

EVALUATION OF THE SAN DIEGO ASSOCIATION OF GOVERNMENTS' SB 375 2021 SUSTAINABLE COMMUNITIES STRATEGY

August 2022

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Introduction

The Sustainable Communities and Climate Protection Act of 2008 (SB 375, Steinberg, Chapter 728, Statutes of 2008) 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 of automobiles and light trucks. Under the law, 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 for the region.

On December 10, 2021, the San Diego Association of Governments (SANDAG),¹ which serves as the MPO for the San Diego region, adopted its 2021 Regional Transportation Plan/Sustainable Communities Strategy (2021 SCS), also known as the *2021 Regional Plan*.² SANDAG provided for CARB staff's review a complete submittal of the 2021 SCS and all necessary supporting information on March 16, 2022. SANDAG's 2021 SCS determined the SCS achieves the regional targets to reduce greenhouse gas emissions from passenger vehicle use by 15 percent by 2020 and 19 percent by 2035, compared to 2005 levels, as adopted by the Board in 2018.³ This report reflects CARB's evaluation of SANDAG's 2021 SCS GHG quantification and proposed actions to meet the 2035 target.

CARB's Evaluation

After CARB set the first SB 375 GHG emission reduction targets in 2010, CARB staff developed the first guidelines on how CARB would evaluate the SCSs for the purposes of making its determinations, which were applied to the first- and second-round SCSs. 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 GHG emission reduction targets. In 2018, when CARB updated the SB 375 GHG emission reduction targets for the third-round SCSs, 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, in 2019, CARB staff updated its 2011

¹ SANDAG is the largest single-county MPO in California, covering eighteen incorporated cities and the unincorporated areas of the San Diego county. The SANDAG region is home to about 3.35 million people, which is about nine percent of the state's population.

² SANDAG. *2021 Regional Transportation Plan/Sustainable Communities Strategy*.

³ CARB. *Board Resolution 18-12*. (March 22, 2018).

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 two components – the determination and reporting components – and is based on the general method described in CARB staff's 2019 Evaluation Guidelines. 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 SANDAG's 2021 SCS; additional SCS submittal materials provided by SANDAG further explaining its modeling inputs and assumptions, performance indicators trends, key actions, investments, current trends, and plan adjustments; as well as information gathered in follow-up conversations with SANDAG staff. For a summary of strategies and quantification methods evaluated as part of SANDAG's 2021 SCS submittal see Appendix A: SANDAG's 2021 SCS Strategy Table.

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 track 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 related to equity. These reporting components are included as Appendix C: MPO Reporting, and serve to identify the effectiveness of prior SCS implementation efforts and increase overall transparency of the SCS for the public and other stakeholders.

This Evaluation section summarizes CARB staff's evaluation of SANDAG's 2021 RTP/SCS through four analyses: trend, policy, investment, and plan adjustment. The Determination section which follows discusses CARB staff's concerns about implementation, recommendations, and CARB's overall conclusion to accept SANDAG's determination that its 2021 SCS would meet the target of a 19 percent reduction by 2035, compared to 2005 levels, when fully implemented.

⁴ CARB. *Final Sustainable Communities Strategy Program and Evaluation Guidelines*. (November 2019).

Trend Analysis

This section summarizes CARB staff's analysis of key plan performance indicators to determine if the data provided by SANDAG support the 2021 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. Staff analyzed how these metrics change over time (i.e., 2016 to 2035) to determine whether these eight SCS performance indicators are trending in a direction that supports the stated GHG/VMT reductions.

SANDAG provided data associated with these metrics from the output of its travel demand model, SANDAG Activity-Based Travel Demand Model (ABM2+). **Table 1** provides a summary of the trend analysis for SANDAG's 2021 SCS.

Table 1. Trend Analysis Results

Performance Indicator	Forecast Change* 2016** to 2035	Trend Analysis
Average Trip Length by Mode	<p>Single-occupancy vehicle (SOV) (-4.9%)</p> <p>Shared ride (-0.6%)</p> <p>Transit (11.3%)</p> <p>Bike (25.4%)</p> <p>Walk (-3.8%)</p>	<p>SANDAG’s 2021 SCS forecasts a decrease in the average single-occupancy vehicle (SOV) trip length from 7.60 miles/day in 2016 to 7.23 miles/day in 2035. Over the same period, trip lengths for biking increase from 1.81 miles/day to 2.16 miles/day, and transit increases from 10.76 miles/day to 11.98 miles/day, while trip lengths for walking decreases from 0.78 to 0.75 miles/day. The increase in transit trip length is due to an increase in the transit coverage area. CARB staff finds these trends directionally supportive and consistent with the relationship shown in the empirical literature, especially in that reducing SOV trip length reduces VMT and GHG emissions. Please see Appendix B: Data Table for more details.</p>

Performance Indicator	Forecast Change* 2016** to 2035	Trend Analysis
Average Travel Time by Mode	SOV (-7.3%) Shared ride (-4.7%) Transit (-11.7%) Bike (5.7%) Walk (-4.7%)	<p>SANDAG's 2021 SCS forecasts a decrease in the average SOV travel time (15.86 minutes in 2016 to 14.7 minutes in 2035) and a decrease in transit travel time on average (53.39 minutes to 47.17 minutes) over the same period. CARB staff finds these trends directionally supportive and consistent with the relationship shown in the empirical literature that travel time and trip length change proportionally and support reducing VMT and GHG emissions. However, CARB staff is concerned that the average travel time for transit is almost three times higher than drive-alone travel time. The travel time for transit is a potential deterrent to transit ridership. Please see Appendix B: Data Table for more details.</p>

Performance Indicator	Forecast Change* 2016** to 2035	Trend Analysis
Mode Share	SOV (-4.0%) Shared ride (-3.7%) Transit (+3.1%) Bike (+0.6%) Walk (+3.5%) Other (+0.4%)	SANDAG's 2021 SCS forecasts that mode share for SOV will decrease from 44.7 percent in 2016 to 40.7 percent in 2035, while mode share for alternate modes of transportation will increase over the same period. The plan forecasts transit mode share will increase from 1.6 percent to 4.7 percent. Along similar lines, bike and walk mode share will increase from 7.8 percent to 11.9 percent over the same period. CARB finds these trends directionally supportive and consistent with the relationship shown in the empirical literature that shifting from drive-alone to other modes such as transit, walking, and biking reduces per capita VMT and GHG emissions. Please see Appendix B: Data Table for more details.

Performance Indicator	Forecast Change* 2016** to 2035	Trend Analysis
Daily Transit Ridership	+224.74%	<p>SANDAG’s 2021 SCS forecasts daily transit ridership increases from 380,540 in 2016 to 1,235,770 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 is concerned about achieving the magnitude of change of 224.74 percent. Further, this trend is a concern in the context of transit travel time, which is three times that of the SOV. It is inconsistent with the empirical literature that decreases in SOV travel time and increases in transit distances would lead to greater transit ridership and lower GHG emissions. Please see Appendix B: Data Table for more details.</p>

Performance Indicator	Forecast Change* 2016** to 2035	Trend Analysis
Household Vehicle Ownership	-5.91%	<p>SANDAG’s 2021 SCS forecasts a decrease in household vehicle ownership from 1.86 in 2016 to 1.75 in 2035. CARB staff finds the 2016 to 2035 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 is concerned about this trend when looked at in the context of transit ridership per household (i.e., 0.34 in 2016 to 0.93 in 2035). The magnitude of increase in transit ridership forecasted may not be consistent with the modest reduction in vehicle ownership between 2016 and 2035. Please see Appendix B: Data Table for more details.</p>

Performance Indicator	Forecast Change* 2016** to 2035	Trend Analysis
Seat Utilization	+8.7%	<p>SANDAG’s 2021 SCS forecasts seat utilization to increase from 31.9 percent in 2016 to 40.6 percent 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, the travel time differences between SOV versus transit do not support an increase in seat utilization percentage.</p>
VMT per Capita	-13.4%	<p>SANDAG’s 2021 SCS forecasts VMT to decrease from 25.4 VMT per capita in 2005 to 22 VMT per capita in 2035. CARB staff finds this trend directionally supportive and consistent with the relationship shown in the empirical literature that reducing VMT per capita will reduce GHG emissions. Please see Appendix B: Data Table for more details.</p>

Performance Indicator	Forecast Change* 2016** to 2035	Trend Analysis
GHG per Capita Reduction Between 2005 and 2035	- 20%	The GHG per capita reduction forecasted by SANDAG meets the target established by CARB. Please see Appendix B: Data Table for more details.

Notes:

** (-) decreasing, (+) increasing, (~) no change*

*** For its 2021 RTP/SCS, SANDAG used a new activity-based travel demand model (ABM2+). The output from this modeling included the performance indicators used for the trend analysis. SANDAG was not able to provide modeled output for 2005 for all metrics, but did provide output for calendar year 2016, the base year of the plan.*

Under the SCS Evaluation Process, SANDAG must show how they meet the target for the years 2020 and 2035. SANDAG provided modeled GHG results reflecting a per capita GHG reduction of 9.4 percent for 2020. SANDAG also conducted and provided a COVID impact analysis on VMT using observed data (traffic flow) from the Performance Measurement System (PeMS) for freeways. Taken together, SANDAG determined it met the 2020 target due to the unique circumstances surrounding travel in 2020 due to the COVID-19 pandemic. Based on the information provided and CARB’s analysis of calculated regional VMT data up to 2019 for the *Draft 2022 Progress Report: California’s Sustainable Communities and Climate Protection Act*, CARB staff found that the SANDAG region would have been unlikely to achieve its 2020 target of 15 percent reduction, but for the pandemic.⁵

However, the performance indicators for 2035 appear to be trending in the right direction to meet the 2035 targets. Therefore, CARB staff finds that taken as a whole, the 2035 performance indicators used to conduct the Trend Analysis support the GHG reductions projected in SANDAG’s SCS. SANDAG will need to do more to ramp up implementation and monitoring of their SCS strategies to ensure that the 2035 emission reduction targets are met, considering SANDAG was not on track to meet its applicable 2020 target, but for the COVID-19 pandemic.

⁵ For more information see CARB’s [Draft 2022 Progress Report: California’s Sustainable Communities and Climate Protection Act](#).

Policy Analysis

The following section summarizes CARB staff's evaluation of whether or not SANDAG's 2021 SCS contains key policy, investment, and other actions that support its identified strategies for meeting its 2035 GHG emission reduction target 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: (1) land use and housing, (2) transportation infrastructure and network, (3) local/regional pricing, and (4) 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 looks 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 pattern 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 SANDAG's 2021 SCS and through additional supporting materials provided by SANDAG in its submittal to CARB. Terms from the SCS are used throughout this evaluation. The plan's overall strategy is structured on the "5 Big Moves."⁶

⁶ The 5 Big Moves, defined on page 6 of the 2021 SCS, are:

- **Next OS** - The underlying technology that allows people to connect to transportation services and a digital platform that allows for dynamic management of roadways and transit services.
- **Flexible Fleets** - Transportation services of many forms, varying in size from bikes to scooters to shuttles, that offer first- and last-mile connections to transit and alternatives to driving alone.

Land Use and Housing Strategy Commitments

SANDAG's 2021 SCS includes two land use and housing strategies, including concentrating new growth in identified mobility hubs⁷ and smart growth opportunity areas,⁸ and preservation of natural resources and farmland to the extent feasible. Together, these land use and housing strategies seek to support SANDAG's goals to concentrate future growth in existing urbanized areas with access to affordable, reliable, and safe mobility options for everyone, and with healthier air and reduced GHG emissions regionwide. SANDAG estimates these strategies will contribute to the total 19.3 percent⁹ reduction in its per capita GHG emissions by 2035 from on-model strategies. This reduction will come from its quantification of on-model land use and housing strategies, along with transportation network changes and pricing strategies together. CARB is unable to isolate the emissions reductions associated with SANDAG's land use and housing strategies alone.

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. Figure 1 shows the 2035 sustainable communities strategy land use pattern. Specifically, the plan assumes the following outcomes:¹⁰

-
- **Complete Corridors** - Roadways that offer dedicated, safe space for everyone, including people who walk, bike, drive, ride transit, and use Flexible Fleets, as well as those who drive freight vehicles. Complete Corridors use technology to dynamically manage the flow of traffic.
 - **Transit Leap** - A complete network of fast, convenient, and reliable transit services that connect people from where they live to where they want to go.
 - **Mobility Hubs** - Vibrant centers of activity where transit and on-demand travel options, supported by safe streets, connect people with their destinations and businesses with their customers. Mobility Hubs are also planned to accommodate future growth and development.

⁷ Mobility hubs are newly defined geographic areas in the 2021 Regional Plan that identify areas for future growth with high concentrations of people, key destinations, and travel choices. They were designed to support a range of different mobility options and investments in focused areas of the region. To identify mobility hubs, SANDAG considered land use, population density, communities of concern, employment density, activity centers of regional significance, and unique local characteristics. Appendix T. <https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-t---network-development-and-performance.pdf>.

⁸ Smart Growth Opportunity Areas are identified on SANDAG's Smart Growth Concept Map which defined the land use scenario of the 2015 Regional Plan. Smart Growth Opportunity Areas include locations in the region that can support smart growth, transit, walking, and biking. This served as a starting point for the vision development for the 2021 Regional Plan which defined mobility hubs. New growth is concentrated in mobility hubs and in smart growth opportunity areas where mobility hubs do not exist.

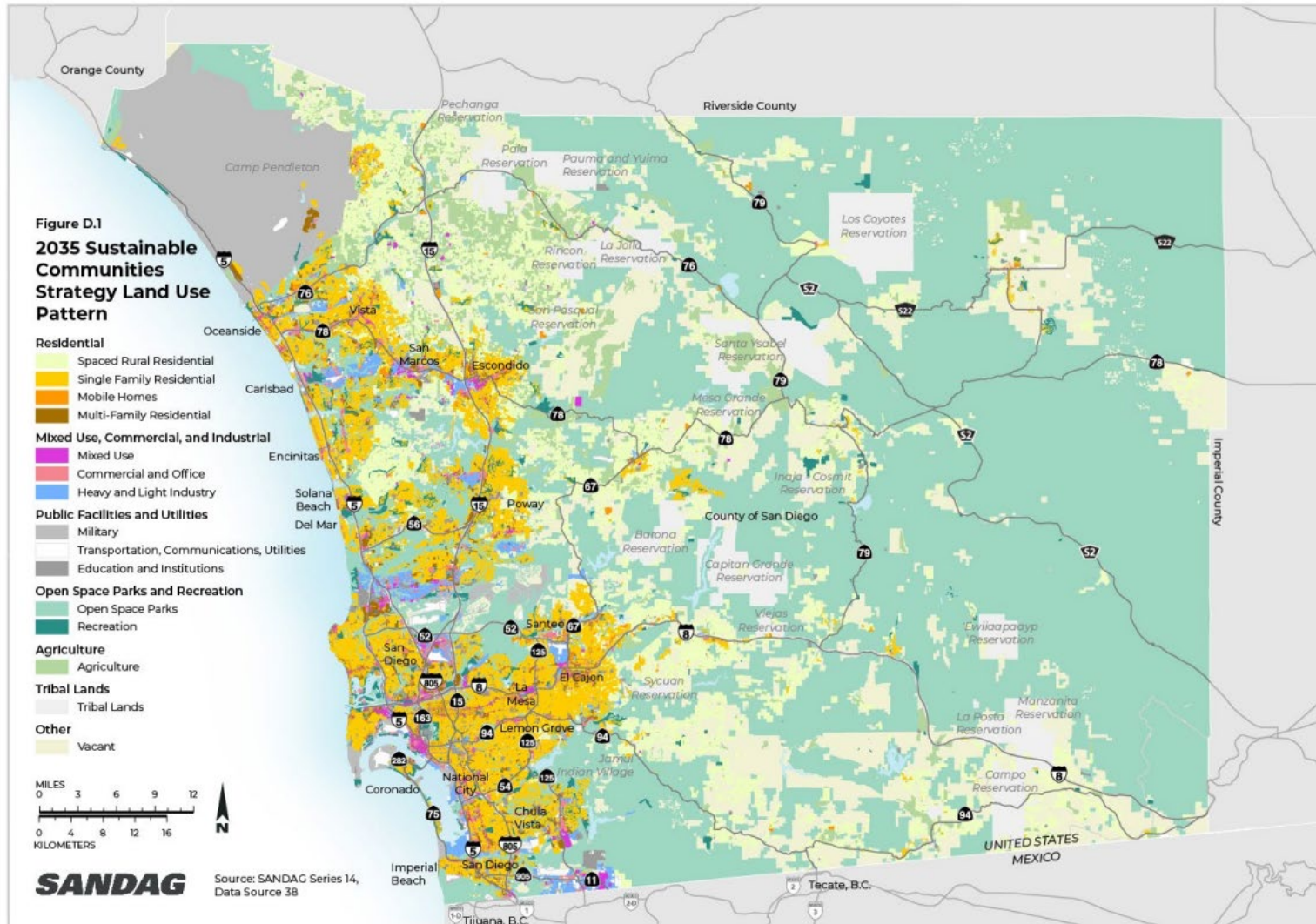
⁹ SANDAG estimates VMT changes from its land use and housing strategies, along with transportation network changes and pricing strategies in aggregate using its activity-based travel demand model. SANDAG uses these estimates to calculate the change in per capita GHG emissions.

¹⁰ This subsection includes information based on the Appendix B: Data Table and compares demographic and land use indicators from the 2016 base year to 2035.

- Adds 219,313 new housing units and 276,056 new jobs;
- Increases the region's residential density by 8.7 percent;
- Includes 17,308 new single-family housing units (7.9 percent of the total new units) and 202,110 (92.2 percent) multi-family or attached housing;
- Assumes 368,068 new housing units and 526,753 new jobs are located within a ½-mile of high-quality transit stations (a 196 percent and 51 percent increase, respectively, compared to 2016 levels). The percent of total jobs and housing units that are located within a ½ mile of high-quality transit will increase from 21 percent and 10 percent in year 2016 to 46 percent and 35 percent in the year 2035, respectively; and
- Increases future housing and employment growth within newly defined mobility hubs and smart growth opportunity areas, forecasting 53 percent of housing units¹¹ and 70 percent of jobs to occur in mobility hubs. Figure 2 and Figure 3 show the assumed locations of housing and employment density growth in 2035 relative to the regional mobility hub network and smart growth opportunity areas.

