

EVALUATION OF THE SACRAMENTO AREA COUNCIL OF GOVERNMENTS' SB 375 2020 SUSTAINABLE COMMUNITIES STRATEGY

October 2020



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Background

The Sustainable Communities and Climate Protection Act (SB 375) is intended to support the State's broader climate goals by encouraging integrated regional transportation and land use planning that reduces greenhouse gas (GHG) emissions from passenger vehicle use. California's metropolitan planning organizations (MPO) develop regional Sustainable Communities Strategies (SCS) – as part of their regional transportation plans (RTP) – which contain land use, housing, and transportation strategies that, when implemented, can meet the per capita passenger vehicle GHG emission reduction targets for 2020 and 2035 set by the California Air Resources Board (CARB or Board). Once an MPO adopts an SCS, SB 375 directs CARB to accept or reject an MPO's determination that its SCS, when implemented, would meet the targets.

On November 18, 2019, the Sacramento Area Council of Governments (SACOG), which serves as the MPO for the Sacramento region, adopted its 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy (2020 SCS).¹ SACOG provided for CARB staff's review a complete submittal of the 2020 SCS and all necessary supporting information on June 5, 2020. SACOG's 2020 SCS estimates a 14 percent and a 19 percent decrease in GHG per capita emissions from light-duty passenger vehicles by 2020 and 2035, respectively, compared to 2005. The region's per capita GHG emission reduction targets are 7 percent in 2020 and 19 percent in 2035, compared to 2005 levels, as adopted by the Board in 2018.² This report reflects CARB's evaluation of SACOG's 2020 SCS GHG quantification.

CARB's Evaluation

After CARB set the first SB 375 GHG emission reduction targets in 2010, CARB staff developed the first guidelines³ on how SCSs would be evaluated for the purposes of CARB's determination in 2011. These 2011 Evaluation Guidelines focused on the technical aspects of regional travel demand modeling and analysis for how CARB would determine acceptance or rejection of an MPO's determination that it met its applicable

¹ Sacramento Area Council of Governments. [2020 Metropolitan Transportation Plan/Sustainable Communities Strategy](#).

² [Board Resolution 18-12](#) (March 22, 2018).

³ California Air Resources Board. [Description of Methodology for ARB Staff Review of Greenhouse Gas Reductions from Sustainable Communities Strategies Pursuant to SB 375](#). July 2011.

GHG emission reduction targets. In 2018, when CARB updated the SB 375 GHG emission reduction targets, the Board directed CARB staff to place greater attention on the strategies, key actions, and investments committed by the MPOs rather than on modeling outputs. Pursuant to Board direction, CARB staff updated its 2011 Evaluation Guidelines in the document [Final Sustainable Communities Strategy Program and Evaluation Guidelines](#)⁴ (2019 Evaluation Guidelines). Under CARB staff's 2019 Evaluation Guidelines, evaluation of SCS strategies, key supporting actions and investments serve as the basis for accepting or rejecting an MPO's SB 375 GHG determination.

CARB's evaluation of the SCS consists of the determination and reporting components and is based on the general method described in CARB staff's 2019 Evaluation Guidelines. This report summarizes CARB staff's evaluation of SACOG's 2020 SCS.

The determination component covers the analyses conducted by CARB staff to determine whether the SCS would achieve the applicable GHG emission reduction targets when implemented. This component consists of a series of four policy analyses, which evaluate whether the strategies, key actions and investments from the SCS support its stated GHG emission reductions. These four analyses include Trend Analysis, Policy Analysis, Investment Analysis, and Plan Adjustment Analysis. CARB staff's evaluation relied on a review of SACOG's 2020 SCS, additional SCS submittal materials provided by SACOG further explaining its modeling inputs and assumptions, performance indicator trends, key actions, investments, and current trends and plan adjustments, as well as on information gathered in follow-up conversations with SACOG staff. For a summary of strategies and quantification methods evaluated as part of SACOG's 2020 SCS submittal see Appendix A.

With respect to the reporting component, the 2019 Evaluation Guidelines includes three elements: tracking implementation, incremental progress, and equity. Tracking implementation reporting captures progress the region has made toward its SCS implementation based on observed data, and whether it is on track to meet the GHG reduction targets based on how well the observed data tracks with what the plan said would happen. Incremental progress reports on whether an MPO's SCS includes more or enhanced strategies compared to its prior SCS that are consistent with the information the MPO shared during the 2018 target-setting process. The equity section identifies the efforts the MPO has undertaken to meet federal and State requirements

⁴ California Air Resources Board. [Final Sustainable Communities Strategy Program and Evaluation Guidelines](#). November 2019.

related to equity. The reporting component is included as Appendix C: MPO Reporting, and serves to identify the effectiveness of prior SCS implementation efforts and increase overall transparency of the SCS for the public and other stakeholders.

Trend Analysis

This section summarizes CARB staff's analysis of key plan performance indicators to determine if the data provided by SACOG supports the 2020 SCS's stated GHG and vehicle miles traveled (VMT) reductions. As part of the 2019 Evaluation Guidelines, CARB staff requested data on the following eight performance indicators: 1) household vehicle ownership, 2) mode share, 3) average travel time by mode, 4) daily transit ridership, 5) average trip length by mode, 6) seat utilization, 7) VMT per capita, and 8) GHG per capita. These indicators represent how a region can show changes to its per capita VMT over time through policies and investments undertaken and reflected in its SCS.

SACOG provided data associated with these metrics from the output of its travel demand model, SACSIM19. Staff analyzed how these metrics change over time (i.e., 2005 to 2035), and whether the change is directionality consistent with the 2020 SCS planned outcomes. In other words, staff determine whether these eight SCS performance indicators are trending in a direction that supports GHG/VMT reductions. Table 1 provides a summary of the trend analysis for SACOG's 2020 SCS. SACOG did not provide transit seat utilization data, so CARB staff could not review the trend for those data.

Table 1. Trend Analysis Results

| Performance Indicator | Forecast Change 2005 to 2035* | Trend Analysis |
|-----------------------|--|--|
| Average Trip Length | SOV (-8.6%) HOV (+0.7%) Transit (+15.8%) Walk/Bike (+45.4%) | <p>SACOG’s 2020 SCS forecasts a decrease in the average single-occupancy vehicle (SOV) trip length from 8.04 miles/day in 2005, to 7.85 miles/day in 2016 and 7.35 miles/day in 2035. Over the same time period, trip lengths for bike/walk increase from 1.63 (2005), 2.3 (2016) and 2.37 (2035), and transit increases from 5.39 (2005), 5.83 (2016) and 6.24 (2035). CARB staff finds these trends directionally supportive and consistent with the relationship shown in the empirical literature that reducing SOV trip length reduces VMT and GHG emissions. Please see Appendix B: Data Table for more details.</p> |
| Average Travel Time | SOV (-6.7%) HOV (~0%) Transit (~0%) | <p>SACOG’s 2020 SCS forecasts a decrease in the average SOV travel time from 15 minutes in 2005 to 14 minutes in 2016 and 2035, with no changes in travel time for high-occupancy vehicle (HOV) (12 minutes in 2005 and 2035), and transit (40 minutes⁵ in 2005 and 2035) over the same time period. CARB staff finds the 2005 to 2016 trend directionally supportive of reducing GHG emissions and consistent with the relationship shown in the empirical literature that travel time and trip length change proportionally. However, the lack of change in travel time in SOV trips beyond 2016, even though trip length decreases, as noted above, is not consistent and may not be supportive of reducing GHG emissions. Please see Appendix B: Data Table for more details.</p> |

⁵ Note, for SACOG’s equity analysis (see Appendix C), for accessibility to key destinations by transit SACOG uses a 30-minute benchmark for travel time.

| Performance Indicator | Forecast Change 2005 to 2035* | Trend Analysis |
|-------------------------|---|--|
| Mode Share | SOV (-2.2%) Transit (+1.1%) Walk/Bike (+2.6%) | <p>SACOG’s 2020 SCS forecasts that the mode share will modestly change by 2035. SOV decreases from 43.7% in 2005 to 41.5% in 2035; transit increases from 1.3% to 2.4%; and walk/bike increases from 9.2% to 11.8% over the same period. CARB staff finds these trends directionally supportive and consistent with the relationship shown in the empirical literature that shifting away from driving alone to other modes such as transit, walk and bike reduces per capita VMT and GHG emissions. Please see Appendix B: Data Table for more details.</p> |
| Daily Transit Ridership | +172% | <p>SACOG’s 2020 SCS forecasts daily transit ridership increases from 138,460 riders in 2005 to 376,040 in 2035. CARB staff finds these trends directionally supportive and consistent with the relationship shown in the empirical literature that increasing transit ridership will reduce GHG emissions. However, CARB staff has concern about this trend when looked at in the context of transit travel in 2035 (40 minutes as noted above) compared to drive-alone trips (14 minutes as noted above). Transit travel time is almost three times longer than driving alone for similar trip lengths. This is not consistent with the empirical literature that longer travel time would increase transit ridership and reduce GHG emissions. Please see Appendix B: Data Table for more details.</p> |

| Performance Indicator | Forecast Change 2005 to 2035* | Trend Analysis |
|--|-------------------------------|--|
| Household Vehicle Ownership | -5.7% | <p>SACOG’s 2020 SCS forecasts a decrease in household vehicle ownership from 1.9 vehicles per household in 2005 to 1.8 in 2016 and 2035. CARB staff finds the 2005 to 2016 trend directionally supportive of reducing GHG emissions and consistent with the relationship shown in the empirical literature that reducing vehicle ownership reduces GHG emissions. However, CARB staff has concern about this trend when looked at in the context of transit ridership per household trends (i.e., 0.18 in 2005 to 0.34 in 2035). The increase in transit forecasted may not be consistent with the modest reduction in vehicle ownership between 2016 and 2035 even though transit ridership increases over the same period. This is contrary to the empirical literature where a household uses more transit tends to own less vehicles. These results are not consistent and may not support reducing GHG emissions. Please see Appendix B: Data Table for more details.</p> |
| VMT per Capita | -15.5% | <p>SACOG’s 2020 SCS forecasts VMT to decrease from 24.1 to 20.3 VMT/capita/day in 2035. CARB staff finds these trends directionally supportive and consistent with the relationship shown in the empirical literature that a reduction in VMT per capita will reduce GHG emissions. Please see Appendix B: Data Table for more details.</p> |
| GHG per Capita Reduction Between 2005 and 2020 | -14% | <p>The GHG per capita reduction forecasted by SACOG meets the target established by CARB. Please see Appendix B: Data Table for more details.</p> |

| Performance Indicator | Forecast Change 2005 to 2035* | Trend Analysis |
|--|-------------------------------|--|
| GHG per Capita Reduction Between 2005 and 2035 | -19% | The GHG per capita reduction forecasted by SACOG meets the target established by CARB. Please see Appendix B: Data Table for more details. |
| Seat Utilization | SACOG did not provide data | NA |

Note:
 * (-) decreasing, (+) increasing, (~) no change
 NA means not available

CARB staff finds that taken as a whole, the performance indicators used to conduct the Trend Analysis support the GHG reductions projected in SACOG's SCS.

Policy Analysis

The following section summarizes CARB staff's evaluation of whether or not SACOG's 2020 SCS contains key policy, investment, and other actions that support its identified strategies for meeting its GHG emission reduction targets using the general method described in CARB's 2019 Evaluation Guidelines. This analysis focuses on what policy commitments are contained in the SCS to support implementation and provides CARB with qualitative evidence on whether an MPO's claimed GHG reductions from its SCS strategies are likely, risky, or unlikely. CARB staff's analysis is organized across four broad SCS strategy categories: land use and housing, transportation infrastructure and network, local/regional pricing, and electric vehicle and new mobility. Within each strategy category, CARB staff discusses: the applicable SCS strategies; the planned outcomes that the SCS assumes will occur in 2035 when strategies are fully implemented; and CARB staff's analysis of whether the SCS contains key policy and investment actions that will support implementation of the SCS strategies and planned outcomes.

CARB staff's analysis of key supporting actions looked at a number of policy factors that, when considered together, are expected to explain how the MPO region will achieve the development pattern, transportation network characteristics, and travel patterns assumed in its SCS by 2035. In general, across all strategy categories, CARB staff looked for:

- Whether the SCS provided policy actions that corresponded to each of its individual strategies.
- Whether the actions were clear with respect to scope, who will be involved, what will be done, and the anticipated implementation timeline.
- Whether the actions were measurable and included specific regional investment commitments in the RTP/SCS project list; policy and/or financial incentives; technical assistance; and if legislative or other entity action is needed, partnership activities to advance needed changes.

Information used for this effort was collected from SACOG's 2020 SCS and through additional supporting materials provided by SACOG in its submittal to CARB. See Appendix C for a summary table of SACOG's 2020 SCS strategies and identified associated key support actions.

Land Use and Housing Strategy Commitments

SACOG's 2020 SCS includes land use- and housing-related strategies that seek to support the creation of compact and diverse land uses and put residents and activity locations closer together, which would ultimately shorten passenger vehicle trips in the region and reduce per capita GHG emissions. SACOG's land use and housing strategies that shorten vehicle trips include: jobs-housing balance, infill development, and transit-oriented development. SACOG estimates these strategies, in aggregate, will result in a 5 percent decrease in per capita GHG emissions.

SCS Planned Outcomes

The SCS includes assumptions about the type and character of new land use and housing development that will take place in the region between 2016 and 2035, which include:⁶

- Adding 223,571 new housing units and 218,265 new jobs to the region.
- Increasing the region's residential density by 25 percent.
- Accommodating 95,834 new housing units (43 percent of total new units) as single-family housing, and 127,737 (57 percent) as multi-family or attached housing.
- Locating 133,100 new housing units and 87,332 new employees within a ½-mile of high-quality transit stations (a 25 percent and 16 percent increase, respectively, compared to 2016 levels).
- By 2040, accommodating 168,026 new housing units⁷ (65 percent of total new units) and 228,902 new employees (85 percent of total new employees) through infill development in the region's center/corridor and established communities, and 92,102 new housing units (35 percent of the total new units) and 41,159 (15

⁶ This subsection includes information based on the data table and compares demographic and land use indicators from the 2016 base year to 2035. CARB staff also looked at changes between the SB 375 2005 target baseline year and 2035, where SACOG provided 2005 data. However, given greater 2016 data availability across the SCS land use and transportation metrics, CARB staff have summarized what the SCS says needs to occur to meet the region's 2035 GHG emission reduction target compared to latest observed 2016 regional conditions.

⁷ Information in this bullet point refers to data from Table 3.2: Summary of Expected Housing and Employment Growth by Community Type in the MTP/SCS. Data in this bullet compare the 2016 base year to the 2040 horizon year as no data were provided for 2035 by community types.

percent of the total new employees) in developing suburban and rural residential communities.

Supporting Actions

While MPOs create SCSs that forecast regional growth patterns, local government staff and elected officials have almost exclusive authority over land use decisions relevant to implementing the SCS. Achieving the plan outcomes discussed above will therefore require local government action. Local actions that do not align with regional goals, such as allowing leapfrog development out in natural or agricultural areas, and failing to allow enough infill, especially affordable housing and growth in walkable or transit-oriented areas, stifles the Sacramento region's ability to implement the plan.

CARB staff checked for evidence that appropriate funding, other incentives, technical assistance, or other key actions were present to support the assumed development pattern in the SCS. In particular, CARB staff considered whether the SCS identified region-specific funding or technical assistance programs that support developers and local governments in prioritizing growth in the SCS's preferred growth areas. In addition, CARB staff checked to see how the SCS's assumptions about future housing unit development within the SCS's preferred growth areas compared against existing local plans, as alignment of regional and local plans is an important first step toward ensuring that future needs can be accommodated.

CARB staff found that the 2020 SCS land use and housing planned outcomes are supported by region-specific funding and planning program actions. In particular, the 2020 SCS carries over a number of positive, well-established programs and commitments to support implementation of the Sacramento region's SCS land use and housing strategy. Notable examples include SB 375 California Environmental Quality Act (CEQA) streamlining resources and assistance, which allows for streamlined environmental review and analysis of residential or mixed-use projects that are consistent with the SCS.⁸ SACOG also continues its Civic Lab Program⁹, which focuses on designing and launching pilot projects that address regional challenges through action at the local level. This program includes projects to help address barriers to infill development, place-making, and private investment. The program recently focused on 12 commercial corridors in the Sacramento region, including corridors like

⁸ [SACOG CEQA streamlining](#).

⁹ [SACOG Civic Lab Program](#).

Main Street in the City of Isleton, Upper Broadway in the City of Placerville, and Del Paso Boulevard in the City of Sacramento.

The 2020 SCS also calls out the Green Means Go Pilot Program¹⁰ as the key new mechanism to encourage infill development in the region. Through this pilot program, local jurisdictions will designate Green Zones, in which they must take specific actions to promote and accelerate infill development, provide travel options, and increase electric vehicle deployment. In addition, SACOG has introduced two additional supporting actions focused on the development of a Regional Housing Needs Plan with action steps and incentives, and an update to the region's Blueprint development plan.

Table 2 shows CARB staff's summary of SACOG's 2020 SCS land use and housing strategy commitments and associated supporting actions and investments.

