

October 26, 2020

Mr. Dan Little
Executive Director
Shasta Regional Transportation Agency
1255 East Street, Suite 202
Redding, California 96001
dlittle@srta.ca.gov

Dear Mr. Little:

In accordance with the Sustainable Communities and Climate Protection Act of 2008, please find enclosed the California Air Resources Board's (CARB) Executive Order G-20-180 and CARB staff's *Technical Evaluation of the Greenhouse Gas Emissions Reduction Quantification for the Shasta Regional Transportation Agency's SB 375 2018 Sustainable Communities Strategy* (Technical Evaluation). The Executive Order accepts the Shasta Regional Transportation Agency's (SRTA) determination that its 2018 Regional Transportation Plan and Sustainable Communities Strategy (SCS) would, when implemented, meet the applicable 2020 and 2035 greenhouse gas (GHG) emissions reduction targets for automobiles and light trucks as established by CARB in 2010, specifically, a 0 percent per capita reduction by 2020 and a 0 percent per capita reduction by 2035, relative to 2005 levels. The Technical Evaluation describes CARB staff's assessment, findings, and recommendations. CARB staff also highlights issues SRTA will need to address in its third-round SCS pursuant to the most recent Evaluation Guidelines, which were updated in 2019 and after SRTA adopted this SCS.

CARB's recent assessment of on-the-ground progress since regions began developing SCSs¹ found that California was not on track to meet the GHG reductions expected under SB 375. This suggests that the Shasta region may not realize the forecasted GHG reductions in its SCS nor meet its targets, if the plan is not fully implemented. California needs strong commitments to implement vehicle miles traveled (VMT) reduction strategies by every region in the State to meet its SB 375 targets and support the statewide effort to successfully mitigate the worst impacts of climate change. We appreciate SRTA's continued work to advance the sustainability of transportation and land use planning in California, and look forward to an ongoing partnership to implement this plan.

¹ Prepared pursuant to Senate Bill (SB) 150 (Allen, Chapter 646, Statutes of 2017). California Air Resources Board. 2018 Progress Report: California's Sustainable Communities and Climate Protection Act. November 2018. Available at: https://ww2.arb.ca.gov/sites/default/files/2018-11/Final2018Report_SB150_112618_02_Report.pdf

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If you have any questions or need further information, please contact Ms. Jennifer Gress, Chief, Sustainable Transportation and Communities Division at jennifer.gress@arb.ca.gov.

Sincerely,



Richard W. Corey
Executive Officer

Enclosures

cc: (via email)

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**State of California
AIR RESOURCES BOARD**

Executive Order G-20-180

**Shasta Regional Transportation Agency's (SRTA)
2018 Sustainable Communities Strategy
CARB Acceptance of GHG Quantification Determination**

WHEREAS, SB 375 (Steinberg, Chapter 728, Statutes of 2008), also known as the Sustainable Communities and Climate Protection Act, aims to reduce greenhouse gas (GHG) emissions from passenger vehicle travel through improved transportation and land use planning at the regional scale;

WHEREAS, SB 375 requires each of the State's 18 federally designated Metropolitan Planning Organizations (MPOs), including the Shasta Regional Transportation Agency (SRTA), to develop a Sustainable Communities Strategy (SCS) or an Alternative Planning Strategy that meets the regional GHG emissions reduction targets for automobiles and light trucks set by the California Air Resources Board (CARB or Board);

WHEREAS, on September 23, 2010, the Board set targets for the SRTA region of a 0 percent per capita reduction by 2020 and a 0 percent per capita reduction by 2035 relative to 2005 levels;

WHEREAS, on October 22, 2015, CARB accepted SRTA's quantification of GHG emissions for its first SCS, adopted by the SRTA Board of Directors on June 30, 2015;

WHEREAS, in preparation for its 2018 SCS, SRTA staff engaged the public via public meetings and notices, web postings, and public hearings between June 2017 and October 2018;

WHEREAS, on June 8, 2018, SRTA published its draft 2018 SCS, which was available for public review through July 24, 2018;

WHEREAS, on October 9, 2018, SRTA's Board of Directors adopted the final 2018 SCS, known as the 2018 Regional Transportation Plan and Sustainable Communities Strategy, with a determination that the SCS would achieve the region's GHG targets of a 0 percent per capita reduction by 2020 and a 0 percent per capita reduction by 2035 relative to 2005 levels;

WHEREAS, SRTA submitted the final 2018 SCS to CARB on December 19, 2018, as required by California Government Code section 65080, subdivision (b)(2)(J)(ii), and completed its submittal of supporting information on February 14, 2020;

WHEREAS, CARB staff performed a technical evaluation of the 2018 SCS's quantification of the GHG emissions reductions the plan would achieve and the

technical methodology used to obtain that result based on CARB's July 2011 document entitled *Description of Methodology for ARB Staff Review of Greenhouse Gas Reductions from Sustainable Communities Strategies Pursuant to SB 375*;

WHEREAS, CARB staff's evaluation indicated that SRTA used technical methodologies that would reasonably quantify GHG emissions reductions from the 2018 SCS;

WHEREAS, CARB staff's evaluation showed SRTA's 2018 SCS, when implemented, would meet the applicable GHG emissions reduction targets that the Board established for the region for 2020 and 2035;

WHEREAS, CARB staff's technical evaluation of SRTA's GHG emissions reduction determination is included in Attachment A, *Technical Evaluation of the Greenhouse Gas Emissions Reduction Quantification for Shasta Regional Transportation Agency's SB 375 2018 Sustainable Communities Strategy*, October 2020;

WHEREAS, California Government Code section 65080, subdivision (b)(2)(J)(ii), calls for CARB to accept or reject an MPO's determination that the Sustainable Communities Strategy submitted would, when implemented, achieve the GHG emissions reduction targets established by the Board;

WHEREAS, California Health and Safety Code sections 39515 and 39516 delegate to the Board's Executive Officer the authority to act on behalf of the Board in this manner;

NOW, THEREFORE, BE IT RESOLVED that under California Government Code section 65080, subsection (b)(2)(J)(ii), the Executive Officer hereby accepts SRTA's determination that the SCS adopted by the SRTA Board of Directors on October 9, 2018, would, when implemented, achieve the applicable GHG emissions reduction targets for automobiles and light trucks of a 0 percent per capita reduction by 2020 and an 0 percent per capita reduction by 2035, relative to 2005 levels, as established by CARB for the region.

NOW, THEREFORE, CARB staff is directed to forward this executive order to the SRTA Executive Director.

Executed at Sacramento, California this 26th day of October 2020.



Richard W. Corey
Executive Officer

Attachment A: *Technical Evaluation of the Greenhouse Gas Emissions Reduction Quantification for Shasta Regional Transportation Agency's SB 375 2018 Sustainable Communities Strategy*, October 2020.

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TECHNICAL EVALUATION OF THE
GREENHOUSE GAS EMISSIONS
REDUCTION QUANTIFICATION FOR
SHASTA REGIONAL TRANSPORTATION
AGENCY'S SB 375 2018 SUSTAINABLE
COMMUNITIES STRATEGY

October 2020



This document has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the California Air Resources Board, nor does the mention of trade names or commercial products constitute endorsement or recommendation for use.

Electronic copies of this document are available for download from the California Air Resources Board's internet site at:

<https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-climate-protection-program>

In addition, written copies are also available. Please email California Air Resources Board program staff at sustainablecommunities@arb.ca.gov to place your request.

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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 emissions reductions 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 October 9, 2018, the Shasta Regional Transportation Agency (SRTA), which serves as the MPO for the Shasta County region, adopted its 2018 SCS, known as the *2018 Regional Transportation Plan/Sustainable Communities Strategy* (2018 SCS).¹ SRTA provided for CARB staff's review a complete submittal of the 2018 SCS and all necessary supporting information on February 14, 2020. SRTA's 2018 SCS estimates a 4 percent and 1.2 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 emissions reduction targets are 0 percent in 2020 and 0 percent in 2035, compared to 2005 levels, as adopted by the Board in 2010.² This report reflects CARB staff's technical evaluation of SRTA's 2018 SCS GHG quantification.