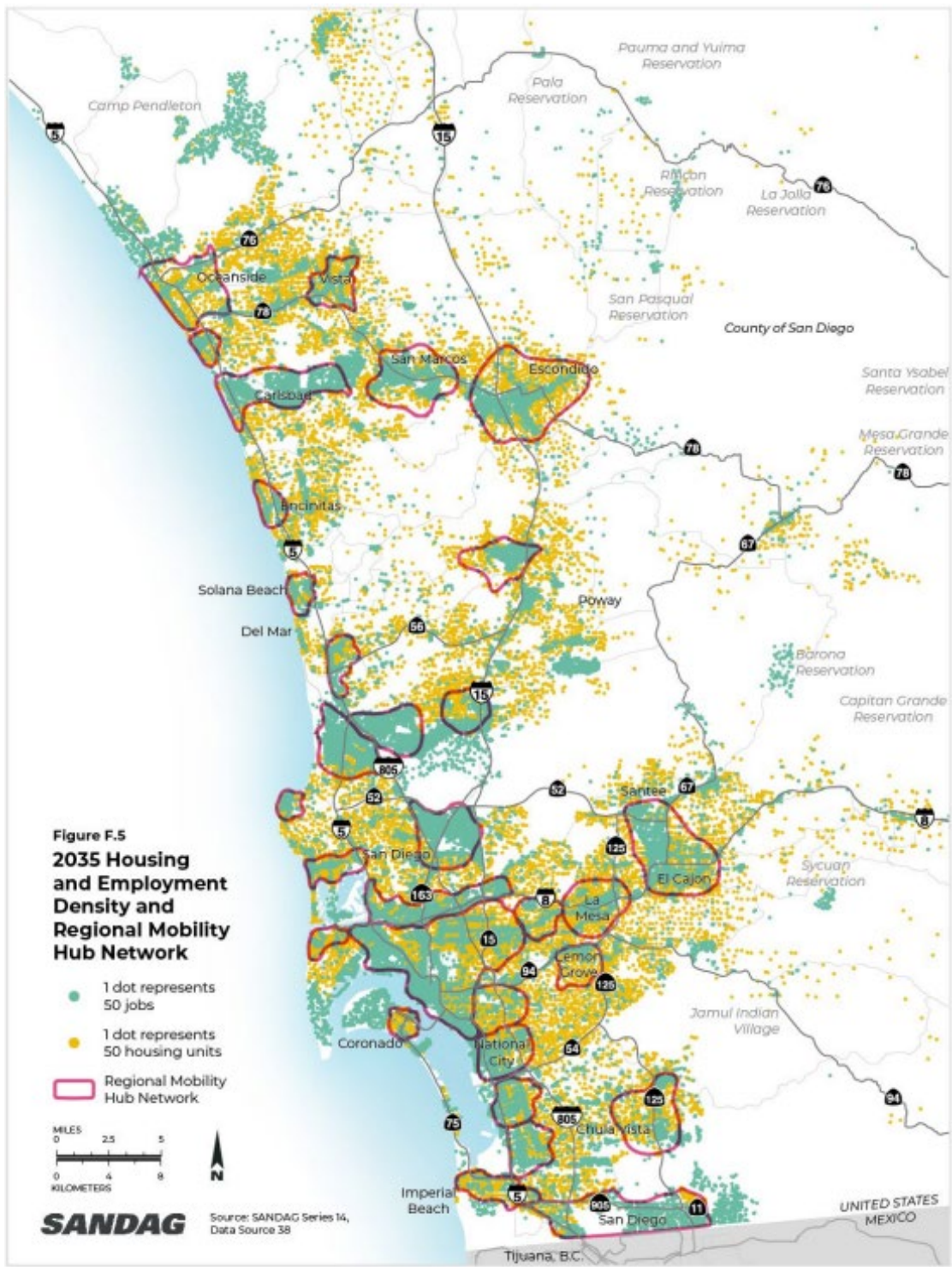
¹¹ This bullet point refers to growth comparison tables in Appendix F: Regional Growth Forecast and Sustainable Communities Strategy Land Use Pattern. Accessed May 13, 2022.
<https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-f---regional-growth-forecast-and-scs-land-use-pattern.pdf>

Figure 1. 2035 Sustainable Communities Strategy Land Use Pattern



Source: SANDAG 2021 RTP/SCS

Figure 2. 2035 Housing and Employment Density and Regional Mobility Hub Network



Source: SANDAG 2021 RTP/SCS

Figure 3. San Diego Region Smart Growth Concept Map with Smart Growth Opportunity Areas Defined



Source: SANDAG, 2016 San Diego Region Smart Growth Concept Map

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 in natural or agricultural areas and rejecting or not affirmatively supporting increased infill, especially affordable housing and growth in walkable or transit-oriented areas, stifles the San Diego region's ability to implement the plan. CARB reviewed the SCS to consider how it would support needed local action to cause development patterns that align with regional goals.

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 2021 SCS land use and housing planned outcomes are supported by region-specific funding and planning program actions. In particular, SANDAG has included new programs and commitments to support acceleration and planning for housing near mobility hubs sufficient to house the 6th cycle regional housing needs assessment (RHNA) plan allocation,¹² and land conservation efforts needed to implement the SCS land use and housing strategies.

The 2021 SCS also identifies the need to focus new growth near newly defined mobility hubs, which overlap with Smart Growth Opportunity Areas and Transit Priority Areas.¹³ The following section includes CARB staff's summary of SANDAG's 2021 SCS

¹² This has been the subject of legal action. "In September 2020, the cities of Coronado, Imperial Beach, Lemon Grove and Solana Beach filed a Petition for Writ of Mandate in San Diego Superior County, challenging, among other things, the Board of Directors' adoption of the RHNA plan. SANDAG demurred to the cities' Writ Petition and the demurrer was sustained by the court in February 2021. The petitioning cities have appealed the ruling on the demurrer to their Writ Petition, and that appeal remains pending in the Fourth District Court of Appeal." Appendix K Regional Housing Needs Assessment Plan page K-2. <https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-k---regional-housing-needs-assessment-plan.pdf>

¹³ Transit priority areas are defined as areas within a half mile of a "major transit stop," defined in Public Resources Code 21064.3. A map identifying the 2035 Transit Priority Areas are illustrated in Figure D.10 in SANDAG's 2021 SCS Appendix D: Sustainable Communities Strategy Documentation and Related

land use and housing strategy commitments and associated supporting actions and investments.

Increase Density Near Transit and Jobs/Housing Balance by Concentrating New Development in Mobility Hubs and Smart Growth Development Opportunity Areas

Estimated GHG Emission Reductions 2035: Strategy contributes an unknown amount to the total -19.3 percent reduction from all on-model strategies as SANDAG did not provide a specific proportion for this particular strategy.

Supporting Actions and Investments: This strategy seeks to concentrate development to mobility hubs and smart growth opportunity areas. Identification of mobility hubs builds off the 2015 SCS land use pattern but is refined based on a geographic scoring process that considers the number of local street intersections per square mile, VMT in 2016, employment counts, population density, and proximity to “activity centers” such as hospitals, schools, airports, hotels, military installations, shopping centers, and universities and colleges. Areas that received higher scores are identified as areas for future growth. This strategy also identifies areas within the region sufficient to house the 6th cycle RHNA plan allocations focusing the majority of housing units in the region’s existing urbanized areas and prioritizing housing in mobility hubs and smart growth opportunity areas for future development. SANDAG projects 12 percent of new housing growth will occur in the unincorporated area of the County.¹⁴

SANDAG is working to establish a Regional Housing Acceleration Program with support from the Regional Early Action Planning Grant Program award of \$6.8 million to accelerate housing production and will work closely with local jurisdictions to update and expand this new incentive program to accelerate housing production near transit in the region.^{15,16} SANDAG administered the first cycle of local funding to projects across the region through the Housing Acceleration Grant Program, which supported feasibility assessments, improvements to local building permit processes, support for accessory dwelling unit permit approvals, and environmental analysis for housing.¹⁷

Information. <https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-d---scs-documentation-and-related-information---updated.pdf>

¹⁴ SANDAG Appendix F Page F-8. <https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-f---regional-growth-forecast-and-scs-land-use-pattern.pdf>

¹⁵ APPENDIX B page B-18. <https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-b---implementation-actions.pdf>

¹⁶ For more information, see *Housing Acceleration Program*.

¹⁷ For more information, see *Housing Acceleration Grant Program Cycle 1 Awards*.

In early 2022, SANDAG hosted a Housing Policy and Leadership Academy, which invites community members, elected officials, advocates, and interested stakeholders to build local support for pro-housing policies.¹⁸

In addition, SANDAG has expanded on technical assistance to help potential applicants compete for the Affordable Housing Sustainable Communities (AHSC) grant program,¹⁹ as well as provide other technical assistance through resources such as the Smart Growth Design Guidelines published by SANDAG,²⁰ and the 2021 Regional Plan Data Viewer, which provides interactive maps for local agencies to use in their planning processes.²¹

SANDAG intends to continue and update existing grant programs to encourage planning and capital projects that allow for higher-density and mixed-use development within mobility hub areas and/or transit priority areas.²² SANDAG also commits to partnering with local jurisdictions to update and refine mobility hub areas as mobility projects and land use changes are implemented, and periodically prepare an updated mobility hub map.

CARB Staff Analysis:

Actions Identified: Yes. However, CARB staff is concerned that SANDAG’s analysis of future housing growth is not reflected or well-supported by all of its member jurisdictions, with 7 of the region’s local jurisdictions in compliance and 12 of the region’s local jurisdictions out of compliance with the 6th cycle RHNA housing element requirements.

Funding in the RTP/SCS Project List: N/A.

SANDAG Other Resources Available: Yes, SANDAG identifies new and existing programs that can implement investments to mobility hub areas, described in Supporting Actions and Investments above. In particular, SANDAG has identified resources to support the Smart Growth Incentive Program and plans to launch a regional housing incentive program. However, CARB staff is concerned that, without securing new funding sources, implementation will be challenging.²³

¹⁸ For more information, see [Housing Policy Leadership Academy](#).

¹⁹ For more information, see [Affordable Housing and Sustainable Communities Program](#).

²⁰ For more information, see [SANDAG Smart Growth Design Guidelines](#).

²¹ For more information, see [2021 Regional Plan Data Viewer](#).

²² “Transit Priority Areas” are defined as an area within a half mile of a “major transit stop,” defined in Public Resources Code 21064.3.

²³ SANDAG identifies \$55,956 (in millions of 2020 dollars) for new major funding sources or 32 percent of the total major revenue sources to fund the 2021 Regional Plan in Appendix V: Funding and Revenues: <https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-v---funding-and-revenues.pdf>

Land Conservation

Estimated GHG Emission Reductions 2035: Strategy contributes an unknown amount to the total -19.3 percent reduction from all on-model strategies as SANDAG did not provide a specific proportion for this particular strategy.

Supporting Actions and Investments: This strategy seeks to concentrate development in existing urbanized areas and conserve land for open space. SANDAG coordinates several TransNet grant programs including the Smart Growth Incentive Program and Environmental Mitigation Program and plans to update requirements to align with the 2021 Regional Plan. To support the land conservation goals in the plan, SANDAG dedicates \$3 billion to support habitat-related efforts including \$2 billion for an enhanced habitat conservation, management, and monitoring program; \$565 million to fund the Nature-Based Climate Solutions Program to promote conservation, restoration, and carbon-sequestration; and \$300-\$500 million to land acquisition and restoration for habitat mitigation of transportation projects.²⁴ SANDAG plans to partner with member agencies on applying to State funding programs and will provide data and technical support to assist local jurisdictions in their land use planning efforts.

CARB Staff Analysis:

Actions Identified: Yes

Funding in the RTP/SCS Project List: N/A

SANDAG Other Resources Available: Yes, SANDAG identifies existing funding resources (TransNet) that will be reevaluated to align with the 2021 Regional Plan and support land conservation, habitat, and climate resilience efforts, described in Supporting Actions and Investments above.

²⁴ SANDAG. 2021 RTP/SCS. Appendix B: Implementation Actions. page B-13.
<https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-b---implementation-actions.pdf>

In addition to CARB staff's evaluation of strategies and supporting actions, CARB staff also looked for general alignment of regional and local planning assumptions around the location of future housing unit development. SANDAG's 2021 SCS used the most recent planning assumptions considering local general plans, but also conducted a subregional RHNA allocation to meet GHG emission reduction goals, requiring a number of local jurisdictions to subsequently update their housing elements for consistency. CARB staff observe that 7 jurisdictions in the region are in compliance and 12 jurisdictions in the region are out of compliance with housing element law for the 6th cycle RHNA at the time of this writing.

While CARB staff's analysis supports a conclusion that SANDAG's 2021 SCS would meet the target, when implemented, CARB staff has significant concerns that SANDAG will not be able to implement the land use and housing strategies in the 2021 SCS to achieve its anticipated GHG reduction and planned outcomes. As shown in CARB's *Draft 2022 Progress Report: California's Sustainable Communities and Climate Protection Act*,²⁵ prepared pursuant to SB 150 (Allen, Chapter 646, Statutes of 2017), actual permits issued are lagging, especially for affordable housing. In the four largest regions, according to local jurisdiction reports that were 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.

SANDAG's process for implementing the 2021 SCS includes actions to help address observed shortfalls, however implementation of these strategies rely on funding that has yet to be secured and local measures that have yet to be developed such as future local sales tax measures and revenue generated from new pricing strategies (see discussion in the "Investment Analysis"). For example, TransNet, a San Diego County voter-approved local sales tax for transportation was approved in 2004 and will generate \$11.1 billion through 2050. The 2021 SCS assumes two additional regional tax measures will pass prior to 2035 that will generate \$26.1 billion. In addition, the 2021 SCS assumes an additional tax measure through the San Diego Metropolitan Transit System and North County Transit District that would generate an additional \$6.1 billion. In sum, SANDAG assumes \$32.2 billion will be generated through these new local funding sources. Securing local funding to implement actions identified in the 2021 SCS is critical to implement the 2021 SCS land use and housing strategies since programs designed to support implementation have historically relied on TransNet. As of April 2021, the TransNet Smart Growth Incentive Program and Active Transportation Grant Program have provided more than \$85 million, leveraging \$52 million in local match (approximately \$132 million invested in the San Diego region) through a competitive grant program to support more than 150 smart growth and active transportation plans, programs, and projects. Also, as of January 2021, the

²⁵ CARB. Draft 2022 Progress Report California's Sustainable Communities and Climate Protection Act. https://ww2.arb.ca.gov/sites/default/files/2022-06/2022_SB_150_Main_Report_Draft_1.pdf (June 2022).

TransNet Environmental Mitigation Program has awarded \$16.4 million through a competitive grant program to support land management throughout the region. An additional \$10.1 million of matching funds has been provided by grantees for their Land Management Grant Projects. In addition, the TransNet Environmental Mitigation Program has provided \$161 million to acquire and/or restore 8,780 acres of sensitive habitat and open space. A tenth cycle of the competitive Land Management Grant Program is planned to be released in the fall of 2021 and awarded by the summer of 2022.”²⁶ These TransNet grant programs are identified and discussed previously as key supporting actions and investments above.

While SANDAG has a track record for using local funds to support implementation of the SCS, full implementation of the SCS land use scenario will require a series of local actions such as plan changes, conservation efforts for natural and working lands, and the shaping of development into more sustainable patterns that today have no definite commitments or guarantees. As previously mentioned regarding assumptions for housing growth across the region, not all cities are in support of the 6th cycle RHNA, which may be problematic in achieving full implementation of the land use and housing strategies in the 2021 SCS. Therefore, CARB staff has concerns as to whether the SCS will be able to fully achieve its planned outcomes based on the land use and housing strategy commitments identified.

Transportation Infrastructure and Network Strategy Commitments

SANDAG has included sixteen transportation strategies in the 2021 SCS. These strategies seek to complement its land use and housing strategies and focus on increasing non-SOV mode share and reducing driving. The strategies include managed lanes, high-occupancy vehicle (HOV)/high-occupancy toll (HOT) policies, regional bike network, commuter rail, light rail, next generation Rapid bus, local bus, transit fare subsidies, local complete streets, parking management, telework, pooled rides (private), vanpool, carshare, and a regional transportation demand management (TDM) ordinance. These transportation strategies support SANDAG’s goals of improving mobility, accessibility, reliability, and travel safety and increasing personal travel and choices within the transportation system. Altogether, SANDAG estimates these strategies will contribute to approximately 22.2 percent²⁷ of its total per capita GHG emission reductions.

²⁶ SANDAG, 2021 RTP/SCS. Appendix M: Progress on 2015 Regional Plan Actions. Page M-20.
<https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-m---progress-on-2015-rp-actions.pdf>

²⁷ Transportation strategies are aggregated with other on-model strategies. Only a portion of the reduction would come from transportation strategies.

SCS Planned Outcomes

These strategies translate into assumptions about changes to the transportation infrastructure and network that will serve the region between 2016 and 2035.²⁸

Specifically, the plan assumes the following outcomes:

- Increases in the region's total transit operational miles by 61 percent compared to 2016. Figure 4 shows the transit network assumed in 2035;
- Increases in service and frequency for commuter rail, light rail, next gen rapid bus service, and local buses;
- Increases in bike and pedestrian lanes miles by over 15 percent compared to 2016 by 2035;
- Removes or repurposes 191 freeway/general purpose lane miles in the region, and adds 10 freeway toll lane miles, 557 arterial/expressway lane miles, 250 collector lane miles, and 449 freeway HOV lane miles compared to 2016;
- Increases in access to destinations and lowering travel costs for youth by providing free transit services through a year-long pilot; and
- Increases in access to basic needs including retail, parks, medical, employment centers, and higher education regionwide.

²⁸ This subsection includes information based on the data table and compares transportation indicators from the 2016 base year to 2035. It also includes information from Strategies Table 2, Off-Model Calculations, and Off-Model Trip and Emissions Data documentation.

Figure 4. 2035 Transit Network



Source: SANDAG 2021 RTP/SCS

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. CARB staff looked for alignment against the project list adopted with the 2021 SCS, as well as other supporting documents²⁹ to see whether the actions are planned and funded within the 2035 target timeframe. CARB staff also considered whether SANDAG 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 induce travel and therefore increase VMT/GHG emissions.

CARB staff found that the 2021 SCS transportation strategies are supported by region-specific funding and planning program actions, as well as through direct investments in the project list adopted with the 2021 SCS. In particular, the 2021 SCS includes a number of positive project commitments that align with the San Diego region's SCS land use strategy and help advance GHG emission reductions. As part of the project list adopted with SANDAG's 2021 SCS, CARB staff found multi-modal projects identified in 11 major regional travel corridors are intended to improve transit, bike, and walk options in the region by the 2035 target year. Examples include:

- North-South Corridor planning for South Bay to Sorrento Corridor includes over 30 active transportation projects, managed lanes, a new commuter rail project (purple line), and investments in the largest mobility hub at the San Ysidro Intermodal Transit Center connecting north county to the international border (\$19.6 billion).
- Coordinated projects within the central mobility hub just north of downtown and the San Diego International Airport provide more mobility options and access to the airport and surrounding communities (\$5.6 billion) including site acquisition and construction of a new transit station (\$2.4 billion).

The following section includes CARB staff's summary of SANDAG's 2021 SCS transportation strategy commitments and associated supporting actions and investments.

Commuter Rail/Light Rail

Estimated GHG Emission Reductions 2035: Strategy contributes an unknown amount to the total -19.3 percent reduction from all on-model strategies as SANDAG did not provide a specific proportion for this particular strategy.

²⁹ Other documents include SANDAG's Proposed Final Program Budget Fiscal Year (FY) 2022-2023, SCS Submittal materials, and other materials submitted by SANDAG.

Supporting Actions and Investments: This strategy will expand commuter rail service and light rail transit improvements within the region by providing new services to improve speed and capacity. Commuter rail improvements will support longer trips and interregional travel while light rail will facilitate shorter, regional trips as part of SANDAG’s vision for Transit Leap.

CARB Staff Analysis:

Actions Identified: Yes, SANDAG identifies rail projects by corridor and specific actions to improve the rail network.

Funding in the RTP/SCS Project List: Funding for commuter and light rail projects by corridor is identified in the project list. While SANDAG has dedicated funding to transit, the plan’s investments in transit that will support the 2035 target are backloaded to the 2026-2035 time period, and planned expenditures for many specific projects identified in the 2021 SCS prior to 2035 are not associated with any firm funding sources that are currently available. CARB staff is concerned that backloading these investments does not support the target.