¹⁰ SACOG [Green Means Go Program](#)

Table 2. SACOG’s 2020 SCS Land Use and Housing Strategy Commitments and Supporting Actions

| SACOG’s SCS Strategies | Estimated GHG Emission Reductions in 2035 | SCS Supporting Actions and Investments | CARB Staff’s Analysis |
|--|---|---|---|
| <i>Shortened Passenger Vehicle Trips: Jobs/Housing Balance</i> | -5% (When combined with all listed Shortened Passenger Vehicle Trips strategies) | SACOG will provide data, research, analysis, incentives, and other support to housing-rich communities actively trying to promote job growth and to jobs-rich communities to promote housing growth. SACOG will continue to provide incentives, tools, and other project support to grow regional jobs and housing. Examples include the Economic Prosperity Plan, Housing Policy Toolkit, SB 375 and SB 743 CEQA streamlining. | Actions Identified: ¹¹ Yes Funding in the RTP/SCS Project List: ¹² N/A ¹³ SACOG Program Funding Available: ¹⁴ Yes, SACOG has identified resources to provide research and technical assistance. |

¹¹ Actions identified refers to if SACOG has identified how the SCS strategy will be implemented through actions.

¹² Funding in the RTP/SCS Project List refers to if there are identified projects and investments in the financially constrained project list that support the SCS strategy.

¹³ N/A means not applicable.

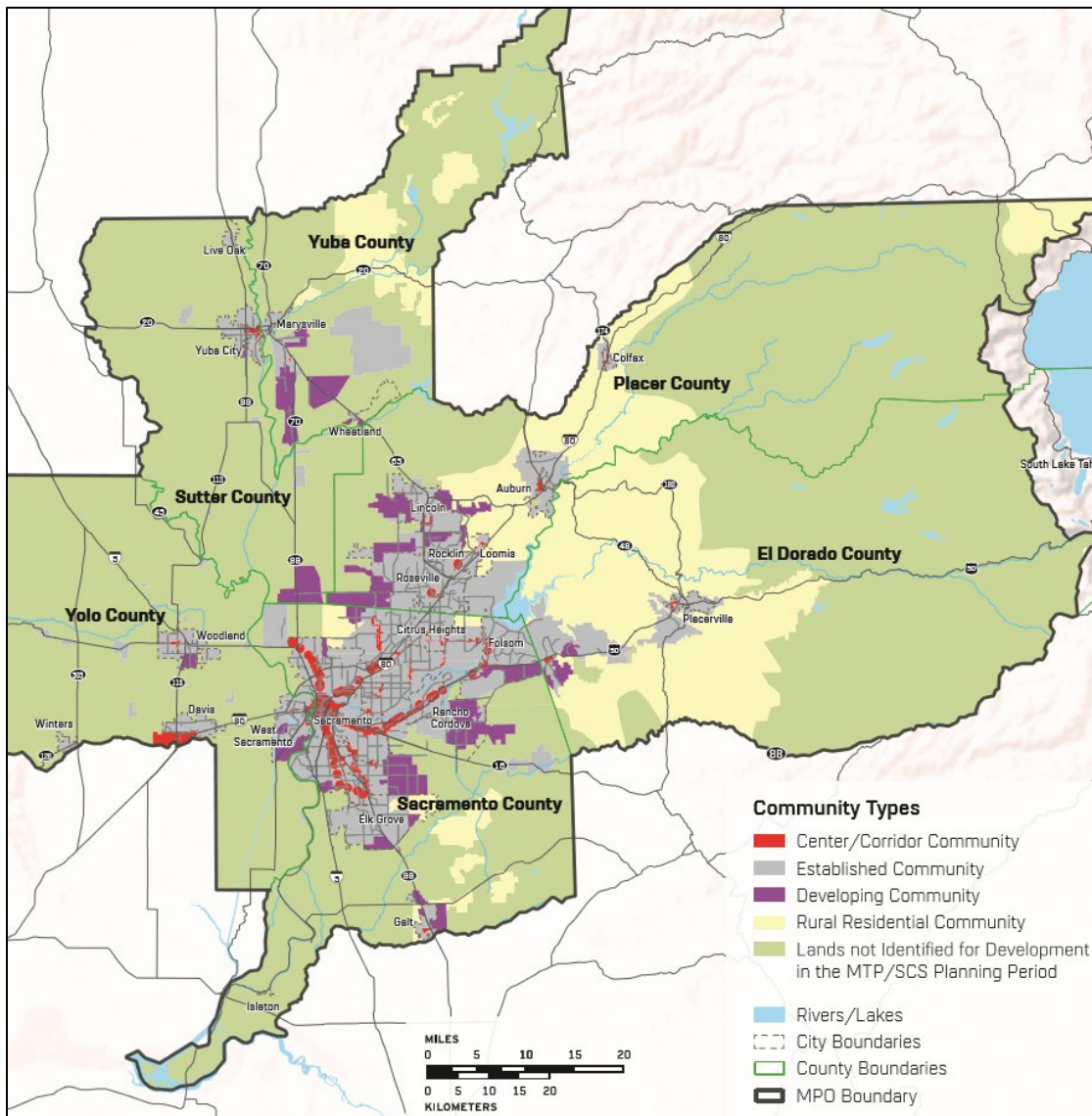
¹⁴ SACOG Program Funding Available refers to if SACOG has resources to support the SCS strategy.

| SACOG's SCS Strategies | Estimated GHG Emission Reductions in 2035 | SCS Supporting Actions and Investments | CARB Staff's Analysis |
|---|---|--|--|
| <p><i>Shortened Passenger Vehicle Trips: Infill Development</i></p> | <p>-5% (When combined with all listed Shortened Passenger Vehicle Trips strategies)</p> | <p>SACOG will develop a Regional Housing Needs Plan with action steps and incentives that put member agencies in a better position to accelerate infill housing production.</p> <p>SACOG will secure funding and implement the Green Means Go Pilot Program to encourage infill development and revitalization of commercial corridors through transit-supportive infrastructure. The Regional Housing Needs Plan, in combination and coordination with SACOG's Regional Early Action Plan funding, Local Early Action Plan funding, and SB 2 housing planning grants will help local jurisdictions with planning and zoning activity. SACOG will secure funding to allow the region's jurisdictions and stakeholders to revisit and update the Blueprint, which is SACOG's regional vision for future growth and development.</p> | <p>Actions Identified: Yes</p> <p>Funding in the RTP/SCS Project List: N/A</p> <p>SACOG Program Funding Available: Some program funds are available for RHNA and other work, however, CARB staff is concerned that this strategy will not be successful in reducing emissions because the Green Means Go Pilot Program remains unfunded and that jurisdictions have to be nominated to participate in the program. The Green Means Go Pilot Program needs further development and funding to support implementation.</p> |

| SACOG's SCS Strategies | Estimated GHG Emission Reductions in 2035 | SCS Supporting Actions and Investments | CARB Staff's Analysis |
|---|---|---|--|
| <p><i>Shortened Passenger Vehicle Trips: Transit-Oriented Development</i></p> | <p>-5% (When combined with all listed Shortened Passenger Vehicle Trips strategies)</p> | <p>SACOG will continue to provide technical assistance to support urban, suburban, and rural community revitalization. Examples include Civic Lab Year 2, Rural Main Streets Technical Assistance, and the Transit-Oriented Development Action Plan.</p> <p>SACOG will partner with cities and transit operators undergoing updates to transit plans, service changes, and transit-oriented development efforts. Examples include SacRT Forward, Transit Asset Management Planning, and the Transit-Oriented Development Action Plan.</p> | <p>Actions Identified: Yes Funding in the RTP/SCS Project List: N/A SACOG Program Funding Available: Yes, SACOG has existing programs and resources to provide funding, research and technical assistance.</p> |

CARB staff also found that the 2020 SCS housing unit growth assumptions in the region’s targeted infill areas are reasonably aligned with local general plan buildout capacities for 2035. Special attention was given to the region’s place type, what SACOG refers to as “Community Types,” and CARB staff focused on the categories of “Center and Corridor” and “Established Communities,” as these are the areas where the SCS expects infill development to occur. Figure 1 is from SACOG’s 2020 SCS and illustrates the Community Types being used to describe the region’s land use forecast for the SCS planning period.

Figure 1. SACOG’s 2020 SCS Community Types Map



CARB staff found that local plans for these “Center and Corridor” and “Established Communities” are nearly fully consistent, and allow for the SCS’s forecasted total units to be built by 2035, with the exception of the Center and Corridor Community areas in El Dorado County, Sacramento County (Gold and Blue line Station Areas), the City of Davis Core Area, and the City of Woodland. In these areas, the 2020 SCS assumes a greater number of housing units by 2035 than is currently in local plan build-out estimates. In aggregate, however, the net difference in total assumed infill housing units in the 2020 SCS versus what is allowable based on local planning is less than one percent of the total assumed housing units, indicating that the SCS’s infill land use assumptions are reasonably aligned with local land use plans.

While CARB staff’s analysis supports a conclusion that SACOG’s 2020 SCS would meet the target, if implemented, CARB staff has significant concerns with SACOG’s capability to implement the 2020 SCS strategies to achieve the planned outcomes. CARB staff recognizes that one of the SACOG region’s strengths is having local plans in place that support the 2020 SCS’s preferred infill housing growth scenario. However, while local plan alignment is an important first step to implementing future needs, it does not guarantee this housing will be built. As shown in CARB’s *2018 Progress Report: California’s Sustainable Communities and Climate Protection Act*,¹⁵ prepared pursuant to SB 150 (Allen, Chapter 646, Statutes of 2017), local housing planning is nearly fully compliant with Regional Housing Needs Allocation (RHNA) law, but actual permits issued are lagging, especially for affordable housing. In the four largest regions, according to local jurisdiction reports submitted to the California Department of Housing and Development (HCD), most regions are ahead of schedule in issuing permits for housing for the wealthiest, “above moderate-income” households but are falling short in housing that is affordable for households in the three lower-income categories: moderate-income, low-income, and very low-income.

SACOG’s process for developing the 2020 SCS acknowledges that the region is not on track to meet the region’s infill goals, and identifies additional strategies and action items within the 2020 SCS to address the challenge of implementing infill. However, CARB staff found that these additional strategies and actions rely on funding that has yet to be secured and partnerships that have yet to be formed. For example, CARB’s review of available program documentation for Green Means Go confirms that SACOG is actively advocating for funding and partners, however, the program is not yet funded and it is not clear what funding source would be used for this purpose, particularly as

¹⁵ [SB 150 Progress Report to the Legislature on Sustainable Communities Implementation](#).

revenue to the Greenhouse Gas Reduction Fund (GGRF) is expected to decline over time.¹⁶ Furthermore, it is unclear what criteria SACOG will use for the Green Means Go Program to direct funds toward projects that will best support the SCS's infill goals. In addition, CARB staff's review of SACOG's SCS submittal materials and publicly available information on SACOG's identified Blueprint Update work and the Regional Housing Needs Plan and incentive work found a lack of specificity about milestones and how these actions would contribute to reducing emissions. CARB staff finds this approach of relying primarily on unspecified incentive actions to carry a high risk that the SCS will not be implemented as planned, especially since SACOG has not identified alternative actions if funding is not secured.

Transportation Infrastructure and Network Strategy Commitments

SACOG has included four transportation-related strategies in the 2020 SCS. Three of the strategies seek to complement its land use and housing strategies, and focus on increasing non-SOV mode share by increasing available alternatives to driving, including transit supportive infrastructure & investment, bicycle & pedestrian infrastructure & investment, and transportation demand management (TDM). Another strategy, intelligent transportation system & transportation system management (ITS & TSM), is also included that focuses on smoothing stop-and-go traffic, which can reduce GHG emissions per mile traveled. Together these transportation strategies support SACOG's goal of building and maintaining a safe, resilient, and multimodal transportation system. Altogether, SACOG estimates these strategies will result in a 6.5 percent decrease in per capita GHG emissions.

SCS Planned Outcomes

These strategies translate into assumptions about changes to the transportation infrastructure and network that will serve the region between 2016 and 2035,¹⁷ which include:

¹⁶ Proceeds from the Cap-and-Trade Program help facilitate comprehensive and coordinated investments throughout California that further the State's climate goals through the GGRF. However, the Cap-and-Trade Program's cap on economy-wide emissions declines over time, making fewer allowances available to purchase, and thus less proceeds available for deposit into the GGRF.

¹⁷ This subsection includes information based on the data table and compares transportation indicators from the 2016 base year to 2035. CARB staff also looked at changes between the SB 375 2005 target baseline year and 2035, where SACOG provided 2005 data. However, given greater 2016 data availability across the SCS land use and transportation metrics, CARB staff have summarized what the SCS says

- Increasing the region’s total transit operational miles by 67 percent, compared to 2016.
- Increasing the region’s total bike and pedestrian lane-miles by 79 percent, compared to 2016.
- Decreasing freeway/general purpose lanes (3 percent), collector lanes (1 percent) and rural roadways (8 percent); and increasing freeway HOV lanes (28 percent) and arterial/expressways (27 percent), compared to 2016.¹⁸

Supporting Actions

Per the 2019 Evaluation Guidelines, CARB staff checked for evidence that appropriate funding, other incentives, technical assistance, or other key actions were present to support the development of the transportation network in the SCS. In particular, CARB staff looked for alignment against the project list adopted with the 2020 SCS to see whether the projects are planned and funded within the target timeframe. CARB staff also considered whether SACOG identified other region-specific funding or technical assistance programs to support implementation of its transportation strategies. In addition, CARB staff evaluated the extent to which the projects included in the SCS complement its land use and housing strategies, with a particular focus on capacity-increasing projects that carry a high risk of inducing travel and therefore increasing VMT/GHG emissions.

CARB staff found that the 2020 SCS transit, active transportation, TDM, and ITS/TSM assumptions are supported by region-specific funding and planning program actions, as well as through direct investments in the project list adopted with the 2020 SCS. In particular, the 2020 SCS includes a number of positive project commitments that align with the Sacramento region’s SCS land use strategy and help advance GHG emission reductions. As part of the project list adopted with SACOG’s 2020 SCS, CARB staff found multi-modal projects that are intended to improve transit, bike and walk options in the region by the 2035 target year. Examples include:

- Extension of the Green Line light rail service to North Natomas Town Center (\$390 million).

needs to occur to meet the region’s 2035 GHG emission reduction target compared to latest observed 2016 regional conditions.

¹⁸ The decrease in freeway general purpose lanes is due to these facilities being converted to HOV lanes, while the reduction in collector lanes and rural roadways, typically two-lane roads with one-lane in each direction, is due to those facilities converting into multiple-lane arterials and expressways.

- Construction of phases 1 and 2 of the Downtown/Riverfront Streetcar in Sacramento and West Sacramento (\$239 million).¹⁹
- SacRT Green Line Light Rail Loop and transit improvements along K and H streets in Sacramento. These improvements would accommodate a future Streetcar Project, as well as future Green Line service (\$60 million).
- Construction of phases 3 and 4 streetscape improvements on West Capitol Avenue in West Sacramento, including wider sidewalks, new lighting, and planting treatments (\$25 million).
- Construction of a Class 1 bike lane between Davis and Woodland (\$10 million).

Table 3 shows CARB staff's summary of SACOG's 2020 SCS transportation infrastructure and network strategy commitments and associated supporting actions and investments.

¹⁹ In September 2020, SacRT recently voted to move forward with a scaled back version of this project. Instead of being 4.4 miles long from Midtown to downtown West Sacramento, it will now only be 1.5 miles long and go from Sacramento Valley Station to Sutter Health Park (formerly Raley Field) in West Sacramento.

