APPENDIX E. SB 375 Program Background

Appendix E. SB 375 Program Background

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

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

A. MPO Regions in California

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

Figure 1: MPO and non-MPO Boundaries

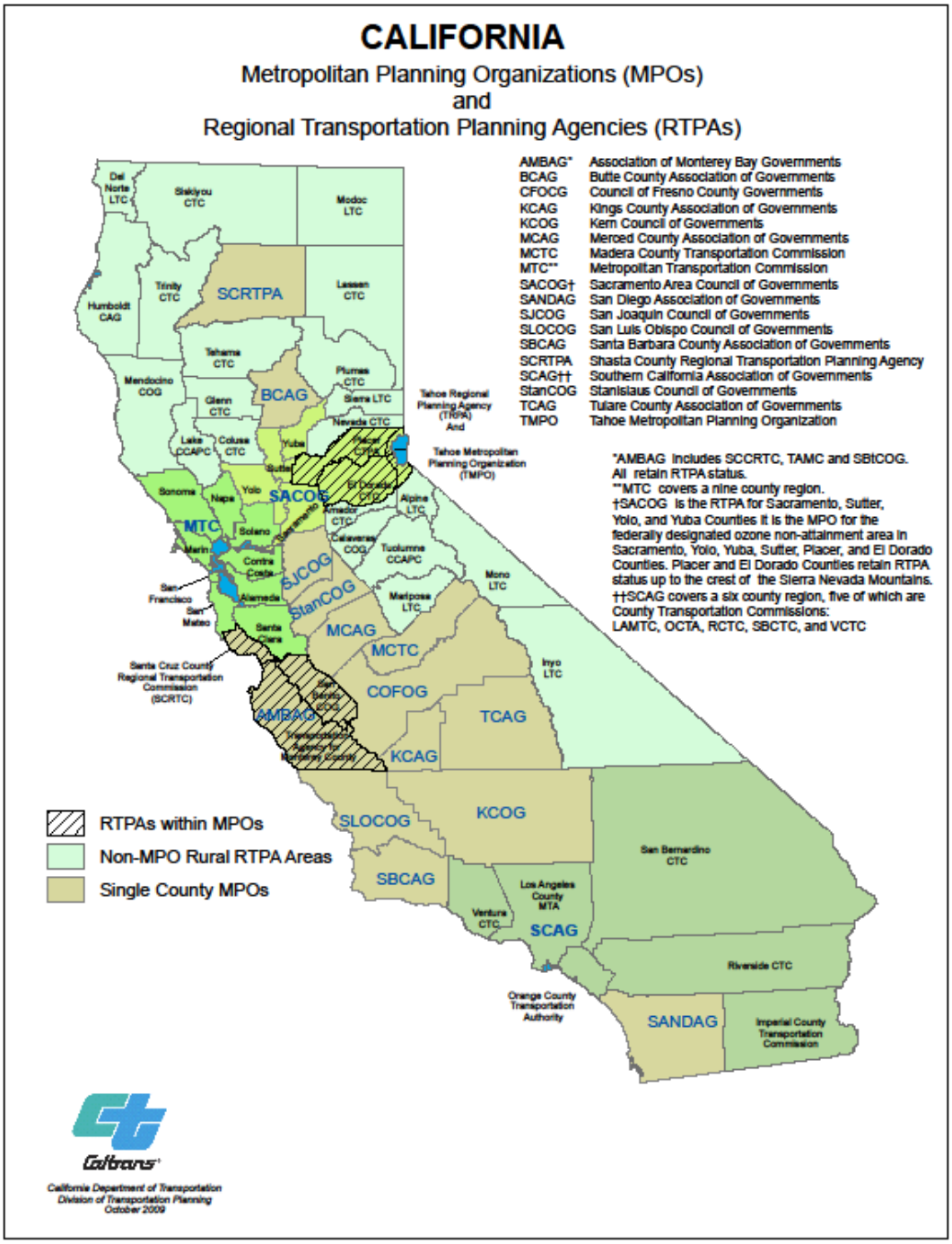
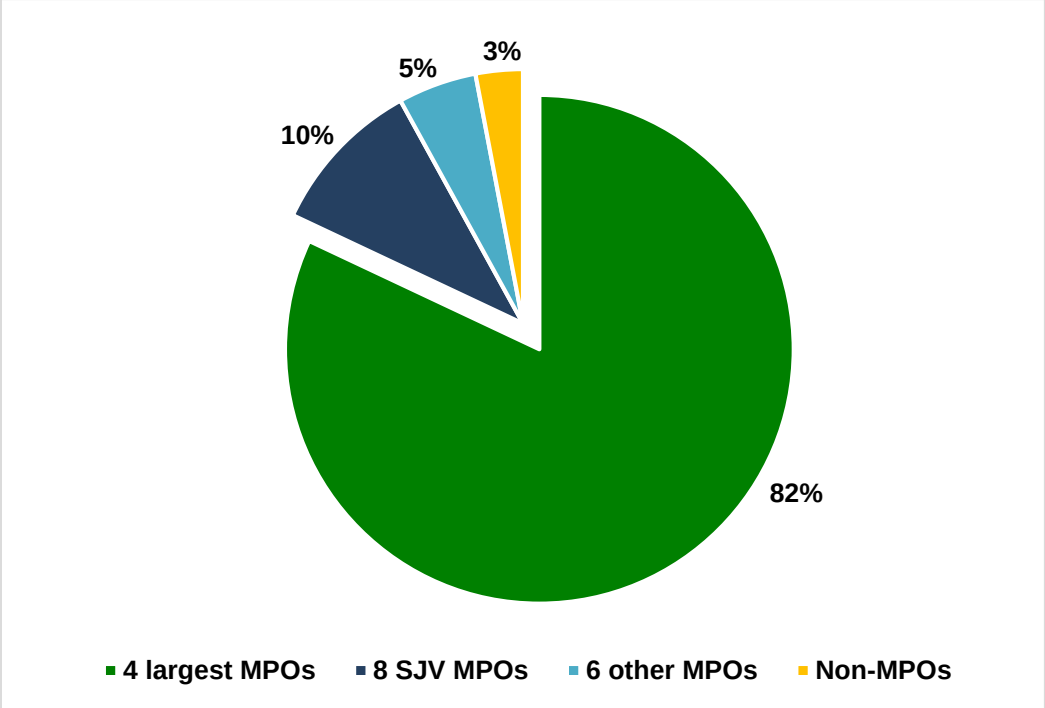