SANDAG Other Resources Available: Yes, SANDAG identifies existing programs to support implementation, including SB 1 funding programs.

Managed Lanes Network

This strategy includes investment in expanding the region’s managed lanes network where drivers pay either per-mile tolls defined by time of day or fixed-fee tolls depending on the corridor. For discussion see the [Local and Regional Pricing Strategy Commitments](#) section of this report.

Next Generation Rapid Bus/ Local Bus

Estimated GHG Emission Reductions 2035: Strategy contributes an unknown amount to the total -19.3 percent reduction from all on-model strategies as SANDAG did not provide a specific proportion for this particular strategy.

Supporting Actions and Investments: This strategy includes faster and more reliable Rapid bus service with increased frequency and service provided throughout the region. Local bus service improvements include increased frequencies and microtransit to offer-on demand travel options to areas not served by fixed-routes.

CARB Staff Analysis:

Actions Identified: Yes, SANDAG identifies Rapid bus and local bus projects by corridor and specific actions to improve the transit network.

Funding in the RTP/SCS Project List: Yes, SANDAG identifies Rapid bus and local bus projects by corridor. While SANDAG has dedicated funding to transit, the plan’s investments in transit that will support the 2035 target are backloaded to the 2026-2035 time period, and planned expenditures for many specific projects identified in the 2021 SCS prior to 2035 are not associated with any firm funding sources that are currently available. CARB staff is concerned that backloading these investments does not support the target.

SANDAG Other Resources Available: Yes, described in Supporting Actions and Investments above.

Transit Fare Subsidies

Estimated GHG Emission Reductions 2035: Strategy contributes an unknown amount to the total -19.3 percent reduction from all on-model strategies as SANDAG did not provide a specific proportion for this particular strategy.

Supporting Actions and Investments: This strategy would provide transit fare subsidies to encourage more transit ridership. SANDAG plans to complete a regional fare impact study to evaluate benefits of fare subsidies to different subgroups by FY 2024, including evaluation of transition to free public transit. This strategy will be guided by an advisory working group working to complete the region’s value pricing and user fee implementation strategy. SANDAG will provide funding, research, and technical assistance. In addition, this strategy also attempts to lower transit cost for youth. SANDAG is currently conducting an Early Action Transit Project consisting of a 1-year pilot project to provide free transit to all youth of ages 18 and under through San Diego county and implement transit service upgrades in communities that have been historically underserved and hit hardest by the COVID-19 pandemic (\$9.5 billion).³⁰

CARB Staff Analysis:

Actions Identified: Yes.

Funding in the RTP/SCS Project List: N/A

SANDAG Other Resources Available: Yes, as described in Supporting Actions and Investments above. However, more work needs to be done around program development and implementation.

³⁰ SANDAG. FY 2023 SANDAG Program Budget. Page 2.3-66.
<https://www.sandag.org/uploads/publicationid/FinalFY2023SANDAGProgramBudget.pdf>

Regional Bike Network

Estimated GHG Emission Reductions 2035: Strategy contributes an unknown amount to the total -19.3 percent reduction from all on-model strategies as SANDAG did not provide a specific proportion for this particular strategy.

Supporting Actions and Investments: SANDAG's Regional Bike Network, originally adopted in 2010, supports the regional arterial network and includes projects that support on- and off- street improvements to support active transportation and micromobility. This strategy is intended to provide better connectivity around mobility hubs. SANDAG plans to incentivize complete streets projects and formalize a Quick Build³¹ implementation program that includes guidance, resources, and partnerships with local jurisdictions to develop complete street solutions.

CARB Staff Analysis:

Actions Identified: Yes, SANDAG identifies projects by corridor and specific actions to implement the network.

Funding in the RTP/SCS Project List: Funding for active transportation projects by corridor is identified in the project list.

SANDAG Other Resources Available: Yes, SANDAG identifies existing programs to support implementation, described in Supporting Actions and Investments above.

Local Complete Streets

Estimated GHG Emission Reductions 2035: Strategy contributes an unknown amount to the total -19.3 percent reduction from all on-model strategies as SANDAG did not provide a specific proportion for this particular strategy.

Supporting Actions and Investments: This strategy supports the regional bike network and mobility hub land use strategies. Local complete street improvements are focused in mobility hubs to support active transportation and connections to key destinations. SANDAG plans to incentivize local implementation of complete streets and prioritize projects that improve safety for vulnerable road users. SANDAG was awarded \$442,650 from the fiscal year

³¹ Quick build projects use simple, inexpensive methods to create bicycle, pedestrian, and bus facilities quickly, often years sooner than could have been done with standard methods. Often installed on a trial basis to allow for adjustments, quick build projects would ideally also have rigorous community involvement. See the Caltrans' [Quick-Build Supplemental Guidance](#) for definitions and examples. For more information on recent implementation of the quick build method in California see: https://www.calbike.org/our_initiatives/quick-build-bikeway-networks-for-safer-streets/.

(FY) 22-23 Caltrans Sustainable Transportation Planning Grant Program³² to accelerate and optimize transit priority solutions for complete streets in the City of San Diego.

CARB Staff Analysis:

Actions Identified: Yes, SANDAG identifies complete streets improvements such as secure micromobility parking, e-charging for micromobility and other Flexible Fleets, flexible curb-management solutions, support for e-commerce and urban delivery, and other mobility hub amenities as part of projects in mobility hubs and the vision for flexible fleets.

Funding in the RTP/SCS Project List: Funding for local complete streets is identified in the project list for mobility hubs directing almost \$1.9 billion in improvements through 2035.

SANDAG Other Resources Available: Yes, described in Supporting Actions and Investments above.

Active Transportation Demand Management and Smart Intersection Systems (ATDM/SIS)

Estimated GHG Emission Reductions 2035: Strategy contributes an unknown amount to the total -19.3 percent reduction from all on-model strategies as SANDAG did not provide a specific proportion for this particular strategy.

Supporting Actions and Investments: These strategies are part of a series of intelligent transportation system strategies in the 2021 SCS designed to maximize capacity and efficiency of the existing and future transportation system, and will include investments in projects that provide real-time roadway conditions and other tactical information through smart sensors, closed circuit television cameras, changeable message signs, and traffic detection equipment to increase travel reliability, help provide safer environments to walk and bike, and add capability to prioritize movement along different corridors. SANDAG assumes this strategy will increase travel reliability in the region by 7 percent and reduce signalized arterial intersection delays by 20 percent. SANDAG states that it will advance this strategy by preparing technical planning studies and initiate pilot opportunities as part of its implementation of the plan's Next

³² Caltrans. FY 22-23 Sustainable Transportation Planning Grant Program Award List. <https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sustainable-planning-grants-2021/04012022-update/1-fy-2022-23-stpg-award-list.pdf>

OS³³ initiative. SANDAG also has \$4.8 billion (in 2020 dollars) in planned expenditures in its project list for ATDM/SIS through 2035.

CARB Staff Analysis:

Actions Identified: Yes, SANDAG identifies ATDM/SIS projects by corridor and specific studies and pilot opportunities.

Funding in the RTP/SCS Project List: Yes, SANDAG identifies 30 separate ATDM/SIS projects with a total funding of \$4.8 billion by 2035.

SANDAG Other Resources Available: Yes, SANDAG identifies both ongoing and new programs to support research, planning, and funding, described in Supporting Actions and Investments above.

Telework

Estimated GHG Emission Reductions 2035: Strategy contributes an unknown amount to the total -19.3 percent reduction from all on-model strategies as SANDAG did not provide a specific proportion for this particular strategy.

Supporting Actions and Investments: This strategy assumes that SANDAG, cities and other local jurisdictions, and employers work together to develop workplace policies that result in telework, flexible schedules, and/or compressed work schedules that help to reduce commute-related traffic congestion and VMT. SANDAG assumes that 10.9 percent of workers will primarily telecommute and 11.8 percent will be occasional teleworkers by 2035. In the near term, SANDAG will expand support for TDM grant and incentive programs, including telework incentives, as well as work to update and expand its Regional Telework Assistance Program.

CARB Staff Analysis:

Actions Identified: Yes, SANDAG identifies specific technical assistance and study work, as well as expansion of telework incentives.

Funding in the RTP/SCS Project List: No

SANDAG Other Resources Available: Yes, SANDAG identifies both ongoing and new programs to support research, funding, and technical assistance, described in Supporting Actions and Investments above.

³³ SANDAG's 2021 SCS introduces the Next OS initiative, which is focused on advancing the underlying technology that allows people to connect to transportation services and a digital platform that allows for dynamic management of roadways and transit services.

Pooled Rides (private)

Estimated GHG Emission Reductions 2035: -0.01 percent

Supporting Actions and Investments: SANDAG formally launched a carpool incentive program in 2017 as part of the iCommute Program, in partnership with Waze Carpool. Through this program, SANDAG provides incentives for carpoolers and drivers for a set period of time to encourage and facilitate carpool creation. To implement this strategy, SANDAG lists actions to provide TDM grants and incentive programs, including e-bike, carpool, and vanpool incentives. Moreover, SANDAG will continue to administer and monitor the iCommute program by providing regional rideshare, employer outreach, and bike education and secure parking services to reduce commute-related traffic congestion and VMT. SANDAG identifies a portion of funding for a mobile phone application to plan, book, and pay for private shared services within Next OS, as well as for TDM that will potentially help to support implementation.

CARB Staff Analysis:

Actions Identified: Yes

Funding in the RTP/SCS Project List: N/A

SANDAG Other Resources Available: Yes, described in Supporting Actions and Investments above.

Vanpool

Estimated GHG Emission Reductions 2035: -0.32 percent

Supporting Actions and Investments: This strategy provides a subsidy of up to \$400 per month for eligible vanpool groups as part of the region's iCommute program, with the intent to reduce VMT. To implement this strategy, SANDAG will provide TDM grants and incentive programs, including e-bike, carpool, and vanpool incentives. Moreover, SANDAG will continue to administer and monitor the iCommute program by providing regional rideshare, employer outreach, and bike education and secure parking services to reduce commute-related traffic congestion and VMT. SANDAG allocates \$223.5 million for TDM grants for 2035.

CARB Staff Analysis:

Actions Identified: Yes

Funding in the RTP/SCS Project List: N/A

SANDAG Other Resources Available: Yes, described in Supporting Actions and Investments above.

Carshare

Estimated GHG Emission Reductions 2035: -0.17 percent

Supporting Actions and Investments: This strategy includes offering access to short-term rental vehicles that are available 24 hours a day, 7 days a week, in locations that help to serve as either first-mile/last-mile connections or fill gaps in transit services in the region. SANDAG envisions the expansion of carshare services as part of the Regional Mobility Hub network. To implement this strategy, SANDAG lists actions to provide TDM grants and incentive programs, including e-bike, carpool, and vanpool incentives. Moreover, SANDAG will continue to administer and monitor the iCommute program by providing regional rideshare, employer outreach, and bike education and secure parking services to reduce commute-related traffic congestion and VMT. SANDAG identifies carshare in funding allocated for mobility hubs, flexible fleets, and TDM grants.³⁴ However, the plan does not identify the share of funding allocated towards implementing carshare strategies within mobility hubs and flexible fleets.

CARB Staff Analysis:

Actions Identified: Yes

Funding in the RTP/SCS Project List: Yes

SANDAG Other Resources Available: Yes, described in Supporting Actions and Investments above.

Regional TDM Ordinance

Estimated GHG Emission Reductions 2035: -0.37 percent

Supporting Actions and Investments: This strategy intends to develop a regional TDM ordinance that requires employers with more than 250 employees to implement and monitor a commuter program and demonstrate reductions in commuter drive-alone rates. Employers would consider provision of one or more TDM strategies, including but not limited to, commuter services, financial subsidies and incentives, marketing education and outreach, parking management, telework and flexible work schedules, on-site amenities, and employer-provided transit. To implement this strategy, SANDAG will complete a Regional TDM Ordinance and provide TDM grants and incentive programs, including e-bike, carpool, and vanpool incentives. Moreover, SANDAG will continue to administer and monitor the iCommute program by providing regional rideshare, employer outreach, and bike education and secure parking

³⁴ See the definitions of the 5 Big Movies in the [introduction to the Policy Analysis section](#) of this report.

services to reduce commute-related traffic congestion and VMT. However, CARB staff are concerned that GHG benefits from some of the strategies considered for the TDM ordinance, such as vanpool, telework, etc., might be double-counted toward its 2035 GHG target. SANDAG allocates \$40 million through 2035 for its Regional TDM Ordinance within the Transportation Demand Management section of the plan under supporting policies and programs.

CARB Staff Analysis:

Actions Identified: Yes

Funding in the RTP/SCS Project List: N/A

SANDAG Other Resources Available: Yes, described in Supporting Actions and Investments above.

In addition to CARB staff's evaluation of the strategies and supporting actions, CARB staff evaluated the extent to which capacity-increasing projects that induce travel and therefore increase VMT/GHG emissions were included in the SCS. Induced travel is a phenomenon 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 critical to analyze as it can affect VMT and GHG emissions.

CARB staff found that the 2021 SCS includes hundreds of millions of dollars in funding for road capital projects including managed lanes.³⁵ Road capital projects that increase capacity, especially those that are counter to the SCS's long-term vision for accommodating new growth, increase VMT and work against achieving the State's climate and air quality goals.³⁶ Even managed lanes that are intended to offer priority access to people using transit, carpooling, or vanpooling, risk inducing additional VMT without firm commitments to limit use by SOV drivers for the life of the facility.

As part of its SCS submittal, SANDAG analyzed the anticipated induced travel effects on VMT due to capital roadway projects within the SCS by using SANDAG's travel demand model and adjusted elasticities from the Induced Travel Calculator developed by UC Davis.³⁷ This analysis included interstate freeway lanes, managed lanes, and the

³⁵ Road capital investments include the following funding categories: highway projects (interchange and operational improvements as well as managed lanes and managed lane connectors), as well as rural corridors, local streets and roads, and airport connectivity.

³⁶ CARB. *Highway Capacity and Induced Travel Brief*. (September 2014).

³⁷ UC Davis, *Induced Travel Calculator*. (September 2019).

repurposing of existing high-occupancy vehicle lanes, general-purpose lanes, and shoulders. This includes projects completed since 2016 or under construction. Based on this analysis, SANDAG estimated that these roadway projects would increase about 193,286 VMT per day, and per capita GHG emissions by 0.2 percent in 2035 relative to 2005.³⁸ SANDAG included these forecasted VMT and GHG increases as part of its overall 2021 SCS emissions estimate and determined that it will still be able to meet its SB 375 GHG reduction target when implemented. However, CARB staff has concerns with SANDAG's ability to implement all transportation strategies and achieve its estimated GHG benefits. If not all SCS strategies are implemented, induced travel from expanded roadways could be higher than estimated and will hinder GHG target achievement. CARB staff reviewed SANDAG's approach to capturing the short- and long-term VMT/GHG impacts of its 2021 SCS capital roadway projects and found them to be reasonable in the context of the aggregate effects on SCS performance. However, for the next SCS, SANDAG could evaluate and discuss the VMT and GHG impacts of individual capacity projects compared to the aggregate analysis used for the SCS. Results of this effort could be used to refine further how SANDAG assesses the VMT impacts of roadway projects on its SCS.

While CARB staff's analysis supports a conclusion that SANDAG's 2021 SCS would meet the target, when implemented, CARB staff has significant concerns that SANDAG will not be able to implement the transportation strategies in the 2021 SCS to achieve its GHG reduction and planned outcome benefits. CARB staff is especially concerned with the region's ability to fund and deliver the transit projects that are needed to support the 2021 SCS planned outcomes, as the plan's investments in transit that will support the 2035 target are backloaded to the 2026-2035 time period, and planned expenditures for many specific projects identified in the 2021 SCS prior to 2035 are not associated with any firm funding sources that are currently available (see discussion in the "Investment Analysis" section of this report). Support for transit and active transportation projects is vital given that the region wants to overcome recent declines in transit ridership and significantly increase transit ridership in the region by more than 200 percent compared to its 2016 level (see discussion in "Trend Analysis" section of this report). Delays or removals of transit projects could prevent SANDAG from meeting its regional targets.

CARB staff is also concerned that SANDAG's 2021 SCS is estimated to only just achieve the GHG emission reduction targets, while many of the strategies identified have a risk of not being implemented. The inclusion of road capital projects that risk increasing VMT and GHGs could further jeopardize the region's target attainment. SANDAG will need to be vigilant about monitoring implementation and deployment

³⁸ Induced travel reflects increases in travel due to changes in residence and workplace locations, including the number of trips and trip distances (destination changes), shifts in travel modes, the time-of-day travel occurs, and routes are all captured as part of this analysis.

levels of strategies, including how projects are prioritized through 2035 to ensure planned reductions and SB 375 goals are achieved.

Local and Regional Pricing Strategy Commitments

SANDAG has included four pricing strategies in the 2021 SCS. These strategies include a network of managed lanes, a Road Usage Charge, a fee on the fares charged for rides provided by transportation network companies, and parking fees in certain mobility hub areas. These strategies seek to encourage travelers to consider more sustainable travel choices and manage congestion, while generating revenue to address aging infrastructure and expand travel options in the region in the following ways:

- charging a fee to solo drivers for use of designated managed lane corridors, while providing free access to transit vehicles, carpoolers, and others to encourage sustainable travel choices;
- charging a Road Usage Charge to drivers based on distance traveled on the region's road network;
- charging a per trip fee for transportation network companies (TNCs); and
- charging a fee to park in certain mobility hub areas.

These strategies are projected to decrease driving and congestion, increase transit use, walking, and biking, and improve the road/highway condition. These strategies also generate revenue through fees for the transportation system. SANDAG estimates these strategies will contribute to approximately 19.3 percent³⁹ of its total per capita GHG emission reductions.

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 by 2035.⁴⁰ Specifically, the plan assumes the following outcomes:

- Starting in 2026, decreased congestion and increased transit, walking, and biking through a region-wide ridehailing company service fee of \$1.25 per trip for non-pooled trips and \$0.65 for pooled trips;
- In 2035, decreased congestion and roadway travel with managed lane network where vehicles carrying three or more persons are allowed with no toll for use, and vehicles carrying fewer than three persons are charged at a rate of \$.30/mile to use the facility. An increase in the number of managed lanes from

³⁹ Pricing strategies are aggregated with other on-model strategies. Only a portion of the reduction would come from pricing strategies.

⁴⁰ This subsection includes information based on the data table, and fee information and timeframe assumptions were taken from the 2021 RTP/SCS Appendix D: SCS Documentation and Related Information and Appendix V: Funding and Revenues.

116 lane miles today to 565 lane miles by 2035, a 387 percent increase. The planned managed lane network that is planned for operation throughout the region is shown in Figure 5;

- In 2035, decreased driving and increased transit use, walking, and biking by increasing parking pricing in strategic job centers, select mobility hub areas, and communities as shown in Figure 6; and
- Starting in 2030, decreased overall roadway travel demand and increased transit use, walking, and biking, with a new region-wide Road Usage Charge for drivers of 3.3 cents per mile.⁴¹

⁴¹ The Road Usage Charge assumes a state component and a regional component, which are reflected in Appendix V: Funding and Revenues. The regional component is assumed to be \$0.033 (in 2020 dollars) per mile starting in 2030. A combined Road Usage Charge between the state and region remains constant at \$0.04 (in 2020 dollars) per mile through 2050.