Table 3. SACOG's 2020 SCS Transportation Infrastructure and Network Strategy Commitments and Supporting Actions

| SACOG's SCS Strategies | Estimated GHG Emission Reductions in 2035 | SCS Supporting Actions and Investments | CARB Staff's Analysis |
|--|---|---|--|
| <p><i>Increase Non-SOV Mode Share:</i></p> <p>Transit Supporting Infrastructure/ Investments</p> | <p>-6% (When combined with all listed Increase Non-SOV Mode Share strategies)</p> | <p>SACOG has allocated \$10.1 billion to bus and rail operations and maintenance, paratransit services, strategic bus and rail infrastructure expansion and transit vehicle purchases. This is a slight reduction in investment of \$0.5 billion compared to the 2016 SCS. SACOG is currently seeing a ridership decline compared to 2005. However, SACOG is projecting a tripling of ridership by 2035 from 120,500 in 2016 to 376,040.</p> <p>SACOG is working on its Next Generation Transit Study to help address the declines in transit and re-envision and explore new opportunities for transit.</p> <p>The SCS's actions support providing better traveler information for trip planning, reliable service and coordination between operators and supports ways for transit agencies to secure funding to improve frequency, span, and coverage of productive transit service.</p> | <p>Actions Identified: Yes</p> <p>Funding in the RTP/SCS Project List: Yes, but transit investment has declined compared to the 2016 SCS. CARB staff is concerned that transit ridership forecasts are overly ambitious and do not connect with on the ground realities of declining ridership and reduced investment. CARB staff would expect to see significant increases in transit investment that correspond with the SCS forecasted transit ridership increases. Additionally, if pricing strategies are not implemented then funding for transit improvements may be at risk.</p> <p>SACOG Program Funding Available: Yes, SACOG has existing programs and resources to provide funding, research and technical assistance.</p> |

| SACOG's SCS Strategies | Estimated GHG Emission Reductions in 2035 | SCS Supporting Actions and Investments | CARB Staff's Analysis |
|---|--|---|---|
| <p><i>Increase Non-SOV Mode Share:</i></p> <p>Improved Bicycle and Pedestrian Infrastructure/ Investments</p> | <p>-6%</p> <p>(When combined with all listed Increase Non-SOV Mode Share strategies)</p> | <p>SACOG has programmed and planned for \$2.5 billion to go towards bicycle facilities, pedestrian improvements, and Americans with Disabilities Act (ADA) retrofits. This number reflects direct investments in bicycle and pedestrian improvements. However, some bicycle and pedestrian improvements are included as part of the costs of road and highway capacity projects. The exact costs for these elements as part of larger investments are not readily available for the planned projects in the 2020 SCS. The direct investment has decreased by \$0.3 billion compared to the 2016 SCS.</p> <p>SACOG is currently seeing a slight increase in bicycle and pedestrian mode share compared to 2005, and is projecting a slight increase in bicycle mode share from 2.5% in 2016 to 2.8% by 2035, and in pedestrian mode share from 7.8% in 2016 to 9% in 2035. The total number of miles of bicycle infrastructure is projected to increase from 37% in 2016 to 79% in 2035.</p> | <p>Actions Identified: Yes</p> <p>Funding in the RTP/SCS Project List: Yes, but bicycle and pedestrian investment has declined compared to the 2016 SCS. CARB staff is concerned that mode share forecasts do not connect with reduction in investments. CARB staff would expect to see increases in bicycle and pedestrian infrastructure investments to correspond to increases in mode share. Additionally, if pricing strategies are not implemented then funding for bicycle and pedestrian improvements may be at risk.</p> |

| SACOG's SCS Strategies | Estimated GHG Emission Reductions in 2035 | SCS Supporting Actions and Investments | CARB Staff's Analysis |
|---|--|--|--|
| <p><i>Increase Non-SOV Mode Share:</i></p> <p>Improved Bicycle and Pedestrian Infrastructure/ Investments (continued)</p> | <p>-6%</p> <p>(When combined with all listed Increase Non-SOV Mode Share strategies) (continued)</p> | <p>SACOG encourages investment in bicycle and pedestrian infrastructure to support healthy, active transportation trips and provide recreation opportunities for residents and visitors. SACOG provides online resources regarding active transportation options for the use of local planning practitioners and stakeholders. SACOG also provides technical assistants regarding complete streets and active design, which promotes improved health outcomes by designing spaces that promote and facilitate regular physical activity.</p> | <p>(Continued) SACOG Program Funding Available: Yes, SACOG has existing programs and resources to provide funding, research and technical assistance.</p> |
| <p><i>Increase Non-SOV Mode Share:</i></p> <p>Transportation Demand Management (TDM)</p> | <p>-6%</p> <p>(When combined with all listed Increase Non-SOV Mode Share strategies)</p> | <p>SACOG has allocated \$3.1 billion to program, safety, and systems management and operations, of which approximately \$12.9 million goes to TDM strategies. These funds are used for outreach, education and incentives to drivers to reduce driving.</p> <p>SACOG will develop and implement new and innovative employer and residential-based TDM programs. SACOG's Civic Lab Innovative Mobility Accelerator Program will provide mini grants to fund this effort.</p> | <p>Actions Identified: Yes</p> <p>Funding in the RTP/SCS Project List: Yes, but CARB staff is surprised that TDM programs are not funded through 2035.</p> |

| SACOG's SCS Strategies | Estimated GHG Emission Reductions in 2035 | SCS Supporting Actions and Investments | CARB Staff's Analysis |
|---|---|--|--|
| Increase Non-SOV Mode Share: Transportation Demand Management (TDM) (continued) | -6% (When combined with all listed Increase Non-SOV Mode Share strategies) (continued) | The project list includes a regional TDM program throughout SACOG, as well as a TDM Program through the Placer County Congestion Management Program, however, these programs are only for the 2020-2025 timeline. | (Continued) SACOG Program Funding Available: Yes, SACOG has existing programs and resources to provide funding, research and technical assistance. |
| Intelligent Transportation System & Transportation Systems Management (ITS & TSM) | -0.5% | SACOG is investing \$3.1 billion in program safety and systems management and operations. A large portion of this funding goes to funding ITS & TSM strategies and used for intelligent technology and management systems to monitor traffic and incidents, to convey information to drivers, and to manage driver movements. The project list includes projects such as ramp metering, changeable message signs, and traffic signalization. SACOG plans to implement ITS and TSM through implementing and raising funding through tolling or pricing strategies, and prioritizing investments in transportation improvements that reduce GHG and VMT. SACOG has an Intelligent Transportation Systems Committee/Sacramento Region ITS Partnership that works to advance ITS in the region. | Actions Identified: Yes Funding in the RTP/SCS Project List: Yes, but if pricing strategies are not implemented then funding for ITS and TSM may be at risk. SACOG Program Funding Available: Yes, SACOG has existing programs and resources to provide funding, research and technical assistance |

CARB staff also found that the 2020 SCS includes hundreds of millions of dollars in funding for roadway capacity expansion projects that are not well-aligned with the region's adopted SCS land use and housing strategy, including segments of the Capital Southeast Connector project. Capacity expansion projects, especially those that are not aligned with the long-term vision for accommodating new growth, increase VMT and work against achieving the State's climate and air quality goals.^{20 21} As part of its SCS submittal, SACOG conducted analysis on the anticipated long-term effects on VMT due to the roadway capacity expansion projects within the SCS by comparing its SACSIM19 model results with research-based elasticity calculations.²² Based on SACOG's elasticity calculations, it estimates that all together these types of roadway projects are increasing the region's VMT as high as 12 percent and as low as 7 percent between 2016 and 2040, through induced travel.²³ SACOG included forecasted VMT increases from these projects as part of its overall 2020 SCS emissions estimate and determined that it will still be able to meet its SB 375 GHG reduction target, if implemented. CARB staff reviewed SACOG's approach to capturing the short- and long-term VMT/GHG impacts of its 2020 SCS roadway capacity expansion projects and found them to be reasonable in the context of aggregate impacts on SCS performance. However, for the next SCS, SACOG should evaluate and discuss the VMT impacts of individual capacity projects in comparison with the aggregate analysis used for the SCS. Results of this effort could be used to further refine how SACOG assesses the VMT impacts of capacity projects on its SCS.

While CARB staff's analysis supports a conclusion that SACOG's 2020 SCS would meet the target, if implemented, CARB staff has significant concerns with SACOG's capability to implement the 2020 SCS transportation system strategies and achieve its estimated GHG reduction benefits. CARB staff is especially concerned with the region's ability to fund and deliver the transit and active transportation projects that are needed to support the 2020 SCS planned outcomes. This is important given the fact that the region wants to overcome recent declines in transit ridership since 2012 and increase transit ridership 212 percent compared to 2016 levels. SACOG's 2020 SCS plans to achieve this, in part, through increasing transit service miles by over 67 percent

²⁰ See CARB's Policy Brief: [Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions](#).

²¹ See the information regarding the [relationship between reducing VMT and responding to the State's Climate Goals](#).

²² See [SACOG MTP/SCS Appendix E: Plan Performance](#).

²³ Through induced travel, or increases in travel due to changes in the number of trips and trip distances (destination changes); shifts in travel modes, the time-of-day travel occurs, and routes; as well as changes in residence and workplace locations.

compared to 2016. However, this is contrary to planned transit and active transportation project investments, which have declined between the 2016 and 2020 SCS, with \$0.5 billion less in the 2020 SCS for total transit investment compared to the 2016 SCS. SACOG attributes this to a delay in the Green Line light rail extension to the airport to after 2040. Further delays or removals of transit and active transportation projects will prevent SACOG from meeting its regional targets.

This is particularly true for SACOG's 2020 SCS, which is estimated to only just achieve the GHG emission reduction targets, and contains roadway capacity-increasing projects that could undermine target achievement and are prioritized over other projects that are more likely to reduce GHG emissions.²⁴ SACOG will need to be vigilant about monitoring implementation of the particular balance of transportation projects through 2035, and funding transportation projects that support the region's adopted SCS land use and housing strategy prior to other projects in order to ensure net reductions are achieved.

Local and Regional Pricing Strategy Commitments

SACOG has included two new pricing strategies in the 2020 SCS. These strategies include facility-based congestion pricing through managed express lanes and a regional mileage-based user fee. The facility-based pricing program will charge drivers for use of managed express lanes by considering time of day and congestion level. Drivers in the region would be given the choice of purchasing their way into the managed express lane in exchange for a faster and more reliable trip. The regional mileage-based user fee, which SACOG calls the Pay Go Program, will charge drivers for use of all roadways across the region on a per-mile basis. SACOG estimates that these strategies will decrease congestion, increase transit, walking, and biking, improve road/highway conditions, generate revenue for funding transportation infrastructure in the region, and result in a 1 to 2 percent decrease in per capita GHG emissions.

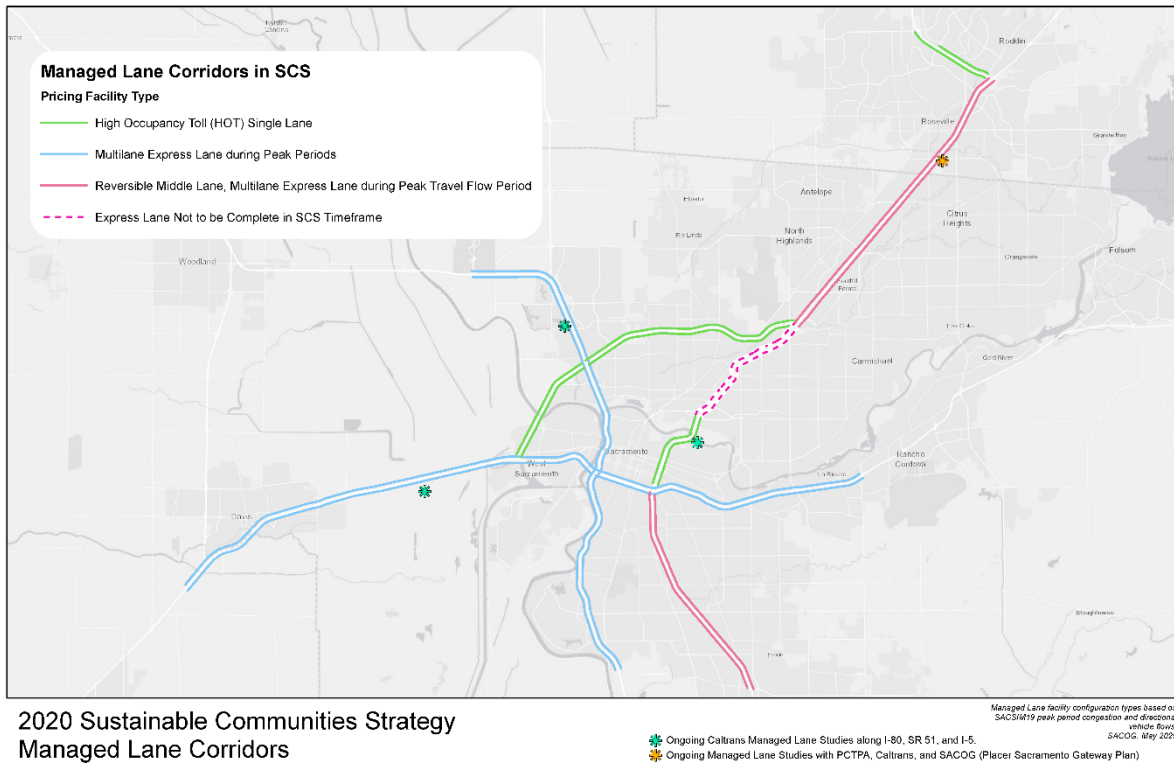
SCS Planned Outcomes

These strategies translate into assumptions about changes to the cost of transportation options, specifically, the cost to drivers for use of the roadway network in the region between 2016 and 2035, which include:

²⁴ CARB staff analyzed how projects that might erode VMT/GHG benefits are prioritized relative to projects that are more aligned with the SCS, see "Investments Analysis" for discussion

- Starting in 2031, decrease congestion and overall roadway travel demand with new priced managed lanes along two corridors with an estimated dynamic charge rate of \$0.10 cents to \$2.12 dollars per mile for passenger vehicles utilizing the lanes during peak period.²⁵ Figure 2 shows the proposed draft managed lane locations.

Figure 2. Proposed Managed Lanes in the SACOG Region



- Starting in 2030, decrease overall roadway travel demand and encourage increased transit, walking, and biking, with a new per-mile charge for drivers along all roadways throughout the region with an estimated charge rate of 3.5 cents per mile.²⁶

²⁵ SACOG, Toll Charges by Facility. July 2020.

²⁶ The SCS states that there is still much work to be done on identifying how this program will be implemented and does not provide details on how the fee would be collected. To estimate the GHG benefits for this program, SACOG assumed all drivers in the region would be charged this fee. This includes \$0.012 California Mileage-Based User Fee, which equals the California State Fuel Tax, and \$0.023 SACOG Mileage-Based User Fee.

Supporting Actions

Per the 2019 Evaluation Guidelines, CARB staff checked for evidence that appropriate funding, other incentives, technical assistance, or other key actions were present to support the assumed local and regional pricing strategies in the SCS. In particular, CARB staff looked for alignment against the project list adopted with the 2020 SCS to see whether the actions are planned and funded within the target timeframe. CARB staff also considered whether SACOG identified other region-specific funding or programs to support implementation of its pricing strategies. In addition, CARB staff looked for whether and how SACOG considered equity, which is a key implementation concern for pricing strategies.²⁷

CARB staff found that the 2020 SCS local and regional pricing assumptions are supported by region-specific funding and planning program actions, as well as through direct investments in the project list adopted with the 2020 SCS. In particular, the 2020 SCS project list includes the same managed express lane corridor projects for funding by 2035 that SACOG assumed when quantifying the SCS's GHG benefits in 2035. The SCS also identifies some initial supporting actions to further support its two pricing strategies. One action is to work with Caltrans and other local partners to identify options for governance and administration of revenues from facility-based pricing, in coordination with ongoing managed lane studies. Another action is to work with regional partners to develop pilot programs and pursue funding for piloting roadway pricing mechanisms, such as facility-based pricing (e.g., managed express lanes) and mileage-based fees (e.g., Pay Go Program), in partnership with the State, federal, and local agencies and private sector organizations. SACOG recently applied, in partnership with SCAG and SANDAG, for a Caltrans planning grant to design a pricing pilot.

Table 4 shows CARB staff's summary of SACOG's 2020 SCS local and regional pricing strategy commitments and associated supporting actions and investments.

²⁷ CARB staff also checked to see to what extent the proposed strategies were tied to the SCS's overall revenue and investment assumptions to see what if any impacts implementation could have on other SCS strategy commitments. See the "Investments Analysis" section for further discussion.

