California Air Resources Board

Staff Report

Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets

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June 2017

California Environmental Protection Agency

Air Resources Board

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

I. Introduction

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

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

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

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

The proposed targets identified in this report were developed through a coordinated analysis of what would be necessary to achieve the State's ambitious climate and air quality goals (a "top-down" process) and MPO target recommendations (a "bottom-up" process) as inputs. CARB staff attempted to strike a balance between the bottom-up and top-down inputs and propose a set of targets that would meet the objectives defined by SB 375, principles established by the Board during adoption of the original targets in 2010, recommendations in the proposed 2017 Climate Change Scoping Plan

Update (Scoping Plan Update), and experience gained from SB 375 implementation to date.

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

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

II. SB 375 Target Update Context and Objectives

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

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

- **SB 375 law.** CARB must consider changes in GHG emission reductions resulting from improved vehicle emission standards, changes in fuel consumption, and other measures that will reduce GHG emissions as part of the target update process. SB 375 also requires consultation between CARB, the Department of Transportation, MPOs, local governments, affected air districts, and public and private stakeholders.

- **CARB's 2010 Final Target Setting Staff Report and Board Resolution 10-31.** The final staff report and associated Board Resolution for the 2010 SB 375 target setting process state that targets should be set to achieve a balance between goals that motivate further positive planning and action toward more sustainable communities, but not be out of reach for regions and local governments. Target updates should consider updated technical data/forecasts, advancement of technical tools and methods, measures of achievement of emission reductions, as well as advances in the measurement of co-benefits. [1]

- **CARB's 2017 Climate Change Scoping Plan Update.** The Scoping Plan Update identifies a reduction in vehicle miles travelled (VMT) as a necessary part of the statewide strategy to achieve California's 2030 statewide emission target. VMT reduction is to be achieved, in part, through more stringent SB 375 targets

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

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

Furthermore, since the Board originally set SB 375 targets in 2010, regions across the State have developed and adopted over 18 regional plans containing SCSs, which generated many lessons learned along the way for consideration. These lessons are reflected in numerous positive changes as part of SCS planning processes, including:

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

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

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

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

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

- Update targets with the most recent technical data, forecasts, and other information provided by the Department of Transportation, MPOs, local governments, affected air districts, and public and private stakeholders.

- Account for advancement of technical tools and methods, such as consistent standards for data and modeling assumptions, model improvements, and measures of achievement of emission reductions.

- Further the objectives set forth in SB 32 and Executive Order B-30-15, specifically targets that would, if implemented, result in greater GHG emission reductions compared to reductions that what would be achieved under currently adopted SCSs. Targets would contribute to achieving the overall statewide GHG emission reduction target of 40 percent below 1990 levels by 2030, as well as support achievement of our statewide public health and air quality objectives.

- Achieve a balance between goals that motivate further positive planning and action toward more sustainable communities that foster co-benefits such as improved public health outcomes, more mobility choices, more housing choices, and resource and land conservation; and remain within the reach of regions and local governments.

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

III. Target Update Process

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

A. Planning and Technical Consideration Changes Since 2010

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

- **New executive and statutory directives on State climate commitments.** The Governor's Executive Order B-30-15 and SB 32 (Chapter 249, Statutes of 2016) established more aggressive statewide GHG reduction goals (40 percent below 1990 levels by 2030) than were in place when the SB 375 targets were first set in 2010. CARB's analysis shows the need for greater emission reductions from all sectors, including passenger vehicle travel, of which SB 375 is an integral part.

- **State air quality commitments.** The federal Clean Air Act requires the State and local air districts to prepare State Implementation Plans demonstrating how the State will attain increasingly stringent air quality standards by specified dates. In March 2017, CARB adopted the State Strategy for the State Implementation Plan, a 15-year plan that outlines the strategies needed to attain the current standards in the two areas of the State with the most critical air quality challenges – the South Coast and the San Joaquin Valley air basins. The strategy includes further reduction in growth of VMT, through SB 375 and other complementary efforts.[3]

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

- **Resources to implement sustainable communities projects.** Funding for building and maintaining sustainable communities transportation and landside infrastructure projects continue to be a challenge. However, the State has recently directed new funding through SB 1 Transportation Funding, Greenhouse Gas Reduction Fund Transformative Climate Communities Program, and Volkswagen Settlement, that should support and incentivize greater SB 375 emission reductions.

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

- **Broadening technology and mobility choices.** Our transportation system is changing through proliferation of new vehicle technologies, fuels, and mobility choices. These mobility choices, if deployed correctly, present an opportunity to achieve greater GHG emission reductions through SB 375 targets.

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

- **Modeling tool capabilities.** The modeling tools local agencies are using to quantify GHG emission reductions and other co-benefits from SB 375 strategies have continued to improve and provide decision makers with better information on the potential impacts of their land use policy and transportation investment choices. While the data and models still do not completely capture all the benefits or consequences of these strategies, their continued improvement is

anticipated to enable many MPOs to demonstrate the ability to achieve greater SB 375 GHG emission reductions, as well as improve strategies to reduce VMT.

- **Local actions.** Many cities and counties have taken action to set GHG reduction targets, develop climate action plans, and make progress toward reducing emissions since SB 375 targets were set. In some cases, these have included strategies consistent with the region's SCS to support SB 375 emission reductions. The Scoping Plan Update recommends local governments aim to achieve a community-wide goal consistent with the statewide emission limits, and the Under 2 MOU. Efforts to update and implement local plans at these levels are anticipated to further support achievement of greater GHG emission reductions through SB 375.

- **New State vehicle miles traveled reduction strategy.** As part of the State's Scoping Plan Update, the Administration also recently laid out its priorities for supporting local agencies on vehicle travel reduction going forward. Actions include developing and expanding funding and financing tools for infill development and related infrastructure, adjusting performance metrics used to select and design transportation projects, expanding investments in transit and active transportation, and developing pricing policies. All of these measures will complement and support further achievement of greater GHG emission reductions through SB 375.

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

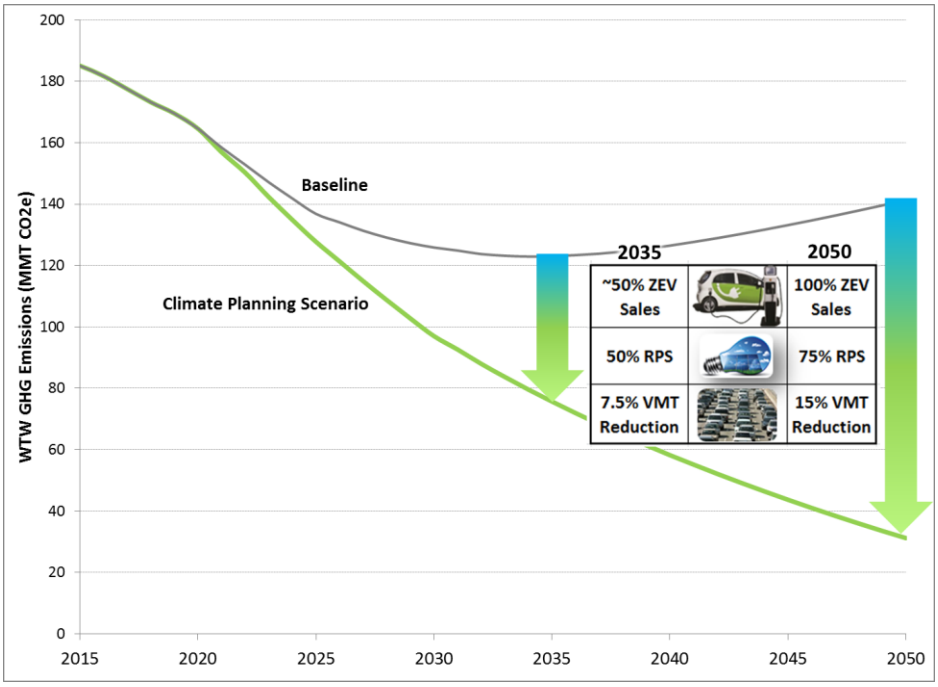
B. Top-Down Analysis: Achieving the State's Climate and Air Quality Goals