CARB Determination

ACCEPT

Based on a review of all available evidence and in consideration of CARB's July 2011 document entitled *Description of Methodology for ARB Staff Review of Greenhouse Gas Reductions from Sustainable Communities Strategies Pursuant to SB 375* (2011 SCS Evaluation Guidelines),³ CARB accepts SRTA's determination that its 2018 SCS plan would meet the targets of a 0 percent reduction in GHG per capita emissions

¹ Shasta Regional Transportation Agency. *2018 Regional Transportation Plan/Sustainable Communities Strategy*. Available at: <https://www.sрта.ca.gov/DocumentCenter/View/4285/2018-Regional-Transportation-Plan--Sustainable-Communities-Strategy-adopted-Oct-9-2018?bidId=>

² Board Resolution 10-31 (Sept. 23, 2010) available at, <https://ww3.arb.ca.gov/board/res/2010/res10-31.pdf>

³ California Air Resources Board. *Description of Methodology for ARB Staff Review of Greenhouse Gas Reductions from Sustainable Communities Strategies Pursuant to SB 375* available at: https://ww3.arb.ca.gov/cc/sb375/scs_review_methodology.pdf

from light-duty passenger vehicles by 2020 and a 0 percent reduction by 2035, compared to 2005 levels, when fully implemented.

SRTA's 2018 SCS contains one new strategy⁴ and uses similar quantification methods and the same tools as SRTA's first SCS,⁵ which CARB reviewed and accepted as meeting the targets in October 2015. Therefore, this evaluation incorporates the analysis from CARB staff's review of the previous 2015 SCS⁶ and adds analysis of changes SRTA made to the current 2018 SCS that have the potential to affect land use, transportation, and the SCS GHG emissions quantification.

CARB staff reviewed SRTA's 2018 SCS to verify that changes in the demographic assumptions, as well as the model and off-model methods used to calculate passenger travel-related GHG emissions reflected the latest information and planning practices. CARB staff also reviewed land use and transportation strategies included within the SCS to understand what, if any, of the 2018 SCS strategy commitments changed from SRTA's 2015 commitments. In addition, CARB staff reviewed SRTA's reported regional land use and transportation performance indicators to confirm that they were trending in a direction that is consistent with forecasted GHG emission and/or VMT reduction trends, as expressed in the empirical literature.

Based on these evaluations, CARB accepts SRTA's determination that its 2018 SCS would meet the targets when fully implemented. CARB staff's analysis and assessment of changes to SRTA's 2018 SCS and GHG quantification are documented in the "Changes from the Region's Previous SCS" section of this evaluation.

CARB staff has identified issues with SRTA's 2018 SCS submittal that SRTA will need to address in its upcoming third-round SCS development and documentation process based on the *Final Sustainable Communities Strategy Program and Evaluation Guidelines*⁷ published by CARB in November 2019 (2019 Evaluation Guidelines).

⁴ See Appendix A: SRTA 2018 SCS Strategy Table for a list of strategies included in the SCS and how they compare with the 2015 SCS.

⁵ Shasta Regional Transportation Agency. *2015 Regional Transportation Plan/Sustainable Communities Strategy*. Available at: https://www.srta.ca.gov/DocumentCenter/View/1881/SRTA_2015_RTP_Final_Adopted_June_2015_with_appendices?bidId=

⁶ CARB's acceptance and technical evaluation of SRTA's first SCS was completed in October 2015 and contains detailed information about the methods SRTA used to quantify GHG emissions. California Air Resources Board. *Technical Evaluation of the Greenhouse Gas Emissions Reduction Quantification for Shasta Regional Transportation Agency SB 375 2015 Sustainable Communities Strategy*. October 2015, available at: https://ww2.arb.ca.gov/sites/default/files/2020-06/Technical_Evaluation_of_the_GHG_Emissions_Reduction_Quantification_for_the_SRTA_SB_375_SCS_October_2015.pdf

⁷ California Air Resources Board. *Final Sustainable Communities Strategy Program and Evaluation Guidelines*. November 2019. Available at: <https://ww2.arb.ca.gov/sites/default/files/2019-11/Final%20SCS%20Program%20and%20Evaluation%20Guidelines%20Report.pdf>

Specifically, SRTA's SCS submittal continues to lack data on a number of key performance indicators to support its GHG emissions reduction calculations, and while its SCS includes an analysis of factors affecting vehicle miles traveled, it still remains unclear what specific actions, milestones, and enabling project investments are needed to support full implementation of its SCS policies and programs. Although SRTA's SCS shows per capita GHG emissions decreasing by 2035 compared to 2005, it shows these benefits peaking in 2020 and then GHG per capita emissions increasing between 2020 and 2035.

This trend is inconsistent with the State's identified need for continued and deeper GHG emissions reductions from this program over time, as reflected in the updated, more aggressive target reductions CARB set in 2018. The Shasta region will need to plan to meet these more aggressive targets in its next SCS. This trend is also concerning when considering increased VMT observed statewide, as well as other data-supported metrics reported in CARB staff's recent assessment of on-the-ground progress since regions began developing SCSs.⁸ This assessment found that California was not on track to meet the GHG reductions expected under SB 375. As a result, the Shasta region may not realize the GHG reductions forecasted in the SCS for 2035, if the plan is not fully implemented. California needs strong commitments to implement VMT reduction strategies to meet the SB 375 GHG commitments and support the statewide effort to successfully mitigate the worst projected impacts of climate change. CARB staff's concerns and suggested remedies are documented in the "Recommendations" section of this evaluation.

Changes from the Region's Previous SCS

The 2018 SCS retains all of the same strategies and tools as the previous plan with some modifications, and adds one new strategy. The following sections summarize changes SRTA made from the 2015 SCS to the underlying 2018 SCS assumptions and strategies, quantification tools and methods, and resulting SCS performance indicator metrics, as well as CARB staff's assessment of the specified actions.

CARB staff examined SRTA's modeling inputs and assumptions, model responsiveness to variable changes, model calibration and validation results, and performance indicators using the general method described in CARB staff's 2011 Evaluation Guidelines.

⁸ Prepared pursuant to Senate Bill (SB) 150 (Allen, Chapter 646, Statutes of 2017). California Air Resources Board. *2018 Progress Report: California's Sustainable Communities and Climate Protection Act*. November 2018. Available at: https://ww2.arb.ca.gov/sites/default/files/2018-11/Final2018Report_SB150_112618_02_Report.pdf.

Land Use and Transportation Strategies

SRTA's 2018 SCS maintains a set of land use and transportation strategies that are similar to those adopted in its previous 2015 SCS, with updates to assumptions for land use, and added a strategy for electric vehicle support. The 2018 SCS also incorporates updates to the region's growth forecast. CARB staff assessed SRTA's updates to its 2018 SCS forecast, land use, investment, and strategy inputs and found them all to be reasonable. Table 1 summarizes these changes and provides CARB staff's assessment based on consistency with best available information and practice.

Table 1. Summary of Demographic, Land Use, and Transportation Changes in SRTA's 2018 SCS Compared to the 2015 SCS

Action	CARB Staff's Assessment	Finding
Updated Regional Growth Forecast	Reasonable	SRTA updated population, housing, and employment growth estimates for its 2018 SCS. The forecasted population, number of households, housing units, and employment in the year 2035 were all within 2 percent of estimates used in the 2015 SCS with decreases in number of households and employment, and a slight increase in population and housing units. Per the 2011 Evaluation Guidelines, CARB staff reviewed these revisions and found them to be consistent with the 2017 DOF projections, which were the latest available at the time of plan development.
Updated Land Use Scenario	Reasonable	SRTA updated the SCS land use assumptions. Per the 2011 Evaluation Guidelines, CARB staff reviewed SRTA's land use update process and found that it appropriately adjusted for total growth based on the region's latest growth forecast, as well as adjusted assumptions for where growth would occur based on latest local planning assumptions in consultation with its members. Compared to the 2015 SCS, the 2018 SCS maintains the same set of Strategic Growth Areas, or locations within the county that are intended to accommodate increased population and employment densities and to provide a range of mobility alternatives.