Figure 5. Planned Managed Lanes Network in SANDAG by 2035



Source: SANDAG 2021 RTP/SCS

Figure 6. Assumed Parking Pricing Locations and Costs for Year 2035 in SANDAG

Parking Cost (\$2020)	Urban shed, major employment centers, U.S.–Mexico border	Hourly: \$3.25 Daily: \$25 Monthly: \$350
	Central Mobility Hub	Hourly: \$5 Daily: \$39 Monthly: \$450
	Coastal Communities	Hourly: \$2.25 Daily: \$16 Monthly: \$250 (Add in Imperial Beach, Coronado, and La Jolla)
	Suburban Communities	Hourly: \$1.50 Daily: \$12 Monthly: \$150

Source: SANDAG 2021 RTP/SCS Appendix D

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 of the strategies with the project list adopted with the 2021 SCS to see whether the actions are planned and funded within the target timeframe. CARB staff also considered whether SANDAG identified other region-specific funding or programs to support implementation of its pricing strategies. In addition, CARB staff looked for whether and how SANDAG considered equity, which is a key implementation concern for pricing strategies.

CARB staff found that the 2021 SCS local and regional pricing assumptions are supported by some region-specific funding and planning program actions, as well as through some direct investments in the project list adopted with the 2020 SCS. In particular, the 2021 SCS project list includes many managed lanes projects for funding by 2035 that SANDAG assumed when quantifying the SCS’s GHG benefits in 2035. The SCS also identifies several initial supporting actions to further support its pricing strategies. Starting in FY 2022 through FY 2024, SANDAG will be launching and participating in a number of planning analysis studies that will guide completion of a regional value pricing and user fee implementation strategy. This work includes facilitating an advisory working group to complete a regional implementation strategy; coordination with federal, state, and other MPO partners on work to design pilot testing for a Road Usage Charge; completing a regional transit fare impact study; completing an operational study of the existing I-15 managed lane corridor; as well as updating the region’s parking inventory. However, CARB staff is concerned that some pricing strategies will not be implemented as planned through the 2035 timeframe. SANDAG has acknowledged they require enabling legislation, which is not guaranteed, and it is not clear that SANDAG is sponsoring legislation at this time. SANDAG’s Board also voted to direct staff to develop an update to SANDAG’s 2021 RTP/SCS that would remove the Road Usage Charge on July 8, 2022. SANDAG staff have stated that they will carry out this SANDAG Board Action as part of their next RTP/SCS and that SANDAG remains committed to implementing their current plan.

The initial studies to analyze the Road Usage Charge and other potential pricing strategies will move forward as scheduled, and SANDAG will continue to work towards pilot testing pricing strategies, including a Road Usage Charge, in Fiscal Year 2026. The following section includes CARB staff's summary of SANDAG's 2021 SCS local and regional pricing strategy commitments and associated supporting action and investments.

Managed Lane Network and Pricing

Estimated GHG Emission Reductions 2035: Strategy contributes an unknown amount to the total -19.3 percent reduction from all on-model strategies as SANDAG did not provide a specific proportion for this particular strategy.

Supporting Actions and Investments: This strategy includes investment in expanding the region's managed lanes network where drivers pay either per-mile tolls defined by time of day or fixed-fee tolls depending on the corridor. SANDAG has planned expenditures of \$15.5 billion for managed lanes in the project list. SANDAG assumes its managed lanes network will generate \$22 billion in revenue over the life of the plan. Implementation efforts underway include analyzing the existing I-15 managed lane corridor in San Diego County to understand potential operational strategies to improve performance of the corridor toward managing demand, incentivizing carpooling, and ensuring reliable travel times. This work is expected to inform SANDAG's comprehensive value pricing and user fee implementation strategy.

CARB Staff Analysis:

Actions Identified: Yes. However, CARB staff is concerned that this program will not be implemented as planned through the 2035 timeframe because this strategy, as SANDAG's SCS acknowledges, requires enabling legislation to repurpose existing shoulders and general-purpose lanes.

Funding in the RTP/SCS Project List: Yes

SANDAG Other Resources Available: Yes, SANDAG will provide funding, research, and technical assistance, described in Supporting Actions and Investments above.

Mileage-Based Road Usage Charge

Estimated GHG Emission Reductions 2035: Strategy contributes an unknown amount to the total -19.3 percent reduction from all on-model strategies as SANDAG did not provide a specific proportion for this particular strategy.

Supporting Actions and Investments: This strategy assumes fees on driving and includes a region-wide mileage based Road Usage Charge. For funding purposes, SANDAG assumed a 3.3 cent per mile Road Usage Charge starting in 2030. A combined Road Usage Charge between the state and the regional Road Usage Charge is assumed to remain constant at 4 cents per mile through 2050. The regional Road Usage Charge is projected to generate \$14.2 billion. SANDAG, in coordination with federal, State, and other MPOs will study and deploy pilot testing, conduct public education and outreach, assess equity impacts and test mitigation strategies. SANDAG has funded and completed research and has coordinated with stakeholders.

CARB Staff Analysis:

Actions Identified: Yes. However, CARB staff is concerned that this program will not be implemented within the identified timeframe, because this strategy requires Congressional and State enabling legislation and because the SANDAG Board voted to direct staff to develop an update to remove the Road Usage Charge. However, SANDAG staff are proceeding with two initial pricing studies designed to prepare for pilot testing pricing strategies, including a Road Usage Charge, in FY 2026

Funding in the RTP/SCS Project List: N/A

SANDAG Other Resources Available: Somewhat, as described in Supporting Actions and Investments above. However, more work needs to be done around program development and implementation.

Ridehailing Company Service Fees

Estimated GHG Emission Reductions 2035: Strategy contributes an unknown amount to the total -19.3 percent reduction from all on-model strategies as SANDAG did not provide a specific proportion for this particular strategy.

Supporting Actions and Investments: This strategy assumes the region levies a per trip fee for TNC services that helps to mitigate VMT and congestion impacts by encouraging pooling, and generating revenue for transit and other modes. For funding purposes, SANDAG assumed a fee of \$1.25 for non-pooled trips and \$0.65 for pooled trips starting in 2026, with the rate growing annually by 2.77 percent. SANDAG will engage an advisory working group to consider details around local implementation of this strategy as part of its value pricing and user fee implementation strategy and pursue a ballot measure or other mechanism to assess the fee. SANDAG has funded and completed research and has coordinated with stakeholders.

CARB Staff Analysis:

Actions Identified: Yes. However, CARB staff is concerned that this program will not be implemented within the identified timeframe of 2026 because, as SANDAG's SCS acknowledges, this strategy requires State enabling legislation and local action.

Funding in the RTP/SCS Project List: N/A

SANDAG Other Resources Available: Somewhat, as described in Supporting Actions and Investments above. However, more work needs to be done around program development and implementation.

Parking Pricing

Estimated GHG Emission Reductions 2035: Strategy contributes an unknown amount to the total -19.3 percent reduction from all on-model strategies as SANDAG did not provide a specific proportion for this particular strategy.

Supporting Actions and Investments: This strategy assumes varied parking pricing rates in certain mobility hub areas. Currently, SANDAG is developing a regional parking inventory to help collect data to inform pilots, along with partnering with the City of San Diego to plan a pilot for a priced parking district in the Pacific Beach mobility hub, which is intended to serve as a model for replication across the region. SANDAG also plans to offer new and updated technical resources to its local jurisdictions for implementation. SANDAG will provide funding, research, and technical assistance.

CARB Staff Analysis:

Actions Identified: Yes. However, CARB staff is concerned that this program will not be implemented as planned through the 2035 timeframe because this strategy requires local support and buy-in from stakeholders and the public regarding parking pricing, which makes it unclear whether implementation would reach assumed levels.

Funding in the RTP/SCS Project List: N/A

SANDAG Other Resources Available: Somewhat, as described in Supporting Actions and Investments above. However, more work needs to be done around program development and implementation.

In addition to its evaluation of the strategies and supporting actions, CARB staff also looked for whether and how SANDAG considered equity when developing its pricing strategies. CARB staff found that as part of SANDAG's effort to complete a regional value pricing and user fee implementation strategy it will be evaluating the relative capabilities of different transportation funding sources, including usage-based fees, to

address and advance equity. It also includes a commitment to continue to work with community-based organizations to solicit feedback from underserved community members in the region on the design of fee structures and collection methods.

While CARB staff's analysis supports a conclusion that SANDAG's 2021 SCS would meet the target, when implemented, CARB staff has significant concerns that SANDAG will not be able to implement the local pricing strategies in the 2021 SCS that are anticipated to encourage use of more sustainable travel choices, manage congestion, as well as generate revenue to expand travel options, and achieve its GHG reductions. CARB staff acknowledges the significant leadership and partnership work needed to realize the 2021 SCS pricing strategies. CARB staff are concerned that the strategy deployment assumptions for these strategies rely on programs and partnerships outside of SANDAG's control, including local jurisdictions and private companies that do not have existing authority, ordinances, or programs in place to impose fees and parking pricing. Supporting actions that more squarely address these implementation steps need to be identified and implemented to achieve the emission reductions assumed in the 2021 SCS. SANDAG will need to demonstrate further progress to implement these strategies by its next plan cycle for SANDAG to continue receiving the full amount of GHG emission reductions assumed.

Electric Vehicle and New Mobility Strategy Commitments

SANDAG has included six strategies related to electric vehicles (EV) and new mobility services, which include microtransit, micromobility, pooled rides for transportation network companies (TNCs), e-bikes, a regional EV charger program, and a regional EV incentive program. The first four strategies seek to provide flexible, low carbon transportation within designated mobility hubs, support first-last mile partnerships to transit, and support shared fleets. The final two strategies seek to accelerate the penetration of EVs in the region by providing infrastructure and incentives to help drivers switch to using EVs. These strategies are intended to support SANDAG's goal of leveraging new transportation technologies to result in more efficient travel.⁴²

SCS Planned Outcomes

These strategies translate into assumptions about new transit modes, TNC partnerships, new mobility fleets, and the availability of EV-supportive infrastructure and purchase incentives that will serve the region by 2035.⁴³ Specifically, the plan assumes the following outcomes:

- Microtransit wait times of 4 minutes and a speed of 17 miles per hour;

⁴² See the definitions of the 5 Big Movies in the [introduction to the Policy Analysis section](#) of this report.

⁴³ This subsection includes information assumptions from SANDAG's Appendix D: Sustainable Communities Strategy Documentation and Related Information and Appendix S: Travel Demand Modeling Tools.

- Micromobility wait times of 3 minutes in urban areas and 5 minutes in suburban areas and a speed of 15 miles per hour;
- 36 percent of privately owned bicycles will be e-bikes;
- Funding will incentivize installation of 33,000 Level 2 EV chargers to support electric vehicles; and
- Funding will incentivize purchase of an additional 112,000 zero-emission vehicles beyond what is assumed in EMFAC.⁴⁴

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, EVs, and other new mobility services in the SCS. CARB staff looked for alignment against the project list adopted with the 2021 SCS to see whether the actions are planned and funded within the target timeframe. CARB staff also considered whether SANDAG identified other region-specific funding or technical assistance programs to support implementation of its EV and new mobility strategies.

CARB staff found that SANDAG'S 2021 SCS EV and new mobility strategy assumptions are supported by region-specific funding and planning program actions. The 2021 SCS project list includes multiple funding items for new mobility and EVs that are expected to be completed by 2035.

The next section includes CARB staff's summary of SANDAG's 2021 SCS EV and new mobility strategy commitments and associated supporting actions and investments.

Microtransit and Micromobility

Estimated GHG Emission Reductions 2035: Strategy contributes an unknown amount to the total -19.3 percent reduction from all on-model strategies as SANDAG did not provide a specific proportion for this particular strategy.

Supporting Actions and Investments: Microtransit and micromobility are key pieces of SANDAG's vision for mobility hubs and flexible fleets⁴⁵ along with

⁴⁴ Emission FACTor (EMFAC) is a CARB-maintained model that estimates the official emissions inventories of on road mobile sources in California. For additional information, see <https://arb.ca.gov/emfac/>.

⁴⁵ From Appendix A, "Flexible Fleets are shared, on-demand transportation services that provide convenient and personalized travel options, generally for short trips to neighborhood destinations." "Flexible Fleets build on the popularity of services such as rideshare, bikeshare, and scootershare, and fleets can also include neighborhood shuttles and local delivery services. Many of these services are accessible through mobile apps, and they can be operated by public and private agencies or through partnerships between the two." See also the definitions of the 5 Big Movies in a footnote in the [introduction to the Policy Analysis section](#) of this report.

local complete streets and parking management discussed previously, and pooled rides for TNCs, and e-bikes, which are discussed below. Microtransit is designed to improve travel within a mobility hub on vehicles that can carry up to 15 individuals and can include smaller electric shuttles, such as neighborhood electric vehicles, and micromobility⁴⁶ on-demand travel solutions.

To implement the microtransit and micromobility strategies, SANDAG will develop a Flexible Fleet Implementation Strategic Plan; procure flexible fleet technology vendors and pilot flexible fleets in partnership with SANDAG member agencies, transit agencies, and community-based organizations; and provide resources and funding for supportive technologies and complete streets elements.

For micromobility, SANDAG has already established its Regional Micromobility Coordination⁴⁷ effort to support micromobility operations regionally and locally by developing data sharing requirements to help guide policy decisions. Additionally, SANDAG has supported and provided resources to assist local agencies in effectively managing micromobility pilots. SANDAG also plans to provide resources and funding for micromobility parking, charging for micromobility and other flexible fleets, and curb management, along with creating TDM grant and incentive programs.

Flexible fleets operations funding is planned through 2025 and 2035 at \$161 million and \$538 million respectively, a portion of which will support microtransit and micromobility. SANDAG also has existing programs and resources to provide funding, research, and technical assistance. The Flexible Fleet Implementation Strategic Plan, pilots, and funding of supportive technologies and complete streets elements were discussed above in the microtransit section and apply to micromobility as well.

CARB Staff Analysis:

Actions Identified: Yes, microtransit and micromobility are part of an integrated suite of strategies centering on mobility hubs, but with application throughout the region.

Funding in the RTP/SCS Project List: Yes.

SANDAG Other Resources Available: Yes, described in Supporting Actions and Investments above.

⁴⁶ As defined in Chapter 2 of the RTP/SCS, micromobility consist of "small, low-speed vehicles to use for short trips within a neighborhood instead of driving a car. Micromobility devices can be personally owned or part of a shared fleet. Examples include bikes, scooters, and other rideables."

⁴⁷ See the Regional Micromobility Coordination program webpage at <https://www.sandag.org/index.asp?fuseaction=micromobility.coord>.

Pooled Rides for TNCS

Estimated GHG Emission Reductions 2035: Strategy contributes an unknown amount to the total -19.3 percent reduction from all on-model strategies as SANDAG did not provide a specific proportion for this particular strategy.

Supporting Actions and Investments: This strategy encourages TNC drivers to pick up multiple fares through lower TNC fees and through improvements to the transportation system to encourage higher occupancy, thereby increasing vehicle occupancy and reducing individual VMT per trip. This is part of SANDAG's mobility hubs and flexible fleets overall strategy, along with local complete streets, parking management, microtransit, micromobility, and e-bikes. For implementation of the pooled rides strategy SANDAG will develop a Flexible Fleet Implementation Strategic Plan, as discussed in the [Microtransit and Micromobility](#) section above. For the pooled rides strategy, SANDAG will also create TDM grant and incentive programs.

The Flexible Fleet Implementation Strategic Plan, pilots, funding of supportive technologies and complete streets elements, and TDM grants are discussed above in the microtransit and micromobility sections and apply to pooled rides for TNCs as well.

CARB Staff Analysis:

Actions Identified: Yes, pooled rides for TNCs is part of an integrated suite of strategies centering on mobility hubs but with application throughout the region.

Funding in the RTP/SCS Project List: Yes.

SANDAG Other Resources Available: Yes, described in Supporting Actions and Investments above. However, the plan lacks details of activities or timelines for this strategy. Appendix B mentions a potential fee on ridehailing to promote pooled trips, but the text makes the program sound uncertain. Also, while managed lanes are a major RTP/SCS strategy and are meant to promote carpooling, among other efficient modes, the plan does not appear to use this to promote TNC pooling.

E-bikes

Estimated GHG Emission Reductions 2035: Strategy contributes an unknown amount to the total -19.3 percent reduction from all on-model strategies as SANDAG did not provide a specific proportion for this particular strategy.

Supporting Actions and Investments: The e-bikes strategy is part of SANDAG's mobility hubs and flexible fleets overall strategy, along with local

complete streets, parking management, microtransit, micromobility, and pooled rides for TNCs.

For implementation of the e-bikes strategy, SANDAG will create TDM grant and incentive programs, including incentives for e-bike ownership. RTP/SCS funding for mobility hub amenities such as complete streets, micromobility parking, and charging will benefit e-bikes. This funding will be \$152 million by 2025 and \$247 million by 2035. The plan specifically includes e-bike incentives of \$5 million by 2025 and \$15 million by 2035.

CARB Staff Analysis:

Actions Identified: Yes, e-bikes are part of an integrated suite of strategies centering on mobility hubs but with application throughout the region.

Funding in the RTP/SCS Project List: Yes.

SANDAG Other Resources Available: Yes, described in Supporting Actions and Investments above.

Regional EV Charger Program

Estimated GHG Emission Reductions 2035: -2.15 percent (EV charger and incentive programs combined, calculated off-model)

Supporting Actions and Investments: The regional EV charger program, along with the regional EV incentive program, is part of SANDAG’s overall zero-emission vehicles strategy. For implementation of the regional EV charger program, SANDAG will support inclusion of EV policies in local climate action plans (CAP), complete an EV Charger Management Strategy for public agency parking lots, and continue funding and promotion of the CALeVIP incentive to provide rebates for public, workplace, and multifamily EV charging stations. The plan anticipates monitoring and funding implementation of CAPs; the Regional Electric Vehicle Charger Management Strategy plan is under way; and funding for EV charging stations is \$45 million by 2025 and \$133 million by 2035. The plan includes funding for a CAP monitoring program of \$4 million by 2025 and \$20 million by 2035, and it includes CAP implementation grants of \$20 million by 2025 and \$100 million by 2035.

CARB Staff Analysis:

Actions Identified: Yes.

Funding in the RTP/SCS Project List: Yes.

SANDAG Other Resources Available: Yes, described in Supporting Actions and Investments above.

Regional EV Incentive Program

Estimated GHG Emission Reductions 2035: -2.15 percent (EV charger and incentive programs combined, calculated off-model)

Supporting Actions and Investments: The regional EV incentive program, along with the regional EV charger program, is part of SANDAG's overall zero-emission vehicles strategy. For implementation of the regional EV incentive program, SANDAG will support inclusion of EV policies in local CAPs. SANDAG allocates \$4 million by 2025 and \$20 million by 2035 to the CAP monitoring program. In addition, EV incentive funding is \$52 million by 2025 and \$552 million by 2035. SANDAG will also design and fund an EV incentive program for residents.

CARB Staff Analysis:

Actions Identified: Yes.

Funding in the RTP/SCS Project List: Yes.

SANDAG Other Resources Available: Uncertain; while funded, current actions are not clear.