Table 1: 2015 Population by MPO Group

MPO	2015 Population	% of Total
4 Largest MPOs	**32,004,000**	**82%**
MTC/ABAG	7,571,000	20%
SACOG	2,418,000	6%
SANDAG	3,264,0000	8%
SCAG	18,781,000	48%
San Joaquin Valley MPOs	**4,149,000**	**11%**
Fresno COG	975,000	3%
Kern COG	880,000	2%
Kings CAG	150,000	0.4%
Madera CTC	155,000	0.4%
Merced CAG	269,000	0.7%
San Joaquin COG	724,000	2%
Stanislaus COG	535,000	1%
Tulare CAG	462,000	1%
Smaller MPOs		**5%**
AMBAG	763,000	2%
Butte CAG	224,000	1%
Santa Barbara CAG	443,000	1%
Shasta RTA	179,000	0.5%
San Luis Obispo COG	276,000	1%
Tahoe MPO		
Non-MPOs	**839,000**	**2%**

Source: California Department of Finance, Report E-1

Figure 2: Percent of Statewide Passenger Vehicle GHG Emissions by MPO Category



The Federal-Aid Highway Act of 1962 originally established the requirement that transportation planning occur at the regional scale because there are broader societal goals that are a direct result of the performance of the transportation system, and are best addressed at the regional level. Thus, MPOs were created to develop strategies for operating, managing, maintaining, and financing the area's transportation system in a way that advances the area's long-term goals. Transportation planning and land use planning became even more closely linked in California following the passage of SB 375. Key goals in the transportation planning process include air quality, natural resource protection and conservation, social equity, jobs/housing balance, economic development, safety, security, and now GHG emission reductions, as a result of SB 375.[1]

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

B. What is an SCS?

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

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

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

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

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

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

C. Current SB 375 Targets and Existing SCSs

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

To date, all 18 MPOs have adopted their first SCSs pursuant to SB 375, 17 of which indicate that they meet or exceed their 2010 CARB-adopted GHG emission reduction targets. MTC/ABAG, SCAG, SANDAG, SACOG, Butte CAG, Santa Barbara CAG, and Tahoe MPO have also adopted their second SCSs. CARB staff has completed over 20 evaluations to verify that MPO-adopted SCSs would meet their per capita GHG emission reduction targets, if the SCSs were implemented. Several MPOs are now in the process of preparing their second and third SCSs, and are focused on implementing their first SCSs. Table 8 below summarizes the existing targets and the anticipated performance of the adopted SCSs prepared, to date, by the MPOs.