Action	CARB Staff's Assessment	Finding
Updated Revenue Projections and Transportation Investments	Reasonable	The 2018 SCS updates both transportation revenue projections and investments. Per the 2011 Evaluation Guidelines, CARB staff reviewed overall changes to SRTA's SCS planned transportation project investments and found them to be generally consistent with changes to projected resources. Compared to the 2015 SCS, total revenues and investments increase from approximately \$2.18 million to \$2.24 million, or approximately 3 percent. The increase in funding is attributable to the difference in revenue forecast period, as well as available funding provided by the Road Repair and Accountability Act of 2017 (SB 1). As a result, transportation investments are different from the previous plan with an increase in investments in road projects, which grew from 71 to 84 percent between plans, whereas investment in transit and active transportation decreased from 22 to 11 percent and 4 to 2 percent, respectively, between plans.
New Strategy: Electric Vehicle Support	Reasonable	SRTA's 2018 SCS includes a new electric vehicle support strategy that assumes a slightly faster plug-in electric vehicle (PEV) adoption rate based on outcomes from the region's PEV Readiness Plan and available electric vehicle and charging incentive programs. CARB staff reviewed SRTA's electric vehicle support strategy and found it to be creditable toward its SB 375 targets, and that SRTA took the appropriate steps when developing a separate off-model methodology to quantify the GHG reduction benefits for this strategy.

Model Calculations

While SRTA used the same travel demand and land use modeling tools to evaluate its 2018 SCS as it used to evaluate its 2015 SCS, it adjusted GHG reductions for its new electric vehicle support strategy. Table 2 summarizes these changes along with CARB staff's assessment and findings based on consistency with best available information and modeling practice.

Table 2. Key Changes in SRTA's 2018 SCS Modeling Compared to the 2015 SCS

Modeling Component	CARB Staff's Assessment	Finding
Adjustment for GHG Reductions from Electric Vehicle Support Strategy	Somewhat Reasonable	SRTA developed and applied a new quantitative methodology outside of its travel demand model to estimate GHG reductions associated with the region's new electric vehicle support strategy. SRTA estimates its electric vehicle support strategy will reduce per capita GHG emissions by 0.9 percent in 2035. CARB staff reviewed and found SRTA's methodology and calculations to be sufficient, but in future SCSs, SRTA will need to identify the specific funding commitments and local policies that will support this strategy in order to receive credit for the GHG benefits being claimed. See the "Recommendations" section for additional discussion.
Adjustment to EMFAC Outputs	Reasonable	SRTA used EMFAC 2014 to estimate GHG emissions. CARB staff reviewed SRTA's emissions calculations and found that it appropriately followed the procedure demonstrated in CARB's memo titled <i>Methodology to Calculate CO2 Adjustment to EMFAC Output for SB 375 Target Demonstrations</i> .

Regional Land Use and Transportation Performance Indicators

To better understand whether SRTA's key modeled land use and transportation performance indicators are trending in a direction consistent with forecasted GHG emissions and/or VMT reduction trends, CARB staff re-analyzed several of these indicators against relationships expressed in the empirical literature. Depending on what regional data were available, CARB staff assessed five performance indicators and found that all trended in the direction that was supportive and consistent with forecasted GHG emissions reductions.

Table 3 shows a summary of SRTA's 2018 SCS land use performance indicators and Table 4 shows a summary of SRTA's 2018 SCS transportation performance indicators. Data for this analysis came from SRTA's SCS data table provided in Appendix B: Data Table.

Table 3. Summary of Land Use Performance Indicators

Performance Indicator	CARB Staff's Assessment	Finding
Residential Density in Strategic Growth Areas	Consistent with Reducing VMT/GHG	SRTA's 2018 SCS forecasts an increase in residential density within the region's identified Strategic Growth Areas of 27 percent from 2005 to 2035. Per the 2011 Evaluation Guidelines, CARB staff found this trend supportive and consistent with the relationship shown in the empirical literature that increasing residential density helps to increase non-auto mode shares and reduce VMT and GHG emissions.
Jobs and Housing near Transit	Consistent with reducing VMT/GHG	SRTA's 2018 SCS forecasts an increase in jobs and housing units near transit. Compared to the 2010 base year (41,147 housing units and 53,187 jobs), the 2018 SCS shows an increasing trend in the numbers of jobs and housing units within one-half mile of transit stations or stops in 2035 (46,802 housing units and 67,674 jobs). Per the 2011 Evaluation Guidelines, CARB staff found this trend supportive and consistent with the relationship shown in the empirical literature that increasing the proportion of new development near transit increases accessibility to destinations and helps reduce VMT and GHG emissions.

Table 4. Summary of Transportation Performance Indicators

Performance Indicator	CARB Staff's Assessment	Finding
Per Capita Passenger VMT	Somewhat Consistent with Reducing VMT/GHG	SRTA's 2018 SCS shows an increase of per capita VMT from 18.7 miles per day in 2005 to 20.4 miles per day in 2035. This increasing trend however, is due to SRTA's use of EMFAC14 for its 2018 SCS compared to EMFAC11 for its 2015 SCS. Updates to EMFAC14 included new information about the fraction of light-duty versus heavy-duty vehicles in the fleet. Because Shasta relies on this fleet mix to determine its light-duty vehicle VMT, it is

Performance Indicator	CARB Staff's Assessment	Finding
		impacted by changes between different versions of EMFAC. To isolate the trend in light-duty VMT due to the SCS, CARB staff adjusted the results to account for differences in EMFAC. With this adjustment, SRTA's 2018 SCS shows a net decline in per capita passenger VMT from all modes of travel between 2005 and 2035, with VMT per capita rising between 2020 and 2035. Per the 2011 Evaluation Guidelines, CARB staff found this trend supportive and consistent with the relationship shown in the empirical literature that per capita GHG emissions follow the same trend directionally as per capita VMT. However, CARB staff has concerns with the increase in VMT per capita toward the later years of the plan. See the "Recommendations" section for additional discussion.
Single-Occupancy Vehicle (SOV) Trip Length	Consistent with Reducing VMT/ GHG	SRTA's 2018 SCS forecasts the region's SOV trip length will decrease from 7 miles in 2005 to 6.6 miles in 2035, or approximately 6 percent. Per the 2011 Evaluation Guidelines, CARB staff found this trend supportive and consistent with the relationship shown in the empirical literature that reduced SOV trip length reduces VMT and GHG emissions.
Transit Boarding	Consistent with Reducing VMT/ GHG	SRTA's 2018 SCS forecasts the region's transit boardings will increase 133.7 percent from 2005 to 2035, or 2,638, and 6,164 respectively. Per the 2011 Evaluation Guidelines, CARB staff found this trend supportive and consistent with the relationship shown in the empirical literature that increasing transit ridership reduces VMT and GHG emissions.

Recommendations

In reviewing SRTA's SCS submittal, CARB staff identified what new information SRTA will need to provide to CARB staff for its upcoming third-round SCS development and

documentation process based on the 2019 Evaluation Guidelines⁹ published in November 2019. The following sections provide information on what additional information will be needed in the MPO's third-round SCS evaluation submittal beyond what was shared with CARB in SRTA's second-round SCS. For a complete understanding of what is needed for the third-round SCS evaluation submittal, please refer to the 2019 Evaluation Guidelines.

Trend Analysis

CARB staff currently uses land use and transportation system performance indicator trends to assess whether an SCS supports the forecasted GHG emissions reductions. This assessment will continue to be a part of CARB's third-round SCS evaluations. While SRTA's submittal included some performance indicators that were directionally supportive of certain strategies and estimated GHG reductions, data provided to evaluate the performance of key strategies in the SCS were limited and some had concerning trends. Specifically, CARB staff is concerned about the per capita VMT trend in the SCS. While CARB staff found that the overall per capita passenger VMT relative to 2005 levels is consistent with the planned performance of SRTA's SCS for GHG emissions reductions, CARB staff has concerns with the increase in VMT per capita toward the later years of the plan. This trend is inconsistent with the State's identified need for continued and deeper GHG emissions reductions from SB 375 over time, as reflected in the updated, more aggressive target reductions that SRTA must plan to meet in its next SCS.