CARB staff's analysis in this section supports a conclusion that SANDAG's 2021 SCS would meet the target, when implemented. SANDAG's comprehensive approach to EVs and new mobility holds promise, with the holistic strategy creating multiple options for a wide diversity of users and situations. Based upon actions already underway, CARB staff sees ongoing progress toward achievement of the EV and new mobility strategies in the 2021 SCS to achieve its GHG emission reductions and planned outcomes.

CARB staff's concerns about the EV and new mobility strategies primarily involve maintaining commitment and funding to implement them to a level where they can be successful. SANDAG's holistic approach holds the promise of creating a resilient and integrated transportation system. To create and protect such a system, SANDAG will need to cultivate strong, reliable partnerships, including with new mobility providers, local jurisdictions, and private companies that often have no established programs in place. SANDAG will need to be vigilant about implementing these strategies through 2035 and making adjustments as necessary to ensure planned reductions and SB 375 goals are achieved.

In addition, SANDAG's plan contains risk from the uncertainty of cost and timeline for programs and technologies that are still developing. without existing funding. An

ambitious plan such as this one requires a long-term commitment to implementation, as well as continued vigilance and course correction.

Looking across all four policy categories, CARB staff's analysis found that SANDAG's 2020 SCS includes evidence of policy commitments for its strategies, that when implemented would meet the target. However, areas of concern for CARB staff are that many strategies still require funding sources, legislative authority, and program development to be implemented.

Investment Analysis

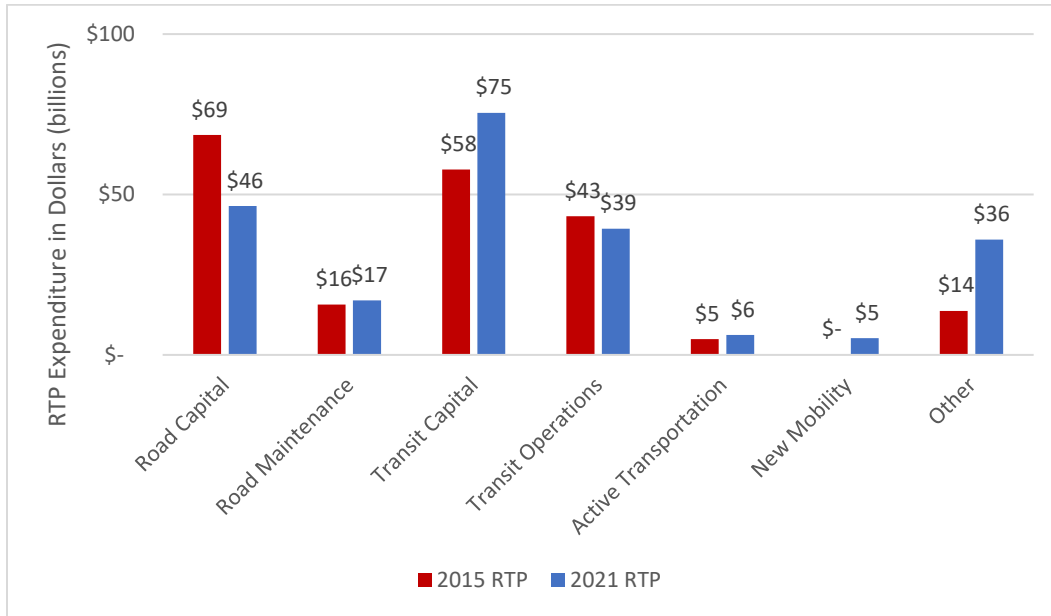
CARB staff evaluated whether the 2021 investments support the expected GHG emission reductions by looking for evidence within the project list adopted with the 2021 SCS for commitments to funding SCS-consistent projects by 2035 and how investment levels across modes have shifted over time. CARB staff also qualitatively assessed the risk of delay to delivering projects that advance SCS goals based on assumed available funding sources.

Based on CARB staff's review of SANDAG's project list, CARB staff found that the 2021 SCS includes 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. For example, SANDAG is decreasing investments in road expansion and increasing funding for road maintenance, transit capital, new mobility, and active transportation modes.

Comparisons between the 2015 and 2021 SCS investments by mode are shown in Figure 7 and Figure 8. Total spending increased by nearly 11 percent, to approximately \$255 billion compared to approximately \$204 billion in the 2015 SCS. Of the total budget, approximately 29 percent is dedicated to road capital and maintenance projects; 50 percent to transit capital and operations; 3 percent to active transportation; 2 percent to new mobility and electric vehicle infrastructure; and the remaining 16 percent to debt service obligations, transportation system management, and other investments.

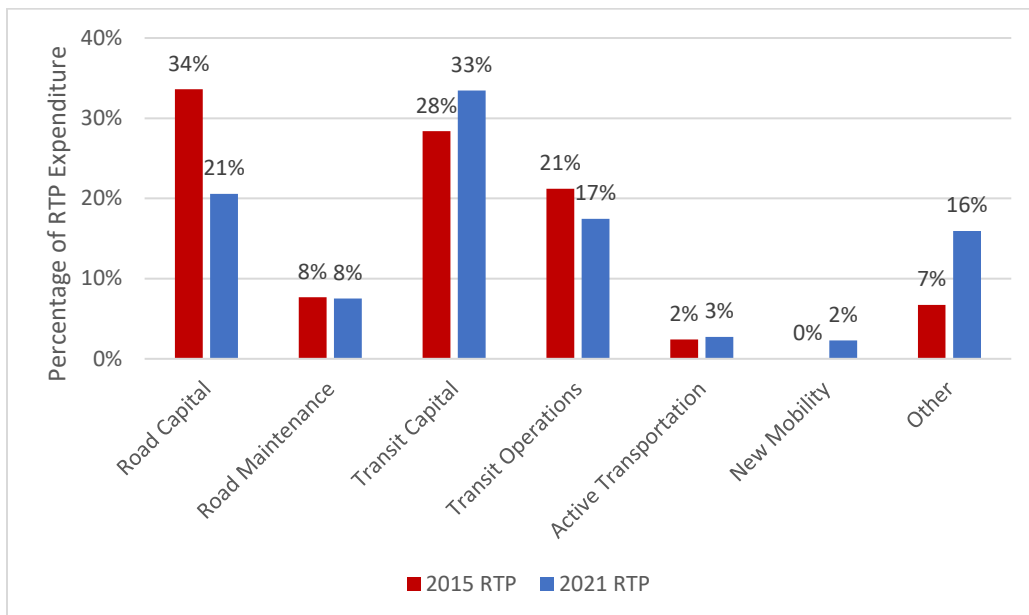
Planned investments in road capital decreased from \$69 billion in the 2015 SCS to \$46 billion in the 2021 SCS. Planned investments in road maintenance increased from \$16 billion in the 2015 SCS to \$17 billion in the 2021 SCS. The budget for transit capital projects increased to \$75 billion in the 2021 SCS from \$58 billion in the 2015 SCS. Additionally, investments in transit operations decreased from \$43 billion in the 2015 SCS to \$39 billion in the 2021 SCS. Transit capital investments are consistent with the 2021 SCS's strong focus on transit expansion. Lastly, planned investments for active transportation projects increased to \$6 billion in the 2021 SCS from \$5 billion in the 2015 SCS. New to the 2021 SCS, SANDAG has dedicated \$5 billion dollars to new mobility solutions, which will support innovative mobility solutions including micromobility, ride hail/carshare, and rideshare microtransit as previously discussed in the Policy Analysis section of this report.

Figure 7. Investment by Mode in SANDAG's 2021 SCS Compared to the 2015 SCS (Billion Dollars)



Source: SANDAG 2015 RTP/SCS and 2021 RTP/SCS Spending Data provided to CARB. For comparison purposes, investments are compared in Year of Expenditure.

Figure 8. Investments by Mode in SANDAG's 2021 SCS Compared to the 2015 SCS (Percent of Total Investment)



Source: SANDAG 2015 RTP/SCS and 2021 RTP/SCS Spending Data provided to CARB. For comparison purposes, investments are compared in Year of Expenditure.

The significant increase in planned expenditure for transit capital and decrease in road capital are aligned with SANDAG’s assumptions around reduced mode share, increased transit ridership, and forecasted declines in VMT and GHG emissions. However, CARB staff is concerned to see increases in transit capital are not paired with increased investment in transit operations. CARB staff is also concerned with the risk of delivering SCS-supportive projects on the project list by 2035. As shown in Table 2, the plan’s investments in transit that will support the 2035 target are backloaded to the 2026-2035 time period, and planned expenditures for many specific projects identified in the 2021 SCS prior to 2035 are not associated with any firm funding sources that are currently available.⁴⁸

Table 2. SANDAG SCS Investment Breakdown by Expenditure Category and Fiscal Year⁴⁹

Expenditure Category	FY 2021-2025 (B\$)	FY 2026-2035 (B\$)	FY 2036-2050 (B\$)	Total (B\$)
Roads	\$3.2 (7%)	\$18.5 (40%)	\$24.7 (53%)	\$46.4
Transit	\$5.0 (4%)	\$38.6 (33%)	\$73.7 (63%)	\$117.3
Active Transportation	\$0.4 (6%)	\$1.6 (25%)	\$4.2 (68%)	\$6.2
Other	\$4.1 (11%)	\$18.8 (49%)	\$15.7 (41%)	\$38.6

Source: SANDAG

The 2021 SCS includes new revenue assumptions from future local tax measures (region-wide and transit service area-specific), ridehailing company service fees, value capture/joint agreements, Road Usage Charges (regional and state), state housing revenue for transportation infrastructure, and future federal revenue from the gas tax that are expected to help fund the expected investments in Table 2. Of the new

⁴⁸ SANDAG. *2021 Regional Transportation Plan/Sustainable Communities Strategy*. Appendix A: Transportation, Projects, Programs, and Phasing.

⁴⁹ Notes: \$ amounts in billions. Roads include: managed lanes, managed lane connectors, interchange and arterial operational improvements, direct access ramps and transit operational improvements, rural corridors, and local streets and roads projects. Transit includes: capital, vehicles, operations, transit fare subsidies, and flexible fleet operations. Active Transportation includes: adopted regional bike network and local bike projects. Other includes: airport connectivity, active transportation, demand management/smart intersection systems, goods movement, mobility hub amenities, central mobility hub and other land acquisitions, complete streets improvements, Next OS elements, supporting policies and programs, and debt service. This table was based off investment information provided in SANDAG’s 2021 RTP/SCS Appendix U: Cost Estimation Methodology Table U.3 Major Estimated Expenditures by Mode (in millions of escalated dollars). <https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-u---cost-estimation-methodology.pdf>. Totals may not add up due to rounding.

revenue assumed,⁵⁰ future local tax measure revenues are expected to generate \$27.8 billion (region-wide measure) and \$9.9 billion (transit service area-specific) between FY 2021- 2050. The regional Road Usage Charge is expected to generate \$24.4 billion from FY 2026-2050, while \$8.9 billion is expected from future state revenues for transportation including the state road user charge strategy, and an additional \$2 billion is expected from ridehailing company service fees. New state housing revenue for transportation infrastructure is anticipated to generate \$4.4 billion between FY 2021 and 2050. Future federal transportation revenues for transportation would generate \$7 billion between FY 2026-2050.

These funds from new funding sources are not yet programmed toward specific projects, but SANDAG anticipates these to support implementation of the transportation project list. While commitment of these potential funds toward SCS-supportive projects is helpful, CARB staff remains concerned that if the SCS pricing strategies are delayed, amended, or not implemented, or if the SCS local tax measures are not approved, transportation projects envisioned to be constructed between 2030 and 2035 will not be delivered on time or at all.

In addition, SANDAG includes revenue assumptions around the Cap-and-Trade Program auction proceeds. Specifically, SANDAG assumes the region will get \$2.5 billion from Cap-and-Trade proceeds.⁵¹ This forecast is based on the annual state budget, historical trends for formula fund allocation, and the annualized average of competitive funding based on region's prior awards. 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 some program dollars are competitive, and total amounts available vary by time period.

On the whole, CARB staff finds that the 2021 RTP/SCS project investments support the implementation of the 2021 SCS strategies and achievement of the SCS's estimated GHG reduction benefits, if implemented. However, CARB staff have identified considerable risk to delivery of SCS-supportive projects on the project list by 2035, as they are not associated with any firm funding, particularly due to reliance on new funding sources, which is 37 percent of total revenue through 2035.

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

⁵⁰ This section refers to investment information provided in SANDAG's 2021 RTP/SCS Appendix V: Funding and Revenues Table V4. Major Revenue Sources in millions of year of expenditure (YOE) dollars. <https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-v---funding-and-revenues.pdf>

⁵¹ SANDAG. 2021 RTP/SCS Appendix V: Funding and Revenues Table V4. Major Revenue Sources (in Millions of YOE Dollars). <https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-v---funding-and-revenues.pdf>

on implementation of its SCS strategies. CARB staff reviewed how the implementation of SANDAG's SCS has performed to date using observed land use and transportation system data.⁵² CARB staff found that SANDAG is not on track to achieve SANDAG's previous 2015 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 2015 SCS to meet the region's GHG reduction targets. In addition, the 2021 SCS assumes that transit ridership will be 60 percent higher than the 2015 SCS did, increasing the challenge. Given this, CARB staff looked for evidence that SANDAG's 2021 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.⁵³

CARB staff's review of the 2021 SCS found that the plan establishes a new vision for the region by focusing heavily on new transportation service and improvements while building off the land use strategies identified in the 2015 SCS in a more coordinated way to achieve an even more aggressive 2035 GHG reduction target.

SANDAG assessed progress of near-term and continuing actions from the 2015 SCS to inform the assumptions and build off previous commitments for the 2021 SCS. While observed trends since the 2015 SCS show transit ridership decreasing, SANDAG adjusted the plan's transit ridership assumptions to be more aggressive and added new supporting actions focused on investments in new transit service, coordinated with investments in mobility hubs. The 2021 SCS reflects adjustments to the land use and transportation network that directionally align with updated growth forecasts sufficient to house the region's 6th cycle RHNA plan allocations paired with new strategies in the 2021 SCS to implement shared mobility travel options, enhanced TDM strategies, regional EV incentive and charger programs, and pricing strategies that are anticipated to also support the region's GHG reductions. Taken as a whole, these adjustments suggest that the region is 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 SANDAG's 2021 SCS compared to its 2015 SCS.

Land Use and Development

- The Regional Housing Incentive Program is added to help catalyze housing development planned in the region's mobility hubs and transit-rich areas.

⁵² See "Tracking Implementation" section of Appendix C: MPO Reporting.

⁵³ See "Incremental Progress" section of Appendix C: MPO Reporting for SANDAG's quantitative assessment of how changes to its SCS strategies between the 2015 SCS and 2021 SCS contributed to achievement of its 2035 target.

- The plan increases alignment with the 6th cycle RHNA plan, which allocated housing to jurisdictions based on the presence of transit and employment, aligning with goals to shorten trips and improve access to transit in support of VMT and GHG reduction.

Transportation

- Transit assumptions are adjusted for the 2035 target year. Transit ridership increased from 774,727 to 1,235,770 average daily boardings (60 percent) between the 2015 SCS and 2021 SCS. Justification for this increase is attributed to the significant focus on transit improvements with a 14 percent increase in total transit funding and 30 percent increase in transit capital funding between the 2015 and 2021 SCS.
- Transit operational miles increase from 223,218 to 242,765 (9 percent) between the 2015 and 2021 SCS.
- Bike and pedestrian lane miles are adjusted for the 2035 target year and increase from 1,136 to 2,912 (over 150 percent) between the 2015 SCS and 2021 SCS.
- A regional TDM ordinance is added to reduce employers' drive-alone rates by incentivizing and expanding TDM programs.

Pricing

- Three pricing strategies were added⁵⁴ and two pricing strategies⁵⁵ were carried over and enhanced that help support VMT reduction.
- Coordination with State agencies and other MPOs to design and implement a comprehensive Road Usage Charge pilot is added to help support implementation of the new per-mile charge pricing strategy.
- Work with regional partners to develop and complete pricing studies is added to support design and implementation of the new pricing strategies.

Electric Vehicles and New Mobility

- A new electric vehicle incentive program supported by \$604 million through 2035 is included to incentivize an estimated 110,000 zero-emission vehicles through 2035.
- A regional electric vehicle charging program of \$270 million through 2050 has been expanded, compared to the 2015 SCS, which included only \$30 million for this program through 2050. This additional investment would incentivize approximately 33,000 level 2 chargers by 2035.

⁵⁴ These include a Road Usage Charge, transit fare subsidies, and ridehailing company service fees.

⁵⁵ These include managed lane pricing and parking pricing.

- New flexible fleets within mobility hubs are added to supply a variety of transportation options and support connections to transit including micromobility, ride hail/carshare, rideshare, microtransit, and last-mile delivery.

CARB staff finds that the 2021 SCS shows evidence of changes and adjustments 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 SIGNIFICANT CONCERNS REGARDING IMPLEMENTATION)

Based on a review of all available evidence and in consideration of CARB's 2019 Evaluation Guidelines, CARB staff accepts SANDAG's determination that its 2021 SCS would meet the target of a 19 percent reduction by 2035, compared to 2005 levels, when fully implemented.

CARB staff commends SANDAG and its member jurisdictions for the innovative thinking and leadership shown in adopting a new vision for the region to address smart growth and increase mobility choices in its 2021 SCS. Furthermore, the region's addition of pricing mechanisms in the 2021 SCS, through a Road Usage Charge, congestion pricing and tolls, ridehailing company service fees, and parking pricing demonstrates leadership on strategies that can help provide mobility benefits to residents and achieve the region's GHG target. CARB staff's policy evaluation of the 2021 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, if fully implemented, will lead the San Diego region to achieve its 2035 GHG reduction target.

CARB staff, however, continue to have serious concerns with whether SANDAG and its local members are putting in place the actions necessary to fully implement the region's SCS strategies by 2035. As seen in [Appendix B](#) of CARB's *Draft 2022 Progress Report*, SANDAG was not on track to meet the GHG reduction target through 2019. Though the COVID-19 pandemic affected emissions in the 2020 target year, we expect future conditions and emissions to follow pre-pandemic patterns and require ongoing work and attention. While SANDAG's plan forecasts bold changes to how the region will travel by 2035, there is uncertainty that the implementation actions can or will be implemented as described. For example, key SCS strategies such as the managed lanes network, Road Usage Charge, and the ridehailing company service fees rely on securing legislative authority for implementation that may or may not be forthcoming, which SANDAG acknowledges. Regional leaders are still evaluating pricing strategies and have some concerns that will need to be addressed, as

illustrated by the SANDAG Board Action on July 8, 2022, which directed staff to develop an update to SANDAG's 2021 Regional Transportation Plan that would remove the Road Usage Charge. SANDAG is undertaking two studies that could help assess and resolve those concerns. Furthermore, it is evident that strategies and projects needed to support GHG emission reductions are expected to be implemented close to the 2035 target year, meaning that delays or unexpected challenges to securing the funding and or legislative authority to implement them could lead to missing the target.

While SANDAG identifies near-term actions that support the successful implementation of the SCS to achieve the GHG reduction benefits for the San Diego region and, ultimately, successful achievement of SB 375's goals to ensure California can meet its statewide climate commitments, SANDAG and its local members will need to undertake additional actions in the long-term to deliver and monitor its SCS strategies, as well as quickly adjust its strategies if some actions are not fully realized. To address these concerns, CARB staff has the following recommendations and requests SANDAG setting up regular monitoring of the implementation actions associated with its SCS strategies in consultation with CARB and other relevant agencies pursuant to AB 1730 (Gonzalez, Chapter 634, Statutes of 2019).

