAG – Butte County Association of Governments
Fresno COG – Fresno Council of Governments
Kern COG – Kern Council of Governments
Kings CAG – Kings County Association of Governments
Madera CTC – Madera County Transportation Commission
Merced CAG – Merced County Association of Governments
MTC/ABAG – Metropolitan Transportation Commission/Association of Bay Area Governments
SACOG – Sacramento Area Council of Governments
SANDAG – San Diego Association of Governments
Santa Barbara CAG – Santa Barbara County Association of Governments
SCAG – Southern California Association of Governments
Shasta RTA – Shasta Regional Transportation Agency
San Joaquin COG – San Joaquin Council of Governments
San Luis Obispo COG – San Luis Obispo Council of Governments
Stanislaus COG – Stanislaus Council of Governments
Tahoe MPO – Tahoe Metropolitan Planning Organization
Tulare CAG – Tulare County Association of Governments

I. Introduction

Since passage of the Sustainable Communities and Climate Protection Act of 2008, Senate Bill (SB) 375, (Chapter 728, Statutes of 2008), there has been a transformation in regional planning in California. SB 375 has raised awareness of the importance of transportation planning as a means of shaping more livable and equitable communities. It has resulted in greater communication between regional planning agencies, local governments, and stakeholders who support more sustainable land use and transportation policies. Furthermore, it has encouraged development of a new generation of regional transportation plans that include more creative thinking about smart growth and increasing mobility choices to reduce greenhouse gas (GHG) emissions, as well as generate numerous public health, economic, mobility, housing, and land conservation benefits associated with a lower carbon future.

Under SB 375, the California Air Resource Board (CARB) is required to establish the regional GHG emission reduction targets (targets), originally established in 2010. Statute requires regions to demonstrate achievement of those targets through a Sustainable Communities Strategy (SCS), which is an integral component of the federally required Regional Transportation Plan (RTP).

At the time of this writing, adoption of the first round of SCSs by California's 18 Metropolitan Planning Organizations (MPO) is complete, and the second round of SCS planning is underway. Three MPO regions are in the very early stages of developing their third SCSs. To date, CARB staff reviewed the final determinations of 16 MPOs, and concluded that, if implemented, each SCS would achieve the SB 375 targets. Two MPOs evaluated additional strategies that would enable their SCSs to achieve their targets and have recently submitted this information to CARB for evaluation. Many of the MPOs indicated that they expect to exceed the original targets. CARB staff recognizes the very strong performance in these first SCSs as a major success.

CARB is in the process of updating the SB 375 targets, which will take effect in 2018, as required by the law. This staff report presents CARB staff's recommendation for updated targets and the technical and policy rationale supporting the recommendation. Staff's recommendation is based on lessons learned during the first rounds of regional SCS plan development and recent public outreach.

The target recommendations identified in this report were developed through a coordinated analysis of what would be necessary to achieve the State's ambitious climate and air quality goals (a "top-down" process) and MPO target recommendations (a "bottom-up" process) as inputs. CARB staff attempted to strike a balance between

the bottom-up and top-down inputs and propose a set of targets that would meet the objectives defined by SB 375, principles established by the Board during adoption of the original targets in 2010, recommendations in the proposed 2017 Climate Change Scoping Plan Update (Scoping Plan Update), and experience gained from SB 375 implementation to date.

The process provided an opportunity to reflect on and increase our understanding of opportunities and barriers to aligning our State's transportation and environmental goals. The challenge has been to develop supporting information for increasing regional planning targets that help achieve greater emission reduction needs, in the face of well-recognized constraints in the current funding framework for infrastructure, MPO authority, and other areas discussed in this staff report. While many of these challenges will not be resolved before the 8-year statutory clock on the target update expires, CARB staff's target recommendations consider what MPOs could achieve with additional State policy and funding tools recommended as part of the proposed Scoping Plan Update and implementation of new transportation spending provisions, including Senate Bill 1 (SB 1). Through these commitments, the State recognizes its essential role in continuing to support development of needed resources for MPOs and local governments to successfully plan and implement their SCSs.

The purpose of this staff report is to provide the CARB Board and the public with an opportunity to discuss and comment on CARB staff's recommended targets. This staff report describes CARB's statutory role to establish targets, reviews the current SB 375 targets and existing SCSs prepared to date, and reflects on several State, regional, and local land use and transportation planning issues that affect SB 375 implementation. The process to develop staff's recommendation for the updated SB 375 targets, environmental analysis, and the alternatives to the recommendation that were considered are discussed in this report. Finally, this staff report describes public outreach activities that have occurred to date, future opportunities for input, and next steps in CARB's process to update the targets and support implementation.

II. SB 375 Target Update Context and Objectives

Under SB 375, CARB is required to adopt regional GHG emission reduction targets for each of the 18 MPO regions in California, and to update those targets every eight years, with the option of revising them every four years. This is the eight-year update of the original targets CARB set in 2010, indexed to years 2020 and 2035. This section describes CARB's role in developing SB 375 targets and staff's objectives for the target update.

CARB's considerations for the target update, as summarized below, are defined by relevant portions of SB 375 law, principles established during adoption of the first target setting process in the final staff report and Board Resolution 10-31, the Scoping Plan Update, along with lessons learned based on SB 375 implementation to date.

- **SB 375 law.** CARB must consider changes in GHG emission reductions resulting from improved vehicle emission standards, changes in fuel consumption, and other measures that will reduce GHG emissions as part of the target update process. SB 375 also requires consultation between CARB, the Department of Transportation, MPOs, local governments, affected air districts, and public and private stakeholders.
- **CARB's 2010 Final Target Setting Staff Report and Board Resolution 10-31.** The final staff report and associated Board Resolution for the 2010 SB 375 target setting process state that targets should be set to achieve a balance between goals that motivate further positive planning and action toward more sustainable communities, but not be out of reach for regions and local governments. Target updates should consider updated technical data/forecasts, advancement of technical tools and methods, measures of achievement of emission reductions, as well as advances in the measurement of co-benefits.¹
- **CARB's 2017 Climate Change Scoping Plan Update.** The Scoping Plan Update identifies a reduction in vehicle miles travelled (VMT) as a necessary part of the statewide strategy to achieve California's 2030 statewide emission target. VMT reduction is to be achieved, in part, through more stringent SB 375 targets

¹ See California Air Resources Board, Proposed Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375, August 9, 2010, https://arb.ca.gov/cc/sb375/staffreport_sb375080910.pdf; and Board Resolution 10-31, September 23, 2010, https://www.arb.ca.gov/cc/sb375/eo_attachment.pdf.

for 2035 and associated SCS planning. The Scoping Plan Update also prioritizes support for improving community health and air quality. CARB staff's initial analysis of the Scoping Plan Update's public health co-benefits shows that SB 375 and supportive strategies will be the primary driver for those benefits. With emphasis on more walkable, livable neighborhoods, people are able to live more active lifestyles, which leads to better health. And when GHG emissions are reduced from vehicles, other air contaminants that are harmful to human health are also reduced.

Furthermore, since the Board originally set SB 375 targets in 2010, regions across the State have developed and adopted over 20 regional plans containing SCSs, which generated many lessons learned along the way for consideration. These lessons are reflected in numerous positive changes as part of SCS planning processes, including:

- More engagement and coordination between MPOs and local jurisdictions around land use policy;
- Advances in modeling tools that allow more sophisticated land use and transportation scenario testing;
- Increased emphasis on infill development;
- Increased funding allocated to public transit and active transportation;
- New organizational principles around which MPOs can rally public support, for example: priority development areas and assessment of the multiple healthy community, social equity, and environmental benefits that accompany sustainable communities; and
- Increased public dialogue about equitable distribution of public benefits.

At the same time, MPOs and local agencies have identified challenges to implementing their current plans, principally tied to the need for additional and more flexible revenue sources to incentivize further positive planning and action toward sustainable communities.

As such, CARB staff has identified the following objectives for the SB 375 target update:

- Account for GHG emission reductions that will be achieved by improved vehicle emission standards, changes in fuel composition, and other measures CARB has approved that will reduce GHG emissions in the affected regions, and

prospective measures CARB plans to adopt to reduce GHG emissions from other GHG emission sources.²

- Update targets with the most recent technical data, forecasts, and other information provided by the Department of Transportation, MPOs, local governments, affected air districts, and public and private stakeholders.
- Account for advancement of technical tools and methods, such as consistent standards for data and modeling assumptions, model improvements, and measures of achievement of emission reductions.
- Further the objectives set forth in SB 32 and Executive Order B-30-15, specifically targets that would, if implemented, result in greater GHG emission reductions compared to reductions that what would be achieved under currently adopted SCSs. Targets would contribute to achieving the overall statewide GHG emission reduction target of 40 percent below 1990 levels by 2030, as well as support achievement of our statewide public health and air quality objectives.
- Achieve a balance between goals that motivate further positive planning and action toward more sustainable communities that foster co-benefits such as improved public health outcomes, more mobility choices, more housing choices, and resource and land conservation; and remain within the reach of regions and local governments.

² As that term is defined in subdivision (i) of Section 38505 of the Health and Safety Code and consistent with the regulations promulgated pursuant to the California Global Warming Solutions Act of 2006 (Division 12.5 (commencing with Section 38500) of the Health and Safety Code).

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III. Target Update Process

This section discusses the analyses CARB staff conducted and reviewed for the SB 375 target update, as well as the public engagement process to date. This includes work by CARB staff to: review statutory, technological, and other factors affecting SB 375 since the targets were originally set in 2010; modeling scenarios to evaluate what emission reductions are needed from passenger vehicle transportation to achieve current statewide climate and air quality objectives; review of MPO target update analysis and recommendations, as well as consideration of public input.

A. Planning and Technical Consideration Changes Since 2010

Several statutory, technological, and policy factors have changed or evolved since the original targets were set in 2010. Directionally, some present opportunities and others present additional barriers to achieving further GHG emission reductions through SB 375 targets. These factors and their implications for achieving CARB's target update objectives are summarized below and discussed further in Appendix E. SB 375 Program Background.

- **New executive and statutory directives on State climate commitments.** The Governor's Executive Order B-30-15 and SB 32 (Chapter 249, Statutes of 2016) established more aggressive statewide GHG reduction goals (40 percent below 1990 levels by 2030) than were in place when the SB 375 targets were first set in 2010. CARB's analysis shows the need for greater emission reductions from all sectors, including passenger vehicle travel and integrated land conservation and development strategies, of which SB 375 is an integral part. Related to SB 375 there are important cross-sector interactions that impact GHG reductions in other sectors including natural and working lands, energy, water, waste, industry, and agriculture.
- **State air quality commitments.** The federal Clean Air Act requires the State and local air districts to prepare State Implementation Plans demonstrating how the State will attain increasingly stringent air quality standards by specified dates. In March 2017, CARB adopted the State Strategy for the State Implementation Plan, a 15-year plan that outlines the strategies needed to attain the current standards in the two areas of the State with the most critical air quality challenges – the South Coast and the San Joaquin Valley air basins. The strategy includes further reduction in growth of VMT, through SB 375 and other

complementary efforts to reduce tailpipe emissions, as well as emissions from facilities that produce the fuels to power vehicles.³

- **Resources to implement sustainable communities projects.** Funding for building and maintaining sustainable communities transportation and landside infrastructure projects continue to be a challenge. However, the State has recently directed new funding through SB 1 Transportation Funding, Greenhouse Gas Reduction Fund Transformative Climate Communities Program, and Volkswagen Settlement, that should support and incentivize greater SB 375 emission reductions.
- **The cost of driving.** Travel behavior is influenced by a number of factors including personal income, the costs of owning and operating a vehicle, mobility options, the time cost of travel, urbanization, and highway capacity. Since the targets were first set, there have been changes in the economy, cost of gasoline, and fuel efficiency of vehicles that have resulted in greater vehicle usage. Without additional policy intervention, like road user, congestion, and/or parking pricing, alongside expanded mobility options, vehicle travel will increase and can erode emission reductions achieved through SB 375. Therefore, new mobility pricing policies are necessary to encourage more efficient driving behavior, including legislation to remove barriers for MPOs and locals to implement pricing.
- **Broadening technology and mobility choices.** Our transportation system is changing through proliferation of new vehicle technologies, fuels, and mobility choices. There is uncertainty regarding the potential impact on VMT and GHG emissions resulting from these new technology and mobility choices; recent studies have indicated potential for both positive and negative impacts. Therefore, it will be important for the State and regional and local governments to explore future policies and regulations aimed at curbing the negative impacts of these technologies.
- **Demographics.** Since targets were set, several research projects have been completed or are underway exploring how travel behavior may be changing with

³ See California Air Resources Board, Revised Proposed 2016 State Strategy for the State Implementation Plan, March 7, 2017, <https://www.arb.ca.gov/planning/sip/2016sip/rev2016statesip.pdf>.

changing demographics in California. Particular interest has been paid to data showing millennials or members of “Generation Y” postpone the time they obtain a driver’s license, often live in urban locations and do not own a car, drive less if they own one, and use alternative travel modes more often.⁴ With continued implementation of already identified SB 375 strategies, as well as new strategies, that make it possible for millennials and subsequent generations to adhere to the travel and residential preferences they are exhibiting now and as they age, it is anticipated that SB 375 emission reductions will be greater than currently estimated.

- **Modeling tool capabilities.** The modeling tools local agencies are using to quantify GHG emission reductions and other co-benefits from SB 375 strategies have continued to improve and provide decision makers with better information on the potential impacts of their land use policy and transportation investment choices. While the data and models still do not completely capture all the benefits or consequences of these strategies, their continued improvement is anticipated to enable many MPOs to demonstrate the ability to achieve greater SB 375 GHG emission reductions, as well as improve strategies to reduce VMT.
- **Local actions.** Many cities and counties have taken action to set GHG reduction targets, develop climate action plans, and make progress toward reducing emissions since SB 375 targets were set. In some cases, these have included strategies consistent with the region’s SCS to support SB 375 emission reductions. The Scoping Plan Update recommends local governments aim to achieve a community-wide goal consistent with the statewide emission limits, and the Under 2 MOU. Efforts to update and implement local plans at these levels are anticipated to further support achievement of greater GHG emission reductions through SB 375.
- **New State vehicle miles traveled reduction strategy.** As part of the State’s Scoping Plan Update, the Administration also recently laid out its priorities for supporting local agencies on vehicle travel reduction going forward. Actions include developing and expanding funding and financing tools for infill development and related infrastructure, improving performance metrics used to

⁴ See Appendix E. SB 375 Program Background for additional information.

select and design transportation projects, expanding investments in transit and active transportation, and developing pricing policies. All of these measures will complement and support further achievement of greater GHG emission reductions through SB 375.

- **Regulatory changes to support infill and transit oriented development.**

Governor Brown signed Senate Bill (SB) 743 (Steinberg, 2013), which creates a process to change the way transportation impacts are analyzed under CEQA. Specifically, SB 743 requires the Governor's Office of Planning and Research to develop updates to the CEQA Guidelines to guide the analysis of project-level transportation impacts. Once the updated Guidelines go into effect, lead agencies will evaluate vehicle travel associated with new development as part of the project's environmental review, and, if the impact is significant, mitigate those impacts through vehicle travel-reducing measures, which will support achievement of SB 375 goals. In addition, the Governor recently signed 15 housing bills that address a variety of areas, including generating more money for affordable and subsidized housing, reducing regulatory burdens for developers, and incentivizing new development within cities.

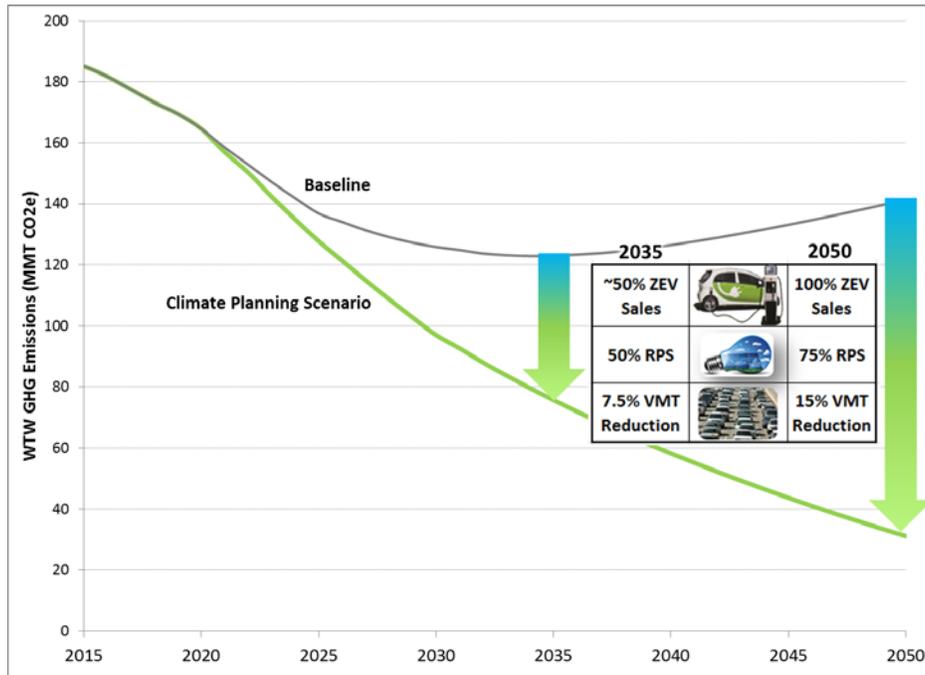
B. Top-Down Analysis: Achieving the State's Climate and Air Quality Goals

Climate and air quality policy has continued to evolve since the SB 375 targets were established in 2010. Specifically, CARB has since been tasked with implementing SB 32 (Chapter 249, Statutes of 2016), which establishes a more aggressive statewide GHG reduction goal (40 percent below 1990 levels by 2030) than was in place when the SB 375 targets were first set in 2010. There is also the ongoing need to meet federal air quality standards that provide essential public health protection. Statewide, approximately 12 million Californians currently live in communities that exceed the federal standards for ozone and fine particulate matter (PM_{2.5}). The two areas with the most critical air quality challenges include the South Coast region, and the San Joaquin Valley.

CARB is moving forward this year with updating the Scoping Plan to reflect the new statewide goal for 2030 called for in SB 32. The Scoping Plan Update addresses emission reductions from the transportation sector as a whole, and recommends strengthening SB 375 targets compared to what would occur under currently adopted SCSs as one of a suite of measures to achieve greater GHG reductions.

The Scoping Plan Update relies on strategies in every single sector that are more aggressive than currently adopted regulations and policies. These include substantially greater increases in sales of zero-emission vehicles (ZEVs), greater increases in fuel efficiency standards for gasoline vehicles, continued decarbonization of energy, additional efficiencies in building and industrial energy efficiency, reductions in short lived climate pollutants, continuing the Cap & Trade program, and a reduction in growth of statewide VMT. Figure 1 illustrates the combined contributions of GHG emission reductions envisioned for the passenger vehicle sector. As the figure shows, by 2035 the State will need 50 percent of new cars sales to be ZEVs, 50 percent of transportation fuels will need to come from renewable sources, and a 7.5 percent reduction from 2035 baseline VMT through passenger vehicle activity efforts such as SB 375 and other State strategies. The GHG emission reduction contribution from VMT is a comparatively smaller in share than the GHG emission reductions called for by advances in technology and fuels, but necessary for GHG reductions in other sectors, and are also anticipated to lead to important co-benefits such as improved public health.

Figure 1: Statewide On-Road GHG Emissions



WTW = well-to-wheel emissions
 MMT CO₂e = million metric tons carbon dioxide equivalent
 RPS = renewable portfolio standard

The Scoping Plan Update recognizes the role that reducing growth in VMT plays in supporting other important public health, equity, economic, and conservation goals. The types of strategies associated with reducing VMT growth also influence where and what types of development are put in place, with implications beyond reducing distances traveled and tailpipe emissions. Development pattern choices also play a role in influencing pollutant exposure; accessibility to jobs and services; future transportation, energy, and water infrastructure demand and costs; as well as conversion of natural and working lands; food security; watershed health; and ecosystems.

Stronger SB 375 GHG reduction targets will enable the State to make significant progress toward the Scoping Plan Update goals, but alone will not provide all of the reductions needed. While currently adopted SB 375 plans achieve, in aggregate, a 17 percent reduction in statewide per capita GHG emissions relative to 2005 by 2035, the full reduction needed to meet our climate goals is on the order of a 25 percent reduction in statewide per capita GHG emissions by 2035.