Table 2: Summary of SB 375 Targets Set in 2010 and Prior SCS Anticipated Performance

MPO	CARB Established Target[1]		First SCS Anticipated Performance[2]		1st RTP/SCS Adoption	Second SCS Anticipated Performance		2nd RTP/SCS Adoption
	2020	2035	2020	2035		2020	2035	
MTC/ABAG	-7%	-15%	-10%	-16%	July 2013	-14%*	-15.5%*	July 2017
SACOG	-7%	-16%	-10%	-16%	Apr. 2012	-8%	-16%	Feb. 2016
SANDAG	-7%	-13%	-14%	-13%	Oct. 2011	-15%	-18%	Oct. 2015
SCAG	-8%	-13%	-9%	-16%	Apr. 2012	-8%	-16%	Apr. 2016
Fresno COG	-5%	-10%	-8.5%	-10.5%	June 2014	TBD	TBD	2018
Kern COG	-5%	-10%	-9%	-13%	June 2014	TBD	TBD	2018
Kings CAG	-5%	-10%	-5.1%	-12.1%	July 2014	TBD	TBD	2018
Madera CTC	-5%	-10%	At least -5%	At least -10%	July 2014 - Amendment 2017	TBD	TBD	2018
Merced CAG	-5%	-10%	-10.1%*	-12.7%*	Sept. 2014 Amended May 2016	TBD	TBD	2018
San Joaquin COG	-5%	-10%	-12%	-14%	June 2014	TBD	TBD	2018
Stanislaus COG	-5%	-10%	-12%	-14%	June 2014	TBD	TBD	2018
Tulare CAG	-5%	-10%	-13%	-15%	June 2014	TBD	TBD	2018
AMBAG	0%	-5%	-3.5%	-5.9%	June 2014	TBD	TBD	2018
Butte CAG	1%	1%	-2%	-2%	Dec. 2012	-6%	-7%	Dec. 2016
San Luis Obispo COG	-8%	-8%	-9.4%	-10.9%	Apr. 2015	TBD	TBD	2019
Santa Barbara CAG	0%	0%	-10%	-15%	Aug. 2013	-13%	-17%	Aug. 2017
Shasta RTA	0%	0%	-4.9%	-0.5%	June 2015	TBD	TBD	2018
Tahoe MPO	-7%	-5%	-12%	-7%	Dec. 2012	-8.8%*	-5%*	Apr. 2017

* Indicates an SCS that is adopted by the MPO but not evaluated by CARB

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

[2] The term "performance" refers to the MPO's estimate of per capita GHG emission reductions that would be achieved if the SCS were implemented.

D. Opportunities and Barriers for Stronger SB 375 Targets

Under SB 375 MPOs are responsible for selecting the appropriate combination of GHG emissions reduction strategies for their RTP/SCSs. Local land use decisions are an essential piece to achieving GHG emission reductions for the purposes of SB 375, and the authority to implement land use-related SCS strategies remains with the local land use agencies—the cities and counties. While many MPOs and jurisdictions report improved planning coordination, ultimately, most MPOs' most significant opportunity to influence the outcome of local land use decisions is through programming funding for transportation infrastructure. MPOs also create Regional Housing Needs Allocations consistent with the land-use pattern in their SCS, and many MPOs demonstrate other forms of leadership as well. It then takes several years to update local general plans and zoning codes to reflect more sustainable land use planning, followed by several more years to affect land use changes on individual parcels. The elapsed time to affect land use change at the regional scale is on the order of several decades.

This suggests that the MPOs are limited in their ability to achieve substantially greater GHG emission reductions where it extends beyond their authority. However, the transportation projects identified in SCSs influence the distribution of population and employment growth in a region, and associated land use changes.[2] Therefore, it is important for more sustainable transportation planning and land use decisions to be initiated now so they begin to take effect within the planning time horizons.

Setting higher GHG emissions reduction targets alone will not necessarily lead to greater GHG emission reductions. Local and regional agencies will need to make investments, update land use plans and zoning codes, and adopt new land use and transportation policies. This requires time, resources, and public support. MPOs can provide essential leadership and technical support, including by working with regional stakeholders to create RTP/SCS plans that identify how policymakers throughout each region can work together to achieve the necessary GHG emission reductions.