SRTA will need to quantify and report changes from its next SCS plan base year to the SCS target years for the eight performance metrics identified below. CARB staff will use these for the Trend Analysis determination in the third-round, which includes checking whether the reported directionality for the following RTP/SCS performance indicators are trending as expected.¹⁰ The metrics not provided by SRTA for this evaluation are noted and italicized below.

1. Household vehicle ownership: The average number of light-duty vehicles registered (i.e., LDA, LDT1, LDT2, and MDV vehicle categories) per household.

⁹ California Air Resources Board. *Final Sustainable Communities Strategy Program and Evaluation Guidelines*. November 2019. Available at: <https://ww2.arb.ca.gov/sites/default/files/2019-11/Final%20SCS%20Program%20and%20Evaluation%20Guidelines%20Report.pdf>

¹⁰ For expected directionality of performance indicators for the Trend Analysis, see the *Final Sustainable Communities Strategy Program and Evaluation Guidelines*, Table 4, Page 39. Available at: <https://ww2.arb.ca.gov/sites/default/files/2019-11/Final%20SCS%20Program%20and%20Evaluation%20Guidelines%20Report.pdf>

2. Mode split: The percentage of average daily trips by travel mode, including single-occupant vehicle, high-occupancy vehicle or carpool, transit, ride-hailing (TNC), bike and walk.
3. Travel time by mode: The regional average travel time (minutes) by trip purpose (e.g., for commute and non-commute trips), by travel mode.
4. Transit ridership: The total number of transit passenger boardings on public transportation per day (one-way linked or unlinked).
5. Average vehicle trip length: The regional average daily trip distance (miles/day) of driving.
6. *Seat utilization: The average daily percentage of occupied vehicle seats on the roadway network, including for passenger vehicles and transit buses. (SRTA did not provide this metric.)*
7. *Household VMT: The average daily light-duty vehicle VMT per household within the MPO, excluding group quarters and visitors. (SRTA did not provide this metric.)*
8. GHG per capita: The average daily CO2 emissions of individuals within the MPO from light-duty vehicles.

Policy and Investment Analysis

For all third-round SCSs, CARB will focus on assessing whether SCS strategies for GHG emissions reduction are likely to be implemented, and are therefore reasonable for inclusion and credit toward target achievement. To assess this, MPOs need to provide clear descriptions of each SCS strategy with regard to applicable geographic scope, with specific locations if known; implementation timeframes; and what key supporting actions the MPO and its member agencies will undertake to support and track strategy implementation.¹¹

Key supporting actions should correspond to each individual strategy, and in general, actions should be measurable. This can include identification of the region's specific investment commitments; policy and/or financial incentives; technical assistance; and if legislative action is needed, partnership activities to advance needed statutory changes. Each action should be clear about its scope, who is involved, and anticipated timeline. For example, one of SRTA's key strategies is its accelerated delivery of active transportation investment in Strategic Growth Areas, with an emphasis on

¹¹ For more information on the Policy Analysis, see the *Final Sustainable Communities Strategy Program and Evaluation Guidelines*, Pages 40-42. Available at: <https://ww2.arb.ca.gov/sites/default/files/2019-11/Final%20SCS%20Program%20and%20Evaluation%20Guidelines%20Report.pdf>

transformational projects and programs that expand accessibility to all ages and abilities. When considering how this strategy will be implemented, it is concerning that active transportation investments have decreased between plans. For the third-round SCS, SRTA will need to identify what key supporting actions it is committing to in order to help implement this strategy and how financial investments support strategy implementation. SRTA will need to demonstrate how transformational projects are defined, provide more specificity with regard to location of the Strategic Growth Area, and could include increasing funding for bike trail expansions as part of the RTP project list within the timeframe of the SCS's 2035 target year. For the third-round SCS, SRTA will need to identify whether it intends to utilize policy and/or financial incentives and/or other mechanisms to encourage growth in line with its assumptions, and show that this activity is planned to occur within the 2035 target timeframe.

CARB staff will also be evaluating how transportation investments are distributed throughout the region and whether these investments support or put at risk the GHG reduction benefits of the SCS. To assess this, SRTA should provide the complete list of transportation projects identified in the second- and third-round SCSs. Projects should be tabulated by project type (road expansion, road maintenance, active transportation, transit, or other), cost, funding source (if known), project time period (e.g., base year through 2020, 2020 through 2035, or beyond 2035), and location including jurisdiction, intersections, and roadway segments (if available).

Tracking Implementation and Plan Adjustment

In the third-round SCS evaluation, CARB staff will look at how an MPO's previous SCS strategies and actions are performing and how plans might be adjusted, if the previous SCS is not performing as expected. CARB's *2018 Progress Report: California's Sustainable Communities and Climate Protection Act*, prepared pursuant to SB 150, provides some information in this area based on the latest observed statewide data and trends. For the next SCS, MPOs should compare available observed data to the development pattern and travel assumptions used in its previous SCS. If the observed data do not align with the plan assumptions, an MPO should document what priority adjustments and changes it is making in the third-round SCS to get the region on track to achieve its SB 375 targets.

SRTA should clearly document how it is using data to track implementation progress of its SCS, as well as justify any adjustments it makes to the underlying baseline assumptions. In particular, CARB staff encourages SRTA to gather more detailed land use, transit, and active transportation data to help better assess the effectiveness of the land use and transit service expansion strategies in the SCS.

Analyze Induced Travel (Short-Term and Long-Term) Effects

Induced travel is the increase in VMT due to roadway capacity expansion. Roadway expansion projects can lead to 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. Induced travel is important to analyze as it can affect VMT and GHG emissions.

CARB staff recommend SRTA explore methods for better analyzing the short- and long-term induced travel from roadway expansion projects in future SCS cycles. SRTA included roadway expansion projects in the 2018 SCS that can lead to short- and long-term induced travel in the region. Currently, long-term induced travel is not well accounted for by SRTA's travel demand model, and may underestimate per capita GHG emissions. CARB staff has identified available tools to help SRTA evaluate the effects of induced travel.¹² Examples include, but are not limited to, University of California, Davis National Center for Sustainable Transportation's Induced Travel Calculator¹³ and Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions.¹⁴

Improve Strategy Calculation Methods

SRTA incorporated new strategies as part of the SCS that it will need to improve calculation methods for to receive credit toward its targets in future SCSs. SRTA included an electric vehicle support strategy in its SCS that it quantified outside of its travel demand model. CARB staff reviewed SRTA's methodology and estimates of GHG emissions from this strategy in the year 2035 and found it to be somewhat reasonable. The current methodology does not identify funding commitments or local policies that support implementation of its assumed plan outcomes. If SRTA continues to quantify this off-model strategy in future SCSs, it should initiate efforts to collect local data and monitor implementation, as well as identify the specific funding commitments and local policies that will continue to support strategy implementation and update assumptions used in the methodology to track with that information.

In addition, SRTA included two strategies in its submitted SCS strategy table that it indicated were not mentioned in the 2018 SCS, but would reduce VMT and GHG emissions and were not captured by its model. These included the technology-based strategies and interregional transit strategy. SRTA did not analyze the VMT and GHG

¹² For more information on the Transportation Policy Analysis where induced travel is discussed, see the *Final Sustainable Communities Strategy Program and Evaluation Guidelines*, Pages 40-41. Available at: <https://ww2.arb.ca.gov/sites/default/files/2019-11/Final%20SCS%20Program%20and%20Evaluation%20Guidelines%20Report.pdf>

¹³ Available at: <https://ncst.ucdavis.edu/research/tools/>

¹⁴ Available at: https://www.arb.ca.gov/cc/sb375/policies/hwycapacity/highway_capacity_brief.pdf

impacts of these strategies and as a result, these were not credited toward achievement of its targets.