Bridging the gap will require a combination of increased SB 375 targets and new State VMT reduction actions. As part of the Scoping Plan Update, CARB staff and our sister State agencies have included the following recommended new State-level strategies to reduce VMT that we are beginning the process to pursue:⁵

- Developing and expanding funding and financing mechanisms and incentives for infill development and related infrastructure (e.g. low-VMT housing rebate, reduced parking requirements, regional transit-oriented development funds, etc.) and connecting to incentives/support for regional land conservation strategies (e.g. transfer-development rights, growth boundaries, etc.).
- Improving performance measures used to select and design transportation facilities to ensure projects harmonize with emission reductions, and increase competitiveness of transit and active transportation modes (e.g. via guideline documents, funding programs, project selection, etc.).
- Expanding investments in transit and active transportation, as well as exploring opportunities for increasing shared mobility transportation options, particularly for automated vehicles.
- Developing pricing policies (e.g. congestion, road user VMT-based, low-emission vehicle zones for heavy duty, parking pricing, etc.).

These strategies will be expanded upon further through the Scoping Plan Update implementation process. The State agencies will continue to gather more detail on the strategies described here, and will develop subsequent actions through separate public processes. As the State agencies move forward, the strategies may change, be adjusted, or new strategies may be added.

⁵ See California Air Resources Board, Public Meeting to Hear Proposed Update to Senate Bill 375 Greenhouse Gas Emission Reduction Targets – Staff Presentation, March 23-24, 2017, Slides 27-34, <https://www.arb.ca.gov/board/books/2017/032317/17-3-7pres.pdf>.

C. Bottom-Up Analysis: MPO Target Recommendations

Since 2014, CARB staff has also been working in support of a bottom-up process whereby MPOs provide target recommendations for their region supported by technical information. This was the process followed during the original target setting in 2010. All MPOs participated in the target recommendation process and provided CARB staff with varying levels of analysis. To view MPO submittals to CARB staff, see Appendix B. MPO Scenarios and Data Submittals.

The four largest MPOs (MTC/ABAG, SACOG, SANDAG, and SCAG) voluntarily conducted a hypothetical, less constrained form of scenario planning to determine what kinds of strategies and factors could generate the additional GHG emission reductions necessary to support higher SB 375 targets. As part of this analysis, CARB staff requested that these MPOs provide further information on opportunities and challenges, as well as what financial and political resources would be necessary, to further deploy the following six policy levers in their respective regions:

- Land use change;
- Transportation;
- Active transportation;
- Pricing;
- More aggressive implementation of technology solutions (e.g., increased deployment of electric vehicle infrastructure); and
- Innovative mobility solutions (e.g., ridesourcing and autonomous vehicles).

CARB staff also asked the MPOs to explore the impact of demographic changes in their regions – the millennial effect. The four MPOs submitted their findings to CARB staff between March and May of 2017.

The tests indicated that additional GHG reductions in 2035 may be achieved from land use changes, transportation investment, and technology strategies, and provided ranges of magnitude for some of the policy lever areas above. As part of this work, the four MPOs identified several barriers to realizing the full benefits of the test ranges reported. They noted that all assumptions tested would require either additional revenue sources and or regional/State/federal rule or guidance changes. In particular, current transportation spending formulas and allocations provide little flexibility to shift funding to more sustainable transportation projects. Under current conditions, much of the funding available to implement the types of projects that are essential to support SB 375 goals (e.g., active transportation infrastructure projects, safety improvements, transit projects, transit oriented development projects, safe routes to school projects) is awarded on a competitive basis through grant funding cycles or through local self-help

tax measures. The MPOs also cited concerns with testing further deployment of some of these policy levers at all, as they may present issues related to social justice, such as displacement and inequitable transportation cost burden.

Furthermore, all four MPOs identified challenges with maintaining the GHG reductions they had previously estimated would come from their currently adopted plans, primarily due to significant changes in forecasts for increasingly clean vehicle fleets. As passenger vehicle fleets get cleaner through increased fuel efficiency, the cost of driving decreases, and can lead to more driving, as well as lost gas tax revenues for funding transportation improvements. All other things equal, the result of inputting updated fleet forecast assumptions into the current MPO transportation demand models is an increase in VMT estimates across all four MPOs. Based on these findings and discussions with their Boards, the four large MPOs submitted target recommendations to CARB in May 2017 of an 18 percent reduction from 2005 levels by 2035.

The eight Valley MPOs submitted target analysis information using preliminary results from their most recent model improvement effort. This work utilizes the most recent Census, American Community Survey, California Household Travel Survey data, as well as implements changes to the model structure based on CARB feedback received during their last SCS evaluation period. The Valley MPOs' preliminary results suggest a more accurate estimate of what their currently adopted plans would achieve, if implemented. For some Valley MPOs, this is close to a 40 percent drop from what the MPOs estimated and reported in their currently adopted SCSs, but more in line with what CARB sensitivity testing previously indicated during the first SCS review process.

Similar to the big four MPOs, the Valley MPOs also identify factors that are making it difficult for them to maintain the estimated emission reduction levels of their currently adopted SCSs. While they do not quantify the magnitude of effect of these factors, they identify a variety of new strategies that go above and beyond their last SCSs that they anticipate will help offset these factors and effectively maintain currently estimated reduction levels. As such, seven of the eight Valley MPOs recommend targets for 2035 that commit to maintaining the same levels of reduction estimated for their currently adopted SCSs. Fresno COG has recommended a 2035 target of 13 percent, which exceeds the estimated reduction of their current SCS.

Of the six remaining MPOs, four submitted target analysis information that would meet or exceed their currently adopted SCSs. All acknowledged challenges in maintaining needed resource and funding levels to match performance of their previously adopted plans.

D. Public Engagement

Since 2014, CARB staff has also engaged in regular and ongoing dialogue with MPOs and other stakeholders to solicit target update recommendations. In August 2014, CARB staff released a preliminary draft staff report on factors to consider in development of the target update. CARB staff used that report to facilitate discussion and gather input at three public workshops in September 2014 in Diamond Bar, Fresno, and Sacramento. Input received at that time included: requests to update the placeholder targets for the MPOs in the San Joaquin Valley, incorporate best practices in the SCSs, identify and measure co-benefits, provide additional resources and funding for SCS implementation, consider GHG credit for advances in technology and electric vehicle usage, improve travel demand modeling, support for both a top-down and bottom-up approach, as well as comments on the timing for when updated targets should take effect. CARB staff incorporated this input and its proposed approach to the target update into its report to the Board on October 23, 2014. At that meeting, the Board indicated their support for staff's proposed approach.

Throughout 2015, CARB staff continued to engage MPOs and other stakeholders following that approach. In September 2015, CARB staff sent a memorandum to the MPOs with an updated schedule and request to receive any target recommendations by spring 2016. While many of the MPOs met that deadline, some MPOs requested more time to conduct additional scenario analysis and testing. At the end of December 2016, the Valley MPOs sent CARB their preliminary target setting recommendations, and the largest four MPOs sent results from their target analyses in early March 2017.

CARB staff conducted a second set of workshops in March 2017 in the cities of Fresno, Los Angeles, and Sacramento, to provide an update and receive feedback on MPO target analysis and recommendations received and next steps to update targets. Over 100 people attended in-person, with additional participation through webcast of the Sacramento workshop. Attendees included MPO and State agency representatives, non-governmental organizations, local jurisdictions, and private citizens. Feedback provided, included requests for performance monitoring of plan implementation, sharing of leading practices, and additional analysis for co-benefits. There was a general agreement on the need to secure additional pricing and transportation revenue and to align transportation funding with land use goals. CARB staff also provided an informational update to the Board on March 23, 2017. At that meeting, Board members acknowledged the need and challenge ahead with ensuring the appropriate funding incentives are in place to support achievement of more aggressive SB 375 targets. As a first step, the Board suggested convening a transportation funding "roundtable", for

State agencies, MPOs, and subject experts to discuss how the State could better align transportation funding with the State's environmental goals.

In addition, CARB staff continued to meet with MPO staffs and various non-governmental organizations on both an individual and group basis to discuss the target update. Updates on the SB 375 target setting process were also presented at the Scoping Plan Update workshops for the transportation sector hosted by CARB in September 2016 and March 2017.

In June 2017, CARB released a "Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets" containing proposed targets for each MPO. An accompanying Draft Environmental Assessment was also released for 45-day public review starting on June 13, 2017, and ending on July 28, 2017.

CARB staff conducted a third round of workshops in June 2017 in the cities of Bakersfield, Los Angeles, and San Francisco, to receive feedback on the proposed targets and environmental document. Over 50 people attended the workshops in-person and CARB staff presented a more in-depth discussion on the MPO analysis and CARB's approach for the proposed targets outlined in the staff report. CARB staff also provided clarification for the underlying assumptions and outlined the process moving forward. During the 45-public comment period, CARB received over 30 comment letters for consideration representing over 100 agencies including non-governmental organizations, MPOs, building industry agencies, transit agencies, local jurisdictions, and private citizens.

Feedback from the workshops and comment letters covered a wide range of topics with some agencies advocating for higher targets and some supporting the MPO recommendations. Below is a brief summary, by topic area, of all comments received regarding the target recommendations and SB 375 process.

- **Environmental Justice:** incorporation of social equity factors and displacement analysis in the SB 375 target update process to ensure targets are beneficial and minimize harm to disadvantaged communities.
- **Modeling Assumptions:** additional explanation for the "rebound effect" and adjustments to future modeling assumptions such as fuel price and EMFAC, support for future change in SB 375 targets and evaluations to focus discussions on policy and strategy implementation (i.e., Best Management Practices).

- **Performance Monitoring:** focus on performance tracking and monitoring for SCS implementation and identify co-benefits and areas for further GHG reductions.
- **State/SCS Strategies:** clarification on State commitments and strategies versus MPO specific SCS strategies and the relationship for credit under SB 375.
- **Target Recommendation Analysis:** clarification on CARB’s mid-point approach and the MPO analysis (i.e., “stress tests” and inclusion/exclusion of strategy areas) for the target recommendation;
- **Transportation Funding:** recognition of current and future transportation funding limitations, such as loss of funding due to assumed sales tax measures and redevelopment finance programs, as well as opportunities like SB 1 and potential State pricing mechanisms.

Following consideration of public comments received, CARB staff made appropriate changes to the Staff Report. These edits are incorporated throughout this document and appendices, with key additions in Section IV. Staff Recommendation for SB 375 Target Updates and Appendix C. Rebound Analysis.

All written comments received can be viewed at:

<https://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=sb375update2017>

IV. Staff Recommendation for SB 375 Target Updates

CARB staff recommendations are designed to strike a balance between the bottom-up analysis provided by the MPOs and CARB's top-down analysis to recommend a set of targets that meet all the identified objectives.

Furthermore, over the first rounds of SCS review, both CARB and MPO staffs have learned about the limitations of the current SB 375 target metric and using modeling as the primary means for demonstrating SB 375 target achievement. Recognizing these challenges, CARB staff also recommend next steps for beginning the process to update CARB's target setting and evaluation methods toward greater emphasis on MPO strategy and investment decisions.

The following set of recommended targets calls for greater per capita GHG emission reductions from SB 375 than are currently in place, which for 2035, translate into targets that either match or exceed the emission reduction levels contained in the MPOs' currently adopted SCSs. CARB staff believes that to achieve the intent of the legislation and to maximize community co-benefits, the per capita GHG emission reduction targets should be achieved predominantly through strategies that reduce VMT.

SB 375 calls for CARB to set GHG emission reduction targets in any metric deemed appropriate by CARB. The SB 375 targets are in units of percent per capita reduction in GHG emissions from automobiles and light trucks relative to 2005. It is important to note that the current SB 375 program does not allow MPOs to take credit for State programs that improve vehicle emission standards, changes in fuel composition, and other State measures that will reduce GHG emissions to demonstrate achievement of their regional targets.⁶ Examples include the Pavley clean-car standards established in 2007, the low-carbon fuel standard (LCFS) established in 2009, as well as the low-emission vehicle and zero-emission vehicle regulations that established the Advance Clean Car program in 2012. Statewide road user pricing is an example of a potential future State strategy that could generate MPOs additional credit toward their SB 375 targets, based on their ability to re-invest revenues to further regional SCSs. Examples of pricing programs that MPOs can already take direct credit for under SB

⁶Government Code Section 65080(b)(2)(A)(iii)

375 include corridor pricing, toll lanes such as express and high-occupancy (HOT) lanes, and parking pricing dedicated to transportation funding.⁷

As proposed, CARB staff's recommended targets would result in an additional reduction of greenhouse gas emissions of over 10 million metric tons of CO₂ per year in 2035 compared to the current targets. CARB staff recommendations for the individual MPO region targets pursuant to SB 375 are described in the following sections. See Appendix A. MPO Target Recommendations and CARB Staff Recommendations for additional detail.

⁷ See Tables 2-2 and 2-3 in Appendix F. Final Environmental Analysis for strategies the SB 375 program currently allows MPOs to take credit for to demonstrate achievement of their regional targets.

A. Target Recommendation for Year 2020

The year 2020 is the first SB 375 milestone year, and while transportation planning for 2020 is essentially done, with some MPOs adopting their next SCSs in 2020 and 2021, CARB staff does not expect future MPO SCS planning to change current projected GHG emission reductions for 2020. CARB staff views updates to the 2020 targets as a clean-up step and an indicator for monitoring success of SB 375 and SCSs going forward. Thus, in most cases CARB staff proposes to bring the 2020 targets in-line with the projected GHG emission reductions of the MPOs' most recent, adopted SCS. Table 1 shows CARB's target recommendation for each MPO for 2020 compared to CARB's currently adopted targets from 2010, and the MPO target recommendations for 2020.

Table 1: 2020 Target

MPO	Currently Adopted Target	MPO-Recommended Target	CARB Recommended Target
MTC/ABAG	-7%	-	-10%
SACOG	-7%	-	-7%
SANDAG	-7%	-	-15%
SCAG	-8%	-	-8%
Fresno COG	-5%	-6%	-6%
Kern COG		-9%	-9%
Kings CAG		-5%	-5%
Madera CTC		-10%	-10%
Merced CAG		-10.1%	-10%
San Joaquin COG		-12 to -13%	-12%
Stanislaus COG		-12 to -13%	-12%
Tulare CAG		-13 to -14%	-13%
AMBAG	0%	-3%	-3%
Butte CAG	1%	-	-6%
San Luis Obispo COG	-8%	-2%	-3%
Santa Barbara CAG	0%	-13%	-13%
Shasta RTA	0%	-	-4%
Tahoe MPO	-7%	-8.8%	-8%

B. Target Recommendation for Year 2035

The target update process is most heavily focused on updating the 2035 target. CARB staff considered a number of factors in its assessment of what might be ambitious and achievable by 2035 for each of the MPOs.

Based on the best available information from the MPO's recent analysis results, CARB staff's look at the current research on potential new strategy areas, as well as new revenue sources and action commitments by the State to support further local action, CARB staff believe the weight of evidence suggests higher target levels than the current targets, and in some cases, than the target levels recommended by the MPOs are within reach. Many of the MPOs' current plans have indicated as much, estimating achievement of greater reductions than the current targets in 2035. Furthermore, as part of the bottom-up analysis and MPO target recommendation process most MPOs have acknowledged the potential for and committed to incorporating additional or enhanced strategies compared to what is included in their currently adopted SCSs, in their future SCSs.

- **Additional and Enhanced Strategies.** Table 2 summarizes the strategy areas and quantitative analysis results that the four largest MPOs provided to CARB and considered in their recommendations, showing potential for additional and enhanced incorporation of land use, transit, active transportation, vehicle technology support, and enhanced mobility strategies. Where an MPO did not provide a value for a particular strategy area, it is marked as "value not provided", indicating that the MPO did not conduct analysis for this particular policy area. In some instances these areas represent potential for additional GHG reductions, and in others they represent strategy areas that the MPO considers already fully explored through development of their most recent SCS.

Table 2: Summary of Quantitative Results Provided by the MPOs

Strategy Type	SACOG*	MTC*	SANDAG*	SCAG*
Land Use	-4%	-1.6%	-2%	-0.1%
Transit			-1%	
Active Transportation		Value Not Provided	Value Not Provided	-0.4%
TDM/TSM	Value Not Provided	Value Not Provided	Value Not Provided	Value Not Provided
Regional/Local Pricing	Value Not Provided	Value Not Provided	Value Not Provided	Value Not Provided
Vehicle Technology: ZEV	-1%	Value Not Provided	-20%	Value Not Provided
Enhanced Mobility: CAVs	Value Not Provided	Value Not Provided	Value Not Provided	-2%
Demographic Changes	Value Not Provided	Value Not Provided	Value Not Provided	Value Not Provided

*MPO values are not fiscally constrained

- Additional Funding Resources and Tools.** As part of the bottom-up target recommendation process, MPOs have identified several challenges to incorporating the additional or enhanced strategies discussed above to achieve higher targets; primarily declining transportation revenue, fixed transportation spending allocations, and local land use authority. MPOs and local agencies have identified the need for additional funding resources and tools that provide the needed incentives to add and enhance strategies and transition to a transportation system that offers true alternative mobility options. Some jurisdictions have recently passed local tax measures that can assist in SCS implementation.

Since the time MPO target recommendations were developed, new funding and regulatory changes have been put in place, which are expected to further incentivize sustainable growth. The recently signed housing package addresses areas including generating more money for affordable and subsidized housing, reducing regulatory burdens for developers, and incentivizing new development within cities. New funding through passage of SB 1, as well as through the Greenhouse Gas Reduction Fund Transformative Climate Communities Program, and the Volkswagen Settlement Investments, totaling over \$53 billion in new funding over the next 10 years, has been identified to provide incentives for

SB 375 implementation that, in most cases, were not analyzed.⁸ SB 1 alone will increase transportation funding from \$7.5 billion annually to \$12.7 billion annually,⁹ which has strong potential to support SB 375 goals and help leverage existing funds for local jurisdictions. For example, a large portion of the SB 1 funds are dedicated to the State Highway Operation & Protection Program (SHOPP) and Local Streets & Roads Maintenance Program, totaling \$3.4 billion in funding. These programs present an opportunity to incorporate SB 375 supportive strategies like complete street elements to improve mobility across the State. In addition, there is over \$800 million dedicated to active transportation, Sustainable Communities Planning Grants, transit and rail, as well as a new Congested Corridors program where projects must be consistent with an SCS.

As part of the Scoping Plan Update, CARB staff and our sister State agencies have also identified and recommended new State commitments for resource and regulatory support related to SCS strategy areas that were not analyzed as part of the MPO recommendations. While the full anticipated benefits of these statewide strategies cannot be counted toward meeting the SB 375 targets, they are expected to provide ancillary support to MPOs for adopting additional or enhanced strategies that may be counted toward the targets. For example, GHG reductions coming from statewide pricing will be accounted for by the State, but MPOs will be able to take credit for strategies resulting from investment of pricing revenues (see previous discussion on page 19). CARB staff and our sister State agencies will convene a VMT reduction “roundtable”, for State agencies, MPOs, and subject matter experts to help further develop these new State-level actions, in a way that will help regions implement key SCS strategies and policies that maximize GHG emission reductions, as well as co-benefits.

At the same time, MPOs have provided additional analysis and information to show that many of the 2035 GHG reduction percentages that are reflected in their latest plans are higher than what can be expected today when accounting for latest assumptions of

⁸ See Senate Bill 1: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB1; Assembly Bill 2722 (Transformative Climate Communities): https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160AB2722; and Volkswagen Settlement: https://www.arb.ca.gov/msprog/vw_info/vsi/vw-zevinvest/vw-zevinvest.htm

⁹ The Legislative Analyst Office “Overview of the 2017 Transportation Funding Package” <http://www.lao.ca.gov/Publications/Report/3688>

increasing vehicle fuel efficiency, economic recovery, available funding, and housing development rates.

- **Rebound Effect.** MPOs cite a rebound effect, of increased overall driving due to increasing vehicle fuel efficiency, as a significant factor making it difficult to maintain their previous estimates of SCS GHG emission reductions. CARB's independent analysis of the rebound effect as part of its Advanced Clean Car Regulation¹⁰ and U.S. EPA's analysis for the Mid-Term Review¹¹ shows the impact to be minimal, on the order of approximately 1 percent increase by 2035. Further discussion of the rebound effect is found in Appendix C. Rebound Analysis.
- **Economic Recovery.** MPOs have stated that updated economic factors have resulted in unanticipated higher VMT estimates, making it difficult to maintain their previous estimates of SCS GHG emission reductions. Some MPOs developed their last SCS plans during the recovery from the recession of 2008 and included more conservative estimates of economic recovery than what is occurring today. Given that economic growth is highly correlated with travel patterns and changes in VMT, this unanticipated growth is expected to increase VMT estimates for some MPOs in the near term, and may even provide opportunities for decreasing VMT over the long term.
- **Available Funding.** As part of the bottom-up target recommendation process, some MPOs have identified funding as a significant factor making it difficult to maintain their previous estimates of SCS GHG emission reductions. Some MPOs included assumptions in their most recent plans that anticipated local tax measures that ultimately were not passed, which have implications for their upcoming SCSs.
- **Housing Development.** California currently has a housing shortage, and according to the California Department of Housing and Community

¹⁰ See California Air Resources Board, LEV III Economic Analysis Technical Support Document, Appendix S, December 7, 2011, <https://www.arb.ca.gov/regact/2012/leviiighg2012/levapps.pdf>.