As mentioned earlier, climate and air quality policy has evolved since the SB 375 targets were established in 2010. Specifically, CARB has since been tasked with implementing SB 32 (Chapter 249, Statutes of 2016), which establishes a more aggressive statewide GHG reduction goal (40 percent below 1990 levels by 2030) than was in place when the SB 375 targets where first set in 2010. There is also the ongoing need to meet federal air quality standards that provide essential public health protection. Statewide, approximately 12 million Californians currently live in communities that exceed the federal standards for ozone and fine particulate matter (PM2.5). The two areas with the most critical air quality challenges include the South Coast region, and the San Joaquin Valley.

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

At the same time, the plan recognizes that targets are only one of many measures the State must take to meet its transportation sector goals. The Scoping Plan Update includes substantially greater increases in sales of zero-emission vehicles (ZEVs) compared to current requirements, greater increases in fuel efficiency standards for gasoline vehicles compared to current requirements, and a reduction in statewide VMT compared to currently adopted SCSs. While most of the GHG reductions from the transportation sector will come from technologies and low carbon fuels, reduction in the growth of VMT is also necessary. Figure 1 illustrates the combined contributions of GHG emission reductions envisioned for the passenger vehicle sector. The blue segment represents the GHG emission reduction contribution from VMT, which is a comparatively smaller share than the GHG emission reductions called for by advances in technology and fuels.

Figure 1: Statewide On-Road GHG Emissions



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

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

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

Bridging the gap will require a combination of increased SB 375 targets and new State VMT reduction actions. As part of the Scoping Plan Update, CARB staff and our sister

State agencies have included the following recommended new State-level strategies to reduce VMT that we are beginning the process to pursue:[4]

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

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

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

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

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

C. Bottom-Up Analysis: MPO Target Recommendations

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

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

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

CARB staff also asked the MPOs to explore the impact of demographic changes in their regions – the millennial effect. The four MPOs submitted their findings to CARB staff in March 2017. The tests indicated that additional GHG reductions in 2035 may be achieved from land use changes, transportation investment, and technology strategies, and provided ranges of magnitude for some of the policy lever areas above.

As part of this work, the four MPOs identified several barriers to realizing the full benefits of the test ranges reported. They noted that all assumptions tested would require either additional revenue sources and or regional/State/federal rule or guidance changes. In particular, current transportation spending formulas and allocations provide little flexibility to shift funding to more sustainable transportation projects. The MPOs also cited concerns with testing further deployment of some of these policy levers at all, as they may present issues related to social justice, such as displacement and inequitable transportation cost burden.

Furthermore, all four MPOs identified challenges with maintaining the GHG reductions they had previously estimated would come from their currently adopted plans, primarily due to significant changes in forecasts for clean vehicle fleets. As passenger vehicle fleets get cleaner through increased fuel efficiency, the cost of driving decreases, and can lead to more driving, as well as lost gas tax revenues for funding transportation improvements.

Based on these findings and discussions with their Boards, all four of these MPOs submitted target recommendations to CARB in May 2017 of an 18 percent reduction from 2005 levels by 2035.

The eight Valley MPOs submitted target analysis information using preliminary results from their most recent model improvement effort. This work utilizes the most recent Census, American Community Survey, California Household Travel Survey data, as well as implements changes to the model structure based on CARB feedback received during their last SCS evaluation period.

The Valley MPOs' preliminary results suggest a more accurate estimate of what their currently adopted plans would achieve, if implemented. For some Valley MPOs, this is close to a 40 percent drop from what the MPOs estimated and reported in their currently adopted SCSs, but more in line with what CARB sensitivity testing previously indicated during the SCS review process.

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

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

D. Public Engagement

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

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

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

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

IV. Staff Recommendation for SB 375 Target Updates

CARB staff recommendations are designed to strike a balance between the bottom-up analysis provided by the MPOs and CARB's top-down analysis to propose a set of targets that meet all the identified objectives. This set of proposed targets calls for greater per capita GHG emission reductions from SB 375 than are currently in place, which for 2035, translate into proposed targets that either match or exceed the emission reduction levels contained in the MPOs' currently adopted SCSs.

SB 375 calls for CARB to set GHG emission reduction targets in any metric deemed appropriate by CARB. The SB 375 targets are in units of percent per capita reduction in GHG emissions from automobiles and light trucks relative to 2005, this excludes reductions anticipated from implementation of State technology and fuels strategies, and any potential future State strategies such as statewide road user pricing. CARB staff believes that to achieve the intent of the legislation and to maximize community co-benefits, the per capita GHG emission reduction targets should be achieved predominantly through strategies that reduce VMT.

As proposed, CARB staff's proposed targets would result in an additional reduction of greenhouse gas emissions of over 10 million metric tons of CO2 per year in 2035 compared to the current targets.

CARB staff recommendations for the individual MPO region targets pursuant to SB 375 are described in the following sections. See Appendix A. MPO Target Recommendations and CARB Staff Recommendations for additional detail.

A. Proposed Targets for Year 2020

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

Table 1: 2020 Target

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

B. Proposed Targets for Year 2035

The target update process is most heavily focused on updating the 2035 target. CARB staff considered a number of factors in its assessment of what might be ambitious and achievable by 2035 for each of the MPOs. Based on the best available information from both the MPO's recent analysis results, staff's look at the current research on potential new strategy areas, as well as new revenue sources and action commitments by the State to support further local action, CARB staff believe the weight of evidence suggests higher target levels than the current targets, and in some cases, than the target levels recommended by the MPOs are within reach. Additional opportunities and considerations include:

- **Additional and Enhanced Strategies.** It is important to note that as part of the bottom-up analysis and MPO target recommendation process most MPOs have acknowledged the potential for and committed to incorporating additional or enhanced strategies in future SCSs, compared to what is included in their currently adopted SCSs. Table 2 summarizes the strategy areas and quantitative analysis results that the four largest MPOs provided to CARB and considered in their recommendations, showing potential for additional and enhanced incorporation of land use, transit, active transportation, vehicle technology support, and enhanced mobility strategies. While quantitative values were not analyzed or provided for every policy lever area, CARB staff acknowledges the potential for additional GHG reductions in these policy lever areas.

Table 2: Summary of Quantitative Results Provided by the MPOs

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

*MPO values are not fiscally constrained

- **Additional Funding Resources and Tools.** As part of the bottom-up target recommendation process, MPOs have identified several challenges to incorporating the additional or enhanced strategies discussed above to achieve higher targets; primarily declining transportation revenue, fixed transportation spending allocations, and local authority considerations. MPOs and local agencies have identified the need for additional funding resources and tools that provide the needed incentives to add and enhance strategies and transition to a transportation system that offers true alternative mobility options. Since the time MPO target recommendations were developed, however, new funding through passage of SB 1, as well as through the Greenhouse Gas Reduction Fund Transformative Climate Communities Program, and the Volkswagen Settlement Investments, totaling over $53 billion in new funding over the next 10 years, has been identified to provide incentives for SB 375 implementation that, in most

cases, were not analyzed.[5] In addition, some jurisdictions have recently passed local tax measures that can assist in SCS implementation.