If SRTA plans to include these strategies in future SCSs for credit towards its targets, it should provide further information to substantiate GHG emissions reductions. For the third-round SCS evaluation, the following additional documentation is needed for each off-model strategy that is quantified before GHG emissions reduction credit can be received:¹⁵

- A comprehensive description of all off-model strategies, including the scope of the strategies, the target users, the timeline of implementation, and current status of the strategies;
- Detailed quantification methods and assumptions for each strategy that document the step-by-step analysis of the strategy benefits;
- Identification of funding commitments or local policies that support implementation of each strategy; and
- The efforts to collect local data and monitor implementation.

¹⁵ For more information on quantifying GHG emissions off model, see the *Final Sustainable Communities Strategy Program and Evaluation Guidelines*, Appendix E. Available at: <https://ww2.arb.ca.gov/sites/default/files/2019-11/Final%20SCS%20Program%20and%20Evaluation%20Guidelines%20Appendices.pdf>

Appendix A: SRTA's Strategy Table

SRTA submitted a summary strategy table to compare the key land use and transportation strategies between the 2015 and 2018 SCSs. This table also illustrates how the individual strategies are accounted for using travel demand model (on model) or off-model analyses.

SCS Factor ¹⁶	On/Off Model	Carryover/New
Population and employment shift to Strategic Growth Areas (SGA)	On model	Carryover w/ updates
Increased residential densities in SGAs	On model	Carryover w/ updates
Increased automobile operating costs ¹⁷	On model	Carryover w/ updates
Increased public transportation service	On model	Carryover w/ updates
Accelerated delivery of active transportation investment in Strategic Growth Areas, with an emphasis on transformational projects and programs that expand accessibility to all ages and abilities	Off model	Carryover w/ updates
Accelerated adoption of plug-in electric vehicles in response to expanded vehicle charging network	Off model	New
Technology-based strategies (not mentioned in 2018 RTP/SCS)	Off model	New
Interregional transit (not mentioned in 2018 RTP/SCS)	Off model	New

¹⁶ Population and employment shift to Strategic Growth Areas (SGA), increased residential densities in SAGs, increased automobile operating costs, increased public transportation service, and accelerated delivery of active transportation investment in Strategic Growth Areas, with an emphasis on transformational projects and programs that expand accessibility to all ages and abilities, were modeled using the travel demand model (ShastaSIM) and were counted toward SRTA's GHG emissions reduction targets. GHG emissions reductions for the accelerated adoption of plug-in electric vehicles in response to expanded vehicle charging network was also counted and quantified using an off-model methodology. Emissions reductions from the technology-based strategies and interregional transit strategy were not submitted for evaluation to CARB staff and were not counted toward the SB 375 targets.

¹⁷ CARB does not consider auto operating cost changes made by SRTA for the 2018 SCS an SCS strategy in its evaluation, rather it is an exogenous variable that affects the region's travel activity. In SRTA's case, changes to the auto operating cost assumptions were not tied to SCS policy decisions.

Appendix B: Data Table

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
DEMOGRAPHICS							
Total Population - forecasted	173,029	177,223	191,905	191,192	214,856	214,830	Shasta County Forecast Assumptions Memorandum, Dowling Associates, November 8, 2011
Percent Increase in Pop	N/A	2.42%	8.28%	7.88%	11.96%	12.36%	Shasta County Forecast Assumptions Memorandum, Dowling Associates, November 8, 2011
Group quarters population	N/A	N/A	N/A	N/A	N/A	N/A	Shasta County Forecast Assumptions Memorandum, Dowling Associates, November 8, 2011
Total employment	69,629	63,054	73,585	72,361	82,252	82,252	Shasta County Forecast Assumptions Memorandum, Dowling Associates, November 8, 2011

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
Employment Growth	N/A	-6,575	10,531	9,307	19,198	19,198	Shasta County Forecast Assumptions Memorandum, Dowling Associates, November 8, 2011
Average unemployment rate (%)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Growth in Employment since 2005	N/A	-6,575	3,956	2,732	12,623	12,623	N/A
Total number of households	67,392	70,346	78,231	77,283	87,481	86,534	Shasta County Forecast Assumptions Memorandum, Dowling Associates, November 8, 2011
Persons per household - Forecast	2.57	2.52	2.45	2.47	2.46	2.48	2010: 2010 Census Summary File 1; 2005, 2020, & 2035: ShastaSIM and Land use and employment forecast memo
Auto ownership per household	1.91	1.91	1.92	1.92	1.92	1.92	ShastaSIM Travel Model - File: [year]_population.dbf

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
Weighted Median household income (Year XXXX \$)	\$42,227	\$41,023	N/A	N/A	N/A	N/A	2005 - 2005 American Community Survey, Table S1903, Median Income in the Past 12 Months (in 2005 Inflation-adjusted Dollars). 2010 - 2010 American Community Survey 1-year Estimates, Table S1903, Median Income in the Past 12 Months (in 2010 Inflation-adjusted Dollars).
LAND USE							
Total acres	2,465,948	2,465,948	2,465,948	2,465,948	2,465,948	2,465,948	N/A
Prime agricultural lands affected by development (acres)	N/A	10,804	N/A	10,588	N/A	N/A	ShastaSIM Travel Model; GIS data from sources as defined by CA GC Section 65080.01: Shasta County General Plan, California Department of Conservation Farmland Mapping

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
							and Monitoring Program website, USFWS, FEMA Maps, CA Conservation Easement Database, Geologic Hazards database (ENPLAN).
Environmentally sensitive lands affected by development (acres)	N/A	1,218,506	N/A	1,218,488	N/A	N/A	ShastaSIM Travel Model; GIS data from sources as defined by CA GC Section 65080.01: Shasta County General Plan, California Department of Conservation Farmland Mapping and Monitoring Program website, USFWS, FEMA Maps, CA Conservation Easement Database, Geologic Hazards database (ENPLAN).

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
Less farmland affected due to project	N/A	N/A	N/A	(216)	N/A	N/A	ShastaSIM Travel Model; GIS data from sources as defined by CA GC Section 65080.01: Shasta County General Plan, California Department of Conservation Farmland Mapping and Monitoring Program website, USFWS, FEMA Maps, CA Conservation Easement Database, Geologic Hazards database (ENPLAN).
Less resource land affected due to project	N/A	N/A	N/A	-1,242	N/A	N/A	ShastaSIM Travel Model; GIS data from sources as defined by CA GC Section 65080.01: Shasta County General Plan, California Department of Conservation

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
							Farmland Mapping and Monitoring Program website, USFWS, FEMA Maps, CA Conservation Easement Database, Geologic Hazards database (ENPLAN).
Total resource area acres(CA GC Section 65080.01)	1,309,997	1,309,997	1,309,997	1,309,997	1,309,997	1,309,997	ShastaSIM Travel Model; GIS data from sources as defined by CA GC Section 65080.01: Shasta County General Plan, California Department of Conservation Farmland Mapping and Monitoring Program website, USFWS, FEMA Maps, CA Conservation Easement Database, Geologic Hazards database (ENPLAN).

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
Total farmland acres (CA GC Section 65080.01)	12,666	12,666	12,666	12,666	12,666	12,666	ShastaSIM Travel Model; GIS data from sources as defined by CA GC Section 65080.01: Shasta County General Plan, California Department of Conservation Farmland Mapping and Monitoring Program website, USFWS, FEMA Maps, CA Conservation Easement Database, Geologic Hazards database (ENPLAN).
Total developed acres	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total commercial developed acres	N/A	14,617 (from 2015 table)	17,981	17,981	18,571	18,571	ShastaSIM Travel Model and GIS files
Total residential developed acres	N/A	198,106 (from 2015 table)	202,643	202,482	210,530	210,530	ShastaSIM Travel Model and GIS files