¹¹ See US Environmental Protection Agency, The Rebound Effect from Fuel Efficiency Standards: Measurement and Projection to 2035, <https://nepis.epa.gov/Exe/ZyPDF.cgi/P100N11T.PDF?Dockey=P100N11T.PDF>.

Development¹² the State needs about 180,000 housing units per year to keep pace with population growth and demand. This is far short of the 80,000 new homes constructed annually over the last ten years and on-going production continues to fall short. During the target setting process, some MPOs discovered that new residential construction has occurred as a slower rate than they previously assumed in their last SCS plans, which can impact their short run VMT estimates and population growth allocations. Most MPOs anticipate that housing development will increase as the economy recovers and housing demand continues to rise over the long run.

Based on these considerations, CARB staff estimate that through different combinations of strategies in each region, most MPOs may be able to achieve additional reductions on the order of 1 to 5 percent compared to each of their currently adopted SCSs. Table 3 reflects CARB staff's assumptions in developing this range. Assumed potential additional reductions from Land Use, Transit, and Active Transportation are taken from the range of effect provided by the four large MPO tests. Reductions from additional or enhanced TDM/TSM, regional/local pricing, and vehicle technology are conservative low bound estimates based on the latest empirical literature¹³ and CARB staff's consideration of what is included in the MPO SCSs already. CARB staff did not quantify or assume enhanced mobility strategies such as connected and autonomous vehicles and demographic factors as part of the target update range at this time.

¹² <http://www.hcd.ca.gov/policy-research/plans-reports/docs/California's-Housing-Future-Full-Public-Draft.pdf>

¹³ See Urban Land Institute, *Moving Cooler An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*, Technical Appendices, October 2009.

Table 3: Potential GHG Target Impacts – MPO Analysis and CARB Review

Strategy Type	SACOG*	MTC*	SANDAG*	SCAG*	CARB
Land Use	-4%	-1.6%	-2%	-0.1%	0 to -4%
Transit			-1%		
Active Transportation		Value Not Provided	Value Not Provided	-0.4%	
TDM/TSM	Value Not Provided	Value Not Provided	Value Not Provided	Value Not Provided	-0.5%
Regional/Local Pricing	Value Not Provided	Value Not Provided	Value Not Provided	Value Not Provided	-0.5%
Vehicle Technology: ZEV	-1%	Value Not Provided	-20%	Value Not Provided	-1%
Enhanced Mobility: CAVs	Value Not Provided	Value Not Provided	Value Not Provided	-2%	+/-
Demographic Changes	Value Not Provided	Value Not Provided	Value Not Provided	Value Not Provided	+/-
Rebound Effect	+2 to +3%	+1%	+1%	- ^A	+1%
					-1 to -5%

* MPO values are not fiscally constrained

^A SCAG staff have indicated to CARB that their originally reported rebound effect estimate continues to be refined and is closer to CARB's estimate.

CARB staff's target recommendations apply this estimated range differently across the regions, recognizing that regional differences continue to affect what can be achieved in each region and that different individual targets continue to be appropriate.

For the four large MPOs, CARB staff took the midpoint of the reduction range (3 percent) and applied it to the emission reduction estimate for their currently adopted SCS to come up with their individual target recommendations. For the Valley MPOs, CARB staff applied a stepped reduction range of 1 to 2 percent additional reduction compared to their adopted SCSs, reasoning that certain strategies would not yield as high a benefit as in the more urbanized MPOs. For the remaining six MPOs, recognizing that overall rate of growth is expected to be slow compared to the other MPO regions and that travel patterns in these regions are also unique, particularly for those that are recreation and vacation destinations, CARB staff recommend targets in line with at minimum maintaining reduction ranges of their currently adopted SCSs. See Appendix A. MPO Target Recommendations and CARB Staff Recommendations for additional detail.

Table 4 shows the currently adopted target, estimated reductions with currently adopted plan, MPO target recommendation, and CARB staff’s recommended target for each MPO for year 2035.

Table 4: 2035 Target

MPO	2035			
	Current Target	Current SCS Performance	MPO Recommended Target	CARB Recommended Target
MTC/ABAG	-15%	-15.5%	-18%	-19%
SACOG	-16%	-16%	-18%	-19%
SANDAG	-13%	-18%*	-18%	-21%
SCAG	-13%	-18%	-18%	-21%
	-10%			
Fresno COG	-10%	-10%*	-13%	-13%
Kern COG		-13%*	-13%	-15%
Kings CAG		-12%*	-12%	-13%
Madera CTC		-15%*	-15 to -20%	-16%
Merced CAG		-12.7%*	-12.7%	-14%
San Joaquin COG		14%*	-14 to -15%	-16%
Stanislaus COG		14%*	-14 to -15%	-16%
Tulare CAG		15%*	-15 to -16%	-16%
AMBAG	-5%	-6%	-6%	-6%
Butte CAG	1%	-7%	-7%	-7%
San Luis Obispo COG	-8%	-10.9%	-4 to -8%	-11%
Santa Barbara CAG	0%	-17%	-17%	-17%
Shasta RTA	0%	-0.5%	-3.5%	-4%
Tahoe MPO	-5%	-5%	-5%	-5%

Italics indicates an SCS that is adopted but not yet evaluated by CARB

*Based on preliminary updated modeling analysis provided by SANDAG and the Valley MPOs.

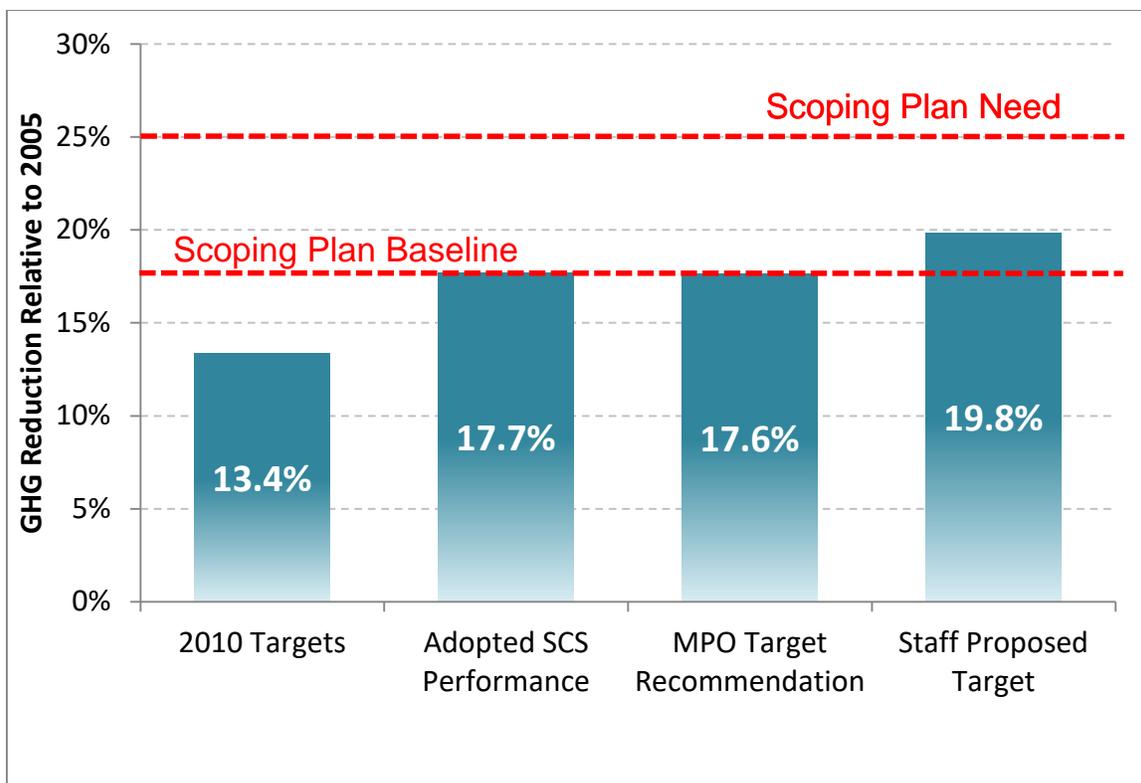
At the personal travel level, CARB staff’s recommended targets are equivalent to reducing VMT a half a mile per person per day.¹⁴ When considering a person’s daily travel patterns, this would translate into individuals having the option to combine

¹⁴ This number represents light duty-passenger vehicle VMT divided by the total population for the State of California in the year 2035. For the California driver-only population this number is 0.6 miles per person per day.

multiple different travel options, such as one bike or transit to work day a month, carpooling or vanpooling, one telecommute day a month, and biking and walking for grocery or other errands.

Figure 2 illustrates what these SB 375 target levels mean in aggregate, within the context of advancing progress toward our statutory climate and air quality goals. CARB staff’s top-down analysis estimates that SB 375 and other VMT reduction strategies need to provide a 25 percent reduction in statewide per capita greenhouse gas emissions relative to 2005 by 2035 to meet these goals (shown as the “Scoping Plan Need” dashed line). CARB staff’s recommended targets would achieve about 20 percent reduction in statewide per capita GHG reduction, compared to a roughly 17 percent per capita reduction being proposed by the MPOs; the 17 percent reduction in aggregate is nearly equivalent to their currently adopted SCSs and the Scoping Plan Update baseline. Also shown, are the current SB 375 targets, which achieve about a 13 percent statewide per capita GHG reduction.

Figure 2: SB 375 Targets Relative to Scoping Plan Need



Note: Adopted SCS Performance is reflected in 2017 Scoping Plan Update Baseline

In terms of tons, CARB staff’s proposed targets would result in an estimated 3.4 million metric tons of CO₂ per year additional reduction compared to the MPO target

recommendations. The estimated remaining GHG emissions reductions needed would be 8.3 million metric tons CO₂ per year in 2035 based on the Draft Scoping Plan scenario. These remaining GHG emission reductions are expected to be attributed to new State-initiated VMT reduction strategies that will be described in the Final 2030 Scoping Plan. CARB may update the SB 375 targets every four years, if needed, so there is an opportunity to reassess and adapt the role of the SB 375 targets in the State's overall suite of VMT and GHG emission reduction strategies on an ongoing basis.

Throughout the Scoping Plan development and SB 375 target update process, social equity and linked issues have been a concern for a number of stakeholders. Historically, there have been instances where transportation and land use decisions have perpetuated race, class, and other hierarchies and have caused disproportionate impacts to disadvantaged communities. The GHG emissions reduction targets included in this report could be met by a wide range of land use and transportation policies and investments, including ones that could advance equity goals and ones that could hinder them. In particular, SCS strategies like infill and transit oriented development, have brought up concerns around displacement of existing residents, possibly to suburban areas with lower access to transit, jobs, and services than low-income families have currently. More recently, discussions on new pricing mechanisms, such as a road toll or user fee, have raised concerns on the potential to disproportionately impact disadvantaged communities. Following on these concerns, some stakeholders have asked CARB to incorporate a social equity and/or environmental justice analysis of the targets to address these and other general concerns around whether the recommended targets will result in regional strategies that benefit communities equitably.

While CARB is committed to making the achievement of environmental justice¹⁵ an integral part of its activities, including the SB 375 program, any analysis of the social equity and environmental impacts of the proposed targets would be speculative, if not impossible, to predict at this stage. Decisions by entities regarding the specific location and design of new development, facilities, or infrastructure, or the specific pricing mechanisms and the details of application that may be undertaken in response to the targets are by design, yet to be developed through subsequent regional and State planning processes. Specific subsequent actions included in future RTP/SCSs, or

¹⁵ CARB approved Policies and Actions for Environmental Justice in 2001, to establish a framework for incorporating environmental justice into the CARB's programs consistent with the directives of State law. CARB is currently in the process of updating the environmental justice policies and actions based on input received through the Scoping Plan Update.

developed by the State agencies because of the targets, would undergo analyses at the time they are proposed. To inform subsequent target update conversations on this topic, CARB staff plans to track indicators of SCS implementation, including: land use change, accessibility, and public health outcomes, integrating social equity and environmental justice analysis to the extent feasible building on implementation of SB 350, AB 617, and the Caltrans' 2017 RTP Guidelines for MPOs. CARB staff also anticipates updating the SCS evaluation process in 2018 to reflect what has been learned through the first rounds of SCS evaluation, the target update, and recent research. See Appendix E. SB 375 Program Background for additional information.

C. Achieving the Target Update Objectives

CARB staff's recommended targets are consistent with the SB 375 target update objectives discussed in Section II. CARB staff's approach relied on MPO generated information as a foundation, reviewed and supplemented with the latest available information, methods, and data for capturing the benefits of potential SCS strategies. Additionally, the recommended targets recognize the need and importance for continued local and State partnership to meet the State's overall VMT reduction goal.

- **MPO Input.** The recommended targets use MPO generated information as the foundation for target setting. MPO baseline information, forecasts, and expertise related to what may be feasible is an important component of the target recommendation. The recommended targets are intended to achieve a balance between goals that motivate positive action, but are not out of reach for regions and local governments.
- **Best Available Information.** The recommended targets are based on analyses performed using the best available models and tools and the latest methods and data. While transportation modeling tools used to quantify GHG emission reductions from SCS strategies continue to improve, they still do not completely capture all the benefits or consequences of SCS planning. The methods and data for capturing the benefits of potential SCS strategies have and will continue to improve as well. The recommended targets recognize improvements since the last target cycle, and the likelihood that tools and methods will continue to improve in their ability to quantify SCS GHG emission reductions and other co-benefit effects.

Local and State Partnership. The recommended targets also recognize that additional State policy and funding tools are being developed to support further VMT reduction that will both help the State overall in achieving needed emission reductions and support MPOs in their ability to achieve higher targets by 2035. The recommended targets are intended to share responsibility and partnership toward meeting the overall goal. See Section III-B, for further discussion on work underway to develop additional State-level assistance and tools.

D. Future Target Update and Evaluation Method Recommendation

Through the first rounds of SCS review and most recently through this target update process, both CARB and MPO staffs have identified a number of limitations with the current SB 375 target metric and the use of modeling as the primary means for demonstrating SB 375 target achievement. Under the current approach, target achievement is dependent not only on things MPOs can control like their policies and investments, but things that they do not control as well, such as changes to forecasted demographics, fuel price, fleet mix, etc. In practice, this has resulted in unproductive effort and focus around getting agreement on forecasted assumptions for factors outside of any regional or State agencies control, rather than focusing more squarely on what efforts MPOs can and are putting in place to implement the land use and transportation strategies and investments called for under SB 375.

To address these challenges, CARB staff recommend beginning discussions with MPOs, community groups, and other affected stakeholders, on alternatives to the current approach for target setting and for SB 375 compliance evaluation. The intended outcome is to explore and identify program implementation options that allow for better measurement of policy implementation and provide better transparency on the efforts MPOs are taking to advance land use and transportation strategies relevant to SB 375. Alternatives for discussion could include approaches such as targets tied only to changes in a region's land use and transportation strategies and best management practices. If promising options are identified, CARB staff would work with the MPOs to collect necessary data and test results of alternative approaches in the next cycle of SCS development.

CARB staff would report back on progress and any results to the Board in advance of its next target-setting opportunity in 2021.

V. Next Steps

CARB is required under SB 375 to update the targets no later than 2018, which is eight years from the time targets were first established in 2010. The purpose of this staff report is to provide the Board and public with an opportunity to discuss and comment on CARB staff's recommended targets. This section describes next steps in CARB's process to update the SB 375 targets and associated program components, including future opportunities for input.

CARB staff will present this staff recommendation and the Final Environmental Analysis pursuant to its certified regulatory program to comply with the California Environmental Quality Act (CEQA; Public Resources Code § 21080.5) to the California Air Resources Board at the November 2017 Board Hearing. The Final Environmental Analysis, with response to comments, is incorporated as Appendix F of this report. If the Board adopts staff's final recommendation, the new SB 375 targets would become effective on January 1, 2018.

At the same time, acknowledging the challenge ahead with ensuring appropriate funding and other incentives are in place to support achievement of more aggressive SB 375 targets, CARB staff and our sister State agencies, will convene a VMT reduction "roundtable". The purpose of the roundtable will be for State agencies, MPOs, and subject matter experts to identify and prioritize the necessary tools, resources, and State-level actions that will help regions implement key SCS strategies and policies that maximize GHG emission reductions, as well as co-benefits. The roundtable may also be a useful place for continuing discussions around environmental justice and social equity issues and analysis. CARB staff will also begin discussions with the MPOs and other stakeholders to discuss alternatives to the current SB 375 target metric and the use of modeling in advance of its next target-setting opportunity in 2021.

MPOs prepare SCSs according to their respective update schedules, which means the next set of SCSs subject to updated targets will be prepared at different times over the next four years. Therefore any SCSs adopted in 2018 would be subject to the updated targets. See Appendix D for the MPO RTP update schedule.

Once target updates are adopted, CARB staff plans to turn its attention to revising the Technical Review Methodology for how CARB evaluations are conducted, and what information and data from the MPOs are necessary to make a determination on whether the SCS, if implemented, would meet the GHG reduction targets.

Furthermore, while the target numbers themselves are a key focus of this staff report and SB 375 implementation, the land use and transportation strategies that underpin

the SCSs are what ultimately determine the ambitiousness of the plans, in terms of improvements to quality of life, health, and long-term sustainability for California residents. Now that the SB 375 program is in its eighth year of implementation, indicators of policy change and SCS implementation are becoming available. CARB staff plans to turn its attention to tracking near-term indicators of SCS implementation, land use change, sustainable development, and public health outcomes.

CARB's SCS performance indicator tracking efforts will provide a basis for understanding whether the intended benefits of SB 375 are beginning to accrue and are benefiting communities equitably. With the recent passage of SB 150, CARB will be responsible for preparing a report to the Legislature starting next year, and every four years thereafter, that discusses regional changes in GHG emissions, as well as best practices and challenges to achieving greater reductions under SB 375. This report will use data-supported metrics to assess progress, as well as the effect of State policies and funding programs. In addition, as the benefits of SB 375 begin to accrue, we want to know whether disadvantaged or vulnerable communities are receiving a fair share of the benefits the program is creating, and whether or not they are experiencing a disproportionate share of any harms. CARB will also integrate social equity and environmental justice analysis to the extent feasible through legislative efforts such as SB 350, AB 617, and the Caltrans' 2017 RTP Guidelines for MPOs.

CARB staff will seek to engage stakeholders in these processes through multiple forums, including: the formation of collaborative stakeholder working groups, continued regular meetings with MPO and non-governmental organization stakeholders, individual meetings with other stakeholders, as requested, as well as through periodic updates on implementation efforts at Board meetings. See Appendix E. SB 375 Program Background for further discussion.

Appendix A. MPO Target Recommendations and CARB Staff Recommendations

The following sections summarize the 18 MPO regions, and describe the SB 375 GHG emission reduction target recommendations and analysis submitted by MPO staff to CARB. CARB staff's recommendations are also presented relative to the MPOs' recommendations. For various policy and technical reasons, the discussions of MPO target recommendations are organized into three groups: 1) the four largest MPOs, 2) the eight MPOs in the San Joaquin Valley; and 3) the six remaining small MPOs.

A. The Four Largest MPOs

The four largest MPOs include the Metropolitan Transportation Commission (MTC)/Association of Bay Area Governments (ABAG), the Sacramento Area Council of Governments (SACOG), the San Diego Association of Governments (SANDAG), and the Southern California Association of Governments (SCAG). These four regions collectively comprise the majority (82 percent) of the State's population and associated GHG emissions from light-duty vehicles.

During the first round of target setting in 2010, the four largest MPOs shared information and conducted testing of various scenarios to compare relative GHG emission reduction benefits using their transportation models and other modeling tools. In 2010, the MPOs made their target recommendations to CARB based on these types of analyses, and CARB recommended targets that largely matched the MPOs' recommendations. The SCSs prepared by these MPOs since that time have demonstrated that, if implemented, they would meet or exceed their current targets.

Over the course of the last two years, CARB staff engaged with these MPOs to encourage them to be more aggressive in their SCSs and GHG outcomes. The MPOs largely indicated that their current SCSs represent the most aggressive and feasible scenarios with respect to land use and transportation policies.

The recommended targets for this group of MPOs are based on CARB staff's evaluation of a number of factors. They include a look at the strategies included within these MPOs most recently adopted SCSs, the strategies and rebound effect impacts they evaluated as part of their additional analyses submittal to CARB, as well as consideration of whether and how these larger MPOs have incorporated different strategy types and impacts.