Recommendations

Prioritize Funding for Transportation Projects that Advance SCS Implementation and Goals

CARB staff appreciate the detail provided on the region's transportation project investments by corridor and are encouraged to see planned investments across modes within the region's key corridors. CARB staff also applaud the region for the fact that, when investing in roadway projects, the region is prioritizing conversion of existing free-flow lanes into managed lanes with priority access for transit, carpool, and vanpool users, and fee access for single-occupant drivers. CARB staff observe that the plan also includes managed lane projects whose scope includes adding new lanes. CARB staff are concerned that although managed lanes are intended to offer priority access to transit, carpooling, and vanpooling, there is still an opportunity for these investments to increase VMT thus risking the region's ability to achieve, and maintain its 2020 and 2035 GHG targets.

SANDAG's investment and revenue plan is ambitious. As noted above, the plan includes many valuable investments to advance its mobility hub strategy, and also some transportation projects that may increase VMT. To fund this portfolio, the plan makes aggressive assumptions about revenue sources and timing, such as that new pricing revenue will begin as early as 2026 and that Greenhouse Gas Reduction Fund investments will remain at current levels. SANDAG could support local actions and in the next SCS prioritize selecting and funding projects that strongly advance SCS goals immediately and in the next few years, and delaying or re-envisioning projects that do

not. Deprogramming projects that no longer fit the region's SCS strategies could allow the region to make more conservative assumptions about when new revenues will become available, while still moving quickly to make regional goals a reality.

In implementing this plan, we recommend that SANDAG consider prioritizing projects that will reduce VMT and GHG and seek early funding that can accelerate their implementation whenever possible. For example, when applying to programs that have criteria designed to support SCS implementation, such as the Solutions for Congested Corridors Program (SCCP) and the Trade Corridor Enhancement Program (TCEP) under SB 1, SANDAG could apply for funding that will support growth in mobility hubs (which include job centers, high-quality transit areas, and neighborhood mobility areas) that foster lower VMT.

The SANDAG region could also build on its track record of using its TransNet local sales tax funds to advance the region's SCS implementation and help to support both the region's and the State's ability to meet their respective climate and air quality targets. Future local sales tax measures in the region could consider how to continue building on this momentum, as well as limit funding for road capital projects that risk increasing VMT. Local sales tax measures comprise approximately 53 percent of the San Diego region's projected local funding. 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 SANDAG region, some of these measures have been supportive of SB 375 goals, while other projects have not. Prioritizing projects that decrease VMT is more important than ever to achieve the region's GHG reductions targets and SB 375's goals. Going forward, CARB recommends that investments focus on, and fund in the near term, transit, active transportation, transportation electrification, and increasing mobility options that discourage solo driving and reduce VMT. Because of their greater flexibility, sales tax measures offer unique opportunities to tailor funding sources to the region's SCS strategies.

Continue to Monitor Implementation of the Adopted SCS Strategies, Actions, and Transportation Project List

SANDAG produced a reflective progress report that assesses implementation actions since the previous 2015 SCS and identifies successes and barriers to implementation that helped to inform development of the 2021 SCS, as required by state law.⁵⁶ SANDAG must continue to track and report to CARB on its SCS's implementation of all strategies, including off-model strategies, and provide data-supported metrics to better assess them. CARB staff encourages SANDAG to track implementation of new

⁵⁶ SANDAG. 2021 RTP/SCS. Appendix M: Progress on Near-Term and Continuing Actions from San Diego Forward: The 2015 Regional Plan and the 2019 Federal Regional Transportation Plan. <https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-m---progress-on-2015-rp-actions.pdf>

and existing programs to help inform SANDAG, its member agencies, and the public on what strategies are performing well, what strategies could be adjusted, or if strategies could be removed. This will also help inform what types of projects and investments the region could consider making in order to achieve the SB 375 GHG emission reduction targets.

SANDAG will need to be vigilant about monitoring the balance of transportation projects through 2035 to ensure planned reductions are achieved. Delays or removals of VMT-reducing transportation projects could prevent SANDAG from meeting its GHG emission reduction target. CARB staff recommends that amendments to the project list be accompanied by recalculation and discussion of whether and how SCS target achievement can be maintained.

Accelerating Infill to Further SCS Implementation and Goals

SANDAG's SCS provides important growth assumptions regarding regional growth to preserve vegetation, existing and proposed habitat conservation lands, wetlands, important agricultural lands, and other natural resources, and concentrate development in urbanized areas near existing and future transportation networks. However, these growth constraints are not yet based on local planning. Jurisdictions could align planning and local policies and actions that support development/redevelopment for growth with the goals of the SCS and RHNA. Examples include actions to update general and specific plans; zoning for higher density; conservation protections of natural and working lands; zoning for development away from high-risk locations such as those that are vulnerable to fire, flood, or sea level rise areas; and site inventory and feasibility studies for infill potential.

There are many funding opportunities available for local jurisdictions in support of actions that will further SCS implementation. Examples funding sources include Regional Early Action Planning (REAP) Grants of 2021,⁵⁷ Affordable Housing and Sustainable Communities (AHSC), Transformative Climate Communities (TCC), Infill Infrastructure Grant Program (IIG), and Permanent Local Housing Allocation (SB 2's PLHA). In addition, SANDAG could partner with HCD to provide technical assistance to members around implementation of Affirmatively Furthering Fair Housing (AFFH)⁵⁸ and Annual Progress Reports (APRs),⁵⁹ and support keeping growth out of sensitive areas, for example, by encouraging local members to pursue Sustainable Agricultural Lands Conservation Program (SALC) funding to protect agricultural lands.⁶⁰

⁵⁷ For information about REAP visit <https://www.hcd.ca.gov/regional-early-action-planning-2021>.

⁵⁸ For more information about AFFH visit <https://www.hcd.ca.gov/community-development/affh/index.shtml>.

⁵⁹ For more information about APRs visit <https://www.hcd.ca.gov/community-development/annual-progress-reports.shtml>.

⁶⁰ For more information about SALC visit <https://www.conservation.ca.gov/dlrp/grant-programs/SALCP>.

When SANDAG updates the requirements of the existing TransNet grant programs to align with the 2021 Regional Plan, CARB staff recommends that SANDAG consider including more guardrails to funding, such as incentivizing development only within mobility hubs and/or transit priority areas. SANDAG could also track and share information with CARB staff about development by SANDAG's mobility hubs to allow better comparison of planned and projected development in the region.

State and Regional Partnership on Pricing Strategies

SANDAG has shown leadership in putting forward a mix of pricing strategies that when integrated with the region's transportation and land use vision will support achievement of the 2021 SCS goals. To succeed with these strategies, SANDAG acknowledges it will need to engage in close collaboration with State partners at Caltrans and CalSTA, local partners, and private companies to ensure successful implementation of the pricing mechanisms. As the region begins initial studies to analyze pricing strategies, it should work carefully to understand and assess the potential concerns that led to the Board Action on July 8, 2022, which directed staff to develop an update to the 2021 SCS that would remove the Road Usage Charge. Furthermore, SANDAG will need to work with local jurisdictions across the region to rapidly implement TNC user fees in order to meet the assumed 2026 implementation timeframe. CARB staff remains concerned that if the SCS pricing strategies are delayed, amended in a way that reduces anticipated benefits, or not implemented, transportation projects envisioned to be constructed between 2030 and 2035 will not be delivered as anticipated, on time, or at all. CARB expects SANDAG to show progress on implementation of these strategies in its next SCS in order to continue receiving credit for the full GHG emission reductions assumed in this 2021 SCS.

Provide All Trend Analysis Metrics

SANDAG provided all the performance metrics for the trend analysis as described in the trend analysis section of this report. However, SANDAG estimated the seat utilization for transit mode only. CARB staff recommends calculating seat utilization for all modes, including passenger and transit vehicles, in the next RTP/SCS. The purpose of this metric is to measure travel efficiency through vehicle occupancy.

Improve Modeling and Data

SANDAG's ABM2+ added many new features to their modeling platform, including TNCs, micromobility, congestion pricing, autonomous vehicles, and hyperloop transit. Though it advances the state of the practice, ABM2+ is becoming complex and needs to be appropriately calibrated and validated based on the best available data and information. CARB staff recommends that SANDAG validate the household vehicle choice model using the Department of Motor Vehicles data. In addition, SANDAG could enhance the sensitivity between transit service level and household vehicle ownership to better estimate the transit ridership.

CARB staff recommends that SANDAG consider smaller traffic analysis zones in their next RTP to improve and increase sensitivity to infill strategies, especially near transit stations and mobility hubs.

CARB staff also encourages SANDAG to develop microeconomic-based land use models as part of its next RTP/SCS. This would be capable of analyzing and evaluating the effects of location choice, density, infill development, home affordability, job-housing balance, housing and transportation cost burden, and similar factors.

Off-model Strategies

SANDAG states that it has used conservative assumptions to quantify GHG emission reductions from the off-model strategies. However, it may have overestimated the benefits of strategies such as vanpool and carpool services, shared mobility, and support for biking. Therefore, CARB staff recommends that SANDAG make its assumptions consistent across modeling and off-model quantifications and support them with local data whenever possible. For example, SANDAG could collect car share member statistics and VMT associated with car share vehicles to report the current participation rate in a car share program. In addition, SANDAG could provide detailed VMT and GHG reductions for individual strategies in the next SCS.

Analyze Induced Travel Demand

SANDAG has included several road expansion projects in its 2021 SCS. SANDAG uses 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. Thus, it may not be directly helpful to future planning and mitigation actions. CARB staff recommends that SANDAG continue to explore methods that can analyze the long-term induced travel demands of road expansion more thoroughly in future SCSs, using integrated land use and travel demand model that captures the 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: SANDAG's 2021 SCS Strategy Table

This is a summary table based on SCAG's submittal that compares the key land use and transportation strategies between the 2015 and 2021 SCSs. This table also illustrates how GHG emissions were estimated for each strategy.

Category: 2021 SCS Strategy Name	New/Carryover Strategy from 2015 SCS	Analysis Type	Estimated GHG Emission Reduction in 2035
<p><u>Land Use & Housing:</u> Accommodation of 6th cycle RHNA, Mobility Hubs, Land Conservation</p> <p><u>Transportation:</u> Managed Lanes, HOV/HOT Policies, Regional Bike Network, Commuter Rail, Light Rail, Next Generation Rapid Bus, Local Bus, Local Complete Streets, Parking Management, Active Transportation Demand Management, Smart Signals, Telework</p> <p><u>Local & Regional Pricing:</u> Road Usage Charge, Congestion Pricing/Toll Rates, Parking Pricing, TNC Fees</p> <p>New Mobility & Electric Vehicles: Microtransit, Micromobility, Pooled rides (TNCs), E-bikes</p>	<p>New: Parking Management, Microtransit, Micromobility, Pooled Rides (TNC), E-Bikes, Road User Charge, Transit Fare Subsidies, Parking Pricing, TNC Fees</p> <p>Carryover: All Other Strategies</p>	On-Model	-19.3%
<u>Transportation:</u> Vanpool	Carryover	Off-Model	-0.31%
<u>Transportation:</u> Pooled Rides (private)	Carryover	Off-Model	-0.01%

Category: 2021 SCS Strategy Name	New/Carryover Strategy from 2015 SCS	Analysis Type	Estimated GHG Emission Reduction in 2035
<u>Transportation:</u> Regional TDM Ordinance	New	Off-Model	-0.37%
<u>New Mobility:</u> Regional Electric Vehicle Charger Program	Carryover	Off-Model	-2.15% (EV charger and incentive programs combined)
<u>New Mobility:</u> Electric Vehicle Incentive Program	New	Off-Model	-2.15% (EV charger and incentive programs combined)
<u>New Mobility:</u> Car Share	Carryover	Off-Model	-0.17%
Total Reduction	N/A	N/A	20%

Notes: N/A means not applicable.

Appendix B: Data Table

Modeling Parameters	2005*	2016	2020	2035	2050	Data Source
Scenario ID	n/a	458	463	475	459	n/a
Total Population	n/a	3,309,509	3,383,955	3,620,349	3,746,077	Travel Demand Model input
Modeled Population1	n/a	3,265,488	3,337,250	3,573,644	3,699,372	Travel Demand Model input
Vehicle Operating Costs (\$2010/mile)	n/a	\$0.163	\$0.193	\$0.200	\$0.193	Travel Demand Model input
Average Toll Price (\$/mile)	n/a	n/a	n/a	n/a	n/a	Travel Demand Model input
Average Median Household Income (\$/year)	n/a	61,040	64,097	67,031	70,001	Travel Demand Model input
Total Number of Households	n/a	1,134,848	1,166,240	1,327,588	1,374,841	Travel Demand Model input
Total Number of Jobs	n/a	1,646,419	1,704,906	1,922,475	2,087,318	Travel Demand Model input
Total Developed Acres	n/a	785,045	799,044	837,043	837,666	Travel Demand Model input/GIS
Total Housing Units	1,107,985	1,190,554	1,226,462	1,409,867	1,471,300	Travel Demand Model input
Total Single-Family Housing Units (du)	673,591	717,626	722,838	734,934	738,133	Travel Demand Model input
Share of Single-Family Housing Units (%)	60.8%	60.3%	58.9%	52.1%	50.2%	Calculated: (Total single-family units/total housing units)
Total Multi-Family Housing Units (du)	383,796	430,716	461,517	632,826	691,060	Travel Demand

Modeling Parameters	2005*	2016	2020	2035	2050	Data Source
Share of Multi-Family Housing Units (%)	34.6%	36.2%	37.6%	44.9%	47.0%	Calculated: (Total multi-family units/total housing units)
Total Housing Units Within ½ Mile of a High-Quality Transit Station	n/a	124,269	146,050	492,337	549,948	Travel Demand Model input/GIS
Total Jobs Within ½ Mile of a High-Quality Transit Station	n/a	349,992	367,817	876,745	996,408	Travel Demand Model input/GIS
Freeway and General Purpose Lanes - Mixed Flow, auxiliary, etc. (lane miles)	n/a	2,414	2,416	2,223	2,122	Travel Demand Model input
Freeway Tolled Lanes (lane miles)	n/a	45	47	55	7	Travel Demand Model input
Freeway HOV Lanes (lane miles)	n/a	116	116	565	821	Travel Demand Model input
Arterial/Expressway (lane miles)	n/a	4,174	4,308	4,731	4,875	Travel Demand Model input
Collector (lane miles)	n/a	4,026	4,080	4,276	4,437	Travel Demand Model input
Average Transit Headway (ATH) (Peak) Commuter Rail (minutes)	n/a	48.0	48	13.3	11.1	Travel Demand Model input
ATH (Peak) Light Rail (minutes)	n/a	13.3	13.3	5.2	5.5	Travel Demand Model input

Modeling Parameters	2005*	2016	2020	2035	2050	Data Source
ATH (Peak) Next Generation Rapid Transit (minutes)	n/a	15.5	14.1	10.0	10.0	Travel Demand Model input
ATH (Peak) Local Bus (minutes)	n/a	28.4	26.7	14.2	14.1	Travel Demand Model input
Average Transit Headway (ATH) (Off-Peak) Commuter Rail (minutes)	n/a	144	144	17.1	12	Travel Demand Model input
ATH (Off-Peak) Light Rail (minutes)	n/a	17.1	13.3	5.2	5.5	Travel Demand Model input
ATH (Off-Peak) Next Generation Rapid Transit (minutes)	n/a	17.0	17.1	10.9	10.8	Travel Demand Model input
ATH (Off-Peak) Local Bus (minutes)	n/a	29.7	27.2	17.5	17.4	Travel Demand Model input
Total Transit Operation Miles	n/a	94,416	96,081	242,765	262,982	Travel Demand Model input
Transit Total Daily Vehicle Service Hours ¹	n/a	6,458	6,458	14,300	15,105	Travel Demand Model input
Bike and Pedestrian Lane (class I, II, & IV) Miles	n/a	2,470	2,657	2,912	3,339	Travel Demand Model input
Household Vehicle Ownership	n/a	1.86	1.86	1.75	1.73	Travel Demand Model output

Modeling Parameters	2005*	2016	2020	2035	2050	Data Source
Average Trip Length by Mode (ATLM): Drive Alone (miles)	n/a	7.60	7.43	7.23	7.25	Travel Demand Model output
ATLM: Shared ride (2 persons) (miles)	n/a	5.72	5.57	5.54	5.56	Travel Demand Model output
ATLM: Shared ride (3+ persons) (miles)	n/a	5.66	5.47	5.77	5.94	Travel Demand Model output
Drive-to-transit (PNR, KNR, TNC to transit) (miles)	n/a	13.73	13.85	15.72	15.47	Travel Demand Model output
ATLM: Walk-to-transit (Walk, micromobility, microtransit to transit) (miles)	n/a	7.79	7.89	8.24	8.26	Travel Demand Model output
ATLM: Bike (miles)	n/a	2.85	2.98	3.56	4.10	Travel Demand Model output
ATLM: Walk (miles)	n/a	0.78	0.78	0.75	0.75	Travel Demand Model output
ATLM: All Modes (miles)	n/a	6.20	6.02	5.87	5.84	Travel Demand Model output
Average Travel Time by Trip Purpose (ATTP): Commute Trip (minutes)	n/a	25.07	25.18	26.79	27.40	Travel Demand Model output
ATTP: Non-Commute Trip (minutes)	n/a	14.23	14.09	14.28	14.42	Travel Demand Model output
Average Travel Time by Mode (ATTM): Drive Alone (minutes)	n/a	15.86	15.72	14.70	14.74	Travel Demand Model output

Modeling Parameters	2005*	2016	2020	2035	2050	Data Source
ATTM: Shared ride (2 persons) (minutes)	n/a	12.67	12.50	11.99	12.04	Travel Demand Model output
ATTM: Shared ride (3+ persons) (minutes)	n/a	12.43	12.16	11.93	12.11	Travel Demand Model output
ATTM: Drive-to-transit (PNR, KNR, TNC to transit) (minutes)	n/a	53.61	52.48	49.17	46.40	Travel Demand Model output
ATTM: Walk-to-transit (walk, micromobility, microtransit to transit) (minutes)	n/a	53.16	52.44	45.16	43.58	Travel Demand Model output
ATTM: Bike (minutes)	n/a	17.12	17.28	18.09	18.64	Travel Demand Model output
ATTM: Walk (minutes)	n/a	15.67	15.64	14.93	15.05	Travel Demand Model output
ATTM: All Modes (minutes)	n/a	14.94	14.80	15.07	15.22	Travel Demand Model output
Average Travel Time for Low-Income Populations by Mode (ATTM-LI): Drive Alone (minutes)	n/a	15.08	14.88	14.02	14.22	Travel Demand Model output
ATTM-LI: Shared ride (2 persons) (minutes)	n/a	12.28	12.09	11.63	11.71	Travel Demand Model output
ATTM-LI: Shared ride (3+ persons) (minutes)	n/a	11.99	11.66	11.42	11.59	Travel Demand Model output
ATTM-LI: Drive-to-transit (PNR, KNR, TNC to transit) (minutes)	n/a	52.05	51.14	49.17	46.43	Travel Demand Model output