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

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

1. Resources for Implementation

MPOs and local governments need funding in sufficient amounts to support SCS implementation and to achieve GHG emissions reductions. Traditional revenue sources have declined as fleet fuel efficiency has improved and the federal fuel excise tax (i.e., the gas tax) has not been raised in 20 years. As a result, the State Transportation Funding Improvement Program (STIP) has collapsed, and MPOs report that they cannot count on the traditional funding source they relied on when budgeting for projects in their last RTP/SCSs. Congress and the State Legislature continue to look for solutions.

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

One challenge that MPOs regularly face is the need to make assumptions about future funding sources. Some funding sources used to meet SB 375 goals are awarded on a competitive basis through grant funding cycles (e.g., Caltrans' Active Transportation Program grants, Strategic Growth Council's Affordable Housing and Sustainable Communities grants, and the U.S. Department of Transportation's Transportation Investment Generating Economic Recovery grants, just to name a few). While providing funds through competitive programs can have value, it also creates uncertainty and requires that staff time be spent applying, which among other issues can disadvantage smaller agencies. Complementing competitive sources with stable, long-term sources of funding for sustainable transportation planning and construction, transit operations, maintenance of active transportation infrastructure, affordable housing, infill development planning and implementation, safe routes to schools and transit education programs, and more would be a useful step to accelerate regional progress.

Some jurisdictions have implemented local self-help tax measures to secure additional reliable revenue streams. These sales tax measures can be highly flexible to help fulfill a region's priorities and advance SB 375 goals. However, individual jurisdictions have their own identities and priorities, which influence the lists of projects that are input in to their sales tax measures and ultimately in their RTP/SCS. Similarly, significant funding in some RTP budgets also comes from private land developers, and this funding may be marked for specific roadway capacity projects serving new development. The transportation and land use priorities of the local jurisdictions may occasionally conflict

with an MPO's regional priorities identified in the RTP/SCS. This practice also has implications for the SB 375 targets that could be a factor leading to a wide range of targets among the MPOs.

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

2. Broadening Technology and Mobility Choices

The transportation system is undergoing a transformation and may not be recognizable 15 to 20 years from now. However, currently accepted modeling methods cannot capture the effects of a system not yet understood. For example, will proliferation of autonomous vehicles result in an increase or a decrease in VMT? Early efforts to model autonomous vehicles in an MPO's travel demand model generally concluded that autonomous vehicles would reduce the cost of travel time, which would increase total VMT.[3] Autonomous vehicles may also present opportunities for increased vehicle

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

efficiency associated with improved traffic flow conditions and manufacturing from lighter materials. Models for deploying autonomous vehicles as shared vehicles rather than under the traditional individual ownership model may present opportunities for reduced travel demand, but more research is needed. Autonomous vehicles will not be widely available for several more years, and their true impact on VMT may not be known for several years after that time. However, the probability is high that autonomous vehicles will be present in the 2035 vehicle fleet. MPOs are working hard to collect data and are beginning to study the impacts of emerging technologies and system changes, but they need more evidence to draw conclusions.

The body of knowledge through research is growing on the effects of shared-use mobility services[4] on auto-ownership and willingness to travel, and the associated effects on VMT. MPOs' travel demand models are not yet capable of reflecting these options as mode choices. Because these new modes appear to be having an impact on auto-ownership (delaying vehicle purchase and foregoing vehicle ownership),[5] there is an opportunity for MPOs to achieve greater GHG reductions than can presently be modeled. There is some uncertainty on the permanence or persistence of shared-mobility options, but the rapid increase in popularity of these new mobility options is compelling.

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

CARB staff actively encourage MPOs to include additional innovative strategies each time they update their RTP/SCS, where feasible and applicable to their regions. Staff strongly encourage MPOs to, at a minimum, maintain the per capita GHG emission reductions demonstrated by their current SCSs, and provided resources to develop

[4] Examples include car-sharing, on-demand ride-sharing or carpooling services such as UberPool and Lyft Line, and cell phone application-based transportation services, such as Ride Scout.
[5] Shaheen, et. al. 2015. Mobility and the Sharing Economy: Impacts Synopsis. Shared---Use Mobility Definitions and Impacts, Special Edition. Transportation Sustainability Research Center.

methods to quantify additional GHG emission reductions outside of MPO models. CARB staff compiled a menu of off-model SCS strategies for MPOs to manually quantify GHG emission reductions from those strategies. This tool can be used during this interim timeframe while MPO travel demand models are not sensitive to certain strategies. CARB staff recommends that MPOs incorporate the future impacts of new and emerging technologies on the available mode choices, cost of travel time, auto-ownership, and other affected components of their travel demand models when they update their models.