Table 5 below characterizes CARB staff's understanding of strategy types included in each of these MPOs most current SCSs.

Table 5: SCS Strategy Examples

Strategy Type	Examples
Land Use	Infill development, increased multi-family and/or small lot development, increased densities for residential and commercial development, transit-oriented development, etc.
Transportation	Increased transit operations and efficiency, bike and pedestrian infrastructure, bikeshare systems, complete streets policies, etc.
Transportation Demand Management (TDM)	Carpool/vanpooling, rideshare and ridematching programs, carshare, high-occupancy vehicle (HOV) lanes, parking supply management, transportation incentive programs, etc.
Transportation Systems Management (TSM)	Traffic signal optimization, transit signal priority, ramp metering, incident management, intelligent transportation systems, integrated corridor management, etc.
Pricing Strategies	HOV toll lanes, congestion pricing, variable parking pricing, etc.
Vehicle Technology/Enhanced Mobility	ZEV/PHEV charging infrastructure, vehicle-to-vehicle technology, vehicle-to-infrastructure technology, neighborhood electric vehicles, autonomous vehicles, etc.

There are some SCS strategies that are included in existing SCSs but are not quantified for GHG emission reduction credit toward SB 375. These include transportation demand or system management components such as parking supply management employer sponsored rideshare and ridematching programs, and transportation aggregators like real-time travel information; transportation strategies such as bikeshare systems and neighborhood electric vehicles; and congestion pricing strategies.

Some strategies, like the emergence of autonomous vehicles, have not been quantified in any SCS. This includes potential GHG benefits of vehicle-to-vehicle technology and vehicle-to-infrastructure technology where automobiles can communicate with one another and infrastructure to optimize traffic flow. CARB and MPOs are working on quantification methodologies and gathering pertinent data for inclusion in future SCSs. These areas present additional opportunities for GHG emission reductions beyond existing SCSs.

Table 6 summarizes the strategy opportunity areas CARB staff requested the MPOs analyze for potential further reduction in future SCSs, which areas each MPO evaluated for additional reductions as part of their most recent analyses, and CARB staff’s review.

Table 6: Potential GHG Target Impacts – MPO Analysis and CARB Review

Strategy Type	SACOG*	MTC*	SANDAG*	SCAG*	CARB
Land Use	-4%	-1.6%	-2%	-0.1%	0 to -4%
Transit			-1%		
Active Transportation		Value Not Provided	Value Not Provided	-0.4%	
TDM/TSM	Value Not Provided	Value Not Provided	Value Not Provided	Value Not Provided	-0.5%
Regional/Local Pricing	Value Not Provided	Value Not Provided	Value Not Provided	Value Not Provided	-0.5%
Vehicle Technology: ZEV	-1%	Value Not Provided	-20%	Value Not Provided	-1%
Enhanced Mobility: CAVs	Value Not Provided	Value Not Provided	Value Not Provided	-2%	+/-
Demographic Changes	Value Not Provided	Value Not Provided	Value Not Provided	Value Not Provided	+/-
Rebound Effect	+2 to +3%	+1%	+1%	- ^A	+1%
					-1 to -5%

* MPO values are not fiscally constrained.

^A SCAG staff have indicated to CARB that their originally reported rebound effect estimate continues to be refined and is closer to CARB's estimate.

Based on the MPO test results above, consideration of the current research and recent policy developments, CARB staff expects MPOs to be able to achieve additional reductions beyond the adopted SCSs and beyond their target recommendations submitted to CARB. While differences across the regions mean the same strategies may produce different emission reduction outcomes, CARB staff estimate that through different combinations of strategies in each region, each may be able achieve additional reductions on the order of 1 to 5 percent compared to each of their currently adopted SCSs.

In Table 6, the column labeled “CARB” reflects CARB staff’s assumptions in developing the range. Assumed potential additional reductions from Land Use, Transit, and Active Transportation are taken from the range of effect provided by the four large MPO tests. Reductions from additional or enhanced TDM/TSM, regional/local pricing, and vehicle technology are conservative low bound estimates based on the latest empirical

literature¹⁶ and CARB staff's consideration of these types of strategies already included in these MPOs SCSs. CARB staff did not quantify or assume enhanced mobility strategies such as connected and autonomous vehicles and demographic factors as part of the target update range at this time. For estimating the rebound effect, CARB staff based its estimate on a review of the latest empirical literature.¹⁷ The "value not provided" indicates that the MPO did not provide information on additional GHG emissions reductions beyond the strategies contained in the existing SCS for these strategy areas. In some cases, this means the MPO did not conduct analysis for the particular strategy and/or the MPO indicated the strategy was already fully explored through development of their most recently adopted SCS. CARB is focused on GHG reductions that go beyond the existing SCSs to provide a target that is both ambitious and achievable.

For the four large MPOs, CARB staff took the midpoint of the reduction range (3 percent) and applied it to the emission reduction estimate for their currently adopted SCS. CARB staff chose the midpoint recognizing that actual achievement by each MPO might vary given their regional differences and the strategies they would use, but overall is reasonable. A necessary consideration in CARB staff's approach has been whether challenges cited by the MPOs for including additional or enhanced land use and transportation strategy reductions, specifically the need for additional funding resources and tools, would be addressed between now and the 2035 target year. CARB staff's assumptions are comparatively less conservative than the MPO recommendations on this point, given new funding incentives affecting SCS strategies through passage of SB 1, the Greenhouse Gas Reduction Fund, Volkswagen Settlement, local tax measures, and new State commitments to achieve VMT reduction in the Scoping Plan Update that were not all analyzed as part of the MPOs target recommendations.

Furthermore, CARB and MPO staffs both consider and cite a rebound effect, of increased overall driving due to increasing vehicle fuel efficiency, as a factor that counteracts SCS GHG emission reductions. The MPO tests quantified the effect as ranging from a 1 to 5 percent increase, depending on the region. CARB's independent

¹⁶ See Urban Land Institute, Moving Cooler An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions, Technical Appendices, October 2009.

¹⁷ See both California Air Resources Board, LEV III Economic Analysis Technical Support Document, Appendix S, December 7, 2011, <https://www.arb.ca.gov/regact/2012/leviiighg2012/levapps.pdf> and US Environmental Protection Agency, The Rebound Effect from Fuel Efficiency Standards: Measurement and Projection to 2035, <https://nepis.epa.gov/Exe/ZyPDF.cgi/P100N11T.PDF?Dockkey=P100N11T.PDF>.

analysis of the rebound effect as part of its Advanced Clean Car Regulation and U.S. EPA’s Mid-Term Review, as well as State commitments to develop pricing policies in the Scoping Plan Update that help counteract this effect, CARB staff assume the magnitude of impact to be no more than a 1 percent increase by 2035.

An overarching consideration to this approach has to do with the continued use and reliance on modeling to demonstrate progress in the SB 375 program. The experience to date has been mixed, but both MPOs and CARB staff agree that part of increasing confidence in demonstrating higher target levels will be further work together to standardize modeling assumptions and methods affecting target achievement calculations, in a way that provides greater certainty that exogenous modeling factors will not detract from the ability to achieve higher targets. CARB staff is committed to this work with the MPOs as part of CARB staff’s update of the methodology for reviewing emission reductions from SCSs.¹⁸

Individual recommendations provided by each of the four large MPOs and CARB’s recommended targets are discussed separately below.

1. Metropolitan Transportation Commission/Association of Bay Area Governments

The Metropolitan Transportation Commission/Association of Bay Area Governments (MTC/ABAG) region is located in the San Francisco Bay area, and includes the counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma. MTC/ABAG proposes per capita GHG emission reduction targets of 18 percent in 2035 relative to 2005 emissions. A 2020 target recommendation was not provided. MTC/ABAG’s original SB 375 targets were a 7 percent reduction in 2020 and a 15 percent reduction in 2035 relative to 2005. The first SCS, adopted in July 2013, would, if implemented, achieve 10 percent per capita GHG emission reduction in 2020 and a 16 percent reduction in 2035 compared with 2005 levels.

	2020	2035
Existing Target	-7%	-15%
2013 SCS Performance	-10%	-16%
2017 SCS Performance	-14%	-15.5%
MTC/ABAG Target Recommendation	n/a	-18%
CARB Staff Recommendation	-10%	-19%

¹⁸ See California Air Resources Board, Description of Methodology for CARB Staff Review of Greenhouse Gas Reductions from Sustainable Communities Strategies (SCS) Pursuant to SB 375, July 2011, http://www.arb.ca.gov/cc/sb375/scs_review_methodology.pdf.

Italics indicates an SCS that is adopted but not yet evaluated by CARB

MTC/ABAG's 2013 SCS encourages growth in locally nominated "priority development areas" while preserving land in identified "priority conservation areas", resulting in the accommodation of all of the region's growth within five percent of the region's land. With SCS implementation, the region's residential density will increase by about 5 percent between 2010 and 2020, and between 2010 and 2040 it will increase by about 19 percent. The SCS replaces and expands the transit fleet and capacity and incentivizes housing production near transit. The SCS also invests in several climate initiative programs that support reducing VMT and promoting cleaner fuels and technology such as: electric vehicle incentive programs, expansion of the electric vehicle charging network, vanpool incentives, and expansion of car-sharing services.

MTC/ABAG recently adopted their second SCS in July 2017. This plan builds upon existing strategies from the region's first SCS and continues to address the region's housing needs, expand transportation to accommodate future growth, and maintains the existing infrastructure. The total budget for the RTP/SCS is \$303 billion in 2040 dollars, with about 63 percent of the funding from local sources, 15 percent from State sources, and the remaining from federal and other sources.

Based on development of the 2017 SCS and additional analysis, MTC/ABAG staff recommended a per capita GHG reduction target of 18 percent in 2035 from 2005 levels. In total, MTC/ABAG's recommendation represents a GHG reduction commitment from additional or enhanced strategies in the range of an additional 2.5 percentage points. MTC/ABAG's analysis showed that in order to achieve these higher greenhouse gas reductions, the region will need significant investments in transit and aggressive market intervention for denser land use development. MTC/ABAG's SB 375 target recommendation is conditional on several factors such as: the need for a State pricing mechanism to increase auto-operating cost; a dedicated funding mechanism for transit, ridesharing, and active transportation; and additional funding for RTP/SCS implementation. It is important to note that increasing densities within the Bay area has the potential to lead to displacement and the addition of new pricing mechanisms, like a road user fee, may lead to equity concerns. The Bay area is sensitive to these issues due to the already high cost of housing.

The next RTP/SCS adopted by MTC/ABAG that will be subject to the updated SB 375 targets will be adopted in 2021. CARB staff recommends an SB 375 target of 10 percent in 2020 and 19 percent in 2035 compared with 2005 levels. CARB staff's 2035 target recommendation is 1 percentage point higher than MTC's target recommendation. This recommendation is based on review of analysis submitted by

MTC and CARB staff’s approach of applying the midpoint of the identified reduction range (3 percent) to what the region has achieved in their currently adopted SCS and the most recent modeling of their Draft 2017 SCS Preferred Scenario. Differences between CARB and MPO staff’s approaches include quantification of the potential for additional land use and transportation strategies.

2. Sacramento Area Council of Governments

The Sacramento Area Council of Government (SACOG) region is located in central California above the San Joaquin Valley and inland from the San Francisco Bay area. The region includes the counties of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba. SACOG proposes a per capita GHG emission reduction target of 18 percent in 2035 relative to 2005 emissions. A 2020 target recommendation was not provided. SACOG’s original SB 375 targets were a 7 percent reduction in 2020 and a 16 percent reduction in 2035 relative to 2005. The first SCS, adopted in April 2012, would, if implemented, achieve 10 percent per capita GHG emission reduction in 2020 and a 16 percent reduction in 2035 compared with 2005 levels. The second SCS, adopted in February 2016, would, if implemented, achieve a 7.6 percent per capita GHG emission reduction in 2020 and a 15.6 percent per capita GHG emission reduction in 2035.

	2020	2035
Existing Target	-7%	-16%
2012 SCS Performance	-10%	-16%
2016 SCS Performance	-8%	-16%
SACOG Target Recommendation	n/a	-18%
CARB Staff Recommendation	-7%	-19%

In 2016, SACOG adopted its second Metropolitan Transportation Plan (MTP)/SCS, which continues to emphasize the key strategies from the first (2012) SCS that reduce barriers to infill development, and increase density in targeted areas served by transit to make the transit system more viable and efficient. SACOG also took a “fix-it-first” approach when prioritizing roadway funding where roadway maintenance and rehabilitation projects were prioritized over projects that would add new roadway capacity. SACOG is also implementing its complete streets policy by configuring on-street bike lanes and including pedestrian safety improvements into scheduled roadway maintenance projects. Since there is limited funding available to complete all the desired transportation projects in the region, SACOG applied project phasing criteria regarding roadway utilization and peak period congestion to determine which transportation projects should be completed within the 20-year plan horizon, and which projects would have to wait. The outcome of SACOG’s growth strategy in the 2016 SCS is to accommodate a 36 percent population increase on less than 2 percent of the region’s land area. The performance outcomes of SACOG’s 2016 MTP/SCS will

include an increase in the number of homes and jobs near transit, improved jobs/housing balance, over a doubling of bike lane miles, and expansion of transit services. The total budget for the 2016 RTP/SCS is \$45.8 billion in 2036 dollars, with about 62 percent of the funding from local sources, 27 percent from State sources, and the remaining 11 percent from federal sources.

SACOG staff recommended a per capita GHG reduction target of 18 percent in 2035 from 2005 levels based on their recent analysis. SACOG's analysis focused on strategies related to incentivizing early growth in infill and transit-oriented development areas, increasing transit services and modernizing deployment of transit services, as well as investment and innovation in locally-initiated programs to accelerate electric vehicle penetration. In total, SACOG's recommendation represents a GHG reduction commitment from additional or enhanced strategies in the range of an additional 5 percentage points. SACOG's analysis also identified several State supportive measures that would be needed to help achieve these additional GHG reductions.

The next MTP/SCS adopted by SACOG that will be subject to the updated SB 375 targets will be adopted in 2020. CARB staff recommends an SB 375 target of 7 percent in 2020 and 19 percent in 2035 compared with 2005 levels. CARB staff's 2035 target recommendation is 1 percentage point higher than SACOG's target recommendation, and is based on review of analysis submitted by SACOG and on CARB staff's approach of applying the midpoint of the identified reduction range (3 percent) to what the region has achieved in their currently adopted SCS. Differences between CARB and MPO staff's approaches include quantification of the rebound effect and potential for additional land use and transportation strategies.

3. San Diego Association of Governments

The San Diego Association of Governments (SANDAG) region is located in the Southern most area of California and shares a border with the country of Mexico and the Pacific Ocean. The SANDAG region shares the same boundary as the County of San Diego. SANDAG proposes a per capita GHG emission reduction target of 18 percent in 2035 relative to 2005 emissions. A 2020 target recommendation was not provided. SANDAG's original SB 375 targets were a 7 percent reduction in 2020 and a 13 percent reduction in 2035 relative to 2005. The first SCS, adopted in October 2011, would, if implemented, achieve a 14 percent per capita GHG emission reduction in 2020 and a 13 percent reduction in 2035 compared with 2005 levels. The second SCS, adopted in October 2015, would, if implemented, achieve a 15 percent per capita GHG emission reduction in 2020 and a 21 percent per capita GHG emission reduction in 2035. In May 2017, SANDAG submitted a summary of updates made to their travel demand model since the 2015 SCS. Updates to various factors, like population,

households, land use, and traffic counts, have lowered SANDAG’s GHG emission reduction estimates for the 2015 SCS. Instead of 21 percent reduction, SANDAG estimates that, if implemented, their 2015 SCS would result in an 18 percent per capita reduction from 2005 levels by 2035.

	2020	2035
Existing Target	-7%	-13%
2011 SCS Performance	-14%	-13%
2015 SCS Performance	-15%	-18%
SANDAG Target Recommendation	n/a	-18%
CARB Staff Recommendation	-15%	-21%

In 2015, SANDAG adopted its second SCS, which continues to emphasize the key strategies from the first (2011) SCS that support a more sustainable future for the San Diego region. SANDAG anticipates cities will continue to grow within existing urban boundaries and the SCS reflects smart growth trends in local general and specific plans, which direct growth in existing urbanized areas and along key transportation corridors. This development pattern will bring people and destinations closer together in more mixed-use, compact communities that facilitate walking and transit use. The SCS includes an extensive regional bus system, improved commuter and light rail service, an expanded regional bicycle network, improved pedestrian infrastructure, dedicated highway lanes for carpool and express buses, and several transportation demand management programs that reduce the number of vehicle trips. Overall, these types of strategies would result in closer proximity of homes and jobs to high frequency transit, with almost 70 percent of all jobs being within a half mile of transit by 2035, and almost 60 percent of new housing being within a half mile of transit by 2035. In addition, multi-family housing would make up 76 percent of new housing units through 2035, and the total share of multi-family units would increase from 37 percent in 2012 to 44 percent in 2035. Travel times in key corridors would be reduced by an average of 18 minutes by 2035 and ridership is expected to more than double from about 356,000 daily boardings in 2012 to over 775,000 in 2035. The total budget for the 2015 RTP/SCS is \$204 billion in 2050 dollars, with about 48 percent of the funding from local sources, 34 percent from State sources, and the remaining 18 percent from federal sources.

Based on analysis conducted throughout 2016 and 2017, SANDAG staff recommended a per capita GHG reduction target of 18 percent in 2035 from 2005 levels. SANDAG’s analysis showed that limited GHG reductions can be achieved through aggressive land use changes and transit investment assumptions. The majority of additional GHG reductions would need to come from increasing the cost of driving and the number of zero-emission passenger vehicles, which are outside the direct control of SANDAG and SB 375.

The next RTP/SCS adopted by SANDAG that will be subject to the updated SB 375 targets will be adopted in 2019. CARB staff recommends an SB 375 target of 15 percent in 2020 and 21 percent in 2035 compared with 2005 levels. CARB staff's 2035 target recommendation is 3 percentage points higher than SANDAG's target recommendation, and is based on review of analysis submitted by SANDAG and CARB staff's approach of applying the midpoint of the identified reduction range (3 percent) to what the region has achieved in their currently adopted SCS based on updated modeling. Differences between CARB and MPO staff's approaches include quantification of the potential for additional land use and transportation strategies.

4. Southern California Association of Governments

The Southern California Association of Governments (SCAG) region is located in Southern California, and includes the counties of Imperial, Orange, Los Angeles, Riverside, San Bernardino, and Ventura. SCAG proposes a per capita GHG emission reduction target of 18 percent in 2035 relative to 2005 emissions. A 2020 target recommendation was not provided. SCAG's original SB 375 targets were an 8 percent reduction in 2020 and a 13 percent reduction in 2035 relative to 2005. The first SCS, adopted in April 2012, would, if implemented, achieve a 9 percent per capita GHG emission reduction in 2020 and a 16 percent reduction in 2035 compared with 2005 levels. The second SCS, adopted in April 2016, would, if implemented, achieve an 8 percent per capita GHG emission reduction in 2020 and an 18 percent per capita GHG emission reduction in 2035. Since the release of CARB staff's draft proposal in June 2017, SCAG submitted a summary of corrections and updates made to modeling assumptions and off-model quantification methods used for their 2016 SCS demonstrating difficulties they face in maintaining the last SCS performance for 2035. SCAG's summary can be found in Appendix B. MPO Scenarios and Data Submittals.

	2020	2035
Existing Target	-8%	-13%
2012 SCS Performance	-9%	-16%
2016 SCS Performance	-8%	-18%
SCAG Target Recommendation	n/a	-18%
CARB Staff Recommendation	-8%	-21%

In 2016, SCAG adopted its second SCS, which continues to emphasize the key land use and transportation strategies in the first (2012) SCS. The goals of SCAG's first SCS include ensuring the region's long-term economic competitiveness and improving quality of life for current and future generations. The region is working to reverse air pollution trends, increase investment in alternatives to single occupancy auto use, create greater opportunities for affordable housing and housing diversity, and

strengthen the economy. It includes an extensive regional bus and bus rapid transit (BRT) system, improved commuter and light rail service, an expanded regional bicycle network, improved pedestrian infrastructure, dedicated highway lanes for carpool and express buses, and several TDM programs that reduce the number of vehicle trips. The outcomes of the 2016 SCS by 2035 include 46 percent of the total household growth and 55 percent of total employment growth will be located within high-quality transit areas. In addition, new housing development is anticipated to be 33 percent single-family and 67 percent multi-family, with the majority of new growth located in infill and compact walkable areas. The SCS also reduces spending on system expansion in favor of increased funding for roadway maintenance and rehabilitation compared to the 2012 RTP/SCS. By 2040, over 170,000 miles of bus routes and 72,000 miles of transit rail will be added to the system. The total budget for the 2016 RTP/SCS is \$556.5 billion in 2016 dollars, with about 51 percent of the funding from local sources, 30 percent from federal sources, and the remaining 19 percent from State sources.