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

- **Rebound Effect.** MPOs cite a rebound effect, of increased overall driving due to increasing vehicle fuel efficiency, as a significant factor making it difficult to maintain their previous estimates of SCS GHG emission reductions. An evaluation of CARB's independent analysis of the rebound effect as part of its Advanced Clean Car Regulation[6] and U.S. EPA's Mid-Term Review[7], CARB staff expects the impact to be minimal, on the order of approximately 1 percent increase by 2035.

- **Modeling Factors.** CARB staff is committed to work with the MPOs on standardizing modeling assumptions and methods affecting target achievement calculations as part of updating CARB's methodology for reviewing emission

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

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

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

reductions from SCSs. The update will help the program better account for emission reductions, as well as provide greater certainty to MPOs that exogenous modeling factors will not detract from their ability to achieve higher targets.

Based on these considerations, CARB staff estimate that through different combinations of strategies in each region, most MPOs may be able achieve additional reductions on the order of 1 to 5 percent compared to each of their currently adopted SCSs. CARB staff's target recommendations apply this estimate differently across the regions, recognizing that regional differences continue to affect what can be achieved in each region and that different individual targets continue to be appropriate.

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

Table 3 shows the currently adopted target, estimated reductions with currently adopted plan, MPO target recommendation, and CARB staff's draft proposed target for each MPO for year 2035.

Table 3: 2035 Target

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

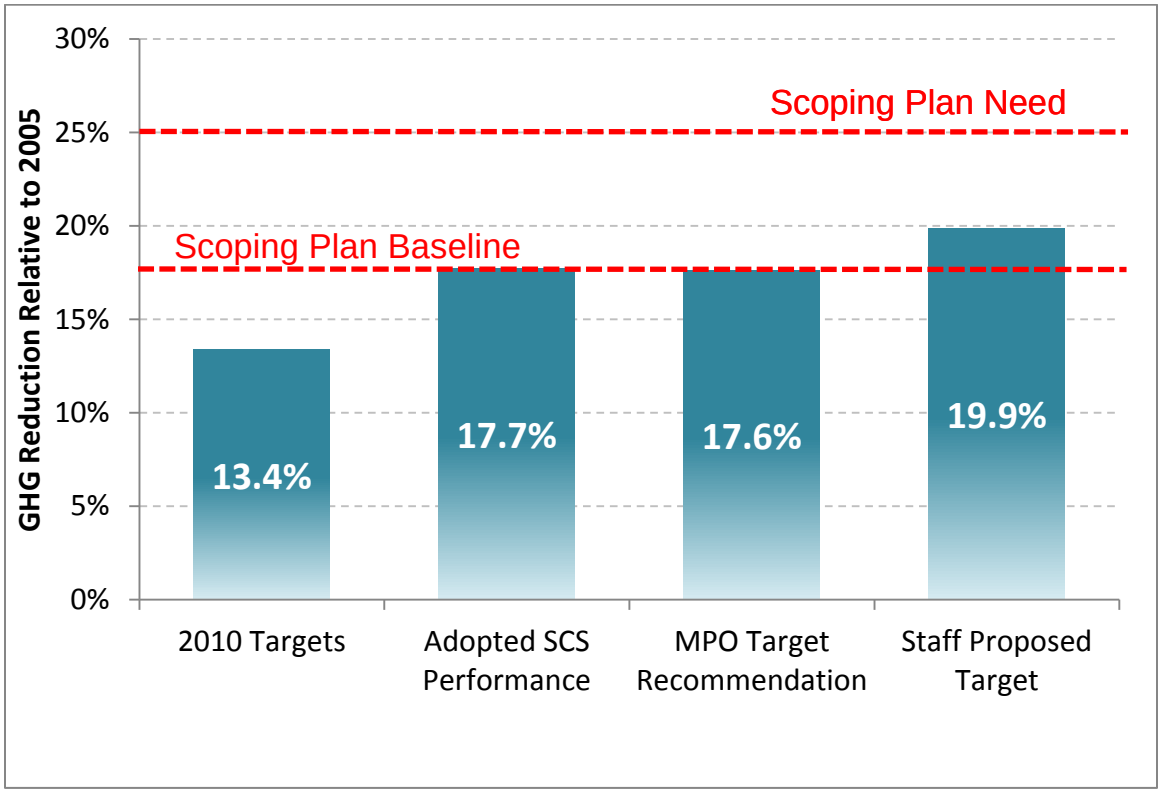
Italics indicates an SCS that is adopted but not yet evaluated by CARB
*Based on preliminary updated modeling analysis provided by SANDAG and the Valley MPOs.

At the personal travel level, CARB staff's proposed targets are equivalent to reducing VMT a half a mile per person per day. When considering a person's daily travel patterns, this would translate into individuals having the option to combine multiple different travel options, such as one bike or transit to work day a month, carpooling or vanpooling, one telecommute day a month, and biking and walking for grocery or other errands.

Figure 2 illustrates what these SB 375 target levels mean in aggregate, within the context of advancing progress toward our statutory climate and air quality goals. CARB staff's top-down analysis estimates that SB 375 and other VMT reduction strategies need to provide a 25 percent reduction in statewide per capita greenhouse gas emissions relative to 2005 by 2035 to meet these goals (shown as the "Scoping Plan Need" dashed line). CARB staff's proposed targets would achieve about 20 percent

reduction in statewide per capita GHG reduction, compared to a roughly 17 percent per capita reduction being proposed by the MPOs; the 17 percent reduction in aggregate is nearly equivalent to their currently adopted SCSs and the Scoping Plan Update baseline. Also shown, are the current SB 375 targets, which achieve about a 13 percent statewide per capita GHG reduction.

Figure 2: SB 375 Targets Relative to Scoping Plan Need



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

C. Achieving the Target Update Objectives

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

- **MPO Input.** The proposed targets use MPO generated information as the foundation for target setting. MPO baseline information, forecasts, and expertise related to what may be feasible is an important component of the target recommendation. The proposed targets are intended to achieve a balance between goals that motivate positive action, but are not out of reach for regions and local governments.

- **Best Available Information.** The proposed targets are based on analyses performed using the best available models and tools and the latest methods and data. While transportation modeling tools used to quantify GHG emission reductions from SCS strategies continue to improve, they still do not completely capture all the benefits or consequences of SCS planning. The methods and data for capturing the benefits of potential SCS strategies have and will continue to improve as well. The proposed targets recognize improvements since the last target cycle, and the likelihood that tools and methods will continue to improve in their ability to quantify SCS GHG emission reductions and other co-benefit effects.

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

V. Next Steps

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

CARB staff will present this staff proposal at a series of public workshops around the State in June 2017 to solicit stakeholder feedback and input. Concurrently, as the lead agency for the target-setting process, CARB prepared a Draft Environmental Analysis pursuant to its certified regulatory program to comply with the California Environmental Quality Act (CEQA; Public Resources Code § 21080.5). The Draft Environmental Analysis provides a programmatic level of analysis of the potential direct and indirect environmental impacts associated with updating the regional GHG targets. The analysis is based on the reasonably foreseeable compliance responses associated with the implementation of SCSs designed to achieve the regional targets. The Draft Environmental Analysis is being circulated to the public and other agencies for a 45-day review and comment, and is incorporated as Appendix E of this report.