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
Total housing units (Occupied) - Modeled	70,343	71,151	78,231	77,283	87,481	86,534	ShastaSIM Travel Model - MOE_2018_RTP.xlsx
Total housing units within Strategic Growth Areas (SGAs)*	10,731	10,824	11,847	11,847	13,487	13,487	ShastaSIM Travel Model - VMT_Summaries_Co mparison.xlsx
New housing units within SGAs*	0	0	1,023	1,023	1,640	1,640	ShastaSIM Travel Model - VMT_Summaries_Co mparison.xlsx
Housing vacancy rate (%)	8.93%	8.91%	7.17%	8.71%	7.53%	8.53%	ShastaSIM Travel Model - File - parcel_update_alloc HH.csv
Total single-family housing units	48,962	49,629	59,986	54,870	67,946	62,257	ShastaSIM Travel Model - File - parcel_update_alloc HH.csv (columns L-P)
Total multi-family housing units	13,123	13,264	15,417	14,155	17,430	16,019	ShastaSIM Travel Model - File - parcel_update_alloc HH.csv (columns L-P)
Total mobile home units & other	8,258	8,258	9,226	8,258	9,226	8,258	ShastaSIM Travel Model - File - parcel_update_alloc HH.csv (columns L-P)

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
Total mixed use (housing / retail) buildings	N/A	N/A	N/A	N/A	N/A	N/A	ShastaSIM Travel Model - File - parcel_update_alloc HH.csv (columns L-P)
Average residential density - housing units per developed residential acre							
Regional average residential density	N/A	0.36	0.39	0.38	0.42	0.41	Calculated from ShastaSIM Model outputs and GIS data
By Jurisdiction Anderson	N/A	3.54	3.64	3.64	4.00	4.01	Calculated from ShastaSIM Model outputs and GIS data
By Jurisdiction Redding	N/A	3.58	3.29	3.31	3.49	3.39	Calculated from ShastaSIM Model outputs and GIS data
By Jurisdiction Shasta Lake	N/A	2.58	2.44	2.54	2.39	2.33	Calculated from ShastaSIM Model outputs and GIS data
Urbanized area average residential density	N/A	0.88	0.91	0.91	0.98	0.98	Calculated from ShastaSIM Model outputs and GIS data
SGA: Shasta Lake	N/A	8.15	8.99	7.74	9.61	9.69	Calculated from ShastaSIM Model outputs and GIS data
SGA: Anderson	N/A	8.34	8.96	5.79	11.46	11.28	Calculated from ShastaSIM Model outputs and GIS data

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
SGA: Downtown Redding	N/A	9.89	11.86	9.72	12.70	12.79	Calculated from ShastaSIM Model outputs and GIS data
SGA: Cottonwood	N/A	2.50	2.46	2.46	2.53	2.55	Calculated from ShastaSIM Model outputs and GIS data
SGA: Palo Cedro	N/A	0.85	1.52	1.52	2.41	2.59	Calculated from ShastaSIM Model outputs and GIS data
SGA: Burney	N/A	3.00	2.72	2.37	2.96	2.95	Calculated from ShastaSIM Model outputs and GIS data
SGA: Fall River	N/A	1.81	1.91	1.91	2.19	2.13	Calculated from ShastaSIM Model outputs and GIS data
Total housing units within ¼-mile of transit stations and stops	29,370	29,848	28,828	31,613	31,275	32,997	ShastaSIM Travel Model - MOE_2018_RTP.xlsx (Transit Summary Tab); Table 14 of 2018 RTP
New housing units within ¼-mile of transit stations and stops	0	0	-1,020	1,765	2,447	1,364	ShastaSIM Travel Model - MOE_2018_RTP.xlsx (Transit Summary Tab); Table 14 of 2018 RTP
Total housing units within ½-mile of	40,254	41,147	42,534	44,644	46,802	48,340	ShastaSIM Travel Model -

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
transit stations and stops							MOE_2018_RTP.xlsx (Transit Summary Tab); Table 14 of 2018 RTP
New housing units within ½-mile of transit stations and stops	0	0	1,387	3,497	4,268	3,696	ShastaSIM Travel Model - MOE_2018_RTP.xlsx (Transit Summary Tab); Table 14 of 2018 RTP
Total employment within ¼-mile of transit stations and stops	44,847	47,023	50,701	53,605	56,051	58,169	ShastaSIM Travel Model - MOE_2018_RTP.xlsx (Transit Summary Tab); Table 14 of 2018 RTP
New employment within ¼-mile of transit stations and stops	0	0	3,678	6,582	5,350	4,564	ShastaSIM Travel Model - MOE_2018_RTP.xlsx (Transit Summary Tab); Table 14 of 2018 RTP
Total employment within ½-mile of transit stations and stops	49,097	53,187	60,175	61,780	67,674	68,753	ShastaSIM Travel Model - MOE_2018_RTP.xlsx (Transit Summary Tab); Table 14 of 2018 RTP

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
New employment within ½-mile of transit stations and stops	0	0	6,988	8,593	7,499	6,973	ShastaSIM Travel Model - MOE_2018_RTP.xlsx (Transit Summary Tab); Table 14 of 2018 RTP
Total employment within SGAs*	19,145	19,783	22,578	22,578	25,903	25,903	ShastaSIM Travel Model - VMT_Summaries_Comparison.xlsx
TRANSPORTATION SYSTEM							
Total lane miles	3,826.7	3,839.6	3,885.0	3,883.4	3,930.7	3,929.8	ShastaSIM Travel Model - Road System Measures of Effectiveness Tables
Freeway (lane miles)	306.8	307.8	329.2	329.2	341.1	341.1	ShastaSIM Travel Model - Road System Measures of Effectiveness Tables
Highway / Expressway (lane miles)	510.6	512.1	513.7	513.7	567.3	513.7	ShastaSIM Travel Model - Road System Measures of Effectiveness Tables
HOV (lane miles)	N/A	N/A	N/A	N/A	N/A	N/A	ShastaSIM Travel Model - Road System Measures of Effectiveness Tables
Arterial (lane miles)	601.8	601.1	601.1	609.3	621.1	631.6	ShastaSIM Travel Model - Road

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
							System Measures of Effectiveness Tables
Collector (lane miles)	933.1	939.0	964.7	953.3	980.0	966.5	ShastaSIM Travel Model - Road System Measures of Effectiveness Tables
Local (lane miles)	369.9	370.9	366.9	370.5	365.4	369.1	ShastaSIM Travel Model - Road System Measures of Effectiveness Tables
Freeway-Freeway Interchange (lane miles)	N/A	N/A	N/A	N/A	N/A	N/A	ShastaSIM Travel Model - Road System Measures of Effectiveness Tables
Regular transit bus operation miles (modeled)	1,944	1,947	N/A	2,269	N/A	3,757	ShastaSIM Travel Model
Bus rapid transit bus operation miles	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commuter / Light Rail operation miles	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Transit total daily vehicle service hours	117.3	128.1	175.6	152.3	270.0	235.6	ShastaSIM MOE Table - Transit Summary
Bicycle and pedestrian	N/A	143.99	159.1	159.1	273.4	273.4	ShastaSIM Travel Model and GIS files;

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
trail/lane miles (Class I & II totals) (Modeled)							2018 RTP pages 57-61; Table 14
Class I (modeled)	60.5	60.5	62.3	62.3	64.1	64.1	ShastaSIM Travel Model and GIS files; 2018 RTP pages 57-61; Table 15
Class II (modeled)	83.5	83.5	96.8	96.8	209.3	209.3	ShastaSIM Travel Model and GIS files; 2018 RTP pages 57-61; Table 16
Miles of sidewalk	N/A	N/A	N/A	N/A	N/A	N/A	ShastaSIM Travel Model and GIS files; 2018 RTP pages 57-61; Table 17
Vanpool (total riders per weekday)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOUR & TRIP DATA							
Number of Tours (by primary tour purpose)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Work	55,952	56,755	60,674	60,726	67,655	67,601	ShastaSIM Travel Model - RTP2018\MOE\POU

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
							T\Compare_Tours.xls x
School	33,432	33,921	36,256	36,277	40,557	40,453	ShastaSIM Travel Model - RTP2018\MOE\POU T\Compare_Tours.xls x
Escort	35,249	35,097	38,827	38,906	44,055	43,494	ShastaSIM Travel Model - RTP2018\MOE\POU T\Compare_Tours.xls x
Personal Business	42,143	42,219	46,204	46,222	52,141	52,206	ShastaSIM Travel Model - RTP2018\MOE\POU T\Compare_Tours.xls x
Shopping	39,877	40,225	42,808	42,906	48,417	48,079	ShastaSIM Travel Model - RTP2018\MOE\POU T\Compare_Tours.xls x
Meal	11,799	11,572	13,038	12,952	14,188	14,555	ShastaSIM Travel Model - RTP2018\MOE\POU T\Compare_Tours.xls x
Social/Recreation	36,391	36,694	40,254	40,286	44,683	44,900	ShastaSIM Travel Model -