SCAG staff recommended a per capita GHG reduction target of 18 percent in 2035 from 2005 levels based on their recent analysis. SCAG's analysis focused on strategies related to active transportation, zero emission vehicles, and mobility innovations and indicated that an additional 2 to 2.5 percentage points achieved beyond the last plan through additional programs, investments, and mobility innovations, at an estimated cost of \$10 billion. As part of the target recommendation, SCAG also committed to an additional 2 to 3 percentage points beyond their test results to be achieved through further innovative strategies. In total, SCAG's recommendation represents a GHG reduction commitment from additional or enhanced strategies in the range of an additional 4 to 5.5 percentage points. Additional reductions would partially be supported through a local sales-tax measure (Measure M) dedicated to transportation funding, which voters approved in Los Angeles County in 2016.

The next RTP/SCS adopted by SCAG that will be subject to the updated SB 375 targets will be adopted in 2020. CARB recommends an SB 375 target of 8 percent in 2020 and 21 percent in 2035 compared with 2005 levels. CARB staff's 2035 target recommendation is 3 percentage points higher than SCAG's target recommendation, and is based on review of analysis submitted by SCAG and CARB staff's approach of applying the midpoint of the identified reduction range (3 percent) to what the region has achieved in their currently adopted SCS. Differences between CARB and MPO staff's approaches include quantification of the rebound effect and potential for additional land use and transportation strategies.

B. The San Joaquin Valley MPOs

In general, limited technical data was available in 2010 on which to base target recommendations for the San Joaquin Valley (Valley) MPOs. The Valley MPOs collectively represent 11 percent of the State's population and 10 percent of the associated GHG emissions from light-duty vehicles. In 2010, CARB established placeholder targets of 5 percent in 2020 and 10 percent in 2035 for all Valley MPOs, with the expectation that the targets would be revised once transportation model improvements were completed and alternative scenario analyses could be provided. An initial round of model improvements was completed in 2013 for use in their 2014 RTP/SCSs. The per capita GHG emission reductions from the SCSs adopted in 2014 varied widely across the eight Valley MPOs. Some Valley MPOs produced transportation model results that showed that their 2014 SCSs would greatly exceed their targets, while others could not meet their targets. The Valley MPO staffs attributed the variability to several factors, including the models' treatment of interregional travel, model inputs and assumptions such as auto operating cost, and socioeconomic conditions such as recovery from the recession.

Updates and enhancements were made to the Valley MPOs' transportation models in the middle of 2016 (Valley Model Improvement Program 2, or VMIP2). It was important to the Valley MPOs that their target recommendations be based on the newest version of the transportation-modeling platform because the new modeling platform would also be used to estimate VMT and GHG emissions for their next round of SCSs, which would be evaluated against the new SB 375 targets. In contrast to the 2010 targets, which were uniform across all eight Valley MPOs, the updated targets would be unique to each MPO.

The San Joaquin Valley MPOs submitted target analysis information using preliminary results from their most recent model improvement effort. This work utilizes the most recent Census, American Community Survey and California Household Travel Survey data, as well as implements changes to the model structure based on CARB feedback received during the last SCS evaluation period. The preliminary result looks to be a more accurate accounting of their current plan achievement. Since the release of CARB staff's draft proposal in June 2017, some Valley MPOs reached out to CARB to ensure understanding of their analysis and target recommendations. San Joaquin COG, Stanislaus COG, and Merced CAG, submitted additional information clarifying the auto operating cost analysis and economic growth impacts for their regions. This information is included in Appendix B. MPO Scenarios and Data Submittals. The Valley MPOs are continuing to update and finalize the VMIP2 model in preparation for their second round of SCSs with model validation and calibration completion expected this fall. CARB staff

used this information as the foundation for evaluating what would be ambitious and achievable for these MPOs.

Similar to the previous discussion for the largest four MPOs, CARB staff expects the Valley MPOs to be able to achieve additional reductions beyond the adopted SCSs and, in most cases beyond the target recommendations submitted to CARB. While the Valley MPOs did not provide quantitative test results, CARB staff considered the results from the large four MPOs, along with knowledge of what strategies the Valley MPOs have included in their SCSs to date, and applied a stepped reduction range, reasoning that certain strategies such as Regional and Local Pricing and Vehicle Technology would not yield as high a benefit as in the more urbanized MPOs.

Given the variability in population size and growth across the Valley MPOs, CARB staff applied a range of 1 to 2 percent additional reduction for the Valley MPOs compared to their adopted SCSs. For the four largest Valley MPOs (Kern, Fresno, San Joaquin, and Stanislaus) CARB staff applied an additional 2 percent reduction range to the estimated emission reductions range of their currently adopted SCS. For the smaller Valley MPOs (Merced, Madera, Kings and Tulare), CARB staff applied a 1 percent reduction range to the to the estimated emission reductions range of their currently adopted SCS.

Individual recommendations provided by each of the Valley MPOs are discussed separately below and CARB’s recommended targets are discussed separately below.

1. Fresno Council of Governments

The Fresno Council of Governments (Fresno COG) region is located in the San Joaquin Valley and shares the same boundary as Fresno County. Fresno COG proposes per capita GHG emission reduction targets of 6 percent in 2020, and 13 percent in 2035 relative to 2005 emissions. Fresno COG’s first SCS, adopted in June 2014, would, if implemented, achieve an 8.5 percent per capita GHG emission reduction in 2020 and a 10.5 percent reduction in 2035 compared with 2005 levels. The reduction in SCS GHG reductions for 2020 is due to updated forecasts showing higher employment and lower population growth than what Fresno COG used in their 2014 RTP/SCS.

	2020	2035
Existing Target	-5%	-10%
2014 SCS Performance	-8.5%	-10.5%
Fresno COG Target Recommendation	-6%	-13%
CARB Staff Recommendation	-6%	-13%

The 2014 SCS, if implemented, would change the region's historical land use pattern and transportation investments. The plan assumes that local jurisdictions will maintain their historic rates of growth, but the growth would occur within existing urban service boundaries to encourage infill and minimize leapfrog development. Further, over 75 percent of the region's population growth through 2035 is forecast to occur within the Fresno-Clovis Metro area, based on recently updated general plans for Fresno and Clovis. The 2014 SCS also increases transit and active transportation investments, which includes funding for five bus rapid transit lines in the city of Fresno and over 500 new lanes miles of bicycle facilities countywide. These strategies would increase the proximity of residents to transit and biking and walking facilities, leading to greater use of active modes of transportation. The 2014 SCS also includes transportation system management and transportation demand management measures (for example, carpooling, vanpooling, and ramp metering) to reduce trips and increase system efficiency. As a result of the strategies, the 2014 SCS would increase the average density of new residential development from 4.9 dwelling units per acre to 9.3 units per acre. This is due in part to the increased proportion of multi-family residential units from 22 percent to 47 percent of total new housing by 2035. This denser development also reduces the total amount of land consumed by development, leading to conversion of 38 percent less agricultural land than the prior RTP.

Fresno COG is currently in the process of developing its second SCS for adoption in 2018, which will be subject to the updated SB 375 targets. This SCS will incorporate updated General Plans for the Cities of Fresno and Sanger and the County of Fresno, as well as more aggressive investments in transit, vanpool/carpool, active transportation, and alternative transportation strategies, such as car/ridesharing. Land use strategies will build upon the 2014 SCS and continue to increase densities, promote infill development, and concentrate growth along transit corridors. Based on the preliminary modeling results, Fresno COG recommends a 13 percent GHG emission reduction target for 2035.

CARB staff recommends an SB 375 target of 6 percent in 2020 and 13 percent in 2035, consistent with the targets recommended by Fresno COG. CARB staff based its recommendation on review of analysis submitted by Fresno COG, updated forecasts that will be used in the 2018 RTP/SCS development process, and CARB staff's approach applies a percent reduction to the currently adopted SCSs of 2 percent to the four largest Valley MPOs and a 1 percent reduction to what the four smaller Valley MPOs by population size.

2. Kern Council of Governments

The Kern Council of Governments (Kern COG) region and is the southern-most county in the San Joaquin Valley. Kern COG shares the same boundary as Kern County. Kern COG proposes per capita GHG emission reduction targets of 9 percent in 2020 and a 13 percent in 2035 relative to 2005 emissions. Kern COG's first SCS, adopted in June 2014, would, if implemented, achieve 14.1 percent per capita GHG emission reduction in 2020 and a 16.6 percent reduction in 2035 compared with 2005 levels. The Valley MPOs used the newest version of the transportation-modeling platform for the target recommendation and based on preliminary model runs, the 2014 SCS achieves a 9 percent reduction in 2020 and a 13 percent reduction in 2035. CARB staff used the latest model estimates for the target update process.

	2020	2035
Existing Target	-5%	-10%
2014 SCS Performance	-9%	-13%
Kern COG Target Recommendation	-9%	-13%
CARB Staff Recommendation	-9%	-15%

Implementation of the 2014 SCS would change the region's historical land use pattern and transportation investments through 2040. The SCS calls for new growth to be focused within existing urban boundaries as compact, infill development. Over 60 percent of the region's population growth is forecast to occur within the Metropolitan Bakersfield area. Additional SCS strategies include increasing the number of households and jobs with access to transit and increasing the proportion of multi-family and small-lot single-family homes. The plan also dedicates a greater amount of funding for active transportation infrastructure and public transit, compared to the prior RTP. Planned transit improvements include increasing the number of natural gas buses in transit fleets, and adding additional buses for fixed routes and express service throughout the region. The plan would establish additional transit transfer stations and add a new bus rapid transit system in Metropolitan Bakersfield. With this emphasis on more compact, transit-oriented development, approximately 62 percent of total housing and 75 percent of total jobs would be located within one-half mile of a transit station by 2040. Access to rural employment centers would also be improved, with plans to double the number of vanpool riders and construct the region's first high-occupancy vehicle lanes to accommodate an increasing number of carpoolers.

Kern COG is currently in the process of developing its second SCS for adoption in 2018, which will be subject to the updated SB 375 targets. This SCS plans to build upon strategies found in the 2014 SCS with a focus on improving transit access,

increasing opportunities for active transportation, increasing investment in express buses, high-occupancy vehicle lanes, park and ride facilities, vanpooling, and bus-rapid transit and commuter rail.

CARB staff recommends an SB 375 target of 9 percent in 2020 and 15 percent in 2035. This recommendation is the same as the MPO recommendation for 2020 and 2 percentage points higher than the MPO recommendation for 2035. CARB staff based its recommendation on review of analysis submitted by Kern COG, and CARB staff’s approach of applying a stepped reduction range of 2 percent to what the four largest Valley MPOs, by population, have achieved in their currently adopted SCSs. Differences between CARB and MPO staff’s approaches include quantification of the potential for additional land use and transportation strategies, where the MPO recommendation is based on quantification of the existing 2014 RTP/SCS strategies with the updated MIP2 model only and CARB staff’s recommendation includes an estimate of the benefits of additional strategies above and beyond the 2014 RTP/SCS.

3. Kings County Association of Governments

The Kings County Association of Governments (Kings CAG) region is adjacent to Tulare CAG and Kern COG located in the southern region of the San Joaquin Valley. Kings CAG shares the same boundary as Kings County. Kings CAG proposes per capita GHG emission reduction targets of 5 percent in 2020 and 12 percent in 2035 relative to 2005 emissions. The region’s first SCS, adopted in June 2014, would, if implemented, achieve a 5.1 percent per capita GHG emission reduction in 2020 and a 12.1 percent reduction in 2035 compared with 2005 levels.

	2020	2035
Existing Target	-5%	-10%
2014 SCS Performance	-5.1%	-12.1%
Kings CAG Target Recommendation	-5%	-12%
CARB Staff Recommendation	-5%	-13%

Kings CAG’s 2014 RTP/SCS prioritizes agricultural preservation while encouraging growth in existing urbanized areas. Efforts within local jurisdictions to increase connectivity and mix of uses will help provide more housing choices for residents and decrease travel distances to destinations. The SCS includes transportation projects that aim to meet the needs of residents such as a new park and ride facility, two new transit routes, and new bike and pedestrian facilities. Given the long commute distances common in the county, vanpools will continue to be an effective alternative to single occupant vehicle travel for some residents.

Kings CAG is currently in the process of developing its second SCS for adoption in 2018, which will be subject to the updated SB 375 targets. For this SCS Kings CAG plans to build upon the ongoing efforts in the upcoming 2018 RTP/SCS. Member agencies and regional transit providers have taking several proactive steps by implementing additional sustainability measures. These include the investment of alternative fuel vehicle fleet replacement and installation of charging stations; pursuing competitive grant funds to build active transportation projects; enhanced existing transit service with additional routes of the regional bus transit system; an additional Amtrak passenger train that will increase ridership from the Hanford station; consideration of smart growth strategies in local agency General Plan updates and in planning for new residential and commercial development that embrace complete streets transportation strategies.

CARB staff recommends an SB 375 target of 5 percent in 2020 and 13 percent in 2035. This recommendation is the same as the MPO recommendation for 2020 and 1 percentage point higher than the MPO recommendation for 2035. CARB staff based its recommendation on review of analysis submitted by Kings CAG, and CARB staff's approach of applying a stepped reduction range of 1 percent to what the four smaller Valley MPOs, by population, have achieved in their currently adopted SCSs. Differences between CARB and MPO staff's approaches include quantification of the potential for additional land use and transportation strategies, where the MPO recommendation is based on quantification of the existing 2014 RTP/SCS strategies with the updated MIP2 model only. CARB staff's recommendation includes an estimate of the benefits of additional strategies above and beyond the 2014 RTP/SCS.

4. Madera County Transportation Commission

The Madera County Transportation Commission (Madera CTC) region is adjacent to Fresno COG in the San Joaquin Valley and shares the same boundary as Madera County. Madera CTC proposes per capita GHG emission reduction targets of 10 percent in 2020 and between 15 and 20 percent in 2035 relative to 2005 emissions.

	2020	2035
Existing Target	-5%	-10%
2014 SCS Performance w/ Amendment	<i>-14.6%</i>	<i>-31.9%</i>
Madera CTC Target Recommendation	-10%	-15% to -20%
CARB Staff Recommendation	-10%	-16%

Italics indicates an SCS that is adopted but not yet evaluated by CARB

An RTP was adopted by the Madera CTC Governing Board in 2014, but the sustainable communities strategies included with the plan did not meet the SB 375 targets. Since 2014, Madera CTC has been working to update the modeling tools and analyze the

existing data, land use, and transportation strategies to provide a more accurate accounting of GHG emissions within the region. As a result, Madera CTC has amended the existing 2014 RTP/SCS and submitted this amendment to CARB in 2017. CARB staff will review the 2014 RTP/SCS and 2017 SCS Amendment for a comprehensive SB 375 evaluation. Madera CTC did submit a target recommendation to CARB that is based on the updated modeling and analysis for the RTP/SCS amendment.

CARB staff recommends an SB 375 target of 10 percent in 2020 and 16 percent in 2035, consistent with the targets recommended by Madera CTC. CARB staff based its recommendation on review of analysis submitted by Madera CTC and CARB staff’s approach of applying a stepped reduction range of 1 percent to the low end of the range to what the four smaller Valley MPOs, by population, have achieved in their currently adopted SCSs.

5. Merced County Association of Governments

The Merced County Association of Governments (Merced CAG) region is located adjacent to Fresno COG in the San Joaquin Valley and shares the same boundary as Merced County. Merced CAG proposes per capita GHG emission reduction targets of 10.1 percent in 2020 and 12.7 percent in 2035 relative to 2005 emissions.

	2020	2035
Existing Target	-5%	-10%
2014 SCS Performance w/ Amendment	<i>-10.1%</i>	<i>-12.7%</i>
Merced CAG Target Recommendation	-10.1%	-12.7%
CARB Staff Recommendation	-10%	-14%

Italics indicates an SCS that is adopted but not yet evaluated by CARB

An RTP was adopted by the Merced CAG Governing Board in 2014, but the sustainable communities strategy included with the plan did not meet the SB 375 targets. Merced CAG adopted an RTP/SCS Amendment in 2016, which included a more compact land use scenario and additional policies intended to further reduce VMT and associated GHG emissions. Merced CAG submitted the amended RTP/SCS to CARB in 2017, and CARB is currently evaluating whether the amended RTP/SCS would meet its existing SB 375 targets, if implemented. Merced CAG proposed target recommendations to CARB that were based on the updated modeling and analysis for the 2016 RTP/SCS Amendment.

CARB staff recommends an SB 375 target of 10 percent in 2020 and 14 percent in 2035. This recommendation is the same as the MPO recommendation for 2020 and approximately 1 percentage point higher than the MPO recommendation for 2035. CARB staff based its recommendation on review of analysis submitted by Merced CAG,

and CARB staff’s approach of applying a stepped reduction range of 1 percent to what the four smaller Valley MPOs, by population, have achieved in their currently adopted SCSs. Differences between CARB and MPO staff’s approaches include quantification of the potential for additional land use and transportation strategies, where the MPO recommendation is based on quantification of the existing 2014 RTP/SCS strategies with the updated MIP2 model only and CARB staff’s recommendation includes an estimate of the benefits of additional strategies above and beyond the 2014 RTP/SCS.

6. San Joaquin Council of Governments

The San Joaquin Council of Governments (San Joaquin COG) region is located in the northern region of the San Joaquin Valley inland from the San Francisco Bay area. San Joaquin COG shares the same boundary as San Joaquin County. San Joaquin COG proposes per capita GHG emission reduction targets in the range of 12 to 13 percent in 2020 and 14 to 15 percent in 2035 relative to 2005 emissions. San Joaquin COG’s first SCS, adopted in June 2014, would, if implemented, achieve a 24.4 percent per capita GHG emission reduction in 2020 and a 23.7 percent reduction in 2035 compared with 2005 levels. The Valley MPOs used the newest version of the transportation-modeling platform for the target recommendation and based on preliminary model runs, the 2014 SCS achieves a 12 percent reduction in 2020 and a 14 percent reduction in 2035. CARB staff used the latest model estimates for the target update process.

	2020	2035
Existing Target	-5%	-10%
2014 SCS Performance	-12%	-14%
San Joaquin COG Target Recommendation	-12% to -13%	-14% to -15%
CARB Staff Recommendation	-12%	-16%

San Joaquin COG is a single-county MPO in which low density development has been the trend, travel patterns are greatly influenced by interregional commuting, and whose economy has been significantly impacted by the recession. The land use and transportation strategies in its 2014 SCS attempt to address these issues by offering residents more mobility options and reducing vehicle trip lengths. Key SCS land use strategies include increasing the amount of infill development within existing urbanized areas, leading to denser development and an increase in the proportion of multi-family and small-lot single-family homes as compared to conventional lot sizes. This results in 61 percent of new growth as single-family housing and 39 percent of new growth as multi-family housing, yielding a countywide average density of ten dwelling units per acre. The SCS also dedicates an increased amount of funding for active transportation infrastructure and public transit, with six additional bus rapid transit routes in Stockton

as well as some expansion of transit services in other communities. With this emphasis on transit-oriented development, the region anticipates that nearly 50 percent of new jobs and 40 percent of new homes will be located within a half mile of transit service and a substantial amount of prime farmland will be conserved through the plan year of 2040. The SCS includes a greater focus on TDM and TSM strategies than on widening and new roadway construction, and more transit expansion and investments in bike and pedestrian facilities.

San Joaquin COG is currently in the process of developing its second SCS for adoption in 2018, which will be subject to the updated SB 375 targets. San Joaquin COG has been collaborating with local agencies to ensure that the region is working toward the State's 2030 and 2050 climate change goals by encouraging land use and transportation decisions that minimize GHG emissions. In partnership with the MPO, member agencies and regional transit providers have pursued smart growth land use planning, transit system maintenance and upgrades, cap-and-trade and Caltrans' Active Transportation Program funds, and alternative vehicle adoption. San Joaquin COG plans to build upon these ongoing efforts in the upcoming 2018 RTP/SCS in order to continue facilitating the growth of sustainable communities.

CARB staff recommends an SB 375 target of 12 percent in 2020 and 16 percent in 2035. This recommendation is the same as the MPO recommendation for 2020 and 1 percentage point higher than the MPO recommendation for 2035. CARB staff based its recommendation on review of analysis submitted by San Joaquin COG, and CARB staff's approach of applying a stepped reduction range of 2 percent to what the four largest Valley MPOs, by population, have achieved in their currently adopted SCSs. Differences between CARB and MPO staff's approaches include quantification of the potential for additional land use and transportation strategies, where the MPO recommendation is based on quantification of the existing 2014 RTP/SCS strategies with the updated MIP2 model only and CARB staff's recommendation includes an estimate of the benefits of additional strategies above and beyond the 2014 RTP/SCS.