Table 4. SACOG’s 2020 SCS Local and Regional Pricing Strategy Commitments and Supporting Actions

| SACOG’s SCS Strategies | Estimated GHG Emission Reductions in 2035 | SCS Supporting Actions and Investments | CARB Staff’s Analysis |
|---|--|--|---|
| <p><i>Facility-Based Pricing:</i></p> <p>Congestion Pricing/Managed Express Lanes</p> | <p>-2%</p> <p>(When combined with all listed pricing strategies)</p> | <p>The project list adopted with the 2020 SCS includes express lane projects. SACOG has stated that revenue generated from facility-based pricing should be used to build and maintain a regional network of priced express lanes and, where surplus revenue is available, on strategic transit services (e.g., express buses) or other mobility solutions that can reduce VMT and provide multiple travel options along priced corridors.</p> <p>SACOG has stated that they want to work with Caltrans and other local partners to identify options for governance and administration of revenues from facility-based pricing.</p> <p>In 2020, as the lead applicant, SACOG applied for a Caltrans Sustainable Transportation Planning grant with SCAG and SANDAG. The grant has not been approved.</p> | <p>Actions Identified: Yes, SACOG has made some initial steps to plan and analyze facility based-pricing. CARB staff is concerned that this pricing program will not be implemented within the identified timeframe and that other SCS projects are at risk due to a lack of revenue if these facilities are not in place as anticipated. CARB finds that further action and buy-in from local jurisdictions, stakeholders, and the public is needed to advance implementation.</p> <p>Funding in the RTP/SCS Project List: Yes, for a few of the identified corridors.</p> |

| SACOG's SCS Strategies | Estimated GHG Emission Reductions in 2035 | SCS Supporting Actions and Investments | CARB Staff's Analysis |
|---|--|---|---|
| <p>(Continued) <i>Facility-Based Pricing:</i></p> <p>Congestion Pricing/Managed Express Lanes</p> | <p>(Continued) -2%</p> <p>(When combined with all listed pricing strategies)</p> | <p>SACOG also collaborated with Caltrans on managed lane studies.</p> | <p>SACOG Program Funding Available: Somewhat. SACOG can provide funding, research and technical assistance, however, more work needs to be done around program development and implementation, specifically around fee collection, and revenue allocation, that should include equity opportunities.</p> |
| <p><i>Mileage-Based: User Fee:</i></p> <p>Pay Go Program</p> | <p>-2%</p> <p>(When combined with all listed pricing strategies)</p> | <p>The project list adopted with the 2020 SCS does not include projects identified for mileage-based user fees.</p> <p>SACOG plans to implement pricing strategies by piloting roadway pricing mechanisms through implementing tolling or pricing of specific lanes, providing technical assistance to local jurisdictions (e.g. Civic Lab 2), working with Caltrans and other partners for administration of revenues, and supporting local agencies in implementing local fees and taxes for transportation improvements.</p> | <p>Actions Identified: Yes, SACOG has made some initial steps to plan and analyze implementation of mileage-based user fees. CARB staff is concerned that this pricing program will not be implemented within the identified timeframe, because this strategy requires congressional and state enabling legislation, as well as local action.</p> |

| SACOG's SCS Strategies | Estimated GHG Emission Reductions in 2035 | SCS Supporting Actions and Investments | CARB Staff's Analysis |
|---|--|--|---|
| <p>(Continued) <i>Mileage-Based: User Fee:</i> Pay Go Program</p> | <p>(Continued) -2% (When combined with all listed pricing strategies)</p> | <p>SACOG assumed a mileage-based user fee would be implemented region-wide to replace gas taxes. The fees are estimated to generate \$959 million. The facility-based and mileage-based fees have been identified as critical for SACOG to provide a sustainable revenue source for funding the region's transportation system.</p> <p>The SCS states that there is still much work to be done on identifying how this program will be implemented and does not provide details on how the fee would be collected.</p> | <p>CARB staff is further concerned that other SCS projects are at risk due to a lack of revenue if these facilities are not in place as anticipated. CARB staff finds that further legislative action and buy in from state and local agencies, stakeholders, and the public is needed to advance implementation.</p> <p>Funding in the RTP/SCS Project List: N/A</p> <p>SACOG Program Funding Available: Somewhat. SACOG can provide funding, research and technical assistance, however, more work needs to be done around program development and implementation, specifically around fee collection, and revenue allocation, and equity considerations.</p> |

CARB staff also found that SACOG analyzed and discussed the effects of roadway pricing on equity. This analysis included discussion of different options to mitigate the potential impacts of facility pricing on lower-income households. It also included analysis to compare the change in household auto operating cost with SCS pricing strategies by community type and income level. SACOG's Board also adopted a policy framework for its pricing strategies, that includes a provision to avoid negative impacts on lower-income and rural households.

While CARB staff's analysis supports a conclusion that SACOG's 2020 SCS would meet the target, if implemented, CARB staff has significant concerns with SACOG's capability to implement the 2020 SCS local and regional pricing strategies and achieve its estimated GHG reduction benefits. CARB staff acknowledges the significant leadership and partnership work needed to realize the 2020 SCS pricing strategies. Given that SACOG's application for a planning grant to pilot pricing was rejected and the planning grant was a primary supporting action necessary to implement this strategy, SACOG needs to identify and implement new supporting actions to advance these strategies along the timeline assumed in the 2020 SCS, and SACOG will need to demonstrate further progress to implement these strategies by its next plan cycle for SACOG to continue receiving the full amount of GHG emission reductions assumed.

Electric Vehicle and New Mobility Strategy Commitments

SACOG has included three strategies related to electric vehicles (EV) and new mobility services, which include EV infrastructure, EV incentives, bike share and micromobility. These strategies seek to accelerate the penetration of EVs and increase micromobility options like bike share and scooter share in the region. These strategies are intended to support SACOG's goal of providing additional clean travel options and induce mode shift away from driving. Altogether, SACOG estimates these strategies will result in a 0.5 percent decrease in per capita GHG emissions.

SCS Planned Outcomes

These strategies translate into assumptions about the availability of EV-supportive infrastructure, bike share and other micromobility fleets that will serve the region between 2016 and 2035, which include:

- Adding 150 new public chargers²⁸ by 2035 in the region.
- Increasing EV market penetration between 13.3 to 16.8 percent by 2035.

²⁸ SACOG Off-Model Assumption Calculation, May 1 2020 Table 3.

- Providing the same level of local EV incentives/rebates in 2035.
- Deploying a total of 25,000 to 50,000 electric bikes and electric scooters²⁹ through sharing applications around the majority of High Frequency Transit Areas. This represents an increase of between 20,500 and 45,500 new electric bikes and scooters (456 to 1,011 percent) by 2035.

Supporting Actions

Per the 2019 Evaluation Guidelines, CARB staff checked for evidence that appropriate funding, other incentives, technical assistance, or other key actions were present to support the assumed availability of EV-supportive infrastructure, bike share and other micromobility fleets in the SCS. In particular, CARB staff looked for alignment against the project list adopted with the 2020 SCS to see whether the actions are planned and funded within the target timeframe. CARB staff also considered whether SACOG identified other region-specific funding or technical assistance programs to support implementation of its EV and new mobility strategies.

CARB staff found that the 2020 SCS EV and new mobility strategy assumptions are supported by region-specific funding and planning program actions, as well as through direct investments in the project list adopted with the 2020 SCS. In particular, the 2020 SCS project list includes EV infrastructure installation projects that are expected to be completed by 2035. In addition, SACOG'S 2020 SCS carries over actions and programs from the 2016 SCS that will support innovative education and TDM programs in the region to pilot, test and scale new mobility options and programs. These include technical assistance for transit and local agencies to pilot these options and implement new employer- and residential-based TDM programs through the region's Civic Lab Innovative Mobility Accelerator Program; leading a collaborative effort to shape a vision of next-generation transit through SACOG's Next Generation Transit Study with strategies to integrate traditional transit services with new mobility options; and potential funding support through the region's Green Means Go Pilot Program.

Table 5 shows CARB staff's summary of SACOG's 2020 SCS EV and new mobility strategy commitments and associated supporting actions and investments.

²⁹ SACOG Off-Model Assumption Calculation, May 1, 2020 Table 4

Table 5. SACOG’s 2020 SCS EV and New Mobility Strategy Commitments and Supporting Actions

| SACOG’s SCS Strategies | Estimated GHG Emission Reductions in 2035 | SCS Supporting Actions and Investments | CARB Staff’s Analysis |
|--|--|--|---|
| <p><i>EV and New Mobility:</i></p> <p>Electric Vehicle Charging Infrastructure</p> | <p>-0.5%</p> <p>(When combined with all listed EV and New Mobility strategies)</p> | <p>SACOG is planning to support local EV programs by pursuing new funding and planning opportunities to support EV infrastructure, and by implementing the Green Means Go Pilot Program.</p> <p>According to the project list adopted with the 2020 SCS, SACOG is allocating \$36.8 million (to support charging infrastructure in the region. The project list includes a partnership with the City of Davis and Valley Clean Energy to install EV charging infrastructure at various locations such as between UC Davis, downtown Davis, and the Davis Amtrak Station. The project list also calls for the installation of 14 EV charging units and related equipment to facilitate the introduction of electric propulsion buses to the Unitrans bus fleet.</p> <p>Both of these projects are anticipated to be completed in the 2020-2025 timeframe. However, other EV charging infrastructure are expected to be complete in the 2036-2040 timeframe. Examples include adding new electric bus charging infrastructure for Sacramento Regional Transit District and for the Placer County Transportation Planning Agency.</p> | <p>Actions Identified: Yes</p> <p>Funding in the RTP/SCS Project List: Yes</p> <p>SACOG Program Funding Available: Some program funds are available, however, CARB staff is concerned that the Green Means Go Pilot Program remains unfunded and that jurisdictions have to be nominated to participate in the program. The Green Means Go Pilot Program needs further development and funding to support implementation.</p> |

| SACOG's SCS Strategies | Estimated GHG Emission Reductions in 2035 | SCS Supporting Actions and Investments | CARB Staff's Analysis |
|---|--|--|--|
| <p><i>EV and New Mobility:</i></p> <p>Electric Vehicle Incentives</p> | <p>-0.5%</p> <p>(When combined with all listed EV and New Mobility strategies)</p> | <p>The project list adopted with the 2020 SCS does not include projects identified for EV incentives. Incentives/rebates for EV purchase are provided in the SACOG region to accelerate and increase market penetration of electric vehicles. For example, El Dorado County Air Quality Management District's (EDCAQMD) Drive Clean! incentive program provides a \$1,000 incentive to County residents who purchase EVs within El Dorado County. Another example is SMUD's Charge Free for 2 Years program, which provides a \$600 incentive for EV purchasers, based on the approximate value of two years' worth of electricity for an EV. SMUD has contracted with the EV advocacy organization Plug-In America to perform outreach and training for car dealership staff to better advertise and educate prospective car buyers about the costs, benefits, and lifestyle considerations related to purchasing an EV. In addition, the program offers participating dealerships a \$300 incentive for each EV they sell.</p> | <p>Actions Identified: Yes</p> <p>Funding in the RTP/SCS Project List: No</p> <p>SACOG Program Funding Available: No, SACOG relies on other programs to provide incentives. CARB staff is concerned that without a dedicated revenue stream these incentive programs may not continue to be available in the timeframe of the plan. CARB staff recommend that SACOG develop a plan to ensure incentives are available to support planned EV outcomes</p> |

| SACOG's SCS Strategies | Estimated GHG Emission Reductions in 2035 | SCS Supporting Actions and Investments | CARB Staff's Analysis |
|--|--|--|--|
| <p><i>EV and New Mobility:</i></p> <p>Bike Share & Micromobility</p> | <p>-0.5%</p> <p>(When combined with all listed EV and New Mobility strategies)</p> | <p>The project list adopted with the 2020 SCS does not include bike share or micromobility projects.</p> <p>SACOG plans to continue to assist transit and local agencies in finding ways to develop, test, and pilot new mobility services such as micro-transit micro-mobility through the SACOG's Civic Lab Innovative Mobility Accelerator Program and TDM Program. SACOG will support piloting innovations in new mobility and transit service as part of its Next Generation Transit Study.</p> | <p>Actions Identified: Yes</p> <p>Funding in the RTP/SCS Project List: No</p> <p>SACOG Program Funding Available: SACOG has some funds available to encourage new mobility but the region is primarily relying on private investment from new mobility companies. CARB staff recommend that SACOG continue to work with and provide incentives to local jurisdictions and bike share and micromobility companies to ensure planned outcomes.</p> |

While CARB staff's analysis supports a conclusion that SACOG's 2020 SCS would meet the target, if implemented, CARB staff has significant concerns with SACOG's capability to implement the 2020 SCS EV and new mobility strategies and achieve its estimated GHG reduction benefits. CARB staff are concerned that the supporting actions for these strategies primarily rely on funding and partnerships outside of SACOG's control. In particular, the 2020 SCS assumes that these strategies will be able to rely on continuing previously available incentives and rebate programs through the region's air district and local utilities, building on the region's demonstrated partnerships with private micromobility providers, as well as continuing to further demonstration projects through the region's Civic Lab Program and Green Means Go Program without long-term dedicated projects or funding in the SCS through 2035. The nature of these programs is dynamic, and not always favorable or within the control of the region. For example, Jump, a major provider of electric bikes and electric scooters in the region, temporarily ceased operations, but has since returned at a smaller scale.³⁰ SACOG will need to be vigilant about monitoring implementation of these strategies through 2035 and making adjustments as necessary to ensure planned reductions are achieved.

Looking across all four policy analysis categories, CARB staff's analysis found that SACOG's 2020 SCS includes evidence of policy commitments for its strategies, that if implemented would meet the target. However, areas of concern for CARB staff are that many strategies still require identification of funding sources and/or legislative changes to be implemented.

Investments Analysis

CARB staff evaluated whether the 2020 investments support the expected GHG emission reductions, by looking for evidence within the project list adopted with the 2020 SCS for commitments to funding SCS-consistent projects by 2035. CARB staff also qualitatively assessed the risk of delay to delivering projects that advance SCS goals based on assumed available funding sources.

Based on CARB's review of SACOG's project list, CARB staff found that the 2020 SCS included a number of projects in the project list for funding that would advance implementation of the SCS, as discussed in the "Policy Analysis" section of this report. However, CARB staff also identified significant concerns with whether SACOG's overall

³⁰ Jump ceased operations in March 2020 due to COVID-19. In May 2020, Uber, which owned Jump, sold the bikes to its competitor Lime. As of September 2020, Jump bikes are back in Sacramento.

investment plan would sufficiently support implementation of the 2020 SCS strategies to achieve its estimated GHG reduction benefits. Specifically, CARB remains concerned with the latest decrease in funding for transit and active transportation projects. A comparison between the 2016 and 2020 SCS investments by mode are shown in Figures 3 and 4. Total spending decreased from approximately \$35.2 billion to \$34.9 billion between the 2016 and 2020 SCSs. The largest increase in investment occurred in the category of road and highway capacity, which grew from \$5.8 billion to \$6.8 billion (17 to 19 percent), while the portion of the plan devoted to transit fell from \$10.6 billion to \$10.1 billion (30 to 29 percent). The category of active transportation also decreased from \$2.8 billion to \$2.5 billion (less than 8 to 7 percent). The decline in anticipated investments to transit, bike and pedestrian projects, is not well-aligned with SACOG’s assumptions around increased non-SOV mode share, increased transit ridership, and forecasted declines in VMT and GHG emissions. CARB staff is particularly concerned with how the region will be able to implement the SCS’s 212 percent increase in transit ridership compared to 2016 levels with a reduced transit investment.

Figure 3. Investments by Mode in SACOG’s 2020 SCS Compared to the 2016 SCS (Total Dollars)

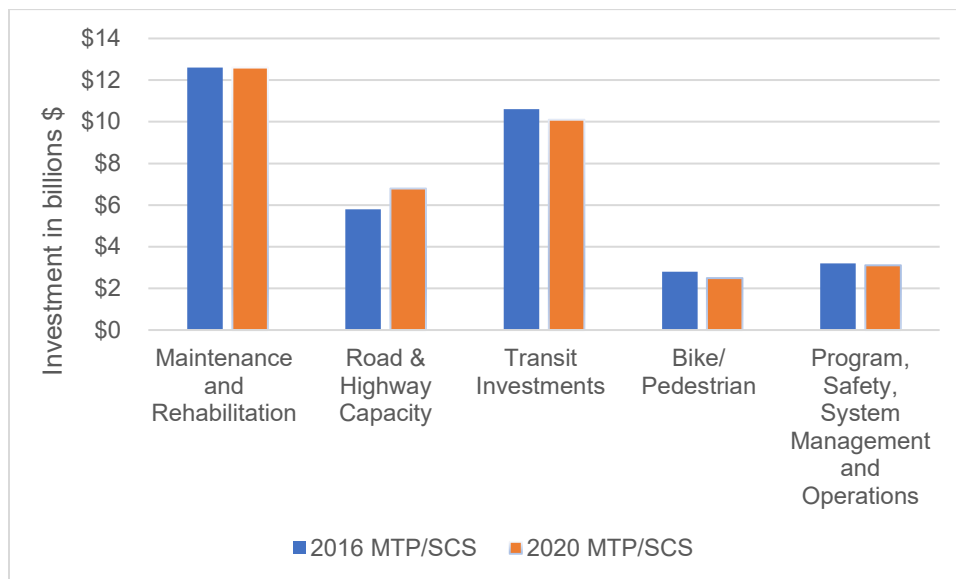
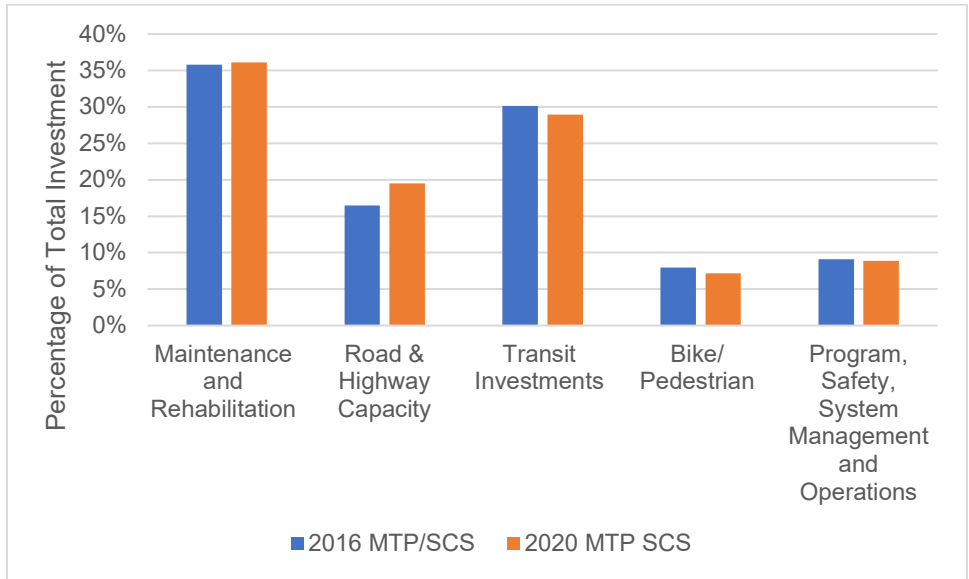


Figure 4. Investments by Mode in SACOG’s 2020 SCS Compared to the 2016 SCS (Percent of Total Investment)



Furthermore, CARB staff is concerned with the risk of delivering SCS-supportive projects on the project list by 2035. As shown in Figure 5, almost every modal category has nearly half or more of total investments planned for the last 5 years of the plan (i.e., post 2035), and are not associated with any firm funding sources. The exception to this is the road and highway capacity category, which has 73 percent of total investments programmed by 2030.