Modeling Parameters	2005*	2016	2020	2035	2050	Data Source
ATTM-LI: Walk-to-transit (walk, micromobility, microtransit to transit) (minutes)	n/a	53.00	52.25	45.73	43.86	Travel Demand Model output
ATTM-LI: Bike (minutes)	n/a	18.71	19.19	19.97	20.70	Travel Demand Model output
ATTM-LI: Walk (minutes)	n/a	16.21	16.26	15.47	15.62	Travel Demand Model output
ATTM-LI: All Modes (minutes)	n/a	14.70	14.54	15.98	16.30	Travel Demand Model output
Mode Share (MS): Drive Alone (%)	n/a	44.7%	44.5%	40.7%	38.6%	Travel Demand Model output
MS: Shared ride (2 persons) (%)	n/a	24.5%	24.5%	23.8%	23.8%	Travel Demand Model input
MS: Shared ride (3+ persons) (%)	n/a	19.7%	19.1%	16.7%	16.6%	Travel Demand Model output
MS: Drive-to-transit (PNR, KNR, TNC to transit) (%)	n/a	0.3%	0.3%	0.7%	0.8%	Travel Demand Model input
MS: Walk-to-transit (walk, micromobility, microtransit to transit) (%)	n/a	1.3%	1.3%	4.0%	4.4%	Travel Demand Model output
MS: Bike (%)	n/a	0.8%	0.9%	1.4%	1.9%	Travel Demand Model output
MS: Walk (%)	n/a	7.0%	7.6%	10.5%	11.7%	Travel Demand Model output

Modeling Parameters	2005*	2016	2020	2035	2050	Data Source
MS: Other (TNC, taxi, school bus, micromobility, microtransit) (%)	n/a	1.7%	1.7%	2.1%	2.3%	Travel Demand Model output
All Modes	n/a	100.0%	100.0%	100.0%	100.0%	Travel Demand Model output
Seat Utilization	n/a	31.9%	32.8%	40.6%	45.6%	Travel Demand Model output
Transit Ridership (Average daily boardings) ¹	n/a	380,540	396,519	1,235,770	1,440,963	Travel Demand Model output
Total VMT per weekday (all vehicle class) (miles)	n/a	83,614,704	83,972,746	85,412,968	88,133,934	Travel Demand Model output
Total VMT per weekday for passenger vehicles (CARB vehicle classes LDA, LDT1, LDT2, and MDV)	n/a	79,051,889	79,214,338	79,725,710	81,804,496	EMFAC model output
Total II VMT per weekday for passenger vehicles (miles)	n/a	67,951,929	67,519,331	65,770,167	66,340,385	EMFAC model output
Total IX/XI VMT per weekday for passenger vehicles (miles)	n/a	10,302,949	10,862,069	12,972,870	14,368,918	ABM output (using IX/XI passenger VMT by model type)
Total XX VMT per weekday for passenger vehicles (miles)	n/a	797,011	832,937	982,673	1,095,193	ABM output (using XX passenger VMT by model type)
SB 375 VMT per capita ²	25.4	23.9	23.4	22.0	21.8	Calculated: (II + IX/XI passenger VMT) / population

Modeling Parameters	2005*	2016	2020	2035	2050	Data Source
Total CO2 emissions per weekday (all vehicle class) (tons/day)	n/a	42,120	37,822	26,700	26,742	EMFAC 2014 model output
Total SB375 CO2 emissions per weekday for passenger vehicles (CARB vehicle classes LDA, LDT1, LDT2, and MDV) (tons/day)	n/a	39,519	39,275	38,473	39,356	EMFAC 2014 model output
Total II CO2 emissions per weekday for passenger vehicles (tons/day)	n/a	33,970	33,477	31,738	31,916	2014 EMFAC model output
Total IX/XI CO2 emissions per weekday for passenger vehicles (tons/day)	n/a	5,151	5,386	6,260	6,913	2014 EMFAC model output
Total XX CO2 emissions per weekday for passenger vehicles (tons/day)	n/a	398	413	474	527	2014 EMFAC model output
SB 375 CO2 per capita (lbs./day)**. 2	26.0	23.6	23.0	21.0	20.7	Calculated: (II + IX/XI CO2) / population / 2000 lbs./ton
EMFAC Adjustment Factor (if applicable)	n/a	n/a	n/a	1.70%	1.60%	CARB Methodology for Estimating CO2 Adjustment

Modeling Parameters	2005*	2016	2020	2035	2050	Data Source
Off-Model CO2 Emissions Reductions ³ : Vanpool (%)	n/a	n/a	0.30%	0.31%	0.32%	MPO estimated
Off-Model CO2 Emissions Reductions ³ : Carshare (%)	n/a	n/a	0.02%	0.17%	n/a	MPO estimated
Off-Model CO2 Emissions Reductions ³ : Pooled Ride (%)	n/a	n/a	0.01%	0.01%	0.01%	MPO estimated
Off-Model CO2 Emissions Reductions ³ : TDM Ordinance (%)	n/a	n/a	0.00%	0.37%	0.56%	MPO estimated
Off-Model CO2 Emissions Reductions ³ : Electric Vehicle Programs (%)	n/a	n/a	n/a	2.15%	1.72%	MPO estimated
Total Off-Model CO2 Emissions Reductions (%)	n/a	n/a	n/a	3.01%	2.61%	MPO estimated

* 2005 data is consistent with the SANDAG SB 150 submittal. Additional 2005 data points not included given that modeling processes have evolved to the point where comparisons are no longer applicable.

**Please see Appendix D, Attachment 2: SB 375 2020 GHG Reduction Estimate: https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-d---scs-documentation-and-related-information.pdf?sfvrsn=ebc1fd65_2

CARB transmittal received from SANDAG with updated information 3/15/2022:

¹ updated 3/15/2022 - Annualization factor for transit is 320. This factor was applied to the modeling outputs for the cost and revenue analysis included in the Final 2021 Regional Plan. The SB 150 Excel file has been updated ("SCS Adopted Scenario Data" tab) to reflect these changes.

² updated 3/15/2022 - 2005 values added and served as the basis for the SB 375 analysis.

³ updated 3/15/2022 - values were reviewed for consistency, additional documentation added to Off-Model Calculator Workbooks. We found a minor copy error that does impact the overall the SB 375 GHG calculation but is as follows: the 2035 vanpool reductions were published in Appendix D as -0.33 percent and would have been correctly published as -0.31 percent. Therefore, the off-model calculator totals would have been published as -3.01 percent and not -3.03 percent. The total published 2035 SB 375 percentage of -20.4 percent remains unchanged with this correction which is still consistent with the published 2021 Regional Plan (chapters and appendices).

Appendix C: MPO Reporting Components

This section will focus on discussing the three reporting components of the 2021 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 SANDAG's progress in implementing its SCS. Specifically, CARB 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. CARB staff chose performance metrics based on the availability of observed data and plan performance indicators provided by SANDAG to illustrate a snapshot of the region's current standing. In the Plan Adjustment analysis, CARB staff examine the direction of metric trends that are not aligned with expected plan outcomes. This analysis allows CARB staff to understand whether the current SCS modifies or adds strategies or actions to get the region on track with desired plan outcomes.

The following charts demonstrate the observed data trend compared with the forecasted data obtained from SANDAG's 2021 Regional Plan. In each chart, the trend line represents the observed data, while the triangles represent the forecasted data for 2020 and 2035 for a given metric. For each metric, the initial year for observed data trend is either 2005 or 2010, depending upon data availability.

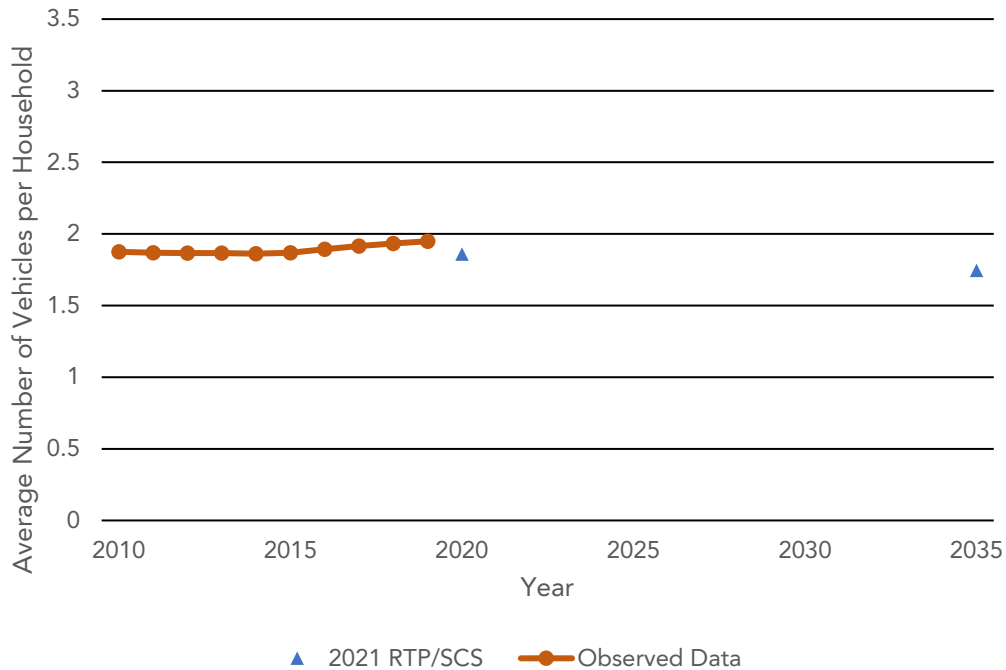
Regional Average Household Vehicle Ownership

CARB staff analyzed the trend in household vehicle ownership for SANDAG from 2010 to 2019. For this indicator, CARB staff reports the average number of privately owned vehicles by household in SANDAG, calculated using the total number of privately owned vehicles divided by the number of households in the SANDAG region. Tract-level private-owned vehicle data and household data were both obtained from the American Census Survey (ACS) 1-year reports from 2010 to 2019.⁶¹ Figure 9 shows historical SANDAG household vehicle ownership from 2010 to 2019 compared to SANDAG's 2035 forecasted household vehicle ownership from its travel demand model (see Appendix B: Data Table). The observed data trend illustrates average household vehicle ownership increased by 3.96 percent from 2010 to 2019. The 2035 forecasted SCS average household vehicle ownership is 10.37 percent below the

⁶¹ U.S. Census Bureau, American Community Survey, 2005 – 2019 [ACS 1-year Estimates](https://www.census.gov/programs-surveys/acs). Available at: <https://www.census.gov/programs-surveys/acs>

observed 2019 average household vehicle ownership. This indicates that the observed trend is heading in the wrong direction relative to expected plan outcome for 2035.

Figure 9. SANDAG Region Average Household Vehicles



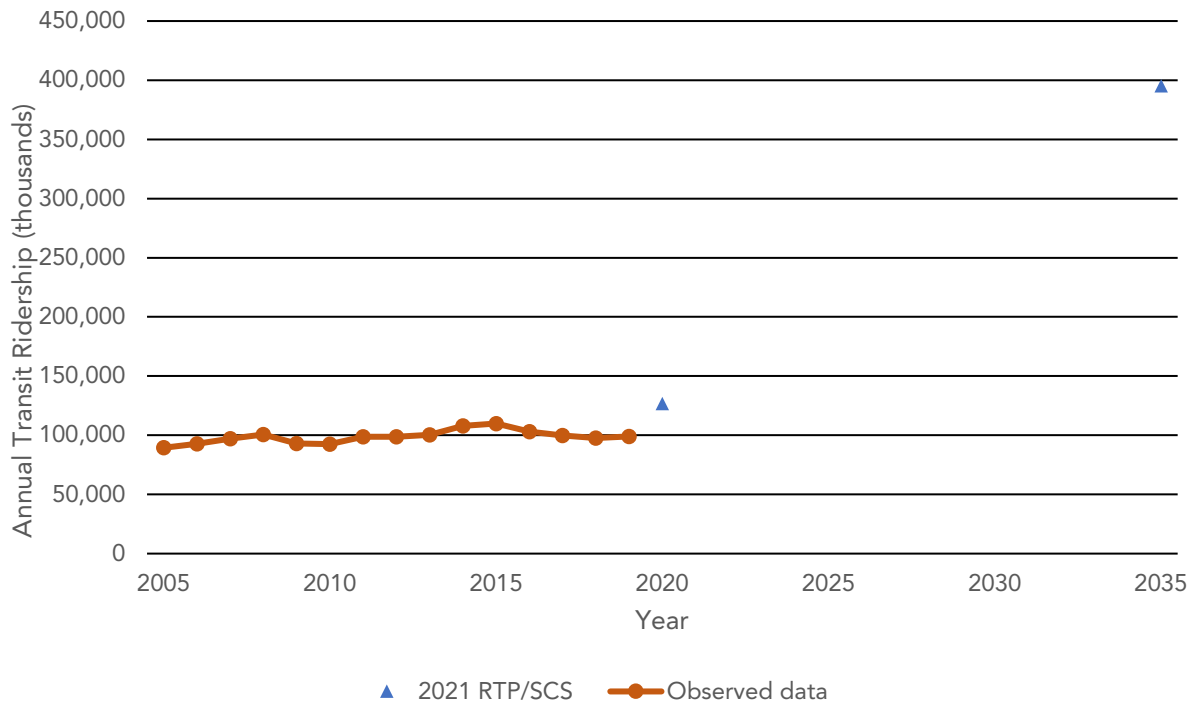
Annual Transit Ridership

CARB staff used the National Transit Database (NTD)⁶² published monthly transit boarding numbers (unlinked trips) reported by local transit agencies to determine the historical monthly and annual boarding numbers in the SANDAG region. This dataset covers the years 2005 to 2019.

Figure 10 shows observed annual transit ridership in SANDAG compared to the 2035 forecast. The observed data trend illustrates annual transit ridership increased by 10.6 percent from 2005 to 2019. However, since 2015, annual transit ridership has been decreasing, while SANDAG’s RTP/SCS forecasted transit ridership in 2035 is almost 4 times that of observed trends. The trend between 2015 and 2019 is heading in the wrong direction relative to the expected plan outcome.

⁶² National Transit Database, NTD data. Available at: <https://www.transit.dot.gov/ntd/ntd-data>

Figure 10. SANDAG Region Annual Transit Ridership



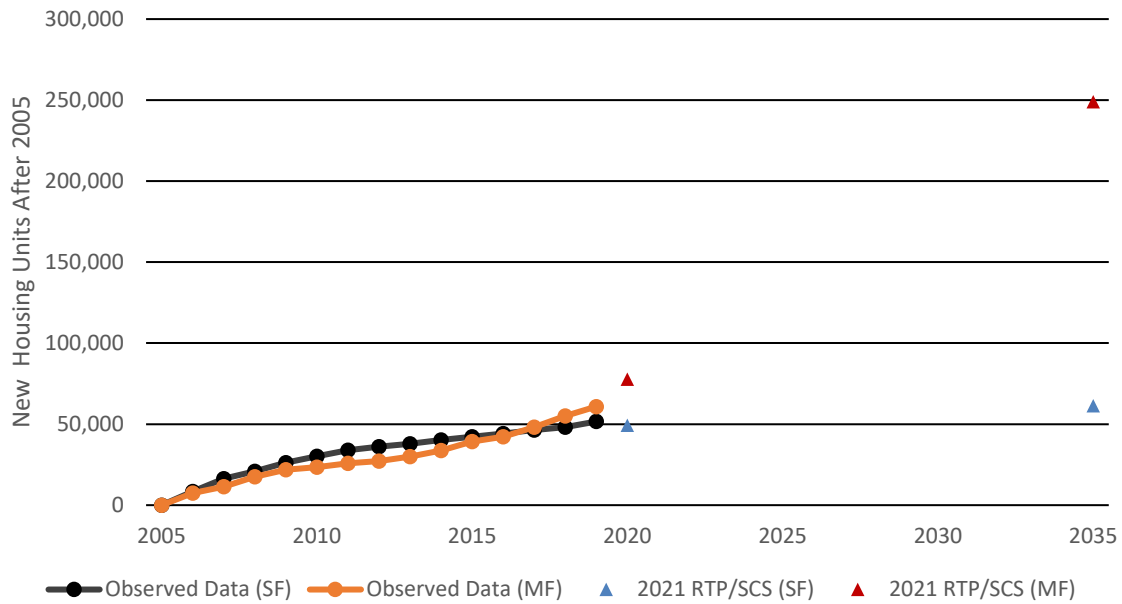
New Homes Built by Type

CARB staff analyzed the rate of new homes being built by type in the SANDAG region from 2005 to 2019 using the California Department of Finance (DOF) datasets including E-5 (for years 2011 to 2019) and E-8 (for years 2005 to 2010).⁶³

Figure 11 shows the historical number of new single-family and multi-family housing units in the SANDAG region. Since 2005, 51,635 new single-family and 60,867 new multi-family housing units have been built in the region. Although it is trending in the right direction, the number of forecasted multifamily homes in 2035 is 309 percent above the observed number of 2019 multi-family homes. The 2035 forecasted number of new single-family housing is 19 percent above the observed number of 2019 single-family homes, while the 2035 forecasted number of new multi-family housing is relatively higher than the observed number of multi-family homes in 2019.

⁶³ California Department of Finance, rate of new homes being built by type. Available at: <http://www.dof.ca.gov/Forecasting/Demographics/Estimates/>

Figure 11. New Single- and Multi-Family Housing Units Built in the SANDAG Region



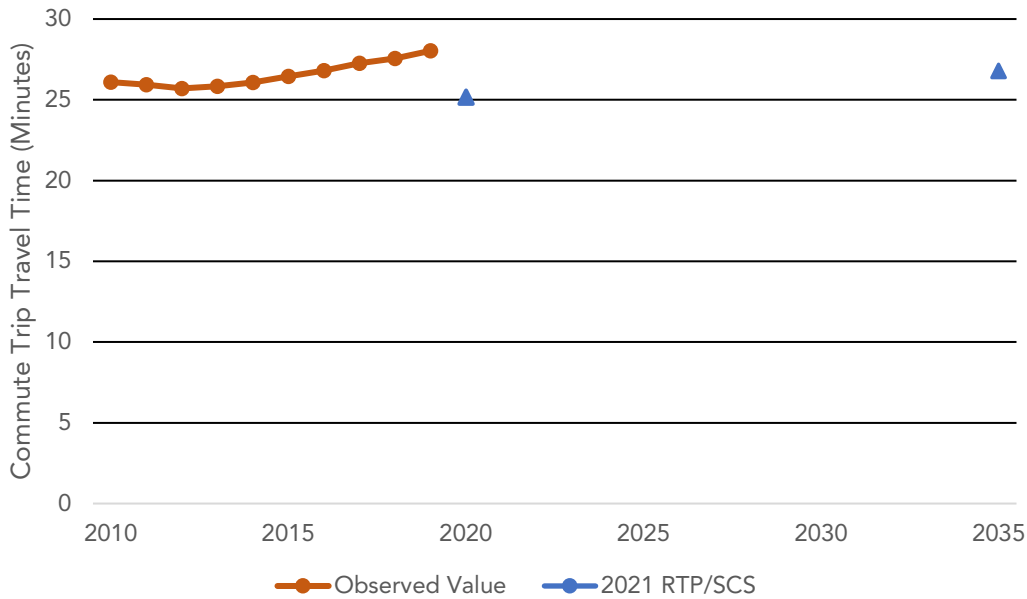
Commute Trip Travel Time

CARB staff analyzed commute trip travel times from 2010 to 2018 using the American Community Survey data.⁶⁴

Figure 12 shows historical commute trip time compared to SANDAG’s forecasted average commute trip time in 2020 and 2035. The observed data trend illustrates commute trip time increased by 7.4 percent from 2010 to 2019. The 2035 forecasted commute trip travel time is 1.25 minutes below the observed 2019 commute trip travel time. This indicates that the observed trend is heading in the wrong direction relative to the expected plan outcome for 2035.