7. Stanislaus Council of Governments

The Stanislaus Council of Governments (Stanislaus COG) region is adjacent to San Joaquin COG located in the northern region of the San Joaquin Valley. Stanislaus COG shares the same boundary as Stanislaus County. Stanislaus COG proposes per capita GHG emission reduction targets in the range of 12 to 13 percent in 2020 and 14 to 15 percent in 2035 relative to 2005 emissions. The region's first SCS, adopted in June 2014, would, if implemented, achieve 24.4 percent per capita GHG emission reduction in 2020 and a 23.7 percent reduction in 2035 compared with 2005 levels. The Valley MPOs used the newest version of the transportation-modeling platform for the

target recommendation and based on preliminary model runs, the 2014 SCS achieves a 12 percent reduction in 2020 and a 14 percent reduction in 2035. CARB staff used the latest model estimates for the target update process.

	2020	2035
Existing Target	-5%	-10%
2014 SCS Performance	-12%	-14%
Stanislaus COG Target Recommendation	-12% to -13%	-14% to -15%
CARB Staff Recommendation	-12%	-16%

The transportation and land use policies identified in the SCS are intended to reduce the distance that residents will need to drive to their jobs and amenities. Calling for a greater proportion of multi-family housing, and more mixed-use and infill development, Stanislaus COG’s SCS would result in consumption of less farmland, higher residential densities, and more jobs and houses located near transit. The SCS proposes a greater mix of housing types with 35 percent of new development as multi-family homes and 65 percent as single family homes. The plan allocates more than twice as much funding for transit as compared to previous RTPs. Projects funded in the 2014 RTP/SCS are designed to increase transit service frequencies and provide better connections to transit services, including the extension of commuter rail service to Modesto and Turlock, which would connect the region to the Bay Area. In addition, the region has allocated funds to begin planning a bus rapid transit service between the region’s largest cities, Modesto and Ceres. The regional plan also allocates an increased amount of funding for active transportation projects compared to the previous RTP. Roadway investments are shifted from new capacity-expanding projects to complete streets projects, maintenance, rehabilitation, and operational improvements.

Stanislaus COG is currently in the process of developing its second SCS for adoption in 2018, which will be subject to the updated SB 375 targets. This SCS plans mainly to build upon strategies found in the 2014 RTP/SCS such as encouraging local agency efforts to implement policies and programs that support sustainable communities through more compact, transit oriented, mixed-use and infill development and more efficient development patterns that enhance a connection between land use and transportation choices.

CARB staff recommends an SB 375 target of 12 percent in 2020 and 16 percent in 2035. This recommendation is the same as the MPO recommendation for 2020 and 1 percentage point higher than the MPO recommendation for 2035. CARB staff based its recommendation on review of analysis submitted by Stanislaus COG, and CARB staff’s approach of applying a stepped reduction range of 2 percent to what the four

largest Valley MPOs, by population, have achieved in their currently adopted SCSs. Differences between CARB and MPO staff’s approaches include quantification of the potential for additional land use and transportation strategies, where the MPO recommendation is based on quantification of the existing 2014 RTP/SCS strategies with the updated MIP2 model only and CARB staff’s recommendation includes an estimate of the benefits of additional strategies above and beyond the 2014 RTP/SCS.

8. Tulare Association of Governments

The Tulare Association of Governments (Tulare CAG) region is adjacent to Kern COG located in the southern region of the San Joaquin Valley. Tulare CAG shares the same boundary as Tulare County. Tulare CAG proposes per capita GHG emission reduction targets in the range of 13 to 14 percent in 2020 and 15 to 16 percent in 2035 relative to 2005 emissions. The region’s first SCS, adopted in June 2014, would, if implemented, achieve a 17.1 percent per capita GHG emission reduction in 2020 and a 19.4 percent reduction in 2035 compared with 2005 levels. The Valley MPOs used the newest version of the transportation-modeling platform for the target recommendation and based on preliminary model runs, the 2014 SCS achieves a 13 percent reduction in 2020 and a 15 percent reduction in 2035. CARB staff used the latest model estimates for the target update process.

	2020	2035
Existing Target	-5%	-10%
2014 SCS Performance	-13%	-15%
Tulare CAG Target Recommendation	-13% to -14%	-15% to -16%
CARB Staff Recommendation	-13%	-16%

Tulare CAG’s 2014 SCS builds upon the Tulare County Regional Blueprint (Blueprint), adopted in 2009, which encourages more compact growth. The SCS plans to increase the average density of new development by 25 percent. With implementation, Tulare CAG projects an increase in the share of multi-family housing region-wide as well as preservation of agricultural resources. It would improve the existing public transportation system by adding additional transit routes, clean fuel (natural gas) buses, and expanding night and weekend service. It increases the amount of investment in active transportation infrastructure such as new bicycle and pedestrian paths. The SCS also improves access to rural employment centers with plans to quadruple the number of vanpool riders in the region. These strategies, together with transportation system management and trip reduction programs, are projected to reduce per capita passenger vehicle GHG emissions in the region.

Tulare CAG is currently in the process of developing its second SCS for adoption in 2018, which will be subject to the updated SB 375 targets. This SCS plans to build on the success of the previous plan that focused increased density of future development within existing communities, as envisioned in the 2009 Tulare County Regional Blueprint, supported by infrastructure improvements. Ongoing implementation strategies for the RTP/SCS consist of a combination of planning projects, transit incentive programs, and public information campaigns.

CARB staff recommends an SB 375 target of 13 percent in 2020 and 16 percent in 2035, consistent with the targets recommended by Tulare CAG. CARB staff based its recommendation on review of analysis submitted by Tulare CAG and CARB staff's approach of applying a stepped reduction range of 1 percent to what the four smaller Valley MPOs, by population, have achieved in their currently adopted SCSs.

C. The Six Remaining Small MPOs

The six remaining small MPOs include the Association of Monterey Bay Area Governments (AMBAG), the Santa Barbara County Association of Governments (Santa Barbara CAG), San Luis Obispo Council of Governments (San Luis Obispo COG), Butte County Association of Governments (Butte CAG), Shasta Regional Transportation Association (Shasta RTA), and the Tahoe Metropolitan Planning Organization (Tahoe MPO). These MPOs collectively represent less than 5 percent of the State's population and associated GHG emissions from light-duty vehicles.

The development patterns in these MPOs can be characterized as semi-rural towns and small cities. The overall rate of growth is expected to be slow compared to the larger MPO regions. The travel patterns in these regions are also unique, particularly for those that are recreation and vacation destinations.

These MPOs have modest targets, some as low as zero and one whose targets allow an increase in per capita GHG emissions relative to 2005. Their targets were largely based on the GHG emission reductions expected from the RTPs in place at the time of initial target-setting.

All six of these MPOs met or exceeded their targets with SCSs adopted since 2010. All demonstrated that per capita GHG emission reductions were possible in these regions, despite their comparatively small RTP budgets and rural geography. Each of these MPO regions provided CARB with recommendations for higher SB 375 targets than were established in 2010, and will either exceed or maintain the same level of estimated per capita GHG emission reductions from their previous SCSs for 2035, as discussed individually below.

1. Association of Monterey Bay Area Governments

The AMBAG region is located along the central coast of California, and includes the three counties of San Benito, Santa Cruz, and Monterey. AMBAG proposes per capita GHG emission reduction targets of 3 percent in 2020 and a 6 percent in 2035 relative to 2005 emissions. AMBAG's original SB 375 targets were a 0 percent reduction in 2020 and a 5 percent reduction in 2035 relative to 2005. AMBAG's first SCS, adopted in June 2014, would, if implemented, achieve a 3.5 percent per capita GHG emission reduction in 2020 and a 5.9 percent reduction in 2035 compared with 2005 levels.

	2020	2035
Existing Target	0%	-5%
2014 SCS Performance	-3.5%	-5.9%
AMBAG Target Recommendation	-3%	-6%
CARB Staff Recommendation	-3%	-6%

AMBAG's 2014 SCS encourages new growth in existing communities and near existing commercial corridors, with an emphasis on active transportation, public transit, and safety. With SCS implementation, AMBAG projects a substantial increase in the number of households and jobs within one-half-mile of high quality transit in 2035. The 2014 SCS increases investment in public transit and active transportation by 90 percent compared to the previous plan. These strategies, together with transportation system management, transportation demand management, and trip reduction programs represent AMBAG's approach to reducing transportation-related GHG emissions in the region.

AMBAG is currently in the process of developing its second SCS for adoption in 2018, and has committed to the same level of aggressiveness as its first SCS, despite shortfalls in State funding needed to maintain existing infrastructure and transit service. Two of the three counties (Monterey and Santa Cruz) in the region successfully pursued transportation sales tax measures in November 2016. San Benito County's proposed sales tax measure failed to secure enough votes. Nonetheless, AMBAG is committed to maintaining the same level of estimated per capita GHG emission reductions achieved in its first SCS.

The next MTP/SCS adopted by AMBAG that will be subject to the updated SB 375 targets will be adopted in 2022. CARB staff recommends an SB 375 target of 3 percent in 2020 and 6 percent in 2035, consistent with the targets recommended by AMBAG, which maintains the same level of estimated per capita GHG emission reductions achieved in their first SCSs.

2. Butte County Association of Governments

Butte CAG is located in northern California, immediately north of the SACOG region. The Butte County Association of Governments (Butte CAG) region shares the same boundary as Butte County. Butte CAG proposes a per capita GHG emission reduction target of 7 percent in 2035 relative to 2005 emissions. Butte CAG's original SB 375 targets were a positive one percent in 2020 and 2035 relative to 2005. Butte CAG's first SCS, adopted in December 2012, would, if implemented, achieve a 2 percent per capita GHG emission reduction in 2020 and 2035 compared with 2005 levels.

	2020	2035
Existing Target	+1%	+1%
2012 SCS Performance	-2%	-2%
2016 SCS Performance	-6%	-7%
Butte CAG Target Recommendation	n/a	-7%
CARB Staff Recommendation	-6%	-7%

CARB recently completed the evaluation for Butte CAG's second (2016) RTP/SCS. The 2016 RTP/SCS expands on the efforts of the 2012 plan by integrating Butte CAG's new Long-Range Transit and Non-Motorized Plan and incorporating the latest regional growth forecasts. The 2016 RTP/SCS would continue implementation of the "balanced" land use scenario developed for the 2012 RTP/SCS, except the total amount of growth projected would be slightly lower. In addition, Butte CAG implemented some changes to the travel demand model, including updating socioeconomic data, school enrollment data, and made the model sensitive to the auto operating cost variable. Butte CAG's target recommendation of 7 percent per capita GHG emission reduction in the year 2035 is based on their 2016 RTP/SCS.

The next RTP/SCS adopted by Butte CAG that will be subject to the updated SB 375 targets will be adopted in 2020. CARB staff recommends an SB 375 target of 6 percent in 2020 and 7 percent in 2035, consistent with the targets recommended by Butte CAG, which maintains the same level of estimated per capita GHG emission reductions in their second SCS.

3. San Luis Obispo Council of Governments

San Luis Obispo COG is located along the central coast of California. The San Luis Obispo Council of Governments (San Luis Obispo COG) region shares the same boundary as San Luis Obispo County. San Luis Obispo COG proposes that their current targets be decreased from their current levels of 8 percent in both 2020 and 2035 relative to 2005 emissions. San Luis Obispo COG's first SCS, adopted in April

2015, would, if implemented, achieve a 9.4 percent per capita GHG emission reduction in 2020 and 10.9 percent in 2035 compared with 2005 levels.

	2020	2035
Existing Target	-8%	-8%
2015 SCS Performance	-9.4%	-10.9%
San Luis Obispo COG Target Recommendation	-2%	-4 to -8%
CARB Staff Recommendation	-3%	-11%

San Luis Obispo COG is in the preliminary stages of developing its 2019 RTP/SCS, and has identified several barriers to implementing their 2015 SCS, including deteriorating or collapsing funding sources needed for key transportation infrastructure investments, and drought conditions that have limited near-term new growth potential due to constrained water supply availability. The region also unsuccessfully pursued a transportation sales tax measure in November 2016. However, there are some new revenue opportunities since the 2015 RTP/SCS was developed with SB 1 and a local general fund sales tax increase that was approved by voters in November 2014.

San Luis Obispo COG staff believes it may be optimistic to maintain a per capita GHG emission reduction target of 8 percent in both 2020 and 2035, nor maintain the achievement identified in its first SCS. In July 2017, during the comment period on the proposed update to the targets, SLOCOG submitted a comment letter that supported CARB staff’s recommended 11 percent 2035 target, but also recommend considering an 8 percent target for 2035 compared with 2005 levels. They also indicated and had subsequent follow ups with CARB staff on conducting modeling work to better inform their 2020 target. On October 10, 2017, SLOCOG submitted a summary of initial 2020 modeling assumptions and scenario run results for their upcoming 2019 SCS. Updates to various factors, like population and employment have lowered SLOCOG’s GHG emission reduction estimates for their 2015 SCS in 2020. In the same submittal, SLOCOG points out that while initial modeling runs like those done for 2020 are not available for the year 2035, the same obstacles they identify for 2020 will similarly affect what they can achieve in 2035.

The next RTP/SCS adopted by San Luis Obispo COG that will be subject to the updated SB 375 targets will be adopted in 2019. CARB staff recommends an SB 375 target of 3 percent in 2020 and 11 percent in 2035. This recommendation is more in line with what the MPO estimates is achievable for 2020 based on review of San Luis Obispo COG’s latest information and is 3 to 6 percentage points higher than the recommendations the MPO has provided for 2035. CARB staff based its recommendation on review of analysis submitted by San Luis Obispo COG, further

review of possible strategies the region has the opportunity to and will be able to quantify in the next round, and CARB staff’s approach for the six remaining MPOs of maintaining, at minimum, the same level of GHG emission reductions estimated from their previous SCSs for 2035.

4. Santa Barbara County Association of Governments

The Santa Barbara County Association of Governments (Santa Barbara CAG) region shares the same boundary as the County of Santa Barbara, located along the central coast of California. Santa Barbara CAG staff conducted preliminary modeling for the draft 2017 RTP/SCS that is currently under development, which is scheduled for adoption in 2017. Santa Barbara CAG staff presented the per capita GHG emission reduction performance of the draft scenarios to their Board in June of 2016. Santa Barbara CAG’s preferred land use and transportation scenario was estimated to achieve per capita GHG emission reductions of 13.3 percent in 2020 and 17.7 percent in 2035 relative to 2005 emissions. Santa Barbara CAG’s original SB 375 targets were a 0 percent reduction in 2020 and 2035 relative to 2005. Santa Barbara CAG’s first SCS, adopted in August 2013, would, if implemented, achieve a 10 percent per capita GHG emission reduction in 2020 and a 15 percent reduction in 2035 compared with 2005 levels.

	2020	2035
Existing Target	0%	0%
2014 SCS Performance	-10%	-15%
2017 SCS Performance	-13%	-17%
Santa Barbara CAG Target Recommendation	-13%	-17%
CARB Staff Recommendation	-13%	-17%

Italics indicates an SCS that is adopted but not yet evaluated by CARB

Santa Barbara CAG’s 2013 SCS selectively increases residential and commercial land use capacity and shifts growth into existing transit corridors. Assumed changes in land use capacity reflect local planning discussions about possible future land use and general plan and community plan updates at the local level. This strategic redistribution of growth directly addresses jobs/housing balance issues by emphasizing job growth in the North County and housing growth in the South County. The preferred scenario (Scenario 3) achieves the highest per capita GHG emission reductions of the seven scenarios under consideration by Santa Barbara CAG. One other scenario (Scenario 7) achieves approximately the same GHG per capita reductions as the preferred scenario.

Santa Barbara CAG recently adopted the 2017 RTP/SCS, which is based on the same transit-oriented infill strategy as was adopted in its first SCS. Changes from the previous SCS that are being reflected in the modeling, include: changes to the

underlying transit routes and frequencies, changes to the constrained transportation project lists, minor changes to land use assumptions and growth allocation, updated inter-regional trip information from SCAG and San Luis Obispo COG staff, and adjustments to U.S. 101's functional classification in Santa Barbara CAG's regional travel demand model. If Santa Barbara CAG continues to implement its preferred scenario with the same level of aggressiveness as in the existing adopted RTP/SCS, the modeling improvements will yield slightly greater per capita GHG emission reductions. CARB is in the process of evaluating the 2017 RTP/SCS and will publish a determination later this year.

The next RTP/SCS adopted by Santa Barbara CAG that will be subject to the updated SB 375 targets will be adopted in 2021, after the first SB 375 milestone year has passed. CARB staff plans to monitor the performance of the SCS in year 2020 compared to the 2020 target. CARB staff recommends an SB 375 target of 13 percent in 2020 and 17 percent in 2035, consistent with the MPO's 2017 SCS estimates for 2020 and 2035. CARB staff based its recommendation on review of analysis submitted by Santa Barbara CAG and CARB staff's approach for the six remaining MPOs of maintaining, at minimum, the same level of GHG emission reductions estimated from their previous SCSs for 2035.

5. Shasta Regional Transportation Agency

Shasta RTA is located in northern California, and is not bordered by any other MPO. The Shasta Regional Transportation Agency (Shasta RTA) region shares the same boundary as Shasta County. Shasta RTA proposes a per capita GHG emission reduction target of 3.5 percent in 2035 relative to 2005 emissions, which was amended from 6 percent. Shasta RTA did not provide a recommendation for a 2020 target. Shasta RTA's original SB 375 targets were a 0 percent reduction in 2020 and 2035 relative to 2005. Shasta RTA's first SCS, adopted in June 2015, would, if implemented, achieve 5 percent per capita GHG emission reduction in 2020 and 0.5 percent reduction in 2035 compared with 2005 levels.

	2020	2035
Existing Target	0%	0%
2015 SCS Performance	-4.7%	-0.5%
Shasta RTA Target Recommendation	n/a	-3.5%
CARB Staff Recommendation	-4%	-4%

Shasta RTA's RTP/SCS plans to increase average residential density on a region-wide basis, improve the existing transportation system by expanding service on existing bus routes, providing more bicycle and pedestrian facilities, and preserving resource areas

and farmland. Additional strategies Shasta RTA is pursuing include: deploying local on-demand public transit, inter-city public transit service to Sacramento, technology-enabled mobility and ride sharing services, and expanding public electric vehicle charging infrastructure. Shasta RTA's target recommendation of 3.5 percent per capita GHG emission reduction in the year 2035 is based on these strategies.

The next RTP/SCS adopted by Shasta RTA that will be subject to the updated SB 375 targets will be adopted in 2018. CARB staff recommends an SB 375 target of 4 percent in 2020 and 4 percent in 2035. This recommendation is 0.5 percentage points higher than the MPO recommendation for 2035. CARB staff based its recommendation on review of analysis submitted by Shasta RTA, and CARB staff's expectation that MPOs should at minimum maintain the same level of GHG emission reductions between 2020 and 2035, unless under special circumstances.

6. Tahoe Metropolitan Planning Organization

The Tahoe Regional Planning Agency (Tahoe RPA) is a bi-state agency created by congress in 1969 that operates under the bi-state Tahoe Regional Planning Contract between California and Nevada. Tahoe RPA prepares the regional land use plan for the Lake Tahoe region, and also serves as the MPO for the region, which operates as Tahoe Metropolitan Planning Organization (Tahoe MPO). Tahoe RPA and Tahoe MPO are the same body, and unlike the rest of the MPOs in California, retain authority over both land use and transportation planning decisions for the Lake Tahoe region.

The Lake Tahoe region includes the eastern-most portions of Placer and El Dorado Counties located in California, along with the western portions of Washoe, Carson, and Douglas Counties located in Nevada. Tahoe MPO is the smallest MPO of the 18 in California. SB 375 only applies to the California-portion of the Lake Tahoe region.

The Tahoe MPO is bordered by the SACOG region to the west, and receives heavy recreation and visitor travel from both the bay area (MTC) and the SACOG region.

The Tahoe MPO proposes a per capita GHG emission reduction target of 8.8 percent in 2020 and 5 percent in 2035 relative to 2005 emissions. Tahoe MPO's original SB 375 targets were a 7 percent reduction in 2020 and a 5 percent reduction in 2035 relative to 2005. Tahoe MPO's first SCS, adopted in December 2012, would, if implemented, achieve 12 percent per capita GHG emission reduction in 2020 and 7 percent reduction in 2035 compared with 2005 levels.