Figure 5. SACOG’s 2020 SCS Investments by Mode

| Category | 2020-2025 | 2026-2030 | 2031-2035 | 2036-2040 |
|---------------------------------------|-----------|-----------|-----------|-----------|
| Bike & Ped | 30% | 23% | 3% | 44% |
| Road & Highway Capacity | 27% | 46% | 11% | 17% |
| Maint & Rehab | 24% | 15% | 1% | 60% |
| Programs & Plans | 8% | 1% | 21% | 71% |
| Transit | 9% | 6% | 2% | 82% |
| System Management, Operations and ITS | 16% | 16% | 2% | 65% |

The 2020 SCS does include new revenue assumptions from its new roadway user fee strategies (\$959 million 2031 to 2035). While these funds are not yet programmed toward specific projects, the SCS states that revenues generated from facility-based pricing should be used to build and maintain a regional network of paid express lanes. Where surplus revenue is available, revenues should be spent on strategic transit services (e.g., express buses) or other mobility solutions that can reduce vehicle miles

traveled and provide multiple travel options along priced corridors. Additionally, the SCS includes the policy that new taxes and fees, including mileage-based fees, intended to raise additional funding for transportation purposes should prioritize closing the gap for system maintenance and state-of-good repair needs before investing in system expansion. While commitment of these potential funds toward SCS-supportive projects is helpful, CARB staff remains concerned that if the SCS pricing strategies are delayed or not implemented, the transit and active transportation projects tied to the 2031-2035 time period will not be delivered in time.

The 2020 SCS also includes revenue assumptions of yet to be adopted local sales tax measures.³¹ For example, SACOG assumes voters will renew Measure A, a half-cent general sales tax in Sacramento County. Specifically, SACOG assumes that Measure A will be approved in November 2020 and generate approximately \$2.9 billion by 2040 in nominal dollars. SACOG also assumes a proposed half-cent general sales tax in Placer County will be approved by voters in November 2020 and will generate approximately \$1.2 billion by 2040 in nominal dollars. This is particularly concerning since both sales tax measures were not placed on the November 2020 ballot and it is unclear how this affects the projects in the project list approved with the 2020 SCS and the expected GHG emissions of the plan.

In addition, SACOG includes revenue assumptions around the Cap and Trade Program and GGRF. Specifically, SACOG assumes the region will capture 35 percent of auction proceeds that are allocated to Affordable Housing & Sustainable Communities, Intercity Rail, and Low Carbon Transit Programs, or approximately \$817 million by 2040 in nominal dollars. The region's capture of these revenues assumes SACOG member agencies will receive revenues roughly equivalent to the region's share of statewide population and assumes 5 percent average annual growth. As of May 2020, the SACOG region has captured just 4.8 percent of all GGRF funds implemented. CARB staff is concerned with these assumptions, as these dollars would be applied to support SCS implementation, but are also not firm funding amounts as program dollars are competitive and total amounts available vary by time period. Further, as mentioned above, GGRF revenues are expected to decline over time. CARB staff's concern is further exacerbated when considering further anticipated impacts to available transportation revenues due to the COVID-19 pandemic.

³¹ This section includes information from the 2020 MTP/SCS [Appendix B – Revenue Forecast](#).

On the whole, CARB staff finds that the 2020 RTP/SCS project investments do not sufficiently support the implementation of the 2020 SCS strategies and achievement of the SCS's estimated GHG reduction benefits. In particular, reduced transit investment does not support the SCS's strategy of growing transit ridership 212 percent from 2016 levels. CARB staff have also identified considerable risk to delivery of SCS-supportive projects on the project list by 2035, as they are not associated with any firm funding sources.

Plan Adjustment Analysis

The Plan Adjustment Analysis evaluates whether and what measures are being taken, as necessary, to correct course to meet an MPO's target if the region is falling behind on implementation of its SCS strategies. CARB staff reviewed how the implementation of SACOG's SCS has performed to date using observed land use and transportation system data.³² CARB staff found that SACOG is not on track to achieve SACOG's previous, 2016 SCS planned outcomes for 2020 and 2035. Observed land use and travel data for the region shows declines in transit ridership and significant unrealized new development within infill areas in the region, which are inconsistent with the trends and values assumed in the 2016 SCS to meet the region's GHG reduction targets.

Given this finding, CARB staff looked for evidence that SACOG's 2020 SCS considered these challenges and either changed its SCS strategies, or put additional measures in place to accelerate implementation of its SCS strategies in order to stay on track to meet its GHG reduction target.³³

CARB staff's review of the 2020 SCS found that the plan maintains phased and coordinated land use development and transit as its key strategies for achieving an even more aggressive 2035 GHG reduction target. SACOG adjusted the 2020 SCS's³⁴ transit ridership assumptions down 25 percent compared to what was assumed in the 2016 SCS; for land use, it assumed a 26 percent decrease in housing within a ½-mile of transit. In addition, 65 percent of new growth is assumed to occur in infill areas such as center/corridor and established communities, which is even higher than the 58 percent

³² See "Tracking Implementation" section of Appendix C: MPO Reporting.

³³ See "Incremental Progress" section of Appendix C: MPO Reporting for SACOG's quantitative assessment of how changes to its SCS strategies between the 2016 SCS and 2020 SCS contributed to achievement of its 2035 target.

³⁴ This section compares performance indicators from its 2020 SCS data table to its 2016 SCS data table.

of new growth in infill areas it assumed in its 2016 SCS. Adjustments to the plan's transit and housing near transit assumptions, while less supportive of GHG emissions reductions, directionally align with declining and stagnant transit service and ridership findings from SACOG's Regional Progress Report³⁵ (Progress Report), which was prepared in 2017 to inform the policy focus of the 2020 SCS. Increased infill assumptions in the 2020 SCS that support the region's GHG reductions, however, are identified as a challenge area based on housing permit data trends shown in the Progress Report. At the same time, SACOG has added new assumptions and strategies to its 2020 SCS regarding the implementation of new and shared mobility travel options, as well as regional roadway pricing that are anticipated to also support the region's GHG reductions. Taken as a whole, these adjustments suggest that the region is doubling down on land use strategies, reducing reliance on transit uptake, and further diversifying the strategies it plans to use to help meet the region's more aggressive 2035 target.

Specifically, CARB observed the following policy changes and adjustments to SACOG's 2020 SCS compared to its 2016 SCS.

Land Use and Development

- Green Means Go Pilot Program initiative is added to help catalyze the development planned in the region's infill areas.
- Regional Housing Needs Plan with action steps and incentives is added to put member agencies in a better position to accelerate infill and affordable housing production.
- Blueprint update effort is added to allow the region's jurisdictions and stakeholders to revisit and update the region's growth and development vision.

Transportation

- Transit assumptions are adjusted for the 2035 target year. Transit ridership is assumed to decrease from 499,800 to 376,040 average daily boardings (25 percent) between the 2016 SCS and 2020 SCS.

³⁵ SACOG. [Sacramento Area Regional Progress Report](#). June 2017.

- Bike and pedestrian lane miles are adjusted for the 2035 target year and decrease from 3,508 to 1,565 (55 percent) between the 2016 SCS and 2020 SCS.

Roadway Pricing:

- Two new pricing strategies are added to help address concerns about transportation funding sustainability, while also helping to support VMT reduction.
- Coordination with Caltrans, and other local partners, on managed lane studies is added to help support implementation of the new facility-based pricing strategy.
- Work with regional partners to develop pricing pilot projects is added to support implementation of the new pricing strategies.

Electric Vehicle and New Mobility:

- Assistance for transit and local agencies to develop, test, and pilot new mobility services such as micro-transit, bike share, and micro-mobility through SACOG's Civic Lab Innovative Mobility Accelerator Program is added to support incorporation of new mobility options into the region.
- Next Generation Transit Study development is added to support strategies to integrate traditional transit services with new mobility options.
- New employer- and residential-based transportation demand management program development is added through SACOG's Civic Lab Innovative Mobility Accelerator Program to support further incorporation of new mobility options in the region in a way that supports the SCS goals.
- EV charging strategy is adjusted to assume 150 additional public chargers will be deployed by 2035. SACOG previously included an EV charging strategy in the 2016 SCS, which assumed future deployment of over 120 public charging stations by 2020, and over 200 by 2035. As of 2020, SACOG had over 280 public chargers.

CARB staff finds that the 2020 SCS shows evidence of changes and adjustments made that are intended to help meet the region's more aggressive targets and are based on lessons learned from previous SCS performance.

CARB's Determination

ACCEPT

(WITH CONCERNS REGARDING IMPLEMENTATION)

Based on a review of all available evidence and in consideration of CARB's 2019 Evaluation Guidelines, CARB staff accepts SACOG's determination that its 2020 SCS would meet the target of a 19 percent reduction by 2035, compared to 2005 levels, when fully implemented.

CARB staff commends SACOG and its member jurisdictions for the innovative thinking and leadership shown in adopting new pathways for the region to address smart growth and increase mobility choices in its 2020 SCS. Furthermore, the region's addition of roadway pricing mechanisms in the 2020 SCS, both paid express lanes and mileage-based fees/Pay Go, demonstrate needed leadership on tough-to-implement strategies that can help provide mobility benefits to residents and achieve the region's GHG target. CARB staff's policy evaluation of the 2020 SCS concludes that the plan includes: sufficiently supportive indicator trends; near-term policy support actions; active transportation, transit, and other SCS-supportive project investments; and adjustments in response to observed implementation challenges that when fully implemented, will lead the Sacramento region to achieve its 2035 GHG reduction target.

CARB staff, however, continue to have serious concerns with the 2020 SCS, regarding the absence of a 2020 target determination and whether SACOG and its local members are putting in place the actions necessary to fully implement the region's SCS strategies by 2035. Specific to the 2020 target determination, SACOG did not make a determination as to whether the 2020 SCS meets the 7 percent GHG reduction target by 2020 compared with 2005 levels. Statute requires MPOs to show how they will meet the CARB-set targets for years 2020 and 2035. The overarching intent of SB 375 was to enact the magnitude of change that would lead to actual GHG reductions from passenger vehicles and light trucks in line with the targets set by CARB. Failing to evaluate and determine whether the strategies would meet the 2020 target could hinder this goal by allowing backsliding on GHG reductions achieved or backloading of strategies to meet the 2035 target, both of which threaten the ability of the region to meet the targets. This would be counter to the intent of SB 375 and frustrates California's ability to meet its climate commitments, which depend on local land use and transportation actions to reduce transportation GHG emissions. For these reasons, SACOG and every MPO should submit a determination as to whether or when it will

meet the 2020 target in every SCS based on latest observed data and SCS strategy implementation progress.

While SACOG's plan forecasts bold changes to the region's future land use and transportation system by 2035, the implementation actions identified concern CARB staff. For example, these actions rely heavily on SACOG and its local members securing new funding sources and State legislative changes in the near-term to pilot and eventually launch some first-of-a-kind regional programs. CARB is concerned that any underperformance in the region's current and planned advocacy efforts to bring new programs and authorities to timely fruition means that the Sacramento region will not meet the targets. SACOG has already missed anticipated milestones for key supporting actions in the 2020 SCS, which raises concerns about the viability of fully implementing its included strategies by 2035. In addition, SACOG anticipates reducing funding for transit and active transportation projects and, the SCS appears to backload those critical projects, while prioritizing projects such as capacity expansion roadway projects that are known to encourage more people to drive.³⁶

To support successful implementation of the SCS, and to continue fully supporting the GHG benefits claimed in the 2020 SCS, SACOG and its local members will need to undertake additional actions to deliver and monitor its SCS strategies, as well as quickly adjust its strategies for any lost opportunities that need to be replaced or mitigated. To address these concerns, CARB staff has the following recommendations and requests that SACOG set up regular monitoring of the implementation actions associated with its SCS strategies in consultation with CARB and other relevant agencies.

Recommendations

- Prioritize Funding for Transportation Projects that Advance SCS Implementation and Goals

SACOG should adjust regional transportation funding award programs, like its Regional and Community Design Programs to target and prioritize certain projects. Specifically, projects with the best demonstrated performance outcomes for implementing the SCS strategies and goals of reducing VMT per capita, accelerating infill, and providing cleaner, multi-modal travel options should be prioritized.

³⁶ CARB - [Research on Effects of Transportation and Land Use-Related Policies](#)

SACOG should prioritize projects that meet the regional GHG reduction targets when seeking funding through the Solutions for Congested Corridors Program (SCCP) and Trade Corridor Enhancement Program (TCEP), under SB 1. SACOG and its member jurisdictions should align project nominations with the region's SCS by ensuring that all project nominations will support growth in the region's location-efficient infill areas, particularly in areas that already include a mix of uses and transportation options that foster lower VMT.

To help maintain the years of regional collaboration that informed SACOG's SCS and both the region and the State's ability to meet respective climate and air quality targets, future local sales tax measures in the region should limit funding roadway capacity expansion projects that are not well-aligned with the region's adopted SCS land use and housing strategy. Local sales tax measures comprise approximately 17 percent of the Sacramento region's projected transportation revenues. These measures list specific projects, locking them in for years or decades. Often, these measures do not fully fund their listed projects, and go on to capture a region's otherwise flexible State and federal funds. Within the SACOG region, some of these measures have been supportive of SB 375 goals, while other projects have not. Considering projects' impacts on VMT is more important than ever. Going forward, investments should focus on transit, active transportation, transportation electrification, and increasing mobility options that discourage solo driving and reduce VMT.

- Monitor Implementation of the Adopted Transportation Project List

SACOG will need to be vigilant about monitoring the balance of transportation projects through 2035 to ensure planned reductions are achieved. Delays or removals of transit and active transportation projects will prevent SACOG from meeting its GHG emission reduction target. Amendments to the project list should be accompanied by recalculation and discussion of whether and how SCS target achievement is maintained.

- Accelerate Infill to Further SCS Implementation and Goals

Given that Green Means Go is a key strategy that SACOG is pursuing and anticipates will contribute significantly to helping address previous challenges with implementing its SCS's infill assumptions, it is imperative that the locations and policies within the program's "green zones" align with the planned outcomes assumed in the SCS. Furthermore, SACOG could assist with identifying priority locations for "green zones" that would result in more

successful implementation. In addition, SACOG and its local jurisdictions may need to also explore other mechanisms to level the cost of infill to make it more financially attractive than greenfield development. Some areas that could be explored are local implementation of SB 743 and development of a regional mitigation bank to support catalytic infill project development in the region, and developing a regional site inventory and feasibility study for infill potential that aligns with the growth assumed in the SCS.

- State and Regional Partnership on Pricing Pilot Options

SACOG will need to engage in close collaboration with State partners at Caltrans and CalSTA to ensure successful implementation of the pricing mechanisms identified in the 2020 SCS. Given that SACOG's pilot project grant application was not funded this round, SACOG needs to work with both Caltrans and CalSTA on identifying alternative joint actions for advancing pilot work in the next four years. CARB expects SACOG to identify further progress on implementing this strategy in its next SCS in order to continue receiving credit for the full GHG emission reductions assumed in this 2020 SCS.

- Provide All Trend Analysis Metrics

SACOG's SCS submittal lacks data on transit seat utilization, which is one of the eight trends that CARB analyzes as part of the trend analysis. This information is important as it can be used to demonstrate how transit strategies in the SCS support growth in public transit ridership and GHG reductions. Providing more meaningful performance indicators like this may require SACOG to update its travel demand model and collect additional information. CARB requests that this metric be included in SACOG's next SCS.

- Improve Modeling and Data

As new data emerge, CARB recommends that SACOG update its model and its components as new data such as travel surveys, transit boarding surveys, and big data become available. Among other updates, CARB recommends that the model incorporate TNCs and autonomous vehicles.

- Analyze Induced Travel Demand

Induced travel is a phenomenon that is caused by roadway expansion that increases VMT when drivers reroute from congested roads to longer, uncongested roads, shift from alternative modes to driving, or make more frequent trips. Road expansion projects can also lead to long-term induced travel in the region. Long-term effects may also occur if households and businesses move to more distant locations or if development patterns become more dispersed in response to the capacity increase. Induced travel is important to analyze as it can affect VMT and GHG emissions. SACOG has included several road expansion projects in its 2020 SCS. Currently SACOG is using an elasticity-based approach to assess the long-term effect of induced travel. While this approach can estimate the magnitude of VMT change, it cannot identify the geographic areas of induced travel or synergistic effects of induced travel with other strategies, and thus may not be directly helpful to future planning and mitigation actions. CARB staff recommends that SACOG continue to explore methods that analyze the long-term induced travel demands of road expansion more thoroughly in future SCSs, using an integrated land use and travel demand model that captures change in transportation investments or neighborhood changes (residential and employment locations). Further, this will improve the capability to analyze the impact of land use policies such as smart growth strategies, transit-oriented development, and bike/pedestrian-friendly developments on travel demand.