At the same time, acknowledging the challenge ahead with ensuring appropriate funding and other incentives are in place to support achievement of more aggressive SB 375 targets, CARB staff and our sister State agencies, will convene a VMT reduction "roundtable", for State agencies, MPOs, and subject experts to identify and prioritize the necessary tools, resources, and State-level actions that will help regions implement key SCS strategies and policies that maximize GHG emission reductions, as well as co-benefits.

Following the comment period, CARB staff will revise the draft staff proposal, if appropriate, based on Board and stakeholder input received. CARB staff will also prepare a document with written responses to comments raising significant environmental issues related to the Draft Environmental Analysis and requiring a written response under CARB's certified regulatory program and CEQA, and prepare a Final Environmental Analysis. A final staff proposal, the written responses to environmental comments, and Final Environmental Analysis will be made available at least 10 days prior to presentation to the Board for consideration in the fall of 2017. If the Board adopts staff's final proposal, the new SB 375 targets would become effective on January 1, 2018.

MPOs prepare SCSs according to their respective update schedules, which mean the next set of SCSs subject to updated targets will be prepared at different times over the next four years (see Appendix C for the MPO RTP update schedule). SCSs adopted in 2018 would be subject to the updated targets.[8]

Once target updates are adopted, CARB staff plans to turn its attention to revising and updating the Technical Review Methodology to reflect technical changes since the original publication, and to make clear CARB staff's recommendations for SCS reviews subject to the new targets. CARB staff will also continue working on tracking near-term indicators of SCS implementation to provide a basis for understanding whether the intended benefits of SB 375 are beginning to accrue and are benefiting communities equitably. CARB staff will seek to engage stakeholders in both these processes through multiple forums, including: the formation of collaborative stakeholder working groups, continued regular meetings with MPO and non-governmental organization stakeholders, individual meetings with other stakeholders, as requested, as well as through periodic updates on implementation efforts at Board meetings.

While the target numbers themselves are a key focus of this staff report and SB 375 implementation, the land use and transportation strategies that underpin the SCSs are equally, if not more, important to assess the ambitiousness of the plans. Now that the SB 375 program is in its eighth year of implementation, indicators of policy change and SCS implementation are becoming available. In addition to fulfilling CARB's obligations to set targets and to determine whether SCSs achieve the targets, CARB staff plans to turn its attention to tracking near-term indicators of SCS implementation, land use change, sustainable development, and public health outcomes. The 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. See Appendix D. SB 375 Program Background for further discussion.

[8] California Air Resources Board staff expects MPOs that adopt an SCS or have a draft SCS released in 2017 to maintain good progress by outperforming their current targets, but the new targets will not officially take effect until 2018.

Appendix A. MPO Target Recommendations and CARB Staff Recommendations

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

A. The Four Largest MPOs

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

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

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

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

Table 4 below characterizes CARB staff's understanding of strategy types included in each of these MPOs most current SCSs.

Table 4: SCS Strategy Examples

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

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

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

Table 5 summarizes the strategy opportunity areas CARB staff requested the MPOs analyze for potential further reduction in future SCSs, which areas each MPO evaluated for additional reductions as part of their most recent analyses, and CARB staff's review.

Table 5: Potential GHG Target Impacts – MPO Analysis and CARB Review

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

*MPO values are not fiscally constrained

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

In Table 5, the column labeled CARB reflects CARB staff's assumptions in developing the range. Assumed potential additional reductions from Land Use, Transit, and Active Transportation are taken from the range of effect provided by the four large MPO tests. Reductions from additional or enhanced TDM/TSM, regional/local pricing, and vehicle technology are conservative low bound estimates based on the latest empirical

literature[9] and CARB staff's consideration of these types of strategies already included in these MPOs SCSs. CARB staff did not quantify or assume enhanced mobility strategies such as connected and autonomous vehicles and demographic factors as part of the target update range at this time. For estimating the rebound effect, CARB staff based its estimate on a review of the latest empirical literature.[10]

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

Furthermore, CARB and MPO staffs both consider and cite a rebound effect, of increased overall driving due to increasing vehicle fuel efficiency, as a factor that counteracts SCS GHG emission reductions. The MPO tests quantified the effect as ranging from a 1 to 5 percent increase, depending on the region. CARB's independent analysis of the rebound effect as part of its Advanced Clean Car Regulation and U.S. EPA's Mid-Term Review, as well as State commitments to develop pricing policies in the Scoping Plan Update that help counteract this effect, CARB staff assume the magnitude of impact to be no more than a 1 percent increase by 2035.

An overarching consideration to this approach has to do with the continued use and reliance on modeling to demonstrate progress in the SB 375 program. The experience

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

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

to date has been mixed, but both MPOs and CARB staff agree that part of increasing confidence in demonstrating higher target levels will be further work together to standardize modeling assumptions and methods affecting target achievement calculations, in a way that provides greater certainty that exogenous modeling factors will not detract from the ability to achieve higher targets. CARB staff is committed to this work with the MPOs as part of CARB staff's update of the methodology for reviewing emission reductions from SCSs.[11]

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

1. Metropolitan Transportation Commission/Association of Bay Area Governments

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

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

MTC/ABAG's 2013 SCS encourages growth in locally nominated "priority development areas" while preserving land in identified "priority conservation areas", resulting in the accommodation of all of the region's growth within five percent of the region's land. With SCS implementation, the region's residential density will increase by about 5 percent between 2010 and 2020, and between 2010 and 2040 it will increase by about 19 percent. The SCS replaces and expands the transit fleet and capacity and

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

incentivizes housing production near transit. The SCS also invests in several climate initiative programs that support reducing VMT and promoting cleaner fuels and technology such as: electric vehicle incentive programs, expansion of the electric vehicle charging network, vanpool incentives, and expansion of car-sharing services.

MTC/ABAG is currently developing their second SCS, which is anticipated to be adopted in summer of 2017. This plan will build upon existing strategies from the region's first SCS and will continue to address the region's housing needs, expand transportation to accommodate future growth, and maintain the existing infrastructure. The total budget for the draft RTP/SCS is $303 billion in 2040 dollars.

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

The next RTP/SCS adopted by MTC/ABAG that will be subject to the updated SB 375 targets will be adopted in 2021. CARB staff recommends an SB 375 target of 10 percent in 2020 and 19 percent in 2035 compared with 2005 levels. CARB staff's 2035 target recommendation is 1 percentage point higher than MTC's target recommendation. This recommendation is based on review of analysis submitted by MTC and CARB staff's approach of applying the midpoint of the identified reduction range (3 percent) to what the region has achieved in their currently adopted SCS and the most recent modeling of their Draft 2017 SCS Preferred Scenario. Differences between CARB and MPO staff's approaches include quantification of the potential for additional land use and transportation strategies.

2. Sacramento Area Council of Governments

The Sacramento Area Council of Government (SACOG) region is located in central California above the San Joaquin Valley and inland from the San Francisco Bay area. The region includes the counties of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba. SACOG proposes a per capita GHG emission reduction target of 18 percent in

2035 relative to 2005 emissions. A 2020 target recommendation was not provided. SACOG's original SB 375 targets were a 7 percent reduction in 2020 and a 16 percent reduction in 2035 relative to 2005. The first SCS, adopted in April 2012, would, if implemented, achieve 10 percent per capita GHG emission reduction in 2020 and a 16 percent reduction in 2035 compared with 2005 levels. The second SCS, adopted in February 2016, would, if implemented, achieve a 7.6 percent per capita GHG emission reduction in 2020 and a 15.6 percent per capita GHG emission reduction in 2035.