	2020	2035
Existing Target	-7%	-5%
2012 SCS Performance	-12%	-7%
2017 SCS Performance	-8.8%	-5%
Tahoe MPO Target Recommendation	-8.8%	-5%
CARB Staff Recommendation	-8%	-5%

Italics indicates an SCS that is adopted but not yet evaluated by CARB

Tahoe MPO's recommended targets are based on their Draft 2017 RTP/SCS. Tahoe MPO expects very low amounts of new growth and new development over the 20-year Regional Plan and RTP/SCS time horizon because the amount of potential developable land in the Lake Tahoe region is restricted due to environmental constraints. The land use strategy of the Regional Plan and the RTP/SCS is highly incentivized urban infill and redevelopment. The transportation strategy includes a variety of bicycle and pedestrian projects, corridor revitalization projects, the Lake Tahoe Waterborne Transit Project, TDM and ITS projects, parking policy changes, and enhanced inter-regional transit operations.

The next RTP/SCS adopted by Tahoe MPO that will be subject to the updated SB 375 targets will be adopted in 2021. CARB staff recommends an SB 375 target of 8 percent in 2020 and 5 percent in 2035, consistent with the targets recommended by Tahoe MPO, which maintains the same level of estimated per capita GHG emission reductions estimated to be achieved with their second SCS. CARB staff based its recommendation on review of analysis submitted by Tahoe MPO that reflect updates to their socioeconomic database and forecasts and resident versus visitation travel, and CARB staff's approach for the six remaining MPOs of maintaining, at minimum, the same level of GHG emission reductions estimated from their previous SCSs for 2035.

Appendix B. MPO Scenarios and Data Submittals

Under Separate Cover

Available at: <https://www.arb.ca.gov/cc/sb375/sb375.htm>

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Appendix C. Rebound Analysis

The rebound effect is the idea that the demand for driving is a function of the operating costs of the vehicle being driven. Where the demand for driving (or vehicle miles traveled (VMT)) is a function of many factors including income, fuel prices, the costs of owning and operating a vehicle, the distance between a person's home and job, desired discretionary driving, transit options, the time it takes to travel, and many other factors. Rebound is the elasticity that specifically refers to effects on the change of travel that comes from changes in the factors influencing driving. For example, when auto operating costs increase, such as when fuel prices increase, driving becomes more expensive and people drive less. Conversely, if fuel prices decrease people may drive more. In this staff report we will only refer to the rebound associated with changes in the costs of driving from more fuel efficient vehicles, as this is an issue many of the MPOs have cited as a significant factor in why they cannot achieve higher SB 375 GHG emission reduction targets.

To address this issue CARB staff are using analyses CARB completed for the development of the Advanced Clean Car Regulation (2011)¹⁹ and work done by U.S. EPA for the Midterm Review (2016).²⁰ These analyses revealed that while increasing fuel efficiency (which makes it less expensive to drive) had an impact on vehicle miles traveled, the impact was minimal at less than one percent increase in overall fleet-wide VMT. U.S. EPA's analysis also included a panel of three economists to peer review the data, methods and conclusions. The researchers for the U.S. EPA analysis go even further in their conclusions and say that there is evidence to suggest that the impacts on VMT of fuel efficiency is not statistically significant, and is potentially near zero.

¹⁹ "Appendix T LEV III Mobile Source Emissions Inventory: Technical Support Document" <https://www.arb.ca.gov/regact/2012/leviiighg2012/levappt.pdf> and "Appendix S LEV III Economic Analysis: Technical Support Document" <https://www.arb.ca.gov/regact/2012/leviiighg2012/levapps.pdf>
²⁰ "The Rebound Effect from Fuel Efficiency Standards: Measurement and Projection to 2035" EPA-420-R-15-012 (July 2015), and "Peer Review for the Report "The Rebound Effect from Fuel Efficiency Standards: Measurement and Projection to 2035"" EPA-420-R-15-013 (July 2015)

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Appendix D. MPO RTP Update Schedule

Status of Regional Transportation Plans (RTPs) – May 2017

http://www.dot.ca.gov/hq/tpp/offices/orip/rtp/docs/MPORTPStatusChart_May2017.docx

<i>MPO</i>	<i>Current RTP Adoption Date</i>	<i>Estimated Date of Next Adopted RTP</i>
MTC	7/2013	7/2017
Santa Barbara CAG	8/2013	8/2017
AMBAG	6/2014	6/2018
Stanislaus COG	6/2014	6/2018
Kern COG	6/2014	6/2018
Fresno COG	6/2014	6/2018
San Joaquin COG	6/2014	6/2018
Tulare CAG	6/2014	6/2018
Madera CTC	7/2014	7/2018
Kings CAG	7/2014	7/2018
Merced CAG	9/2014	9/2018
San Luis Obispo COG	4/2015	4/2019
SANDAG	10/2015	10/2019
SACOG	2/2016	2/2020
SCAG	4/2016	4/2020
Shasta RTA	6/2015	6/2020
Butte CAG	12/2016	12/2021
Tahoe MPO	5/2017	5/2021

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Appendix E. SB 375 Program Background

The Sustainable Communities and Climate Protection Act of 2008, also known as Senate Bill (SB) 375, is intended to encourage regional planning that integrates land use and transportation policy in a way that reduces greenhouse gas (GHG) emissions from driving. The program, now in its seventh year of implementation, has resulted in regional plans, known as Sustainable Communities Strategies (SCS). SCSs have shown that, if implemented, the major metropolitan regions of California can reduce transportation-related GHG emissions compared to the status quo, thereby contributing to achievement of the State's broader climate goals.

SB 375 requires CARB to adopt targets for each of the State's MPO regions every eight years, with an optional update every four. The original targets were developed through an 18-month-long collaborative process that involved input from the Regional Targets Advisory Committee (RTAC), the MPOs, and numerous other stakeholders. In late 2010, CARB provided each MPO with targets for GHGs emitted by passenger cars and light trucks for 2020 and 2035. For the current target update, the MPOs and CARB underwent a similar process. This appendix provides an overview of the SB 375 program, highlights challenges and opportunities for higher SB 375 targets, as well as additional considerations that may influence the program moving forward.

A. MPO Regions in California

California's 18 MPO regions comprise 98 percent of the State's population. The remaining 2 percent lives outside a designated MPO region. SB 375 only applies in California's designated MPO regions (Figure 33). For various policy and technical reasons, the discussions of MPO regions are organized into three groups: 1) the four largest MPOs, 2) the eight MPOs in the San Joaquin Valley; and 3) the six remaining small MPOs. The 2015 population of each MPO group is summarized Table 7. The passenger vehicle GHG emissions attributable to these MPO groups are almost exactly proportional to their populations, as shown in Figure 44.

Figure 3: MPO and non-MPO Boundaries

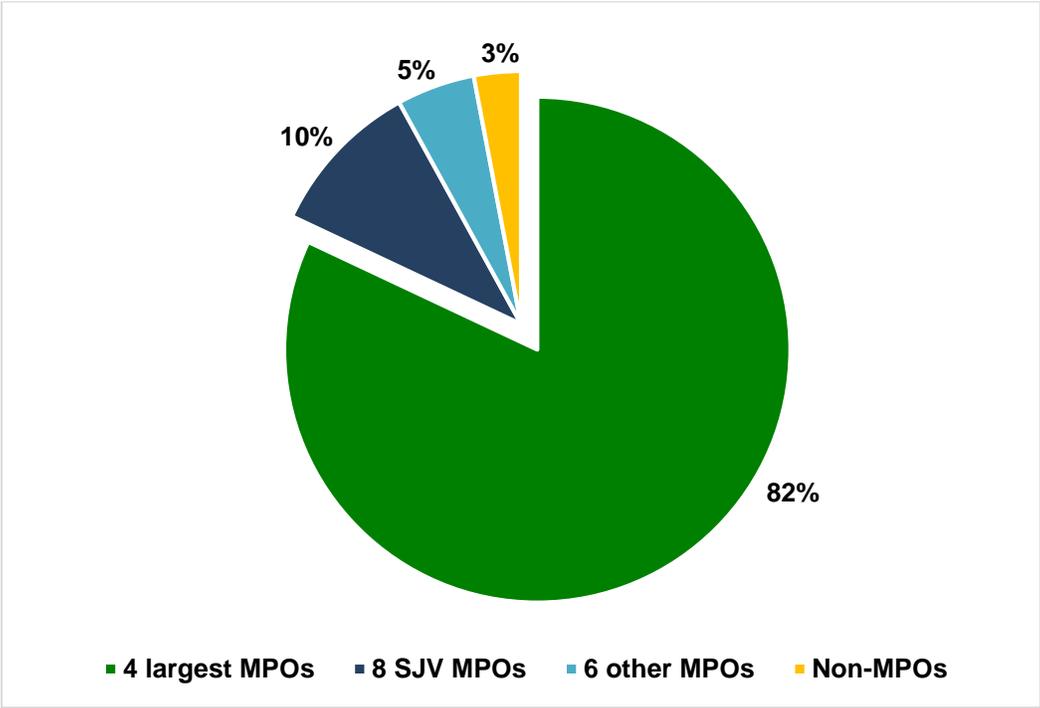


Table 7: 2015 Population by MPO Group

MPO	2015 Population	% of Total
4 Largest MPOs	32,004,000	82%
MTC/ABAG	7,571,000	20%
SACOG	2,418,000	6%
SANDAG	3,264,000	8%
SCAG	18,781,000	48%
San Joaquin Valley MPOs	4,149,000	11%
Fresno COG	975,000	3%
Kern COG	880,000	2%
Kings CAG	150,000	0.4%
Madera CTC	155,000	0.4%
Merced CAG	269,000	0.7%
San Joaquin COG	724,000	2%
Stanislaus COG	535,000	1%
Tulare CAG	462,000	1%
Smaller MPOs		5%
AMBAG	763,000	2%
Butte CAG	224,000	1%
Santa Barbara CAG	443,000	1%
Shasta RTA	179,000	0.5%
San Luis Obispo COG	276,000	1%
Tahoe MPO		
Non-MPOs	839,000	2%

Source: California Department of Finance, Report E-1

Figure 4: Percent of Statewide Passenger Vehicle GHG Emissions by MPO Category



The Federal-Aid Highway Act of 1962 originally established the requirement that transportation planning occur at the regional scale because there are broader societal goals that are a direct result of the performance of the transportation system, and are best addressed at the regional level. Thus, MPOs were created to develop strategies for operating, managing, maintaining, and financing the area’s transportation system in a way that advances the area’s long-term goals. Transportation planning and land use planning became even more closely linked in California following the passage of SB 375. Key goals in the transportation planning process include air quality, natural resource protection and conservation, social equity, jobs/housing balance, economic development, safety, security, and now GHG emission reductions, as a result of SB 375.²¹

²¹ California Transportation Commission. 2010. California Regional Transportation Planning Guidelines. http://www.catc.ca.gov/programs/rtp/2010_RTP_Guidelines.pdf

B. What is an SCS?

SCSs include a variety of land use and transportation strategies that are designed to ultimately lead to GHG emission reductions. Each MPO around the State has been working with their local jurisdictions and citizens to determine which strategies best suit the region, which strategies will move the dial enough to help them meet their targets, which strategies garner enough political support, and which strategies can be financed with known revenue sources.

Land use strategies that MPOs have been building into their RTP/SCSs are designed to decrease the number and length of car trips that people need to take, the amount of land that is consumed by development, and the cost of housing and transportation, along with multitude of other co-benefits that regions' SCSs could achieve. Such strategies include maintaining or increasing: the rate of infill development and redevelopment; supply of multi-family and small-lot housing for future development; the frequency of mixed use development; development around existing and future transit stations; the preservation of open space and agricultural land; and any needed updates to local land use plans or zoning ordinances that would allow for any of these types of land use strategies to be implemented.

The list of transportation projects is the heart of RTP/SCSs. Some of the traditional strategies that MPOs employ in their SCSs to reduce GHG emissions include: investments in bicycle and pedestrian infrastructure and/or complete streets; improved transit operations and efficiency measures; construction of new transit corridors; funding for carpool and vanpool programs; the number of miles of managed highway and freeway high occupancy vehicle (carpool) and/or toll lanes; funding, technical support, or region-wide ordinances for employer-sponsored programs to reduce commuter-related VMT; investments in education about or promotion of active transportation as a form of transportation; improvements to traffic signals to promote smoother traffic flow; provision of signal priority for transit vehicles; programs to quickly detect and clear traffic incidents; communications-based information and wireless technologies to improve system-wide traffic flow; rates of parking prices based on demand; and allowing reduced on-site parking requirements for new development.

Some of the newer strategies that have been recently incorporated into RTP/SCSs on a limited basis include adding, increasing, or expanding: funding for corporate shuttles, privatized carsharing services, and/or bikesharing programs; investments in public and workplace charging stations to promote electric vehicle ownership; providing neighborhood electric vehicles and/or infrastructure; and road user pricing/VMT fees.

Strategies on the horizon that MPOs may soon begin incorporating into their RTP/SCSs include: creating a congestion pricing program in which a toll is charged to drive within certain districts of an urban area during peak hours to limit congestion; modifying infrastructure to support the incorporation of autonomous vehicles into the passenger vehicle fleet; and incorporating vehicle-to-vehicle and/or vehicle-to-infrastructure technologies to enable vehicles to communicate with each other or with infrastructure to optimize traffic flow.

Each MPO region of the State differs in a multitude of ways, which results in differences in the strategies they choose to incorporate in their RTP/SCSs. Some regions of the State have more extensive roadway systems, transit services, bicycle and pedestrian infrastructure, available funding, and expectations for more future growth through which the land use pattern can change over time. Other MPO regions, due to having smaller populations and, generally, a more rural nature, do not have the population density needed for an extensive mass transit system to be viable, receive less funding, and often have less growth through which to make substantial land use changes over time. Still, each MPO, with the input of their local jurisdictional agencies and with public input, must make difficult choices about where to allocate funding resources, and which policies to set forth, to make the greatest changes possible to their transportation system and land use pattern.

C. Current SB 375 Targets and Existing SCSs

The current SB 375 targets, adopted in 2010, were developed through an 18-month-long collaborative process that involved input from the Regional Targets Advisory Committee (RTAC), the MPOs, and numerous other stakeholders. SB 375 gives MPOs the opportunity to recommend targets for their regions. During the initial target-setting process, many of the MPOs provided CARB with recommendations for their respective targets.

To date, all 18 MPOs have adopted their first SCSs pursuant to SB 375, 16 of which indicate that they meet or exceed their 2010 CARB-adopted GHG emission reduction targets. MTC/ABAG, SCAG, SANDAG, SACOG, Butte CAG, and Tahoe MPO have also adopted their second SCSs. CARB staff has completed over 20 evaluations to verify that MPO-adopted SCSs would meet their per capita GHG emission reduction targets, if the SCSs were implemented. Several MPOs are now in the process of preparing their second and third SCSs, and are focused on implementing their first SCSs. Table 8 below summarizes the existing targets and the performance of the adopted SCSs prepared, to date, by the MPOs.

Table 8: Summary of SB 375 Targets Set in 2010 and Prior SCS Performance

MPO	CARB Established Target ¹		First SCS Performance ²		1 st RTP/SCS Adoption	Second SCS Performance		2 nd RTP/SCS Adoption
	2020	2035	2020	2035		2020	2035	
MTC/ABAG	-7%	-15%	-10%	-16%	July 2013	-14%	-15.5%	July 2017
SACOG	-7%	-16%	-10%	-16%	Apr. 2012	-8%	-16%	Feb. 2016
SANDAG	-7%	-13%	-14%	-13%	Oct. 2011	-15%	-21%	Oct. 2015
SCAG	-8%	-13%	-9%	-16%	Apr. 2012	-8%	-18%	Apr. 2016
Fresno COG	-5%	-10%	-8.5%	-10.5%	June 2014	TBD	TBD	2018
Kern COG	-5%	-10%	-14.1%	-16.6%	June 2014	TBD	TBD	2018
Kings CAG	-5%	-10%	-5.1%	-12.1%	July 2014	TBD	TBD	2018
Madera CTC	-5%	-10%	-14.6%	-31.9%	July 2014 - Amendment 2017	TBD	TBD	2018
Merced CAG	-5%	-10%	-10.1%	-12.7%	Sept. 2014 Amended May 2016	TBD	TBD	2018
San Joaquin COG	-5%	-10%	-24.4%	-23.7%	June 2014	TBD	TBD	2018
Stanislaus COG	-5%	-10%	-26.0%	-22.0%	June 2014	TBD	TBD	2018
Tulare CAG	-5%	-10%	-17.1%	-19.4%	June 2014	TBD	TBD	2018
AMBAG	0%	-5%	-3.5%	-5.9%	June 2014	TBD	TBD	2018
Butte CAG	1%	1%	-2%	-2%	Dec. 2012	-6%	-7%	Dec. 2016
San Luis Obispo COG	-8%	-8%	-9.4%	-10.9%	Apr. 2015	TBD	TBD	2019
Santa Barbara CAG	0%	0%	-10%	-15%	Aug. 2013	-13%	-17%	Aug. 2017
Shasta RTA	0%	0%	-4.7%	-0.5%	June 2015	TBD	TBD	2018
Tahoe MPO	-7%	-5%	-12%	-7%	Dec. 2012	-8.8%	-5%	Apr. 2017

Notes: *Italics indicates an SCS that is adopted by the MPO but not evaluated by CARB*

¹ GHG emission reduction target measured in percent below (or above) 2005 per capita GHG emissions.

² The term “performance” refers to the MPO’s estimate of per capita GHG emission reductions that would be achieved if the SCS were implemented.

D. Opportunities and Barriers for Stronger SB 375 Targets

Under SB 375 MPOs are responsible for selecting the appropriate combination of GHG emission reduction strategies for their RTP/SCSs. Local land use decisions are an essential piece to achieving GHG emission reductions for the purposes of SB 375 and the authority to implement land use-related SCS strategies remains with the local land use agencies—the cities and counties. While many MPOs and jurisdictions report improved planning coordination, ultimately, the MPOs' ability to influence the outcome of local land use decisions is limited to programming funding for transportation infrastructure. In addition, it takes several years to update local general plans and zoning codes to reflect more sustainable land use planning, followed by several more years to affect land use changes on individual parcels. The elapsed time to affect land use change at the regional scale is on the order of several decades.

This suggests that the MPOs are limited in their ability to achieve substantially greater GHG emission reductions where it extends beyond their authority. However, the transportation projects identified in SCSs influence the distribution of population and employment growth in a region, and associated land use changes.²² Therefore, it is important for more sustainable transportation planning and land use decisions to be initiated now so they begin to take effect within the planning time horizons.

Setting higher GHG emission reduction targets alone will not necessarily lead to greater GHG emission reductions without updates to local comprehensive land use plans and zoning codes, which requires time, resources, and public support.

The sections that follow describe opportunities for, and barriers to supporting achievement of California's climate and air quality goals through stronger SB 375 targets.

1. Resources for Implementation

MPOs and local governments need funding in sufficient amounts to support SCS implementation and to achieve GHG emission reductions. Traditional revenue sources have declined as fleet fuel efficiency has improved and the federal fuel excise tax (i.e., the gas tax) has not been raised in 20 years. As a result, the State Transportation

²² Duranton, G. and M.A. Turner. 2011. The Fundamental Law of Road Congestion: Evidence from US Cities. *American Economic Review*, 101: 2616-2652.

Funding Improvement Program (STIP) has collapsed, and MPOs report that they cannot count on the traditional funding source they relied on when budgeting for projects in their last RTP/SCSs. Congress and the State Legislature continue to look for solutions.

In the meantime, MPOs need resources to invest early in infrastructure planning to lay the groundwork for long-term change. The dwindling federal and State funding that is available to MPOs is primarily directed to building and maintaining roadways. Additional discretionary funding for transit and active transportation capital projects is needed. In most regions, transit revenue is insufficient to cover operating costs, not to mention expanding service. Local governments also need new sources of funding to incentivize the types of land use development projects (e.g., infill, redevelopment, affordable housing, transit oriented development) to successfully implement the SCS.

Under current conditions, much of the funding available to implement the types of projects that are essential to support SB 375 goals (e.g., active transportation infrastructure projects, safety improvements, transit projects, transit oriented development projects, safe routes to school projects, affordable housing projects) is awarded on a competitive basis through grant funding cycles (e.g., Caltrans' Active Transportation Program grants, Strategic Growth Council's Affordable Housing and Sustainable Communities grants, U.S. Department of Transportation's Transportation Investment Generating Economic Recovery grants, just to name a few). Grant funding cycles commonly occur on an annual basis, while the MPO is responsible for updating the RTP every four years, and looking out 20 years into the future. Uncertainty around this critically important funding source makes it difficult for MPOs to long-range plan. The MPO can make assumptions about how much grant funding it might receive, but these assumptions are too important to the SCS's outcome to be based on speculation. To plan for the long-term, MPOs need more certainty around the long-term funding resources on which they depend.