Appendix A: SACOG's 2020 SCS Strategy Table

This is a summary table based on SACOG's submittal that compares the key land use and transportation strategies between the 2016 and 2020 SCSs. This table also illustrates how GHG emissions were estimated for each strategy.

| Strategy Category: 2020 SCS Strategy Name | New/Carryover Strategy from 2016 SCS | Analysis Type | Estimated GHG Emission Reduction in 2035 |
|---|--------------------------------------|---------------|--|
| <i>Land Use & Housing:</i> Shortening Passenger Vehicle Trips: Jobs/Housing Balance, Infill Development, Transit-Oriented Development | Carryover | On-Model | -5% |
| <i>Transportation:</i> Increasing Non-SOV Mode Share: Transit Supportive Infrastructure & Investment, Bicycle and Pedestrian Infrastructure & Investment, Transportation Demand Management (TDM) | Carryover | On-Model | -6% |
| <i>Local/ Regional Pricing:</i> Managed Express Lane Pricing & PAYGO | New | On-Model | -2% |
| <i>Transportation:</i> Intelligent Transportation System & Transportation System Management (ITS & TSM) | Carryover | Off-Model | -0.5% |
| <i>Electric Vehicles and New Mobility:</i> | Carryover | Off-Model | -0.5% |

| Strategy Category: 2020 SCS Strategy Name | New/Carryover Strategy from 2016 SCS | Analysis Type | Estimated GHG Emission Reduction in 2035 |
|--|--|-----------------------|---|
| Electric Vehicle Charging Infrastructure | Carryover | (Continued) | (Continued) |
| Electric Vehicle Incentives | Carryover | | |
| Bike Share/Micromobility | New | | |
| <i>Aging Population</i> ³⁷ | Carryover | Exogenous Variable | -2% |
| <i>Increase in Auto Cost</i> ³⁸ | Carryover | Exogenous Variable | -3% |
| Total Reduction | NA | NA | 19% |

Note:
NA means not available

³⁷ SACOG is claiming GHG reductions from there aging population, which is an exogenous variable.

³⁸ SACOG is claiming GHG reductions from increased auto operating cost, which is an exogenous variable

Appendix B: Data Table

| Modeling Parameters | 2005 | 2016 (base year) | 2020 With Project [1] | 2035 With Project | 2040 With Project | Notes for CARB |
|--|-----------|------------------------|-----------------------------|----------------------|----------------------|--|
| Modeled Population | 2,139,955 | 2,376,311 | 2,482,749 | 2,903,090 | 2,996,832 | MPO Estimated |
| Vehicle Operating Costs (\$/mile) | \$0.22 | \$0.19 | n/a[3] | \$0.24 | \$0.24 | In 2017 dollars, Includes federal fuel tax assumed to remain constant for all future scenarios. Fuel, Maintenance and Tires |
| State Fuel Tax or Mileage Fee Price (\$/mile) | \$ n/a | \$ n/a | n/a | \$0.012 | \$0.012 | In 2017 dollars, California State Fuel Tax or Mileage fee per mile range from (\$0.012-\$0.019) Assumed low range for SCS. Refer to 3d - Auto Operating Costs, Fuel Taxes and Mileage-Based Fees |
| SACOG Mileage Fee Price (\$/mile) | \$ n/a | \$ n/a | n/a | \$0.023 | \$0.023 | 2017 dollars, SACOG Mileage fee per mile may range from (\$0.007-\$0.023) Assumed high range for SCS. Refer to 3d - Auto Operating Costs, Fuel Taxes and Mileage-Based Fees |

| Modeling Parameters | 2005 | 2016 (base year) | 2020 With Project [1] | 2035 With Project | 2040 With Project | Notes for CARB |
|---|-----------|------------------------|-----------------------------|----------------------|----------------------|---|
| Average Median Household Income (\$/year) | \$72,270 | \$61,970 | n/a | \$61,520 | \$61,500 | In 2017 dollars |
| Total Number of Households | 774,312 | 881,799 | n/a | 1,100,474 | 1,136,599 | MPO Estimated |
| Total Number of Jobs | 1,000,887 | 1,060,751 | n/a | 1,279,016 | 1,330,813 | MPO Estimated |
| Total Developed Acres | n/a | 686,847 | n/a | 728,790 | 733,247 | MPO Estimated |
| Total Housing Units (DU) | n/a | 921,123 | n/a | 1,144,694 | 1,181,251 | MPO Estimated |
| Total Single-Family Housing Units (DU) | n/a | 664,718 | n/a | 760,552 | 784,841 | Refer Table C-4 in Appendix C, 2020 MTP/SCS |
| Share of Single-Family Housing Units (%) | n/a | 72% | n/a | 66% | 66% | Refer Table C-4 in Appendix C, 2020 MTP/SCS |
| Total Multi-Family Housing Units (DU) | n/a | 256,405 | n/a | 384,142 | 396,410 | Refer Table C-4 in Appendix C, 2020 MTP/SCS |
| Share of Multi-Family Housing Units (%) | n/a | 28% | n/a | 34% | 34% | Refer Table C-4 in Appendix C, 2020 MTP/SCS |
| Net Residential Density Regional Total | n/a | 1.2 | n/a | 1.5 | 1.5 | dwelling units/acre |
| Net Residential Density Center and Corridor | n/a | 11.0 | n/a | 13.9 | 14.0 | dwelling units/acre |
| Net Residential Density Established | n/a | 2.4 | n/a | 2.5 | 2.5 | dwelling units/acre |
| Net Residential Density Developing | n/a | 1.4 | n/a | 3.0 | 2.9 | dwelling units/acre |

| Modeling Parameters | 2005 | 2016 (base year) | 2020 With Project [1] | 2035 With Project | 2040 With Project | Notes for CARB |
|--|------|------------------------|-----------------------------|----------------------|----------------------|---|
| Net Residential Density Rural Residential | n/a | 0.2 | n/a | 0.2 | 0.2 | dwelling units/acre |
| Total Housing Units Within ½-Mile of a High- Quality Transit Station | n/a | 536,075 | n/a | 669,175 | 690,960 | High Frequency Transit Areas are those areas of the region within ½-mile of a major transit stop (existing or planned light rail, street car, or train station) or high-quality transit corridor. A high-quality transit corridor is a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours (Pub. Resources Code, § 21155). |
| Total Employees Within ½-Mile of a High-Quality Transit Station | n/a | 553,756 | n/a | 641,088 | 658,323 | High Frequency Transit Areas are those areas of the region within ½-mile of a major transit stop (existing or planned light rail, street car, or train station) or high-quality transit corridor. |

| Modeling Parameters | 2005 | 2016 (base year) | 2020 With Project [1] | 2035 With Project | 2040 With Project | Notes for CARB |
|--|-------|------------------------|-----------------------------|----------------------|----------------------|--|
| Total Employees Within ½-Mile of a High-Quality Transit Station | n/a | 553,756 | n/a | 641,088 | 658,323 | A high-quality transit corridor is a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours (Pub. Resources Code, § 21155). |
| Freeway and General Purpose Lanes - Mixed Flow, auxiliary, etc. (lane miles) | 1,401 | 1,705 | n/a | 1,648 | 1,670 | General purpose + auxiliary lane miles. |
| Freeway Express Lanes (lane miles) | 0 | 0 | n/a | 273 | 273 | Express Lanes during AM peak hour. Includes taking a lane from GP and implementing reversible lanes. |
| Average Express Lane Price (\$/mile) | n/a | n/a | n/a | \$ 0.83 | \$0.68 | Based on dynamic demand corridor pricing rollup of average SOV + commercial vehicles across only priced corridors during peak hour periods only, off peak hours is free for all vehicle types. All other freeway and other roadway lanes not along Express Lane are free. 2017 dollars |

| Modeling Parameters | 2005 | 2016 (base year) | 2020 With Project [1] | 2035 With Project | 2040 With Project | Notes for CARB |
|---|-------|------------------------|-----------------------------|----------------------|----------------------|---|
| Freeway HOV Lanes (lane miles) | 64 | 124 | n/a | 159 | 171 | HOV lanes miles during AM peak period lane configuration. |
| Arterial/Expressway Lanes (lane miles) | 2,935 | 3,392 | n/a | 4,324 | 4,477 | Expressways, Major, Minor Arterials, and American River Crossings |
| Rural Roadway Lanes (lane miles) | 3,203 | 3,103 | n/a | 2,849 | 2,854 | Rural Highways and Rural Arterials |
| Collector Lanes (lane miles) | 2,336 | 2,425 | n/a | 2,410 | 2,414 | MPO Estimated |
| Average Transit Headway (minutes) | n/a | n/a | n/a | n/a | n/a | MPO Estimated |
| Total Transit Operation Miles | 4,916 | 5,558 | n/a | 9,308 | 9,368 | Vehicle Service Miles |
| Transit Total Daily Vehicle Service Hours | 3,588 | 3,994 | n/a | 8,212 | 8,223 | MPO Estimated |
| Bike and Pedestrian Lanes (class I, II, & IV) Miles | 639 | 876 | n/a | 1,565 | 1,576 | MPO Estimated |
| Household Vehicle Ownership | 1.92 | 1.82 | n/a | 1.81 | 1.80 | MPO Estimated |
| Average Trip Length (miles/day) Drive Alone | 8.04 | 7.85 | n/a | 7.35 | 7.33 | Average trip length for all trips by mode. |
| Average Trip Length (miles/day) Shared Ride | 6.73 | 6.89 | n/a | 6.78 | 6.78 | Average trip length for all trips by mode. |
| Average Trip Length (miles/day) Public Transit | 5.39 | 5.83 | n/a | 6.24 | 6.24 | Average trip length for all trips by mode. |
| Average Trip Length (miles/day) Bike & Walk | 1.63 | 2.3 | n/a | 2.37 | 2.37 | Average trip length for all trips by mode. |

| Modeling Parameters | 2005 | 2016 (base year) | 2020 With Project [1] | 2035 With Project | 2040 With Project | Notes for CARB |
|--|-------|------------------------|-----------------------------|----------------------|----------------------|--|
| Average Travel Time by Trip Purpose (minutes) Commute Trip | 25 | 24 | n/a | 25 | 25 | Half of work tours |
| Average Travel Time by Trip Purpose (minutes) Non-Commute Trip | 17 | 19 | n/a | 19 | 19 | Half of non-work tours |
| Average Trip Travel Time Drive Alone (minutes) | 15 | 14 | n/a | 14 | 13 | Average trip travel time for all trips by mode. |
| Average Trip Travel Time Drive Alone (TNC) | n/a | n/a | n/a | n/a | n/a | TNC not a mode in the MTP/SCS |
| Average Trip Travel Time Shared Ride | 12 | 12 | n/a | 12 | 12 | Average trip travel time for all trips by mode. |
| Average Trip Travel Time Shared Ride (pooled TNC) | n/a | n/a | n/a | n/a | n/a | TNC pool not a mode in the MTP/SCS |
| Average Trip Travel Time Public Transit | 40 | 46 | n/a | 40 | 40 | Average trip travel time for all trips by mode. |
| Average Trip Travel Time by Mode (minutes) Bike | 21 | 28 | n/a | 29 | 29 | Average trip travel time for all trips by mode. |
| Average Trip Travel Time by Mode (minutes) Walk | 23 | 30 | n/a | 32 | 32 | Average trip travel time for all trips by mode. |
| Average Travel Time for Low-Income Populations | 14 | 15 | n/a | 16 | 16 | Low Income Population defined as households less than 200% the U.S. Poverty Line. |
| Mode Share (%) Drive Alone | 43.7% | 42.1% | n/a | 41.5% | 41.5% | MPO Estimated |
| Mode Share (%) Drive Alone (TNC) | n/a | n/a | n/a | n/a | n/a | TNC not a mode in the MTP/SCS |

| Modeling Parameters | 2005 | 2016 (base year) | 2020 With Project [1] | 2035 With Project | 2040 With Project | Notes for CARB |
|--|------------|------------------------|-----------------------------|----------------------|----------------------|--|
| Mode Share (%) Shared Ride | 43.8% | 45.1% | n/a | 43.3% | 43.2% | MPO Estimated |
| Mode Share (%) Shared Ride (pooled TNC) | n/a | n/a | n/a | n/a | n/a | TNC pool not a mode in the MTP/SCS |
| Mode Share (%) Public Transit | 1.3% | 1.2% | n/a | 2.4% | 2.4% | MPO Estimated |
| Mode Share (%) Bike | 1.9% | 2.5% | n/a | 2.8% | 2.8% | MPO Estimated |
| Mode Share (%) Walk | 7.3% | 7.8% | n/a | 9.0% | 9.0% | MPO Estimated |
| Mode Share (%) Other | 2.0% | 1.2% | n/a | 1.0% | 1.0% | MPO Estimated |
| Seat Utilization | n/a | n/a | n/a | n/a | n/a | MPO Estimated |
| Transit Ridership (Average daily boarding's) | 138,460 | 120,500 | n/a | 376,040 | 385,901 | MPO Estimated |
| Total VMT per weekday (all vehicle class) (miles) | 57,820,351 | 58,442,986 | 60,832,404 | 67,499,956 | 69,812,811 | MPO Estimated |
| Total VMT per weekday for passenger vehicles (CARB vehicle classes LDA, LDT1, LDT2, and MDV) | 51,543,000 | 51,440,387 | 53,449,298 | 59,052,790 | 61,073,845 | 2005 from EMFAC 2007, all other scenarios are from EMFAC 2011. |
| SB 375 vehicle population vehicles (CARB vehicle classes LDA, LDT1, LDT2, and MDV) | 1,916,792 | 1,356,213 | 1,410,022 | 1,579,658 | 1,634,419 | 2005 from EMFAC 2007, all other scenarios are from EMFAC 2011. |
| GHG Emissions Per Person Vehicle VMT | 0.986 | 0.948 | 0.948 | 0.950 | 0.951 | 2005 from EMFAC 2007, all other scenarios are from EMFAC 2011. |

| Modeling Parameters | 2005 | 2016 (base year) | 2020 With Project [1] | 2035 With Project | 2040 With Project | Notes for CARB |
|---|------------|------------------------|-----------------------------|----------------------|----------------------|--|
| Total II VMT per weekday for passenger vehicles (miles) | 39,714,178 | 40,775,623 | n/a | 46,522,031 | 48,125,117 | MPO Estimated |
| Total IX/XI VMT per weekday for passenger vehicles (miles) | 10,746,419 | 9,584,515 | n/a | 11,054,439 | 11,421,881 | MPO Estimated |
| Total XX VMT per weekday for passenger vehicles (miles) | 1,082,403 | 1,080,248 | n/a | 1,476,320 | 1,526,846 | MPO Estimated |
| SB 375 VMT per capita | 24.09 | 21.65 | 21.53 | 20.34 | 20.38 | 2005 from EMFAC 2007, all other scenarios are from EMFAC 2011. |
| Total CO2 emissions per weekday (all vehicle class) (tons/day) | 32,970 | 31,417 | 32,924 | 36,905 | 29,021 | 2005 from EMFAC 2007, all other scenarios are from EMFAC 2011. |
| Total SB375 CO2 emissions per weekday for passenger vehicles (CARB vehicle classes LDA, LDT1, LDT2, and MDV) (tons/day) | 25,410 | 24,373 | 25,404 | 28,051 | 29,045 | 2005 from EMFAC 2007, all other scenarios are from EMFAC 2011. |
| Total II CO2 emissions per weekday for passenger vehicles (tons/ days) | 19,579 | 19,320 | n/a | 22,099 | 22,887 | 2005 from EMFAC 2007, all other scenarios are from EMFAC 2011. |
| Total IX / XI CO2 emissions per weekday for passenger vehicles (tons/day) | 5,298 | 4,541 | n/a | 5,251 | 5,432 | 2005 from EMFAC 2007, all other scenarios are from EMFAC 2011. |

| Modeling Parameters | 2005 | 2016 (base year) | 2020 With Project [1] | 2035 With Project | 2040 With Project | Notes for CARB |
|--|-------|------------------------|-----------------------------|----------------------|----------------------|---|
| Total XX CO2 emissions per weekday for passenger vehicles (tons/day) | 534 | 512 | n/a | 701 | 726 | 2005 from EMFAC 2007, all other scenarios are from EMFAC 2011. |
| SB 375 CO2 per capita (lbs./day) (Through Trips removed with factors 0.979 for 2005/2016/2020 and 0.975 for 2035/2040) | 23.25 | 20.00 | 20.03 | 18.84 | 18.90 | 2005 from EMFAC 2007, all other scenarios are from EMFAC 2011. |
| EMFAC Adjustment Factor | n/a | n/a | 3.50% | 3.7% | n/a | Applied to SB375 CO2 per capita. This is the adjustment factor for EMFAC version 2007 to 2011 |
| Off-Model CO2 Emissions Reductions RTP/SCS Strategy 1: ITS/TSM | n/a | n/a | -0.15% | -0.36% | n/a | 2020: Estimates of actual off model adjustment. 2035: Applied midpoint of low-high forecast range. |
| Off-Model CO2 Emissions Reductions RTP/SCS Strategy 2: TDM + Car Sharing | n/a | n/a | -0.80% | -2.00% | n/a | 2020: Estimates of actual off model adjustment. 2035: Applied midpoint of low-high forecast range. |
| Off-Model CO2 Emissions Reductions RTP/SCS Strategy 3: EV | n/a | n/a | -0.05% | -0.55% | n/a | 2020: Estimates of actual off model adjustment. 2035: Applied midpoint of low-high forecast range. |

| Modeling Parameters | 2005 | 2016 (base year) | 2020 With Project [1] | 2035 With Project | 2040 With Project | Notes for CARB |
|--|------|------------------------|-----------------------------|----------------------|----------------------|---|
| Off-Model CO2 Emissions Reductions RTP/SCS Strategy 4: Bike Share | n/a | n/a | -0.10% | -0.42% | n/a | 2020: Estimates of actual off model adjustment. 2035: Applied midpoint of low-high forecast range. |
| Off-Model CO2 Emissions Reductions RTP/SCS Strategy : Average Combined | n/a | n/a | -1.10% | -3.33% | n/a | 2020: Estimates of actual off model adjustment. 2035: Applied midpoint of low-high forecast range. |
| Total RTP Expenditure (\$ in billions) [2] | n/a | n/a | n/a | n/a | n/a | n/a |
| Road & Highway Capacity expansion (\$) | n/a | n/a | n/a | n/a | n/a | n/a |
| Roadway Maintenance & Rehabilitation (\$) | n/a | n/a | n/a | n/a | n/a | n/a |
| Transit Investments (\$) | n/a | n/a | n/a | n/a | n/a | n/a |
| Transit operations (\$) | n/a | n/a | n/a | n/a | n/a | n/a |
| Bike and pedestrian projects (\$) | n/a | n/a | n/a | n/a | n/a | n/a |
| Other (Program, Safety, System Management & Operations) (\$) | n/a | n/a | n/a | n/a | n/a | n/a |

[1] 2020 forecast based on an interpolation between 2016 and 2027. No land use scenario was prepared for 2020.