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

In 2016, SACOG adopted its second Metropolitan Transportation Plan (MTP)/SCS, which continues to emphasize the key strategies from the first (2012) SCS that reduce barriers to infill development, and increase density in targeted areas served by transit to make the transit system more viable and efficient. SACOG also took a "fix-it-first" approach when prioritizing roadway funding where roadway maintenance and rehabilitation projects were prioritized over projects that would add new roadway capacity. SACOG is also implementing its complete streets policy by configuring on-street bike lanes and including pedestrian safety improvements into scheduled roadway maintenance projects. Since there is limited funding available to complete all the desired transportation projects in the region, SACOG applied project phasing criteria regarding roadway utilization and peak period congestion to determine which transportation projects should be completed within the 20-year plan horizon, and which projects would have to wait. The outcome of SACOG's growth strategy in the 2016 SCS is to accommodate a 36 percent population increase on less than 2 percent of the region's land area. The performance outcomes of SACOG's 2016 MTP/SCS will include an increase in the number of homes and jobs near transit, improved jobs/housing balance, over a doubling of bike lane miles, and expansion of transit services. The total budget for the 2016 RTP/SCS is $45.8 billion in 2036 dollars.

SACOG staff recommended a per capita GHG reduction target of 18 percent in 2035 from 2005 levels based on their recent analysis. SACOG's analysis focused on strategies related to incentivizing early growth in infill and transit-oriented development areas, increasing transit services and modernizing deployment of transit services, as well as investment and innovation in locally-initiated programs to accelerate electric vehicle penetration. In total, SACOG's recommendation represents a GHG reduction commitment from additional or enhanced strategies in the range of an additional

5 percentage points. SACOG's analysis also identified several State supportive measures that would be needed to help achieve these additional GHG reductions.

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

3. San Diego Association of Governments

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

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

In 2015, SANDAG adopted its second SCS, which continues to emphasize the key strategies from the first (2011) SCS that support a more sustainable future for the San Diego region. SANDAG anticipates cities will continue to grow within existing urban

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

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

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

4. Southern California Association of Governments

The Southern California Association of Governments (SCAG) region is located in Southern California, and includes the counties of Imperial, Orange, Los Angeles, Riverside, San Bernardino, and Ventura. SCAG proposes a per capita GHG emission reduction target of 18 percent in 2035 relative to 2005 emissions. A 2020 target

recommendation was not provided. SCAG's original SB 375 targets were an 8 percent reduction in 2020 and a 13 percent reduction in 2035 relative to 2005. The first SCS, adopted in April 2012, would, if implemented, achieve a 9 percent per capita GHG emission reduction in 2020 and a 16 percent reduction in 2035 compared with 2005 levels. The second SCS, adopted in April 2016, would, if implemented, achieve an 8 percent per capita GHG emission reduction in 2020 and an 18 percent per capita GHG emission reduction in 2035.

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

In 2016, SCAG adopted its second SCS, which continues to emphasize the key land use and transportation strategies in the first (2012) SCS. The goals of SCAG's first SCS include ensuring the region's long-term economic competitiveness and improving quality of life for current and future generations. The region is working to reverse air pollution trends, increase investment in alternatives to single occupancy auto use, create greater opportunities for affordable housing and housing diversity, and strengthen the economy. It includes an extensive regional bus and bus rapid transit (BRT) system, improved commuter and light rail service, an expanded regional bicycle network, improved pedestrian infrastructure, dedicated highway lanes for carpool and express buses, and several TDM programs that reduce the number of vehicle trips. The outcomes of the 2016 SCS by 2035 include 46 percent of the total household growth and 55 percent of total employment growth will be located within high-quality transit areas. In addition, new housing development is anticipated to be 33 percent single-family and 67 percent multi-family, with the majority of new growth located in infill and compact walkable areas. The SCS also reduces spending on system expansion in favor of increased funding for roadway maintenance and rehabilitation compared to the 2012 RTP/SCS. By 2040, over 170,000 miles of bus routes and 72,000 miles of transit rail will be added to the system. The total budget for the 2016 RTP/SCS is $556.5 billion in 2016 dollars.

SCAG staff recommended a per capita GHG reduction target of 18 percent in 2035 from 2005 levels based on their recent analysis. SCAG's analysis focused on strategies related to active transportation, zero emission vehicles, and mobility innovations and indicated that an additional 2 to 2.5 percentage points achieved beyond the last plan through additional programs, investments, and mobility innovations, at an estimated cost of $10 billion. As part of the target recommendation, SCAG also committed to an

additional 2 to 3 percentage points beyond their test results to be achieved through further innovative strategies. In total, SCAG's recommendation represents a GHG reduction commitment from additional or enhanced strategies in the range of an additional 4 to 5.5 percentage points. Additional reductions would partially be supported through a local sales-tax measure (Measure M) dedicated to transportation funding, which voters approved in Los Angeles County in 2016.

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

B. The San Joaquin Valley MPOs

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

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

were uniform across all eight Valley MPOs, the updated targets would be unique to each MPO.

The San Joaquin Valley MPOs submitted target analysis information using preliminary results from their most recent model improvement effort. This work utilizes the most recent Census, American Community Survey and California Household Travel Survey data, as well as implements changes to the model structure based on CARB feedback received during the last SCS evaluation period. The preliminary result looks to be a more accurate accounting of their current plan achievement. CARB staff used this information as the foundation for evaluating what would be ambitious and achievable for these MPOs.

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

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

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

1. Fresno Council of Governments

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

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

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

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

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

four largest Valley MPOs and a 1 percent reduction to what the four smaller Valley MPOs by population size.

2. Kern Council of Governments

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

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

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

Kern COG is currently in the process of developing its second SCS for adoption in 2018, which will be subject to the updated SB 375 targets. This SCS plans to build upon strategies found in the 2014 SCS with a focus on improving transit access, increasing opportunities for active transportation, increasing investment in express buses, high-occupancy vehicle lanes, park and ride facilities, vanpooling, and bus-rapid transit and commuter rail.

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

3. Kings County Association of Governments

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

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

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

distances common in the county, vanpools will continue to be an effective alternative to single occupant vehicle travel for some residents.

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

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

4. Madera County Transportation Commission

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

	2020	**2035**
Existing Target	-5%	-10%
2014 SCS Performance	*-10%*	*-15%*
Madera CTC Proposed Target	-10%	-15% to -20%
CARB Staff Recommendation	-10%	-16%

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

An RTP was adopted by the Madera CTC Governing Board in 2014, but the sustainable communities strategies included with the plan did not meet the SB 375 targets. Since 2014, Madera CTC has been working to update the modeling tools and analyze the existing data, land use, and transportation strategies to provide a more accurate accounting of GHG emissions within the region. As a result, Madera CTC will amend the existing 2014 RTP/SCS and submit this plan to CARB in 2017. Madera CTC did submit a target recommendation to CARB that is based on the updated modeling and analysis for the RTP/SCS amendment.

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

5. Merced County Association of Governments

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

	2020	**2035**
Existing Target	-5%	-10%
2014 SCS Performance	*-10.1%*	*-12.7%*
Merced CAG Proposed Target	-10.1%	-12.7%
CARB Staff Recommendation	-10%	-14%

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

Merced CAG prepared an RTP/SCS in 2014, which did not meet the SB 375 targets, and an RTP/SCS amendment in 2016, which has not yet been submitted and evaluated by CARB.