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
							RTP2018\MOE\POU T\Compare_Tours.xls x
Home	N/A	N/A	N/A	N/A	N/A	N/A	ShastaSIM Travel Model - RTP2018\MOE\POU T\Compare_Tours.xls x
Number of trips (by trip destination) per day	655,704	661,715	717,257	717,363	804,097	803,686	N/A
Work (all)	88,648	89,795	95,722	95,668	107,192	107,362	ShastaSIM Travel Model - Compare Mode Share Table
Work (from home)	53,086	53,743	57,337	57,411	63,966	63,886	ShastaSIM Travel Model - Compare Mode Share Table
School	34,335	34,852	37,260	37,305	41,667	41,535	ShastaSIM Travel Model - Compare Mode Share Table
Escort	63,794	63,939	70,702	70,847	80,019	79,417	ShastaSIM Travel Model - Compare Mode Share Table
Personal Business	70,352	70,751	77,856	77,716	87,313	87,447	ShastaSIM Travel Model - Compare Mode Share Table
Shopping	68,044	68,814	73,935	73,869	83,319	82,653	ShastaSIM Travel Model - Compare Mode Share Table

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
Meal	25,988	26,099	28,841	28,797	31,600	32,277	ShastaSIM Travel Model - Compare Mode Share Table
Social/Recreation	49,700	50,706	54,880	54,886	61,291	61,707	ShastaSIM Travel Model - Compare Mode Share Table
Home	254,843	256,759	278,061	278,275	311,696	311,288	ShastaSIM Travel Model - Compare Mode Share Table
Average trip distance (miles) by mode	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Drive alone	7.0	7.1	6.6	6.6	6.6	6.5	ShastaSIM Travel Model - Compare Mode Share Table
Shared ride (2 persons)	4.9	5.0	4.9	4.8	4.8	4.9	ShastaSIM Travel Model - Compare Mode Share Table
Shared ride (3+ persons)	4.9	4.9	5.0	5.0	5.0	5.0	ShastaSIM Travel Model - Compare Mode Share Table
School bus	5.9	6.1	7.0	7.0	6.8	6.9	ShastaSIM Travel Model - Compare Mode Share Table
Transit	0.3	0.3	0.4	0.4	0.4	0.4	ShastaSIM Travel Model - Compare Mode Share Table

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
Bicycle	2.0	2.0	2.1	2.1	2.1	2.1	ShastaSIM Travel Model - Compare Mode Share Table
Walk	0.7	0.7	0.7	0.7	0.7	0.7	ShastaSIM Travel Model - Compare Mode Share Table
All modes	5.6	5.7	5.4	5.4	5.4	5.4	ShastaSIM Travel Model - Compare Mode Share Table
Average trip distance (miles) by trip destination	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Average work trip length (all work trips)	8.9	8.9	8.4	8.5	8.4	8.4	ShastaSIM Travel Model - Compare Mode Share Table
Average work trip length (home-to- work trips)	12.8	12.8	12.0	12.1	12.1	11.9	ShastaSIM Travel Model - Compare Mode Share Table
Average school trip length	4.2	4.3	4.6	4.6	4.5	4.6	ShastaSIM Travel Model - Compare Mode Share Table
Average escort trip length	3.7	3.8	3.6	3.6	3.6	3.6	ShastaSIM Travel Model - Compare Mode Share Table
Average personal business trip length	4.5	4.5	4.3	4.3	4.3	4.3	ShastaSIM Travel Model - Compare Mode Share Table

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
Average shopping trip length	3.8	3.8	3.7	3.7	3.7	3.7	ShastaSIM Travel Model - Compare Mode Share Table
Average meal trip length	4.1	4.0	4.0	4.0	3.9	4.0	ShastaSIM Travel Model - Compare Mode Share Table
Average social/recreation trip length	4.6	4.6	4.4	4.4	4.4	4.4	ShastaSIM Travel Model - Compare Mode Share Table
Average home trip length	6.3	6.4	6.1	6.1	6.1	6.0	ShastaSIM Travel Model - Compare Mode Share Table
Average trip duration (minutes) by mode	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Drive alone	10.5	10.5	9.8	9.9	9.8	9.8	ShastaSIM Travel Model - Compare Mode Share Table
Shared ride (2 persons)	7.9	8.0	7.8	7.8	7.8	7.8	ShastaSIM Travel Model - Compare Mode Share Table
Shared ride (3+ persons)	7.9	7.9	8.0	8.1	8.0	8.1	ShastaSIM Travel Model - Compare Mode Share Table
School bus	35.2	36.5	42.1	41.9	40.5	41.2	ShastaSIM Travel Model - Compare Mode Share Table

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
Transit	41.9	40.8	42.9	40.2	37.8	35.5	ShastaSIM Travel Model - Compare Mode Share Table
Bicycle	12.0	12.1	12.5	12.5	12.5	12.5	ShastaSIM Travel Model - Compare Mode Share Table
Walk	13.5	13.6	14.0	13.7	14.1	14.6	ShastaSIM Travel Model - Compare Mode Share Table
All modes	10.1	10.1	9.9	10.0	10.0	10.0	ShastaSIM Travel Model - Compare Mode Share Table
Average trip duration (minutes) by trip destination	N/A	N/A	N/A	N/A	N/A	N/A	N/A
work trip duration (all work trips)	13.5	13.5	13.0	13.1	13.1	13.1	ShastaSIM Travel Model - Compare Mode Share Table
work trip duration (home-to-work trips)	18.3	18.2	17.3	17.5	17.6	17.6	ShastaSIM Travel Model - Compare Mode Share Table
school trip duration	13.3	13.4	15.0	15.0	14.7	14.9	ShastaSIM Travel Model - Compare Mode Share Table
escort trip duration	6.8	6.9	6.7	6.7	6.6	6.8	ShastaSIM Travel Model - Compare Mode Share Table

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
personal business trip duration	8.1	8.1	8.0	8.0	8.0	8.1	ShastaSIM Travel Model - Compare Mode Share Table
shopping trip duration	7.0	7.0	6.9	6.9	6.9	6.9	ShastaSIM Travel Model - Compare Mode Share Table
meal trip duration	7.5	7.5	7.6	7.5	7.4	7.6	ShastaSIM Travel Model - Compare Mode Share Table
Social/Recreation trip duration	8.6	8.5	8.4	8.4	8.4	8.5	ShastaSIM Travel Model - Compare Mode Share Table
home trip duration	11.2	11.2	11.0	11.0	11.0	11.1	ShastaSIM Travel Model - Compare Mode Share Table
MODE SHARE							
Vehicle Mode Share (AM Peak Period)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Drive alone (% of trips)	50.8%	50.9%	49.7%	49.5%	49.6%	49.4%	ShastaSIM Travel Model - Compare Mode Share Table
Shared ride (2 persons) (% of trips)	20.9%	20.9%	20.9%	21.0%	21.0%	21.0%	ShastaSIM Travel Model - Compare Mode Share Table
Shared ride (3+ persons) (% trips)	16.4%	16.5%	17.4%	17.3%	17.4%	17.6%	ShastaSIM Travel Model - Compare Mode Share Table