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

3. Demographics

Shifting demographics and demographic preferences play an important role in the SCS development process as it influences travel behavior and VMT. Particular interest has been paid to the travel behavior, preferences, and patterns of millennials or members of "Generation Y," since they are increasingly reported to behave, and travel, differently from previous generations at the same stage in life. Recent research and data show that the millennial generation postpones the time they obtain a driver's license, often live in urban locations and do not own a car, drive less if they own one, and use alternative travel modes more often[6]. If millennials' travel choices and preferences hold as they

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

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

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

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

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

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

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

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

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

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

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

Several research projects are underway to better characterize how travel behavior and patterns may be changing with changes in demographics. As this information becomes available, there is an opportunity to incorporate shifting preferences into SCS strategies with potential to obtain further GHG emission reductions. For example, if millennials prefer higher density housing closer to the urban core, this supports more infill development and higher residential and commercial densities. Transit expansion and active transportation opportunities can also lead to a reduction in car ownership and auto-dependency, and the millennial generation is more likely to adopt new technologies and emerging mobility options like ridesourcing and ridesharing.

4. Cost of Driving

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

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

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

5. Modeling Capabilities

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

Some of the key limitations of MPOs' travel demand models with respect to SB 375 are that the models do not fully capture induced growth or induced or latent demand from new roadway capacity. In particular, the models do not contain feedback processes that influence trip generation and long-term population and employment distribution associated with changes to the transportation network. Adding roadway capacity measurably increases vehicle travel in both the short-term and long-term.[7] Some MPOs' travel demand models are sensitive to the change in time-cost of travel associated with adding capacity, which can result in increased VMT. However, MPOs' models do not respond to the long-term, dynamic effects roadway capacity has on land use change, or induced growth. Instead, the land use distribution assumptions and regional control totals (population and employment assumptions) are fixed inputs into the travel models. Travel forecasting models and processes to account for induced travel and induced growth should be modified to account for these factors to better reflect the full impact of transportation and land use policies on a region.

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

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

6. Local Actions

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

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

7. New State Vehicle Miles Traveled Reduction Strategy

As part of the State's latest proposed Scoping Plan Update, the Administration also recently laid out its priorities for supporting local agencies on vehicle travel reduction going forward. CARB staff and our sister State agencies have discussed and recommended the following set of new State actions in the Scoping Plan Update to reduce VMT:[8]

- Developing and expanding funding and financing mechanisms and incentives for infill development and related infrastructure (e.g. low-VMT housing rebate, reduced parking requirements, regional transit-oriented development funds, etc.). Connect to incentives/support for regional land conservation strategies (e.g. transfer-development rights, growth boundaries, etc.).

- Improving performance measures used to plan and select transportation facilities to ensure projects help to achieve emission reductions, and increase competitiveness of transit and active transportation modes (e.g. via guideline documents, funding programs, project selection, etc.).

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

- Expanding investments in transit and active transportation, as well as exploring opportunities for increasing shared mobility transportation options, particularly for automated vehicles.

- Developing pricing policies (e.g. low-emission vehicle zones for heavy duty, road user, parking pricing, transit discounts).

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

8. Regulatory Changes to Support Infill and Transit Oriented Development

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

E. Additional Considerations

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

1. Social Equity

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

communities. CARB is committed to making the achievement of environmental justice[9] an integral part of its activities, including the SB 375 program.

To begin to address concerns around infill and neighborhoods with transit proximity on disadvantaged communities, CARB and Caltrans have sponsored research projects to help study the impacts. One study examined displacement in fixed-rail transit neighborhoods in Los Angeles and the San Francisco Bay Area.[10] Researchers at UC Berkeley modeled patterns of neighborhood change in relation to neighborhoods with transit proximity, and found that neighborhoods that already had good access to fixed-rail transit were associated with changes in the stability of the surrounding neighborhood, such as increases in housing costs and the loss of low-income households. The research found mixed evidence as to whether gentrification and displacement in rail station areas would increase auto usage and VMT. Overall, the study results support the importance of evaluating displacement and anti-displacement strategies when developing SCS policies and investments. It examines the effectiveness of anti-displacement strategies, with results that may be useful for MPOs, local jurisdictions, and communities; as well, it explores ways to evaluate displacement with existing travel demand models used by the Southern California and Bay Area MPOs, and developed new off-model tools. CARB staff anticipates incorporating these findings into future SCS evaluation processes.

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

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

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

2. Performance Indicators

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

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

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