CARB staff recommends an SB 375 target of 10 percent in 2020 and 14 percent in 2035. This recommendation is the same as the MPO recommendation for 2020 and approximately 1 percentage point higher than the MPO recommendation for 2035. CARB staff based its recommendation on review of analysis submitted by Merced CAG, and CARB staff's approach of applying a stepped reduction range of 1 percent to what the four smaller Valley MPOs, by population, have achieved in their currently adopted SCSs. Differences between CARB and MPO staff's approaches include quantification of the potential for additional land use and transportation strategies, where the MPO recommendation is based on quantification of the existing 2014 RTP/SCS strategies

with the updated MIP2 model only and CARB staff's recommendation includes an estimate of the benefits of additional strategies above and beyond the 2014 RTP/SCS.

6. San Joaquin Council of Governments

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

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

San Joaquin COG is a single-county MPO in which low density development has been the trend, travel patterns are greatly influenced by interregional commuting, and whose economy has been significantly impacted by the recession. The land use and transportation strategies in its 2014 SCS attempt to address these issues by offering residents more mobility options and reducing vehicle trip lengths. Key SCS land use strategies include increasing the amount of infill development within existing urbanized areas, leading to denser development and an increase in the proportion of multi-family and small-lot single-family homes as compared to conventional lot sizes. This results in 61 percent of new growth as single-family housing and 39 percent of new growth as multi-family housing, yielding a countywide average density of ten dwelling units per acre. The SCS also dedicates an increased amount of funding for active transportation infrastructure and public transit, with six additional bus rapid transit routes in Stockton as well as some expansion of transit services in other communities. With this emphasis on transit-oriented development, the region anticipates that nearly 50 percent of new jobs and 40 percent of new homes will be located within a half mile of transit service and a substantial amount of prime farmland will be conserved through the plan year of

2040. The SCS includes a greater focus on TDM and TSM strategies than on widening and new roadway construction, and more transit expansion and investments in bike and pedestrian facilities.

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

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

7. Stanislaus Council of Governments

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

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

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

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

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

with the updated MIP2 model only and CARB staff's recommendation includes an estimate of the benefits of additional strategies above and beyond the 2014 RTP/SCS.

8. Tulare Association of Governments

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

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

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

Tulare CAG is currently in the process of developing its second SCS for adoption in 2018, which will be subject to the updated SB 375 targets. This SCS plans to build on the success of the previous plan that focused increased density of future development within existing communities, as envisioned in the 2009 Tulare County Regional Blueprint, supported by infrastructure improvements. Ongoing implementation

strategies for the RTP/SCS consist of a combination of planning projects, transit incentive programs, and public information campaigns.

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

C. The Six Remaining Small MPOs

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

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

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

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

1. Association of Monterey Bay Area Governments

The AMBAG region is located along the central coast of California, and includes the three counties of San Benito, Santa Cruz, and Monterey. AMBAG proposes per capita GHG emission reduction targets of 3 percent in 2020 and a 6 percent in 2035 relative to 2005 emissions. AMBAG's original SB 375 targets were a 0 percent reduction in 2020

and a 5 percent reduction in 2035 relative to 2005. AMBAG's first SCS, adopted in June 2014, would, if implemented, achieve a 3.5 percent per capita GHG emission reduction in 2020 and a 5.9 percent reduction in 2035 compared with 2005 levels.

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

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

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

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

2. Butte County Association of Governments

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

SCS, adopted in December 2012, would, if implemented, achieve a 2 percent per capita GHG emission reduction in 2020 and 2035 compared with 2005 levels.

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

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

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

3. San Luis Obispo Council of Governments

San Luis Obispo COG is located along the central coast of California. The San Luis Obispo Council of Governments (San Luis Obispo COG) region shares the same boundary as San Luis Obispo County. San Luis Obispo COG proposes to maintain the current per capita GHG emission reduction targets of 8 percent in both 2020 and 2035 relative to 2005 emissions. San Luis Obispo COG's first SCS, adopted in April 2015, would, if implemented, achieve a 9.4 percent per capita GHG emission reduction in 2020 and 10.9 percent in 2035 compared with 2005 levels.

	2020	**2035**
Existing Target	-8%	-8%
2015 SCS Performance	-9.4%	-10.9%
San Luis Obispo COG Proposed Target	-8%	-8%
CARB Staff Recommendation	-8%	-11%

San Luis Obispo COG is on a later RTP planning cycle relative to the SB 375 target update compared to the rest of the MPOs. Thus, San Luis Obispo COG is in the preliminary stages of developing its 2019 RTP/SCS. Unlike the other MPOs, San Luis Obispo COG does not yet have new growth or financial forecasts to develop scenarios on which to base target recommendations. San Luis Obispo COG does not anticipate having new growth or financial forecasts to inform scenario development until late 2017.

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

San Luis Obispo COG staff believes it may be optimistic to maintain a per capita GHG emission reduction target of 8 percent in both 2020 and 2035, nor maintain the achievement identified in its first SCS.

The next RTP/SCS adopted by San Luis Obispo COG that will be subject to the updated SB 375 targets will be adopted in 2019. CARB staff recommends an SB 375 target of 8 percent in 2020 and 11 percent in 2035. This recommendation is the same as the MPO recommendation for 2020 and 3 percentage points higher than the MPO recommendation for 2035. CARB staff based its recommendation on review of analysis submitted by San Luis Obispo COG and CARB staff's approach for the six remaining MPOs of maintaining, at minimum, the same level of GHG emission reductions estimated from their previous SCSs for 2035.

4. Santa Barbara County Association of Governments

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

a 0 percent reduction in 2020 and 2035 relative to 2005. Santa Barbara CAG's first SCS, adopted in August 2013, would, if implemented, achieve a 10 percent per capita GHG emission reduction in 2020 and a 15 percent reduction in 2035 compared with 2005 levels.

	2020	**2035**
Existing Target	0%	0%
2014 SCS Performance	-10%	-15%
Draft 2017 SCS Performance	-13%	-17%
CARB Staff Recommendation	-13%	-17%

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

Santa Barbara CAG is currently in the process of developing its second SCS for adoption in 2017, and is pursuing the same transit-oriented infill strategy as was adopted in its first SCS. Changes from the previous SCS that are being reflected in the preliminary modeling, include: changes to the underlying transit routes and frequencies, changes to the constrained transportation project lists, minor changes to land use assumptions and growth allocation, updated inter-regional trip information from SCAG and San Luis Obispo COG staff, and adjustments to U.S. 101's functional classification in Santa Barbara CAG's regional travel demand model. If Santa Barbara CAG continues to implement its preferred scenario with the same level of aggressiveness as in the existing adopted RTP/SCS, the modeling improvements will yield slightly greater per capita GHG emission reductions.

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

MPOs of maintaining, at minimum, the same level of GHG emission reductions estimated from their previous SCSs for 2035.

5. Shasta Regional Transportation Agency

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

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

Shasta RTA's RTP/SCS plans to increase average residential density on a region-wide basis, improve the existing transportation system by expanding service on existing bus routes, providing more bicycle and pedestrian facilities, and preserving resource areas and farmland. Additional strategies Shasta RTA is pursuing include: deploying local on-demand public transit, inter-city public transit service to Sacramento, technology-enabled mobility and ride sharing services, and expanding public electric vehicle charging infrastructure. Shasta RTA's target recommendation of 3.5 percent per capita GHG emission reduction in the year 2035 is based on these strategies.

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

6. Tahoe Metropolitan Planning Organization

The Tahoe Regional Planning Agency (Tahoe RPA) is a bi-state agency created by congress in 1969 that operates under the bi-state Tahoe Regional Planning Contract

between California and Nevada. Tahoe RPA prepares the regional land use plan for the Lake Tahoe region, and also serves as the MPO for the region, which operates as Tahoe Metropolitan Planning Organization (Tahoe MPO). Tahoe RPA and Tahoe MPO are the same body, and unlike the rest of the MPOs in California, retain authority over both land use and transportation planning decisions for the Lake Tahoe region.