[2] SACOG did not provide investment information in the data table provided to CARB. SACOG referred CARB to the [2020 MTP/SCS DEIR Table 2-16 Summary of Proposed Investments in the Plan Area](#) for the Proposed MTP/SCS, and [Appendix A Transportation Project List](#) for investment information.

[3] n/a means not available

Appendix C: MPO Reporting Components

This section will focus on discussing the three reporting components of the 2019 Evaluation Guidelines: tracking implementation, incremental progress, and equity. The three reporting components are included to identify the effectiveness of prior SCS implementation and increase overall transparency of the SCS for the public and other stakeholders. These reporting components will demonstrate the efforts put forward by MPOs and the progress made towards meeting their SB 375 GHG targets.

Tracking Implementation

The purpose of this section is to report on the progress the SACOG region has made implementing its SCS. Specifically, staff compared observed data for transportation, housing, and land use performance metrics to plan performance to determine whether the region is on track to meet its targets. Performance metrics used in this analysis were chosen based on the availability of observed data and plan performance indicators provided by SACOG and represent a snapshot of where the region is currently. Metric trends that are not heading in the right direction relative to expected plan outcomes are areas that CARB staff look at in the Plan Adjustment analysis, to understand whether the current SCS modifies or adds its strategies or actions to get the region on track with expected plan outcomes.

Regional Average Household Vehicle Ownership

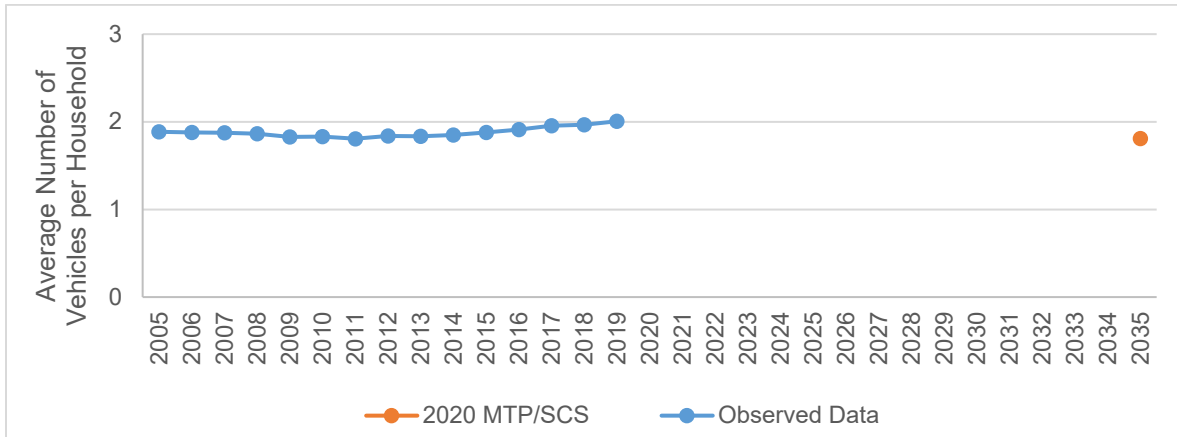
CARB staff analyzed the trend in household vehicle ownership for SACOG from 2005 to 2019. This indicator reports the average number of private vehicles owned by each household in SACOG (i.e., the total number of household vehicles divided by the number of households). Total county-level, privately owned vehicle and household data for 2005 to 2016 were obtained from the American Community Survey (ACS) reports³⁹ and Department of Finance,⁴⁰ respectively.

Figure 6 shows historical SACOG average household vehicle ownership from 2005 to 2019 in comparison to SACOG's 2035 forecasted household vehicle ownership from its travel demand model (See Appendix B: Data Table). While average household vehicle ownership increased by 6.4 percent in SACOG from 2005 to 2019, there was a decline between 2005 and 2012, with a subsequent rebound. The 2035 forecasted SCS household vehicle ownership is 4 percent below 2005 levels and the trend in observed data from 2012 forward is heading in the wrong direction relative to expected plan outcomes.

³⁹ U.S. Census Bureau, American Community Survey, 2005 – 2019 [ACS 1-year Estimates](#).

⁴⁰ [Department of Finance, Demographics](#).

Figure 6. SACOG Region Average Household Vehicles



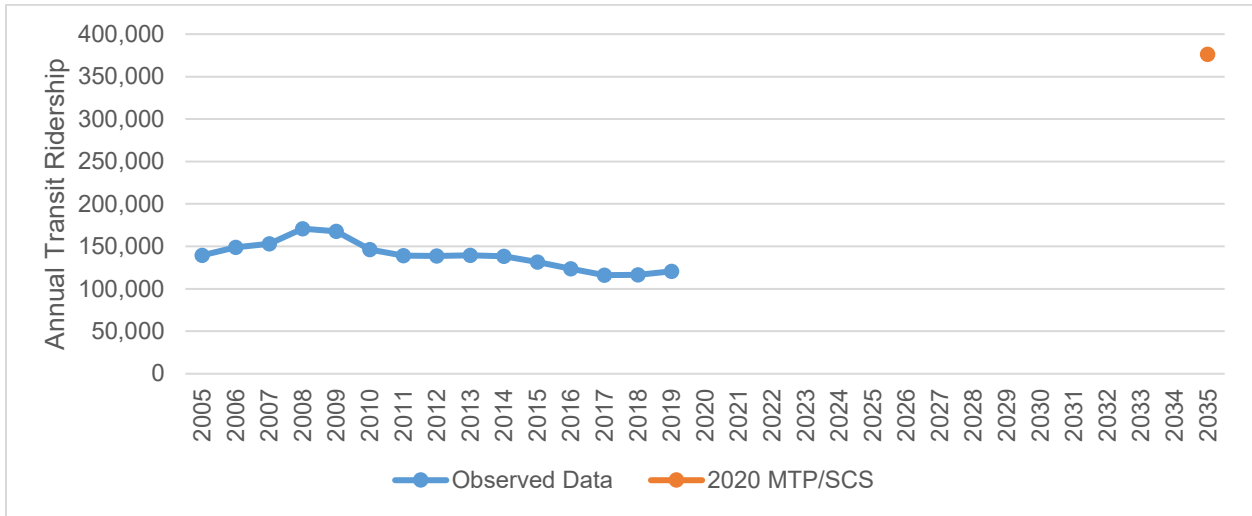
Annual Transit Ridership

CARB staff used the National Transit Database (NTD)⁴¹ published monthly transit boarding numbers (unlinked trips) reported by local transit agencies to determine the historical monthly and annual boarding numbers in the SACOG region. This dataset cover 2005 to 2017.

Figure 7 shows observed annual transit ridership in SACOG in comparison to 2035 plan performance. The observed data generally increase from 2005 throughout 2008 and then generally decrease through 2019, while SACOG’s MTP/SCS forecasted transit ridership is twice that of historical levels. The trend between 2008 and 2019 is heading in the wrong direction relative to the expected plan outcomes.

⁴¹ Federal Transit Agency, [National Transit Database](#).

Figure 7. SACOG Region Annual Transit Ridership



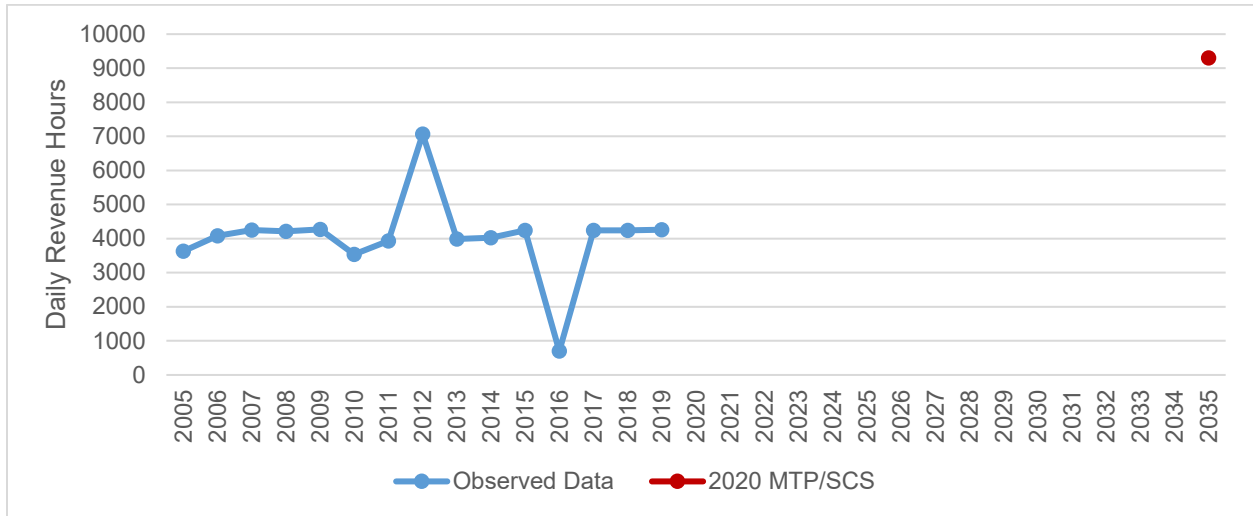
Daily Transit Service Hours

The National Transit Database (NTD) publishes monthly boarding numbers (unlinked trips) reported by local transit agencies. CARB staff calculated the monthly and annual revenue hours in the SACOG region based on this NTD dataset from 2005 to 2019⁴². Total transit revenue hours in SACOG were then adjusted to daily transit revenue hours.

Observed NTD transit revenue hours shows slight increase from 2002 to 2006, and then remained relatively steady through 2019. SACOG’s 2020 MTP/SCS forecasts transit revenue hours to more than double from 2019 observed transit revenue hours.

⁴² [National Transit Database \(NTD\)](#).

Figure 8. SACOG Region Transit Revenue Hours



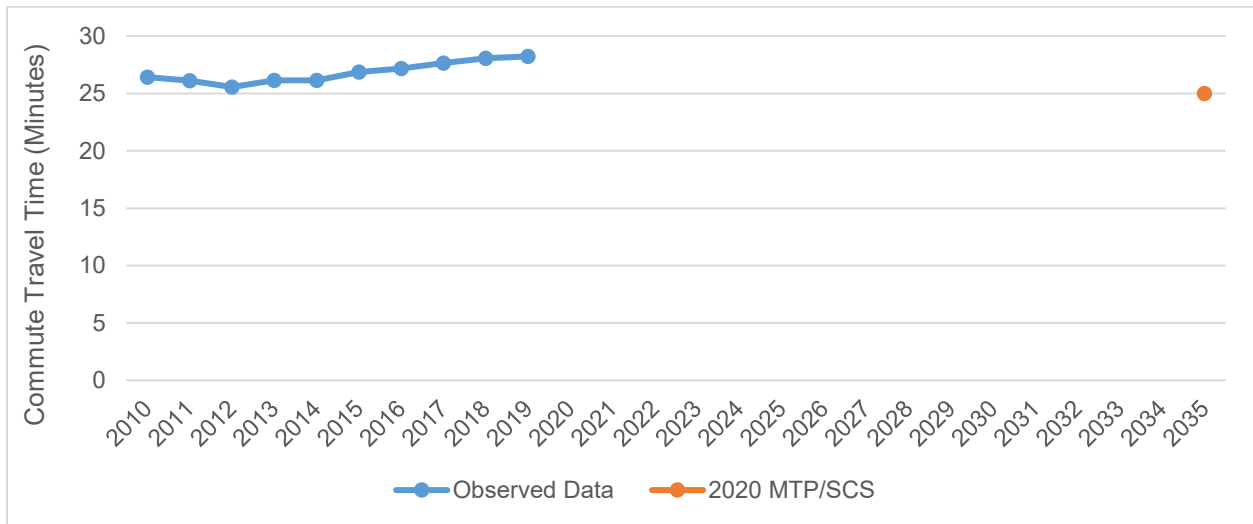
Commute Trip Travel Time

CARB staff analyzed commute trip travel times from 2010 to 2019 using data from the American Community Survey⁴³ data. A population weighted approach was used to calculate total travel times by county and then aggregated to the SACOG region.

Figure 9 shows historical commute time in comparison to SACOG's 2020 MTP/SCS average commute time. SACOG's 2020 MTP/SCS forecasts a 3-minute reduction in commute time for the region by 2035, while the observed data slightly increase from 2010 to 2019, away from the expected plan outcomes.

⁴³ [U.S. Census Bureau, American Community Survey](#)

Figure 9. SACOG Commute Time



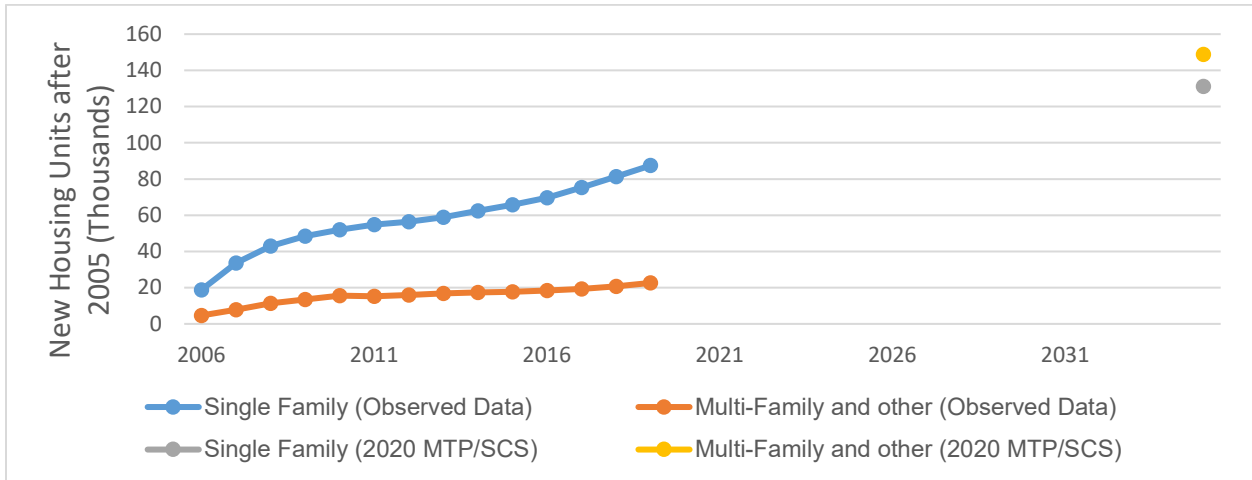
New Homes Built By Type

CARB staff analyzed the rate of new homes being built by type in the SACOG region from 2005 to 2016 using the California DOF datasets including E-5 (for years 2011 to 2016) and E-8 (for years 2005 to 2010)⁴⁴:

Figure 10 shows the historical number of new single-family and multi-family housing units in the SACOG region. Since 2005, there have been 808,214 new single-family and 217,011 new multi-family housing units built in the region. During this period, single-family housing has represented a much greater share of the new housing units built and that share has risen rather than declined. In 2019, 87,470 new single-family housing units and 22,630 new multi-family housing units were built. The 2020 SACOG MTP/SCS forecasts 131,241 new single-family housing units and 148,842 multi-family housing units to be built in 2035, with multi-family housing units representing a greater share of housing than single-family housing units. While the total number of observed housing units is increasing consistent with the plan, the share of single-family is heading in the wrong direction relative to the expected plan outcomes.

⁴⁴ California Department of Finance, [rate of new homes being built by type](#).

Figure 10. SACOG Region Housing Units Mix



In summary, CARB staff compared the observed data for regional average household vehicle ownership, annual transit ridership, daily transit service hours, commute trip travel time, and new homes built by type with the projected plan performance indicators provided by SACOG. Based on the analysis none of the observed data heading in the right direction toward the expected plan outcomes. CARB staff concluded that SACOG is not on track to meet its GHG targets.