⁶⁴ U.S. Census Bureau, American Community Survey. Available at: <https://data.census.gov/cedsci/table?q=ACSST1Y2019.S0801&g=0400000US06.050000&tid=ACSST5Y2018.S0801&hidePreview=true>

Figure 12. Commute Trip Travel Time



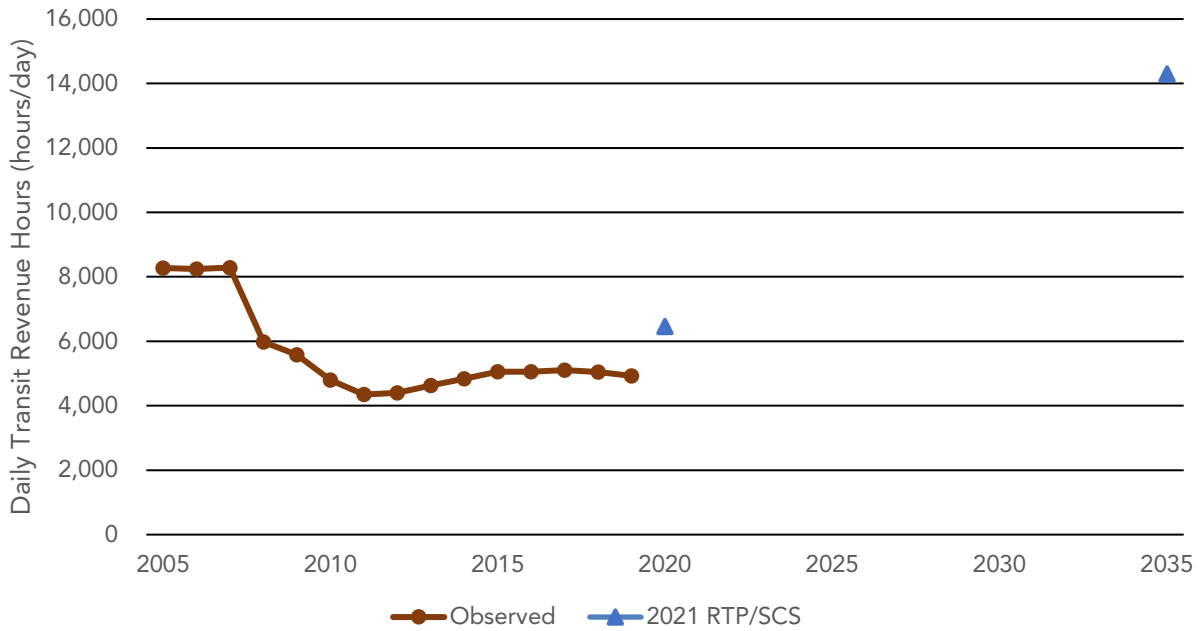
Daily Transit Service Hours

The NTD publishes monthly boarding numbers (unlinked trips) reported by local transit agencies. CARB staff calculated the monthly and annual revenue hours in the SANDAG region based on this NTD dataset from 2005 to 2019.⁶⁵ Total transit revenue hours in SANDAG were then adjusted to daily transit revenue hours.

Observed NTD transit revenue hours have decreased by 40 percent from 2005 to 2019, as shown in Figure 13. SANDAG 2021 SCS's forecasted transit revenue hours in 2035 is 190 percent higher than the observed transit revenue hours in 2019, which indicates the trend in observed data is heading in the wrong direction.

⁶⁵ National Transit Database (NTD). Available at: <https://www.transit.dot.gov/ntd/ntd-data>.

Figure 13. Daily Transit Revenue Hours in the SANDAG Region



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 SANDAG. Based on the analysis, the majority of the observed data are not heading in the direction of expected plan outcomes. Therefore, CARB staff concluded that SANDAG is not on track to meet its 2035 GHG target without significant new strategies.

Incremental Progress

CARB staff reviewed the incremental progress of SANDAG's 2021 SCS compared to its 2015 SCS in place in October 2018, in accordance with Board direction and the 2019 Evaluation Guidelines.⁶⁶ As background, during the 2018 regional GHG target update process, some of the MPOs reported to CARB that, due to external factors (e.g., auto operating cost, socioeconomic changes), the additional effort would be required to achieve the same level of per capita GHG emission reduction reported in the current SCSs. According to the MPOs, simply staying on course to achieve the previously demonstrated regional SB 375 GHG emission reduction targets would be a stretch of current resources, let alone achieving the more aggressive targets adopted by the Board in 2018.

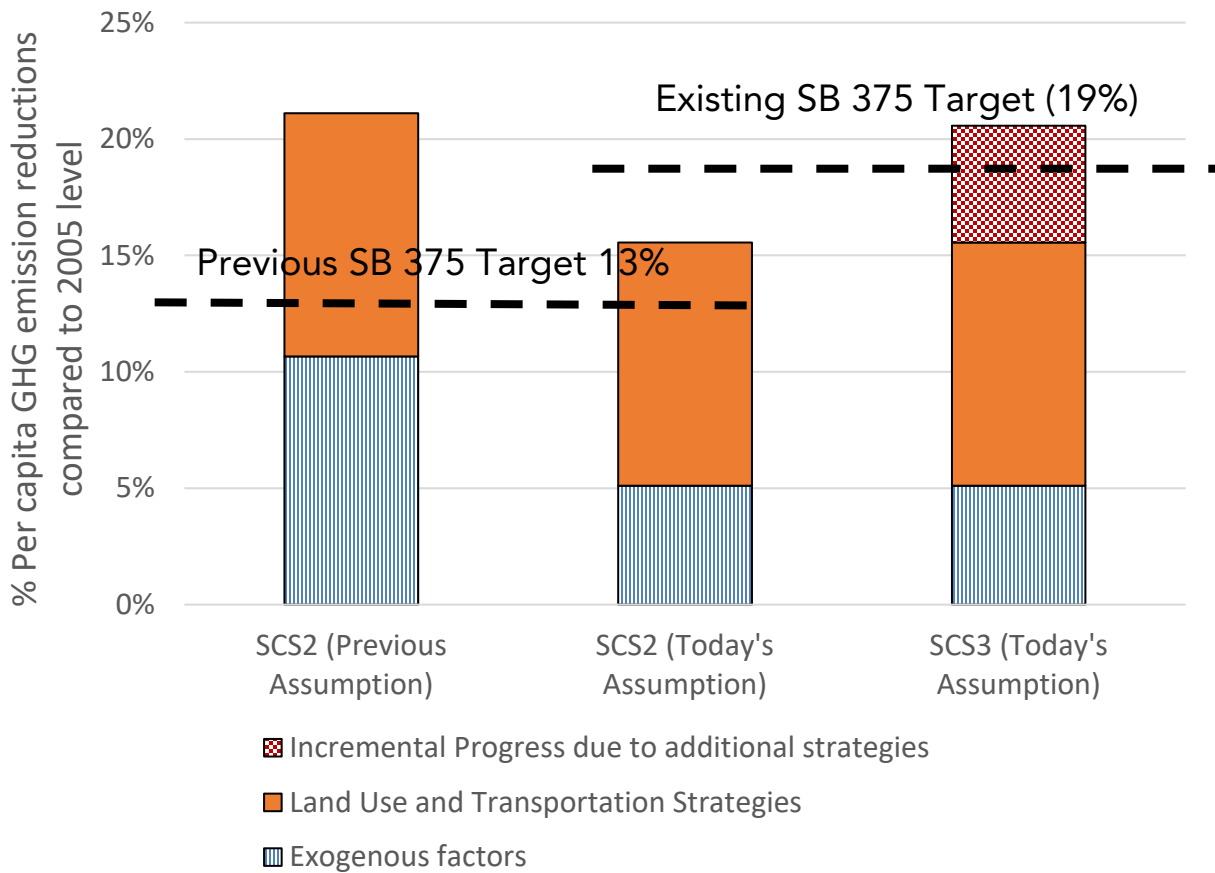
To determine whether SANDAG is achieving the level of incremental progress consistent with what it reported during the target setting process, CARB staff intended to rely on the analysis provided by SANDAG consistent with methods put forward in the 2019 Evaluation Guidelines. That methodology called for a comparison of the 2015 SCS to the 2021 SCS under varying assumptions, controlling for as many exogenous factors as possible.

SANDAG provided incremental progress analysis, which analyzes the difference between the 2015 Regional Plan and SCS and the 2021 Regional Plan and SCS (2021 SCS). SANDAG's incremental progress analysis highlights key changes between the plans, including a more robust transit network, aggressive policies to encourage the use of transit and alternative modes of driving, lower auto operating costs, a more concentrated pattern of growth and development, lower population growth, increased telework, and updated off-model calculators.

Figure 14 illustrates incremental progress between SANDAG's 2015 RTP/SCS and 2021 RTP/SCS when controlling for exogenous factors, along with the relationship to the previous SB 375 GHG emission reduction targets and the newly adopted 2021 goals. Based on today's assumptions, exogenous factors account for 5.1 percent of GHG emission reduction, including auto operating costs, telework rates, cross-border tours, population forecast, housing units, average household size, and ABM2+ enhancements in the 2015 RP SCS. Based on today's assumptions, SANDAG's 2021 SCS's incremental progress accounts for a 5 percent GHG emission reduction. Incremental progress in 2021 RP SCS includes enhanced SCS policies such as land use patterns, flexible fleets, HOV/Toll policy, technology improvement, capital projects, fee policy, and off-model strategies.

⁶⁶ Board Resolution 18-12 (March 22, 2018). Available at: https://ww2.arb.ca.gov/sites/default/files/2020-06/SB375_Final_Target_Staff_Report_%202018_Resolution_18-12.pdf

Figure 14. Comparison of SANDAG's 2015 SCS and 2021 SCS with Updated Assumptions



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. The information presented suggests that the 2021 SCS includes additional and enhanced strategies relative to the 2015 SCS.

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 California Transportation Commission's *2017 Regional Transportation Plan Guidelines for Metropolitan Planning Organizations*.⁶⁷ Appendix H: Social Equity: Engagement and Analysis⁶⁸ of SANDAG's 2021 RTP/SCS documented SANDAG's equity analysis. CARB staff reviewed this appendix and prepared this section to summarize SANDAG's 2021 SCS equity work, including identified communities of concern, equity performance measures, equity analysis, and public participation efforts.

Identifying Disadvantaged Populations in the San Diego Region

As a first step in SANDAG's social equity analysis of the effects of the 2021 RTP/SCS on vulnerable or disadvantaged population groups in the region, SANDAG used both population-based methods and geographic areas to identify vulnerable or disadvantaged population groups in the region. With input from social equity stakeholders, SANDAG selected three population groups that represent the disadvantaged populations analyzed in its transportation model:

- minorities⁶⁹
- low-income populations – populations with household income of less than 200 percent of the 2016 federal poverty level
- seniors – 75 years and older

SANDAG also identified geographic disadvantaged communities for the 2021 RTP/SCS using CalEnviroScreen, a screening/mapping tool for evaluating multiple pollutants and stressors in communities, to ensure that the 2021 RTP/SCS would include pollution-reduction strategies benefitting those communities.

Equity Performance Measures

As part of the social equity analysis process, SANDAG worked with community-based organization (CBO) partners and other interested stakeholders to identify performance measures for the social equity analysis. Through this process, SANDAG identified the following framework of three goal areas and associated measures for evaluating the comparative impact of the 2021 RTP/SCS on social equity focus populations.

Fast – accessibility and safety of the transportation system for people, no matter which mode they choose to use, as measured by the number/percentage of population within .5 mile of rail and rapid transit

Fair – access the system provides to jobs, education, and activities

⁶⁷ California Transportation Commission. *2017 Regional Transportation Plan Guidelines for Metropolitan Planning Organizations*. (January 2017).

⁶⁸ SANDAG, 2021 RTP/SCS, *Appendix H: Social Equity: Engagement and Analysis*

⁶⁹ SANDAG uses the US Census definition, including Black, Hispanic, Asian American, and American Indian and Alaskan Native (see plan Appendix H, page H-2).

1. Percent of working-age population who can access employment centers via transit
2. Percent of population 18 years of age or older that can access higher education via transit
3. Benefit-cost to drivers and transit riders
4. Change in percentage of income consumed by out-of-pocket transportation costs

Clean – environmental and health impacts of the network

1. Percent of population with 30-minute access to medical facilities/healthcare and 15-minute access to active parks, and retail
2. Average particulate matter 2.5 exposure per person
3. Percent of population within .25 miles of a bike facility

For each performance measure, SANDAG calculated the percentage differences between the 2021 RTP/SCS and the No-Build scenario for years 2025, 2035, and 2050, for each identified disadvantaged and non-disadvantaged population. Percentage point differences between the groups were then calculated. Percentage differences of more than 20 points in the calculation were considered a potential disparate impact or disproportionate effect. If a potential disparate impact or disproportionate effect was found, SANDAG would have considered alternatives and mitigation to reduce the impact/effect. No disparate impact/disproportionate adverse affect was found.

Access to Transportation Choice Performance Measures

SANDAG’s analysis shows that access to high-quality transit improves significantly for all disadvantaged populations with the 2021 RTP/SCS. Overall, for all social equity populations, access to high-quality transit is projected to double from 2025 to 2050. Low-income populations’ benefit is greater than that of non-low-income populations in the Build Scenario. This is also the case for minority populations relative to the non-minority populations. For seniors, access to high-quality transit also improves significantly, going from 8 percent in the base year to 34.7 percent by the 2050 horizon year, but the differences between seniors and non-seniors over the life of the plan are slight.

SANDAG also analyzed changes to access to bike facilities (class I and II, cycle track, or bike boulevards) as a result of the 2021 RTP/SCS and found that the percentage of people within a quarter mile of a bike facility for all disadvantaged populations is comparable or better than that of respective non-disadvantaged populations. For example, 73 percent of low-income populations are projected to have access to a bike facility within a quarter mile in 2025, which increases to 77 percent in 2035 and 82 percent in 2050.

Accessibility to Destinations Performance Measures

SANDAG assessed transit accessibility impacts from the RTP/SCS to important destinations such as employment centers and higher education facilities. Overall, SANDAG's analysis shows that access to any employment center (within a 30-minute travel time via transit) for low-income and minority populations is relatively high at 86.9 percent and 84.9 percent respectively in the 2016 base year. The 2021 RTP/SCS increases access for both of these populations in 2025, 2035, and 2050. No significant disparate impacts or disproportionate effects were identified for these populations compared to non-low-income and non-minority populations.

With respect to transit access to higher education for disadvantaged populations, SANDAG found the 2021 RTP/SCS improves access over time, and that low-income and minority populations start with significantly higher access in the 2016 base year than their respective non-disadvantaged populations and are projected to continue to achieve higher access rates through the plan phase and horizon years.

In addition, SANDAG analyzed the plan's impact on access to key amenities, specifically, percentage of population within 30 minutes of medical facilities via transit, within 15 minutes of parks, and within 15 minutes of retail via walk, bike, or transit. Results show that the plan will substantially increase the region's disadvantaged populations' access across all three indicators, especially via transit. No significant disparate impacts or disproportionate effects were identified for disadvantaged populations compared to non-disadvantaged populations.

SANDAG also looked at the percentage change of income consumed by out-of-pocket transportation costs (e.g., auto operating costs, cost of tolls, parking costs, taxi and transportation network company fares, and transit fares) as a result of the plan and found that the cost stays relatively constant for all populations through the term of the plan. No significant gap in percentage point differences were identified for any of the disadvantaged groups. For low-income populations, the change in percentage of income consumed by these costs decreases from 5.1 percent in 2025 to 4.4 percent in 2050 with the plan, while it increases for non-low-income populations. For minority populations, the percent change remains nearly the same in 2025 and 2050. No significant disparate impacts or disproportionate effects were identified for these populations compared non-low-income and non-minority populations.

Health and Environment Performance Measures

SANDAG's equity analysis also looked at the human health and environmental effects of PM2.5 pollution exposure from the 2021 RTP/SCS, measured by grams per person per day. The results show a slight increase in pollution exposure with the 2021 Regional Plan, but less than the No-Build Scenario. When comparing the disadvantaged populations to their respective non-disadvantaged populations, the social equity calculations indicate that disadvantaged populations fare better, with

low-income populations projected to have less of an exposure increase relative to non-low-income populations. In terms of minority populations, minority populations are projected to be almost at parity in 2025 relative to non-minorities and will receive less exposure relative to non-minorities in 2035, but return to close to parity in 2050. The social equity analysis for PM2.5 did not show any disparate impacts or disproportionate effects for disadvantaged populations in the region.

Public Outreach and Engagement

To guide public participation and public involvement in the development of the 2021 RTP/SCS, SANDAG was guided by both its Public Participation Plan (PPP)⁷⁰ and the 2021 Regional Plan's Public Involvement Plan (PIP),⁷¹ which outlines tactics and strategies to coordinate outreach, input, and communications efforts. A tribal consultation plan was also developed in parallel for this project.⁷²

For the 2021 RTP/SCS, SANDAG developed a partnership program in its PIP with community collaboratives and community-based organizations (CBOs) in vulnerable areas around the region. At the beginning of the planning process for the 2021 RTP/SCS, 13 CBOs and collaboratives from around the San Diego region were selected to partner with SANDAG to create a community-based network as part of the planning process. The network was selected based on identification of the most vulnerable 25 percent of communities on the environmental/socioeconomic vulnerability scale using CalEnviroScreen. This network worked closely with SANDAG staff throughout the plan development process, holding regular monthly meetings to learn about the process, share insights, develop outreach strategies for engaging communities, contribute to the social equity analysis, coordinate outreach, and bring community input into the process at key milestones. At the same time, SANDAG brought together a public social equity working group made up of executive-level staff from each CBO partner to help provide a social equity perspective on key elements of the plan and to contribute to the social equity analysis through a public forum focused on social equity in the plan.

Part of the work of the CBO network and SANDAG was to conduct a CBO mobility needs assessment, to evaluate needs and opportunities for 2021 RTP/SCS projects in historically underserved communities through a representative community engagement process. The assessment included implementation of a community survey in 2020 to gain deeper insight into the barriers to transportation access and evaluate the impacts of the COVID-19 pandemic on the use of and willingness to use transportation services. The survey and highlighted several considerations for making

⁷⁰ For more information see: SANDAG, 2021 RTP/SCS, [Appendix G: Public Involvement Program](#).

⁷¹ For more information see: SANDAG, 2021 RTP/SCS, [Appendix G: Public Involvement Program](#).

⁷² For more information see: SANDAG, 2021 RTP/SCS, [Appendix I: Tribal Consultation Process: Communication, Cooperation, and Coordination](#).

the solutions envisioned in the 2021 RTP/SCS to be successful and meet community needs especially around new mobility options.⁷³

⁷³ For more information see SANDAG, 2021 RTP/SCS, [Appendix H Attachment 2: Community-Based Organization Mobility Needs Assessment Summary](#).