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

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

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

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

**Not yet submitted and evaluated by CARB*

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

The next RTP/SCS adopted by Tahoe MPO that will be subject to the updated SB 375 targets will be adopted in 2021. CARB staff recommends an SB 375 target of 8 percent in 2020 and 5 percent in 2035, consistent with the targets recommended by Tahoe MPO, which maintains the same level of estimated per capita GHG emission reductions

estimated to be achieved with their second SCS. CARB staff based its recommendation on review of analysis submitted by Tahoe MPO that reflect updates to their socioeconomic database and forecasts and resident versus visitation travel, and CARB staff's approach for the six remaining MPOs of maintaining, at minimum, the same level of GHG emission reductions estimated from their previous SCSs for 2035.

Appendix B. MPO Scenarios and Data Submittals

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May 1, 2017

Mary Nichols, Chair
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: MTC, SACOG, SANDAG, and SCAG Joint Submittal SB 375 Target Recommendation

Dear Chair Nichols,

We want to first express our appreciation for your leadership in addressing climate change and air quality challenges for our state. We also want to thank you and your staff for the outreach efforts to MPOs regarding the SB 375 target update.

This joint target recommendation is submitted by the four largest MPOs (MTC, SACOG, SANDAG, and SCAG) and represents almost 85 percent of the state's population. Our starting premise in this process has been that the ARB targets should remain ambitious, but at a level that MPOs can meet with a Sustainable Communities Strategy (SCS) – not an Alternative Planning Strategy (APS). We have also committed to a joint target as a means of improving our own commitment to sharing information and achieving ambitious reductions.

Our March stress test results provide insight into opportunities and challenges for setting stronger targets across our respective regions. These stress tests informed our target recommendations and also highlighted several supportive state strategies that will be needed to meet the state's ambitious 2030 and 2050 climate change goals.[1]

As a result of our coordinated stress test efforts, we are pleased to submit this joint target recommendation for ARB's consideration. Each of the four MPOs recommend a 2035 SB 375 target of -18% per capita from 2005 levels based on a partnership with the state as described later in this letter.

Attached to this letter, you will find the individual MPO target recommendations as approved by our respective Boards.

1. Value of this Joint Recommendation

This joint recommendation represents a maturing of the target setting process. This joint recommendation does more than hold each MPO accountable to a target under the SB 375 process. It increases our accountability to each other. We had to work together and coordinate a great deal

[1] For test results see: https://www.arb.ca.gov/cc/sb375/sb375_target_update_analysis_mtc_sacog_sandag_scag_030617.pdf.

on data and modeling assumptions in order to reach this joint recommendation—and we are committed to maintaining that coordination and information sharing as we move forward with development and implementation of our plans. For the state, we believe that this will bring more predictability and understanding to the process. The real differences and variations across our regions will always mean that the same or similar strategy may have different outcomes in different regions—but through closer collaboration we should be able to explain those differences with more accuracy and transparency. And from that, all California will benefit.

1. Ambitious but Achievable Target Recommendation

This recommendation reflects ambitious but achievable targets that support achievement of SB 32 goals. Considering the GHG reductions achieved by MPOs in the previous two rounds of their RTP/SCSs, the "Stress Test" results, and the VMT/GHG rebound effect, target recommendations from the four major MPOs for 2035 are predicated upon commitments from the state as indicated in section number two below.

All four MPOs have adopted SCSs, instead of APSs. In addition, for our currently adopted SCSs, all have met or exceeded the 2035 regional GHG targets established by ARB in 2010. Each regional plan has gone through extensive stakeholder engagement and public participation. They are all ambitious and push the envelope. Each is effecting change within its region and is shaping new planning efforts to be more sustainable.

Nevertheless, all four MPOs have similar challenges in implementing the adopted SCS, including a lack of financial resources (particularly at the city/county levels), loss of revenues due to increasing fuel efficiency, and dissolution of redevelopment agencies.

2. State Leadership with Supportive Policies and Funding

Our ambitious joint target recommendation is predicated on a partnership with the state and ARB on several critical issues that are largely outside of an MPO's authority to implement. This foundational assumption is consistent with Scoping Plan acknowledgement that SB 375 alone will not provide all the VMT growth reductions required to meet the State's 2030 and the Administration's 2050 Executive Order goals. We have identified five areas where state leadership with supportive policies will be necessary. Our joint target recommendation is based upon the assumption that the state will take meaningful action in each of these areas.

- **Offsetting VMT Rebound.** Clean vehicle and fuel efficiency programs are the most effective strategies to reducing GHG emissions, but also make driving more economical and thereby generate additional VMT. MPOs lack authority to implement road and parking pricing strategies that might be the most effective means to offset this effect. As a result, additional state policies will need to be developed that discourage growth in VMT.
- **User Fees to Offset Declining Revenues as Soon as Possible.** We are all grateful for the passage of SB 1 and the funding gap it fills as it relates to the maintenance needs of current transportation infrastructure, but it did not fix the longer term problem: that gas tax revenues will continue to decline as California changes to a fleet of cleaner, more efficient fossil-fuel

vehicles, and more electric and other non-fossil fuel vehicles. The recommended targets presented here assume that the state takes leadership in offsetting the decline of fuel excise tax revenues by transitioning to mileage-based user fees as soon as possible. Changing the funding model to a mileage-based user fee reduces the dependency on fuel consumption to fund the system and yields new opportunities to both manage demand and reduce GHG emissions. But the policies needed to implement a mileage-based user fee requires action by state government. Though some regions implement regional user fees like tolls, it's often on special authority and limited to specific corridors.

- **Dedicated Funding to Support Transit, Ridesharing, and Non-Motorized Transportation.** The recommended targets also assume the state moves to provide dedicated funding to support transit, ridesharing, and non-motorized transportation from user fees, pricing mechanisms, and new state programs. Again, this is an area where SB 1 has made good progress, but much more will be needed to support these services to the extent that will be needed under SB 32.

- **Direct Support for SCS implementation.** The recommended targets assume the state provides additional funding to ensure the implementation of RTP/SCSs. Given that the funding contained in the recent transportation legislation largely focuses on maintaining and rehabilitating the existing transportation system, the state also should recognize the lasting impacts of the elimination of redevelopment funding and provide additional funding to support SCS implementation, including funding to incentivize infill and compact residential development and policies to encourage a better job/housing match.

- **Normalization of Exogenous Modeling Factors.** A commitment from ARB to address/normalize changes to exogenous factors affecting the calculation of the target achievement by MPOs, including iterations of the EMFAC model and long range fuel forecasts of fuel price. This is an important issue to the extent that we all rely on modeling to measure our progress.

3. MPO Commitment to Aggressively Push the Envelope of SB 375 Emissions Reductions.

With state action and achievement in the above five areas, our commitment is to continue to do our utmost to accelerate implementation of our SCS's and continue to find new ways to reduce single occupant vehicle travel and greenhouse gases to support the state's climate change goals. We will continue to collaborate and share information to improve consistency and predictability to the process, and maintain the partnership with the state and ARB to generate additional policy changes and revenues needed to push the envelope of SB 375 GHG emissions reductions through innovative strategies. Examples of how we may achieve this include:

- Incentivize early development of infill and transit-oriented development areas.
- Increase transit and active transportation mode investments to provide more and better options to single occupant vehicle travel.