Incremental Progress

CARB staff reviewed the incremental progress of SACOG's 2020 SCS compared to its 2016 SCS in place in October 2018, in accordance with Board direction and the 2019 Evaluation Guidelines.⁴⁵ As background, during the 2018 target update process, some of the MPOs reported to CARB that, due to external factors, even greater effort would be required to achieve the same level of per capita GHG emissions reduction reported in the current SCSs. According to the MPOs, simply staying on course to achieve the previously demonstrated SB 375 GHG emission reduction targets will be a stretch of current resources, let alone achieving the more aggressive targets adopted by the Board in 2018. For example, in 2018, SACOG determined that the 2016 SCS would achieve approximately 3 to 5 percent less than when it was adopted in 2016 simply due to changes in exogenous assumptions (e.g., auto operating cost and growth forecasts)⁴⁶. In other words, if during the target setting process, SACOG updated its 2016 SCS with exogenous assumptions current at the time, it would only achieve 11 to 13 percent per capita GHG reduction in 2035, well below its target of 16 percent. At that time, SACOG communicated that in order to meet its new target of 18 to 19 percent, it would need to include another 5 to 8 percent GHG reductions in new and/or enhanced SCS strategies (i.e., incremental progress) in its 2020 SCS.

To determine whether SACOG is achieving the level of incremental progress consistent with what it reported during the target setting process, CARB staff compared⁴⁷ GHG emissions for both the 2016 SCS to the 2020 SCS under varying assumptions using data and information provided by SACOG.⁴⁸ Figure 11 illustrates the incremental progress between SACOG's 2016 and 2020 SCSs when controlling for as many exogenous factors as possible. As you can see, the 2016 SCS achieves a 16 percent GHG reduction from 2005 levels in 2035, with 5 percent coming from exogenous variables and the remaining 11 percent from the plan's land use and transportation strategies along with the related demographic assumptions. When adjusting the 2016 SCS with exogenous assumptions from the 2020 SCS, the 2035 per capita GHG reductions are approximately 18 percent, with 3 percent coming from exogenous variables and 11 percent from the plan's land use and transportation strategies along with the related demographic assumptions. Lastly, under the 2020 SCS, the 2035 per capita GHG reductions are approximately 19 percent, with 3 percent coming from exogenous variables and 16 percent from the

⁴⁵ [Board Resolution 18-12 \(March 22, 2018\)](#).

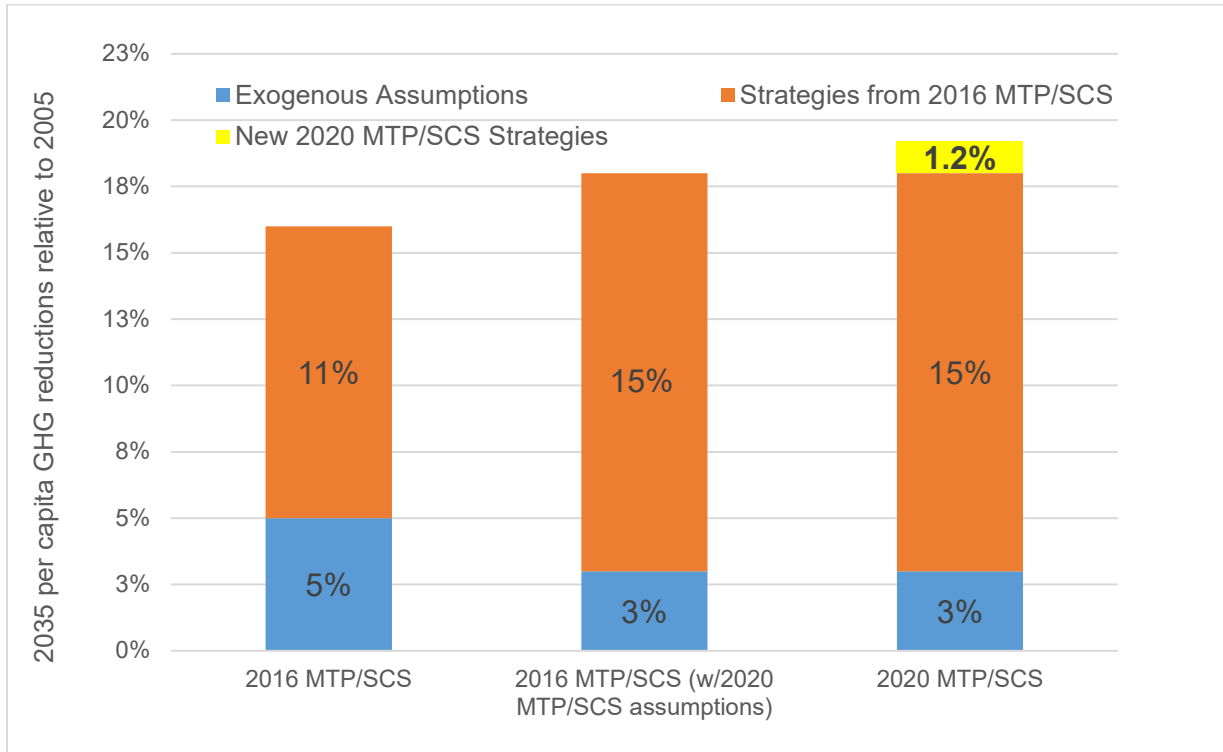
⁴⁶ California Air Resources Board. [Final Staff Report Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets: Appendix B. MPO Scenario and Data Submittals](#). October 2017.

⁴⁷ For a detailed description of CARB's analysis approach, please refer to: California Air Resources Board. [Final Sustainable Communities Strategy Program and Evaluation Guidelines](#). November 2019.

⁴⁸ For a detailed description of SACOG's approach to demonstrating incremental progress, please refer to SACOG's 2020 SCS Submittal to CARB for Technical Review: 1c. Analysis of Incremental Progress, April 15, 2020.

plan’s land use and transportation strategies along with the related demographic assumptions.

Figure 11. SACOG’s Incremental Progress



When adjusting the 2016 SCS with exogenous assumptions from the 2020 SCS, the contribution of exogenous assumptions went from 5 percent down to 3 percent primarily due to lower auto operating cost, while the contribution from land use, transportation and demographic characteristics went from 11 percent to 15 percent. This change in the contribution from land use and transportation strategies is in the opposite direction from what CARB expected given the information SACOG shared during the 2018 target update process. CARB expected the contribution from these strategies to go down instead of up. SACOG staff indicated that this change is due to improvements they made to the sensitivity of its travel demand model, SACSIM19, to various variables such as regional auto and transit accessibility, residential density, proximity to transit, street pattern, and mix of land uses. However, CARB staff found this increased sensitivity (elasticities) to be higher than the existing literature would suggest (e.g., regional accessibility, mix of use and residential density).⁴⁹ This

⁴⁹ SACSIM 19 is more sensitive (i.e., model elasticities) to land use and transportation factors when compared to SACSIM15 used in SACOG’s 2016 SCS. Some of the elasticities are higher than elasticities in the existing literature, which may result in an overestimation of land use and transportation

oversensitivity may overestimate the contribution of the plans land use and transportation strategies. Finally, when comparing the 2016 SCS adjusted with exogenous assumptions from the 2020 SCS to the 2020 SCS SACOG plan performance of 19 percent, you can see the new plan has achieved an incremental 1.2 percent per capita GHG reductions in 2035.

While incremental progress is not used for CARB's SCS determination, CARB expects MPOs to achieve incremental progress due to its SCS land use and transportation strategy commitments from its second SCS to its third SCS consistent with information shared during the GHG emission reduction target setting process. Information SACOG submitted during the target setting process indicated it would achieve 5 to 8 percent incremental progress as part of the 2020 SCS, however, it only achieved 1.2 percent. As such, SACOG did not include new/enhanced strategies consistent with the information they shared during the 2018 target setting process.

SACOG did not include enough new/enhanced strategy reductions to show incremental progress consistent with the information they shared during the 2018 target setting process.

strategies. For example, elasticities for regional accessibility in SACSIM 19 are -0.38; mix of use -0.31; residential density -0.27; street pattern -0.31. While the literature suggests reasonable elasticities are in the range of -0.05 to -0.25 for region accessibility; -0.01 to -0.17 for mix of use; -0.05 to -0.12 for residential density, and -0.005 to -0.2 for street pattern. For a more detailed description of SACOG's sensitivity test results, please refer to SACOG's 2020 SCS Submittal to CARB for Technical Review: 3b. SACSIM19 Sensitivity Test Report, April 15, 2020.

Equity

MPOs may report to CARB a summary of how they conducted equity analyses as part of the development of their SCSs in accordance with the *CTC's 2017 Regional Transportation Plan Guidelines for Metropolitan Planning Organizations*.⁵⁰ Appendix H of SACOG's 2020 SCS documented SACOG's equity analysis. CARB staff reviewed this appendix and prepared this section to summarize SACOG's 2020 SCS equity work, including identified communities of concern, equity performance measures, equity analysis, and public participation efforts.

Identifying Vulnerable Communities

SACOG's 2020 SCS states that its environmental justice (EJ) and Title VI analysis strives to go beyond its federal and State legal requirements in addressing the actual needs within the MPOs most vulnerable communities and of its residents. While SACOG identified and addressed EJ areas in its previous two SCSs, for the 2020 SCS, SACOG convened an equity working group to review and refine its methodology for defining EJ areas. Through this process, EJ communities were developed for areas within each SACOG county (excluding the Tahoe Basin portions of El Dorado and Placer Counties). Criteria for establishing these EJ areas included⁵¹ race/ethnicity, low income status, and vulnerability criteria, such as the concentration of older adults aged 75 years or older, concentration of linguistically isolated households, concentration of single parent households with children under the age of 18, concentration of low educational attainment with less than a high school diploma or GED for the population aged 25 or more, concentration of severely housing cost burdened households, and concentration of households with at least one person with a disability. In addition, another criterion for identifying EJ areas considered CalEnviroScreen 3.0, a screening tool that evaluates the burden of pollution from multiple sources in communities while accounting for potential vulnerability to the adverse effects of pollution. Based on these criteria, key characteristics of the region's EJ analysis areas included:

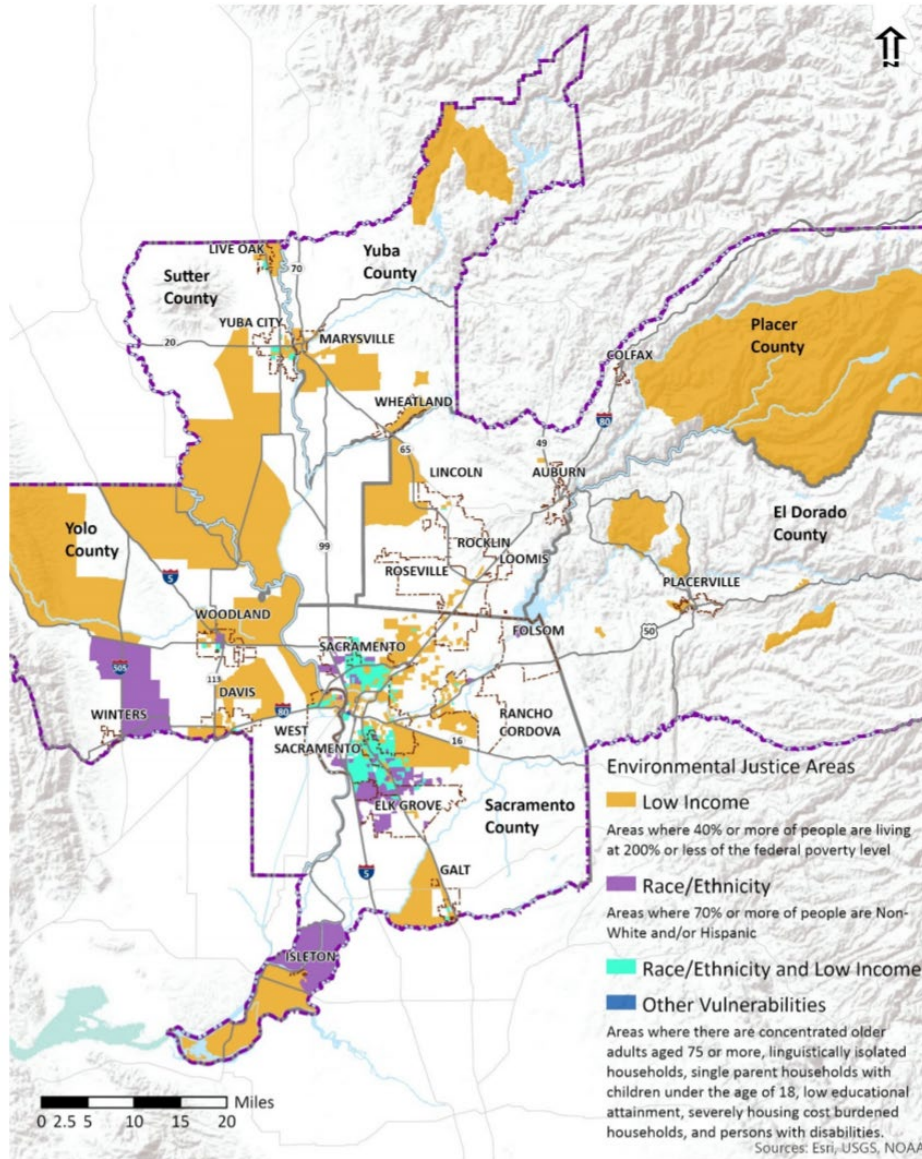
- About 38 percent of the region's population lives in one of the defined EJ communities. See Figure 12 for Environmental Justice Areas within the SACOG Region.
- People in the EJ communities are nearly twice as likely to be classified as low income as people in other areas.
- The number of EJ block groups increased from the 2016 plan.

⁵⁰ California Transportation Commission. [2017 Regional Transportation Plan Guidelines for Metropolitan Planning Organizations](#). January 2017.

⁵¹ SACOG, Appendix H: 2020 MTP/SCS EJ Analysis, Page 5

- Households in EJ Communities tend to use transit, walk, and bike at significantly higher rates than non-EJ households — more than twice the rate for transit use and a 65 percent greater rate for walking and bicycling region-wide.⁵²

Figure 12. Environmental Justice Areas in the SACOG Region



SACOG, 2020 MTP/SCS, Appendix H Environmental Justice

⁵² SACOG, Appendix H: 2020 MTP/SCS EJ Analysis, Page 6

Equity Performance Measures

SACOG's EJ analysis attempted to determine if the SCS has a disproportionate negative impact on the low-income population and/or people of color living in the community or the region and if there are any disparate impacts specifically based on race, color, or national origin. SACOG's EJ analysis examined the effect of the SCS on access by both transit and auto from both EJ and non-EJ communities to key destinations.

Accessibility Performance Measures

SACOG assessed changes in transit and auto access to a variety of destinations over the SCS timeframe, such as job sites, medical services, higher education, and parks, for residents of both EJ and Non-EJ communities. For both transit and auto accessibility performance measures, SACOG used a 30minute travel time to destinations as a benchmark.

The trends of SACOG's performance measures for both the EJ and Non-EJ communities appeared generally to improve. Throughout the duration of the SCS, accessibility by transit or auto to job sites, medical services, higher education sites, and parks seemed to increase.

Health and Environment Performance Measures

SACOG's EJ analysis also looked at human health and environmental effects of EJ and non-EJ communities. One measure SACOG analyzed was the number of people in EJ and non-EJ communities that would live within 500 feet of major roadways. SACOG used this as an indicator of risk of exposure to toxic air contaminants. SACOG also looked at the number of people in EJ and non-EJ communities that get at least 30 minutes of physical activity from active modes of transportation.

SACOG's EJ analysis identified that approximately two percent of the MPO's population lives within the 500-foot Sensitive Receptor⁵³ buffer, with EJ communities even slightly higher at about three percent.

SACOG's analysis of its active transportation measure showed the SCS resulting in increased use of active transportation modes and more physical activity, especially in EJ communities.

⁵³ ARB, 2005 Sensitive Receptors guidance: 500-foot buffer (homes, schools, day care centers, parks, hospitals, etc.) of major roadways, defined as freeways or urban roads with traffic volumes of 100,000 or more vehicles per day or rural roads with 50,000 or more vehicles per day.

Public Outreach and Engagement

SACOG held eight outreach meetings for the SCS. SACOG used the locations and times of the meetings as a significant way to reach out to the community, where workshops were hosted at locations that already convened people and focused on communities of color and lower-income residents. In addition, an online survey was conducted that reduced barriers of having to attend in person to participate.

SACOG also convened an Equity Working Group (EWG) to vet ideas and receive feedback on its EJ Analysis. Additional EWG tasks included analysis on the existing travel behaviors, updating the existing methodology for the required EJ analysis, identifying an accessible public workshop format, and developing inclusive outreach strategies.

In addition, SACOG developed “EJ Fact Sheets” as a resource for local agencies as they consider the infrastructure needs of their communities.⁵⁴ The EJ fact sheets were prepared for each city, county, and unincorporated area in the region and contain baseline demographics and transportation trend comparisons between the EJ and Non-EJ communities within the jurisdiction.

⁵⁴ SACOG, Appendix H: 2020 MTP/SCS EJ Analysis