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
School Bus (% trips)	3.5%	3.4%	3.8%	3.8%	3.7%	3.8%	ShastaSIM Travel Model - Compare Mode Share Table
Transit (% of trips)	0.3%	0.40%	0.5%	0.5%	0.7%	0.7%	ShastaSIM Travel Model - Compare Mode Share Table
Bike (% of trips)	1.9%	1.9%	1.8%	1.9%	1.8%	1.8%	ShastaSIM Travel Model - Compare Mode Share Table
Walk (% of trips)	6.1%	6.0%	6.0%	6.0%	5.8%	5.7%	ShastaSIM Travel Model - Compare Mode Share Table
Vehicle Mode Share (PM Peak Period)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Drive alone (% of trips)	49.2%	49.3%	47.8%	47.7%	47.6%	47.7%	ShastaSIM Travel Model - Compare Mode Share Table
Shared ride (2 persons) (% of trips)	27.2%	27.1%	27.4%	27.5%	27.7%	27.3%	ShastaSIM Travel Model - Compare Mode Share Table
Shared ride (3+ persons) (% trips)	16.5%	16.5%	17.5%	17.4%	17.5%	17.7%	ShastaSIM Travel Model - Compare Mode Share Table
School Bus (% trips)	0.8%	0.8%	0.9%	0.9%	0.9%	0.9%	ShastaSIM Travel Model - Compare Mode Share Table

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
Transit (% of trips)	0.3%	0.3%	0.4%	0.5%	0.6%	0.6%	ShastaSIM Travel Model - Compare Mode Share Table
Bike (% of trips)	0.9%	1.0%	1.0%	1.0%	1.0%	1.0%	ShastaSIM Travel Model - Compare Mode Share Table
Walk (% of trips)	5.0%	5.0%	5.1%	5.0%	4.7%	4.7%	ShastaSIM Travel Model - Compare Mode Share Table
Vehicle Mode Share (Whole Day)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Drive alone (% of trips)	47.8%	47.8%	46.2%	46.1%	46.1%	46.1%	ShastaSIM Travel Model - Compare Mode Share Table
Shared ride (2 persons) (% of trips)	26.1%	26.1%	26.5%	26.6%	26.6%	26.4%	ShastaSIM Travel Model - Compare Mode Share Table
Shared ride (3+ persons) (% trips)	17.0%	17.0%	17.9%	17.8%	18.1%	18.2%	ShastaSIM Travel Model - Compare Mode Share Table
School Bus (% trips)	1.7%	1.7%	1.8%	1.8%	1.8%	1.8%	ShastaSIM Travel Model - Compare Mode Share Table
Transit (% of trips)	0.3%	0.3%	0.4%	0.4%	0.6%	0.6%	ShastaSIM Travel Model - Compare Mode Share Table
Bike (% of trips)	1.3%	1.3%	1.3%	1.3%	1.2%	1.2%	ShastaSIM Travel Model - Compare Mode Share Table

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
Walk (% of trips)	5.8%	5.9%	5.9%	5.9%	5.6%	5.6%	ShastaSIM Travel Model - Compare Mode Share Table
Transit Boardings (modeled)	2,638	2,808	3,500	3,936	6,164	6,452	ShastaSIM Travel Model - MOE_2018_RTP.xlsx - Transit Summary Tab; 2018 RTP - Table 14 (page 76)
TRAVEL MEASURES							
Vehicle Miles Traveled (typical weekday, all vehicles, all miles)	5,606,121	5,701,977	6,165,145	6,166,473	7,386,838	7,374,997	EMFAC
Vehicle Miles Traveled (typical weekday, all vehicles, SB-375 miles (e.g., minus XX))	4,638,709	4,624,372	5,105,238	5,106,514	6,107,514	6,095,620	EMFAC
Total SB-375 VMT per weekday for passenger vehicles (ARB vehicle classes of LDA, LDT1, LDT2 and MDV) (miles)	3,896,516	3,767,199	4,357,743	4,358,832	5,296,383	5,286,068	EMFAC

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
Total II (Internal) VMT per weekday for ARB vehicle classes (miles)	2,236,600	2,215,113	2,348,823	2,349,410	2,658,784	2,653,606	EMFAC and ShastaSIM Travel Model file (VMT_Summaries_Comparison)
Total IX/XI VMT per weekday for ARB vehicle classes (miles)	993,611	934,265	1,263,745	1,264,061	1,721,324	1,717,972	EMFAC and ShastaSIM Travel Model file (VMT_Summaries_Comparison)
Total XX VMT per weekday for ARB vehicle classes (miles)	666,304	617,821	745,174	745,360	916,274	914,490	EMFAC and ShastaSIM Travel Model file (VMT_Summaries_Comparison)
Congested Peak Hour VMT on freeways (Lane Miles, V/C ratios >0.75)	AM Peak: 6,466 PM Peak: 0	AM Peak: 12,789 PM Peak: 6,154	AM Peak: 9,806 PM Peak: 0	AM Peak: 9,817 PM Peak: 1,412	AM Peak: 13,337 PM Peak: 2,600	AM Peak: 13,211 PM Peak: 2,552	ShastaSIM Travel Model - MOE_2018_RTP.xlsx
Congested Peak VMT on all other roadways (Lane Miles, V/C ratios >0.75)	AM Peak: 9,279 PM Peak: 13,379	AM Peak: 8,432 PM Peak: 8,115	AM Peak: 6,123 PM Peak: 8,857	AM Peak: 6,370 PM Peak: 11,026	AM Peak: 11,099 PM Peak: 17,411	AM Peak: 10,975 PM Peak: 16,311	ShastaSIM Travel Model - MOE_2018_RTP.xlsx
CO2 EMISSIONS							

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
Total CO2 emissions per weekday for all vehicle classes all miles (tons)	1,249,816	1,257,796	1,160,771	1,161,021	1,034,363	1,032,705	EMFAC outputs
Total CO2 emissions per weekday for passenger vehicles (SB 375 VMT) (ARB vehicle classes LDA, LDT1, LDT2, and MDV) (tons)	639,660	627,977	688,517	688,689	821,245	819,645	EMFAC outputs
Total II (Internal) CO2 emissions per weekday for ARB vehicle classes (tons)	367,165	369,250	371,111	371,203	412,265	412,281	EMFAC2011 and ShastaSIM Travel Model file (VMT_Summaries_Comparison)
Total IX / XI trip CO2 emissions per weekday for ARB vehicle classes (tons)	163,113	155,738	199,670	199,720	266,905	265,565	EMFAC2011 and ShastaSIM Travel Model file (VMT_Summaries_Comparison)
Total XX trip CO2 emissions per weekday	109,382	102,988	117,736	117,766	142,075	141,799	EMFAC2011 and ShastaSIM Travel Model file

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
for ARB vehicle classes (tons)							(VMT_Summaries_Co mparison)
INVESTMENT (Thousands) [3]							
Total RTP Expenditure (\$)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Streets and Roads - Capital Improvements (\$)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Active Transportation - Capital Improvements (\$)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Streets, Roads and Active Transportation - Operations and Maintenance (\$)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Transit - Capital Improvements (\$)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Transit - Operations and Maintenance (\$)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aviation - Capital Improvements (\$)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Aviation - Operations and Maintenance (\$)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Modeling Parameters	2005 (if available)	2010 (base year)	2020 With Project [1]	2020 Without Project [2]	2035 With Project	2035 Without Project	RTP/SCS Chapter- Page(s) or Data Source(s)
Other (Complete Streets – maintain and sustain existing infrastructure) (YOE\$, millions)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TRANSPORTATION USER COSTS							
Vehicle operating costs (Year 2009 \$ per mile)	\$0.15	\$0.15	\$0.27	\$0.27	\$0.29	\$0.29	ShastaSIM Travel Model
Gasoline price (\$ per gallon)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Average transit fare: Fixed-route	\$0.75	\$0.75	\$0.75	\$0.75	\$0.75	\$0.75	ShastaSIM Travel Model
Average transit fare: Express route	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	ShastaSIM Travel Model
Parking cost (\$)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EMFAC ADJUSTMENT [4]							
% change in per capita GHG due to EMFAC 2011 to EMFAC2014 adjustment (%)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[1] This scenario includes modeling of all planned and programmed projects in RTP/SCS for the respective calendar year.

[2] This scenario reflects the MPO's Business as Usual scenario, which is what would happen under the MPO's previously adopted RTP for the respective calendar year.

[3] Investment information was not provided as part of the 2018 SCS Data Table Submittal, so CARB staff referred to the Investment Analysis conducted between the 2015 SCS and 2018 SCS as part of the SB 150 report with approval from SRTA.

[4] EMFAC adjustment was provided separately and not part of the data table submittal.