Some jurisdictions have implemented local self-help tax measures to attempt to secure additional reliable revenue streams. However, individual jurisdictions have their own identities and priorities, which influence the lists of projects that are input to the RTP/SCS. Similarly, significant funding in the RTP budget also comes from private land developers, and this funding is often marked for specific roadway capacity projects serving new development. The transportation and land use priorities of the local jurisdictions may occasionally conflict with an MPO's regional priorities identified in the RTP/SCS. This practice also has implications for the SB 375 targets that could be a factor leading to a wide range of targets among the MPOs.

Work is still underway to identify and develop additional State-level funding assistance and tools, but progress has been made. New funding through passage of Senate Bill 1

(SB 1), as well as through the Greenhouse Gas Reduction Fund, and Volkswagen Settlement has been identified to provide new incentives for implementation. For example, SB 1 is anticipated to generate over \$3.5 billion annually, with approximately \$750 million for transit, \$100 million for active transportation, \$25 million for local planning grants, and \$250 million for congested corridors program improvements. The program is funded through new per gallon excise taxes on gasoline and diesel and a new vehicle registration surcharge (both tied to inflation). Additional State-level funding considerations that have been suggested include increasing certainty around State competitive grant funding to regions for SCS implementation, as well as implementation of a user fee policy, which could help yield further GHG emission reductions by providing additional revenue and incentives to invest in sustainable communities projects. These policies and programs will take the collective authorities of local and State agencies to implement and direct revenues in a way that incentivizes further emission reductions. The recommended targets recognize that it is likely that between this target setting cycle and the next cycle of target setting, there will be additional State policy and funding tools that will encourage further emission reductions, as well as enable MPOs to demonstrate the ability to achieve higher targets.

2. Broadening Technology and Mobility Choices

The transportation system is undergoing a transformation and may not be recognizable 15 to 20 years from now. However, currently accepted modeling methods cannot capture the effects of a system not yet understood. For example, will proliferation of autonomous vehicles result in an increase or a decrease in VMT? Early efforts to model autonomous vehicles in an MPO's travel demand model generally concluded that autonomous vehicles would reduce the cost of travel time, which would increase total VMT.²³ Autonomous vehicles may also present opportunities for increased vehicle efficiency associated with improved traffic flow conditions and manufacturing from lighter materials. Models for deploying autonomous vehicles as shared vehicles rather than under the traditional individual ownership model may present opportunities for reduced travel demand, but more research is needed. Autonomous vehicles will not be widely available for several more years, and their true impact on VMT may not be known for several years after that time. However, the probability is high that autonomous vehicles will be present in the 2035 vehicle fleet. MPOs are working hard

²³ Guerra, 2015. Planning for Cars That Drive Themselves: Metropolitan Planning Organizations, Regional Transportation Plans, and Autonomous Vehicles. *Journal of Planning Education and Research*, November 2, 2015.

to collect data and are beginning to study the impacts of emerging technologies and system changes, but they need more evidence to draw conclusions.

The body of knowledge through research is growing on the effects of shared-use mobility services²⁴ on auto-ownership and willingness to travel, and the associated effects on VMT. MPOs' travel demand models are not yet capable of reflecting these options as mode choices. Because these new modes appear to be having an impact on auto-ownership (delaying vehicle purchase and foregoing vehicle ownership),²⁵ there is an opportunity for MPOs to achieve greater GHG reductions than can presently be modeled. There is some uncertainty on the permanence or persistence of shared-mobility options, but the rapid increase in popularity of these new mobility options is compelling.

GHG emission reductions are needed from all aspects of the transportation sector: activity (VMT), fleet efficiency (miles per gallon), and vehicle technology (electric vehicles [EVs]). There is a role for MPOs in planning for and incentivizing EV infrastructure. CARB encourages MPOs to take credit in their SCSs for EV readiness strategies that could result in more EVs arriving in their region than what would be expected under CARB programs alone. CARB staff has developed a methodology using the EMFAC model that MPOs can follow to estimate the EV population in their regions in excess of the State's assumptions for new EV sales in 2020 and 2035. MPOs should provide documentation supporting their assumption that their EV readiness strategies would result in a higher-than-projected EV population or eVMT.

CARB staff actively encouraged MPOs to include additional innovative strategies each time they update their RTP/SCS, where feasible and applicable to their regions. Staff strongly encouraged MPOs to, at a minimum, maintain the per capita GHG emission reductions demonstrated by their current SCSs, and provided resources to develop methods to quantify additional GHG emission reductions outside of MPO models. CARB staff compiled a menu of off-model SCS strategies for MPOs to manually quantify GHG emission reductions from those strategies. This tool can be used during this interim timeframe while MPO travel demand models are not sensitive to certain strategies. CARB staff recommends that MPOs incorporate the future impacts of new and emerging technologies on the available mode choices, cost of travel time, auto-

²⁴ Examples include car-sharing, on-demand ride-sharing or carpooling services such as UberPool and Lyft Line, and cell phone application-based transportation services, such as Ride Scout.

²⁵ Shaheen, et. al. 2015. Mobility and the Sharing Economy: Impacts Synopsis. Shared---Use Mobility Definitions and Impacts, Special Edition. Transportation Sustainability Research Center.

ownership, and other affected components of their travel demand models when they update their models.

Emerging technologies, new mobility choices, and shifting preferences present the opportunity to transform the transportation system and achieve higher GHG emission reduction targets. However, a careful, deliberate, and adaptive approach will be necessary to foster this transformation in a way that reduces GHG emissions; satisfies the requirements for a financially constrained, federally-approvable RTP; meets air quality goals; benefits public health; promotes equity; and results in more sustainable communities.

3. Demographics

Shifting demographics and demographic preferences play an important role in the SCS development process as it influences travel behavior and VMT. Particular interest has been paid to the travel behavior, preferences, and patterns of millennials or members of “Generation Y,” since they are increasingly reported to behave, and travel, differently from previous generations at the same stage in life. Recent research and data show that the millennial generation postpones the time they obtain a driver’s license, often live in urban locations and do not own a car, drive less if they own one, and use alternative travel modes more often²⁶. If millennials’ travel choices and preferences hold as they

²⁶ Blumenberg, E., Taylor, B. D., Smart, M., Ralph, K., Wander, M., & Brumbagh, S. (2012). What's youth got to do with it? Exploring the travel behavior of teens and young adults.

Circella, G., Fulton, L., Alemi, F., Berliner, R. M., Tiedeman, K., Mokhtarian, P. L., & Handy, S. (2016). What Affects Millennials’ Mobility? PART I: Investigating the Environmental Concerns, Lifestyles, Mobility-Related Attitudes and Adoption of Technology of Young Adults in California (No. CA16-2825).

Coogan, M., Nygaard, N., & Weinberger, R. (2017). Understanding Changes in Youth Mobility.

National Cooperative Highway Research Program (NCHRP) 08-36, Task 132.
[http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP08-36\(132\)_FR.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP08-36(132)_FR.pdf)

Delbosc, A., & Currie, G. (2013). Causes of youth licensing decline: a synthesis of evidence. *Transport Reviews*, 33(3), 271-290.

Garikapati, V. M., Pendyala, R. M., Morris, E. A., Mokhtarian, P. L., & McDonald, N. (2016). Activity patterns, time use, and travel of millennials: a generation in transition?. *Transport Reviews*, 36(5), 558-584.

age, or if they are indicative of travel behavior trends that will continue with future generations that fall within the age range now associated with millennials, the long-term implications for the transportation sector could be significant. While, shifting demographics, in and of itself, is not a strategy it does overlay effectiveness of infill, active transportation, transit, and ridesourcing SCS strategies. Because preferences for housing and auto-ownership are shifting in a major sector of the population, MPOs can capitalize on the opportunities for additional benefits (GHG emission reductions) that these strategies may offer.

However, the potential long-term impacts of millennials' travel behavior depend on several factors, most of which are still being examined via research. For example, the underlying reasons for millennials' choices may influence whether or not this trend may be observed in future generations of young people. Some researchers attribute differences in millennials' travel-related behavior to the lingering effects of the economic recession (e.g., employment is delayed due to job scarcity), which suggests that economic growth may mean that travel behaviors of past generations (like Generation Xers) will resume in the future, but this is still under study. Additionally, some researchers are considering how millennials' travel behavior may change as they age and transition to life-stages that tend to be associated with higher rates of auto ownership and use (e.g., having children and moving to the suburbs where housing costs are lower and schools are better). These research studies may ultimately highlight ways that policy can make it possible for millennials to adhere to travel and residential preferences that they exhibit in the present as they age and despite changes in the overall economy.

Several research projects are underway to better characterize how travel behavior and patterns may be changing with changes in demographics. As this information becomes available, there is an opportunity to incorporate shifting preferences into SCS strategies with potential to obtain further GHG emission reductions. For example, if millennials prefer higher density housing closer to the urban core, this supports more infill development and higher residential and commercial densities. Transit expansion and

McDonald, N. C. (2015). Are millennials really the “go-nowhere” generation? *Journal of the American Planning Association*, 81(2), 90-103.

Polzin, S. E., Chu, X., & Godfrey, J. (2014). The impact of millennials' travel behavior on future personal vehicle travel. *Energy Strategy Reviews*, 5, 59-65.

Sakaria, N., & Stehfest, N. (2013). Millennials and mobility: understanding the millennial mindset and new opportunities for transit providers (No. Task 17, TCRP Project J-11).

active transportation opportunities can also lead to a reduction in car ownership and auto-dependency, and the millennial generation is more likely to adopt new technologies and emerging mobility options like ridesourcing and ridesharing.

4. Cost of Driving

Travel behavior is influenced by a number of factors including personal income, the costs of owning and operating a vehicle, mobility options, the time cost of travel, urbanization, and highway capacity. Since the SB 375 targets were first set, there have been changes in the economy, cost of gasoline, and fuel efficiency of vehicles that have resulted in greater vehicle usage. Without additional policy intervention, like road user, congestion, and/or parking pricing, alongside expanded mobility options, vehicle travel will increase and challenge achievement of greater emission reductions through SB 375.

MPO staffs have reported that using more recent data, such as updated forecasts of fuel price, growth forecasts, or new socioeconomic data, is making it more difficult to achieve the current GHG emission reduction targets, even with the exact same SCS.

More specifically, MPOs have cited the rebound effect or changes in driving associated with more fuel-efficient vehicles as one challenging factor. As part of the Advanced Clean Car Regulation CARB evaluated the impacts of increased fuel efficiency on vehicle miles traveled. This analysis revealed that while increasing fuel efficiency (which makes it less expensive to drive) had an impact on vehicle miles traveled, the impact was minimal (less than one percent increase). As part of the Mid-Term Review completed earlier this year U.S. EPA contracted Ken Small (UCI) and Kent Hymel (Cal State Northridge) to evaluate rebound, and a panel of three economists to peer review the data, methods and conclusions. The conclusions of the analysis were nearly identical to the conclusions for the Advanced Clean Car Regulation analysis. The researchers go further and say that there is evidence to suggest that the impacts on VMT of fuel efficiency is not statistically significant, and is potentially near zero.

5. Modeling Capabilities

Transportation modeling tools used to quantify GHG emission reductions from SCS strategies continue to improve, but still do not completely capture all the benefits or consequences of transportation planning. Improving the models takes place incrementally and requires substantial investment of time and money by MPOs.

Some of the key limitations of MPOs' travel demand models with respect to SB 375 are that the models do not fully capture induced growth or induced or latent demand from new roadway capacity. In particular, the models do not contain feedback processes

that influence trip generation and long-term population and employment distribution associated with changes to the transportation network. There are measurable effects that adding roadway capacity increases vehicle travel in both the short-term and long-term.²⁷ Some MPOs' travel demand models are sensitive to the change in time-cost of travel associated with adding capacity, which can result in increased VMT. However, MPOs' models do not respond to the long-term, dynamic effects roadway capacity has on land use change, or induced growth. Instead, the land use distribution assumptions and regional control totals (population and employment assumptions) are fixed inputs into the travel models. Travel forecasting models and processes to account for induced travel and induced growth should be modified to account for these factors to better reflect the full impact of transportation and land use policies on a region.

In addition, most travel demand models are not capable of reflecting the trip reduction benefits of active transportation projects or mixed land uses because the models are primarily designed to count vehicle trips. The transportation analysis zone (TAZ) structure is coarse, and therefore the models do not represent neighborhood-scale trips, which most often include the non-vehicle trips. MPOs could increase the resolution of TAZ size within their models. Doing so would result in longer model run times; however, computing power is improving, and could mitigate the potential for longer model run times. CARB staff believes the benefits of better reflecting the impacts of active transportation and land use strategies of SCSs in travel demand models outweighs the potential cost of longer computational time.

6. Local Actions

Local governments play an important role in achieving the State's long-term GHG goals because they have broad influence, and sometimes-exclusive authority, over activities that enable or thwart uptake of policies that can contribute to significant GHG emissions. Many cities and counties are already setting GHG reduction targets, developing climate action plans, and making progress toward reducing emissions. In California, 60 percent of cities and over 70 percent of counties have completed a GHG inventory, and 42 percent of local governments have completed a climate, energy, or sustainability plan that directly address GHG emissions. In some cases, these include SB 375 consistent strategies that should be incorporated into their region's SCS.

²⁷ Handy, Susan and Boarnet, Marlon, G., (2014) "Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions," Available at: http://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway_capacity_brief.pdf

In the Scoping Plan Update, CARB recommends that local governments aim to achieve a community-wide goal consistent with the statewide emission limits, and the Under 2 MOU. Efforts to update and implement local plans at these levels will likely need to include SB 375 strategies to be incorporated within the regional SCSs.

7. New State Vehicle Miles Traveled Reduction Strategy

As part of the State's latest proposed Scoping Plan Update, the Administration also recently laid out its priorities for supporting local agencies on vehicle travel reduction going forward. CARB staff and our sister State agencies have discussed and recommended the following set of new State actions in the Scoping Plan Update to reduce VMT:²⁸

- Developing and expanding funding and financing mechanisms and incentives for infill development and related infrastructure (e.g. low-VMT housing rebate, reduced parking requirements, regional transit-oriented development funds, etc.). Connect to incentives/support for regional land conservation strategies (e.g. transfer-development rights, growth boundaries, etc.).
- Improving performance measures used to select and design transportation facilities to ensure projects harmonize with emission reductions, and increase competitiveness of transit and active transportation modes (e.g. via guideline documents, funding programs, project selection, etc.).
- Expanding investments in transit and active transportation, as well as exploring opportunities for increasing shared mobility transportation options, particularly for automated vehicles.
- Developing pricing policies (e.g. low-emission vehicle zones for heavy duty, road user, parking pricing, transit discounts).

All of these measures are expected to complement and support further achievement of greater GHG emission reductions through SB 375.

²⁸ See California Air Resources Board, Public Meeting to Hear Proposed Update to Senate Bill 375 Greenhouse Gas Emission Reduction Targets – Staff Presentation, March 23-24, 2017, Slides 27-34, <https://www.arb.ca.gov/board/books/2017/032317/17-3-7pres.pdf>.

8. Regulatory Changes to Support Infill and Transit Oriented Development

Governor Brown signed Senate Bill (SB) 743 (Steinberg, 2013), which creates a process to change the way transportation impacts are analyzed under CEQA. Specifically, SB 743 requires the Governor's Office of Planning and Research to develop updates to the CEQA Guidelines to guide the analysis of project-level transportation impacts. Once the updated Guidelines go into effect, lead agencies will evaluate vehicle travel associated with new development as part of the project's environmental review, and, if the impact is significant, mitigate those impacts through vehicle travel-reducing measures, which will support achievement of SB 375 goals.

E. Additional Considerations

The following section discusses additional considerations influencing the SB 375 program moving forward.

1. Social Equity

Throughout the Scoping Plan development and SB 375 target update process, social equity and linked issues have been a concern for a number of stakeholders. In particular, SCS strategies like infill and transit oriented development, have brought up concerns around displacement of existing residents, possibly to suburban areas with lower access to transit, jobs, and services than low-income families have currently. More recently, discussions on new pricing mechanisms, such as a road toll or user fee, have raised concerns on the potential to disproportionately impact disadvantaged communities. CARB is committed to making the achievement of environmental justice²⁹ an integral part of its activities, including the SB 375 program.

To begin to address concerns around infill and neighborhoods with transit proximity on disadvantaged communities, CARB and Caltrans have sponsored research projects to help study the impacts. One study examined displacement in fixed-rail transit neighborhoods in Los Angeles and the San Francisco Bay Area.³⁰ Researchers at UC Berkeley modeled patterns of neighborhood change in relation to neighborhoods with

²⁹ CARB approved Policies and Actions for Environmental Justice in 2001, to establish a framework for incorporating environmental justice into the CARB's programs consistent with the directives of State law. CARB is currently in the process of updating the environmental justice policies and actions based on input received through the Scoping Plan Update.

³⁰ Chapple, Karen and Anastasia Loukaitou-Sideris, (2017) "Developing a New Methodology for Analyzing Potential Displacement," Available at: https://www.arb.ca.gov/research/single-project.php?row_id=65188

transit proximity, and found that neighborhoods that already had good access to fixed-rail transit were associated with changes in the stability of the surrounding neighborhood, such as increases in housing costs and the loss of low-income households. The research found mixed evidence as to whether gentrification and displacement in rail station areas would increase auto usage and VMT. Overall, the study results support the importance of evaluating displacement and anti-displacement strategies when developing SCS policies and investments. It examines the effectiveness of anti-displacement strategies, with results that may be useful for MPOs, local jurisdictions, and communities; as well as explores ways to evaluate displacement with existing travel demand models used by the Southern California and Bay Area MPOs, and developed new off-model tools. CARB staff anticipates incorporating these findings into future SCS evaluation processes.

In addition, CARB staff recognizes that in the context of SB 375, performance indicators are essential to assessing a region's progress in meeting its GHG reduction target, but can also provide substantive information on co-benefits while supporting social equity. To help gain a better understanding of whether the intended benefits of SB 375 are beginning to accrue and are benefiting communities equitably CARB staff will be turning our attention to developing, tracking, and reporting on a consistent set of indicators as discussed in the next section. Outside of the Scoping Plan and SB 375 efforts, there are other areas where social equity is being addressed. This includes both SB 350 and AB 617 as well as Caltrans' 2017 RTP Guidelines for MPOs. CARB will continue to integrate these efforts and pertinent findings into the SB 375 evaluation process to the extent feasible.

2. Performance Indicators

Measuring performance of the SB 375 program has become increasingly important as we approach the year 2020, the first SB 375 target year. As of October 2017, there was no requirement for SCS monitoring, but with the recent passage of SB 150, CARB is now responsible for preparing a report to the Legislature starting 2018, and every four years thereafter, that discusses regional changes in GHG. This report will use data-supported metrics to assess progress toward statewide climate goals including SB 375 strategies as well as the effect of State policies and funding programs. It will also include a discussion of best practices and regional challenges to achieving greater reductions. Performance monitoring is also a recommendation within the recently updated Regional Transportation Plan Guidelines developed by Caltrans for the MPOs and several MPOs are tracking the elements of the SCS (both strategies and investments) that are driving change in the region and resulting in desired outcomes.

CARB staff plans to track near-term indicators of SCS implementation statewide and to encourage all MPOs to start tracking performance measures, in a consistent and transparent way, so progress can be measured over time. Our goal is to gain an understanding of whether the strategies in SCSs are working, and whether the intended benefits of SB 375 are beginning to accrue and are benefiting communities equitably, with an emphasis on tracking on-the-ground SCS performance compared with observed data as part of our future technical evaluations.

CARB and Caltrans are currently co-funding a research project through the University of California Los Angeles (UCLA) designed to establish a foundation for a future statewide SCS monitoring system. Effective SCS monitoring requires detailed data and information that can link changes in VMT and GHG to specific elements and strategies in the plans, at both the regional and neighborhood levels. The research project will identify and evaluate indicators of SCS implementation and data sources primarily related to regional accessibility including access to jobs, retail, transit as well as tracking changes in housing unit density and new development. The final product will be a set of recommendations regarding the data and information that can be used to evaluate whether shifts in land-use regulations, plans and programs, and new developments (housing, commercial, and recreational/entertainment) are consistent with the intent of SB 375 through the SCS. The initial phase of the research project whereby the research team will provide recommendations on indicators will be completed by summer of 2018. This will establish a foundation for a future statewide SCS monitoring program that will be expanded to include indicators that measure land use mix and density, social equity, and public health benefits.

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Appendix F. Final Environmental Analysis

Forthcoming