- Prioritize early state-of-good-repair investments, in order to realize long-term savings on maintaining the system. Studies show deferring maintenance of the transportation system increases costs.
- Invest in innovative programs and services to generate additional GHG savings.
- Continue to assess Title VI and environmental justice needs throughout the planning process, especially as it relates to the more aggressive transportation and land use strategies that will be necessary to meet tougher GHG emissions reduction targets.

CONCLUSION.

In closing, we encourage ARB to continue to set ambitious but achievable targets that can be met with an SCS. The achievement of GHG emission reductions under SB 375 is a cooperative partnership between local governments, MPOs, ARB, and other state agencies. Thank you for the opportunity to provide our target setting recommendations. We look forward to working with you to ensure a sustainable future for our state.

Sincerely,

HASAN IKHRATA
Executive Director, SCAG

GARY GALLEGOS
Executive Director, SANDAG

STEVE HEMINGER
Executive Director, MTC

JAMES CORLESS
Chief Executive Officer, SACOG

Attachment: MPO Target Recommendations

Target Recommendation

Metropolitan Transportation Commission

METROPOLITAN
TRANSPORTATION
COMMISSION

Bay Area Metro Center
375 Beale Street, Suite 800
San Francisco, CA 94105
415.778.6700
www.mtc.ca.gov

May 1, 2017

Mary Nichols, Chair
California Air Resources Board
1001 I Street
Sacramento, CA 95814

RE: MTC SB 375 Target Recommendation

Dear Chair Nichols:

On April 26, 2017, the Metropolitan Transportation Commission (MTC) approved MTC Resolution No. 4271, which recommends the greenhouse gas reduction target for the 2021 Bay Area Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and beyond. This resolution is attached, along with the memorandum to the Planning Committee with additional considerations and detail.

We are joining our three largest peer MPOs (SACOG, SANDAG, and SCAG) in recommending a target of 18% reduction in greenhouse gas emissions per capita by 2035 compared to 2005 levels. Our resolution includes the conditions outlined in the joint letter but also emphasizes additional conditions including that the state strengthen mandates and incentives to align housing production and employment center proximity as a key strategy for reducing greenhouse gas emissions caused by added vehicle miles traveled when there is a significant mismatch in housing and jobs locations.

Thank you for considering MTC's target-setting recommendations.

Sincerely,

Steve Heminger
Executive Director

LZ: LT
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Attachments:
MTC Resolution No. 4271 approving Greenhouse Gas Target Update
Memorandum of Background and Considerations to MTC Resolution No. 4271: Greenhouse Gas Target Update

Date: April 26, 2017
Referred by: Planning

ABSTRACT

Resolution No. 4271

This resolution approves the recommendation to the Air Resources Board of an 18% per capita greenhouse gas reduction target for 2035 compared to 2005 levels for the 2021 Bay Area Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and beyond.

Discussion of this resolution is contained in the Executive Director's Memorandum to the Planning Committee dated April 7, 2017.

Date: April 26, 2017
Referred by: Planning

RE: Resolution to recommend to the Air Resources Board a conditional 18% per capita greenhouse gas reduction target for 2035 from 2005 levels to the Air Resources Board for the 2021 Regional Transportation Plan/Sustainable Communities Strategy and beyond

METROPOLITAN TRANSPORTATION COMMISSION
RESOLUTION NO. 4271

WHEREAS, the Metropolitan Transportation Commission (MTC) is the regional transportation planning, financing and coordinating agency for the San Francisco Bay Area pursuant to Government Code Section 66500 *et seq.*; and

WHEREAS, the Sustainable Communities and Climate Protection Act of 2008 ((Chap. 728, Stats. 2008) Senate Bill 375, or SB 375, as amended) requires each California Metropolitan Planning Organization (MPO), as part of its Regional Transportation Plan (RTP) planning process, to develop a Sustainable Communities Strategy (SCS) or an Alternative Planning Strategy (APS) that meets regional greenhouse gas (GHG) emission reduction targets (targets) set by the Air Resources Board (ARB);

WHEREAS, SB 375 also recognizes ARB's target-setting responsibility as a recurring process, requiring ARB to update the targets every eight years and permits target updates every four years;

WHEREAS, low fuel prices and increased fuel efficiency is resulting in reduced auto operating costs, which is resulting in California residents driving more (the rebound effect), making it more challenging for MPOs to achieve GHG reduction targets;

WHEREAS, ARB Board Member, UC Davis Professor Daniel Sperling will convene a best practices roundtable to include representatives from ARB, the MPOs and other entities to identify and define new initiatives, incentives and regulations for achieving the RTP/SCS targets, including: 1) potential regulations requiring that autonomous vehicles and Transportation Network Company (TNC) fleets such as Uber and Lyft be electric; 2) enabling the reduction of emissions related to school and public transit trips through accelerating the turnover of these fleets to electric; 3) potential to strengthen requirements to site public facilities/state-funded facilities (state agency

offices, hospitals, etc.) in transit-served locations; 4) potential to increase enforcement of California's Parking Cash Out law; 5) expand the availability of efficient first and last mile transit solutions to provide for more carbon efficient commuting; 6) in partnership with the state's air districts, consider advancing the development of an Indirect Source Review (ISR) rule or similar mechanism to mitigate emissions from larger employment centers located in areas with high levels of vehicle miles traveled due to inadequate transit service and/or a lack of workforce housing; 7) the development of zero emission vehicles and alternative transportation fuel systems that should be promoted and incentivized.

WHEREAS, **conditional** upon the state granting pricing authority to MPOs to bring user auto operating costs back to levels commensurate with 2008 levels (the conditions under which SB 375 was enacted);

WHEREAS, **conditional** upon the state dedicating funding to support transit, ridesharing, and non-motorized transportation from pricing mechanisms and new state sources and programs;

WHEREAS, **conditional** upon the state provide additional funding to ensure implementation of regional plans/sustainable communities strategies, on a scale commensurate with the defunct redevelopment law;

WHEREAS, **conditional** upon the state strengthening mandates and incentives to align housing production and employment center proximity as a key strategy for reducing greenhouse gas emissions caused by added vehicle miles traveled when there is a significant mismatch in housing and jobs locations;

WHEREAS, **conditional** upon ARB committing to address issues resulting from any update to the Emission Factor emissions model for target setting and target compliance, including any model-related impacts on target attainment; now, therefore, be it

RESOLVED, that the Metropolitan Transportation Commission hereby recommends an 18% per capita greenhouse gas emissions reduction target for 2035 from 2005 levels for the third round of RTP/SCS and beyond.

METROPOLITAN TRANSPORTATION COMMISSION

Jake Mackenzie, Chair

The above resolution was entered into by
the Metropolitan Transportation Commission
at a regular meeting of the Commission
held in San Francisco, California on April 26, 2017

METROPOLITAN
TRANSPORTATION
COMMISSION

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Agenda Item 3a

Memorandum

TO: Planning Committee DATE: April 7, 2017

FR: Executive Director

RE: MTC Resolution No. 4271: SB375 Greenhouse Gas Target Update

Background

The California Air Resources Board (ARB) released the draft Scoping Plan Update in January 2017 and is scheduled to release draft SB 375 GHG targets in late spring/early summer. Each California Metropolitan Planning Organization (MPO) is required to meet the new ARB targets for the years 2020 and 2035 in the upcoming third round of Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) plans. MTC is currently in the midst of the 2017 RTP/SCS (Plan Bay Area 2040) process for which the first and second round targets apply, so these new third targets will be applicable to the 2021 RTP/SCS.

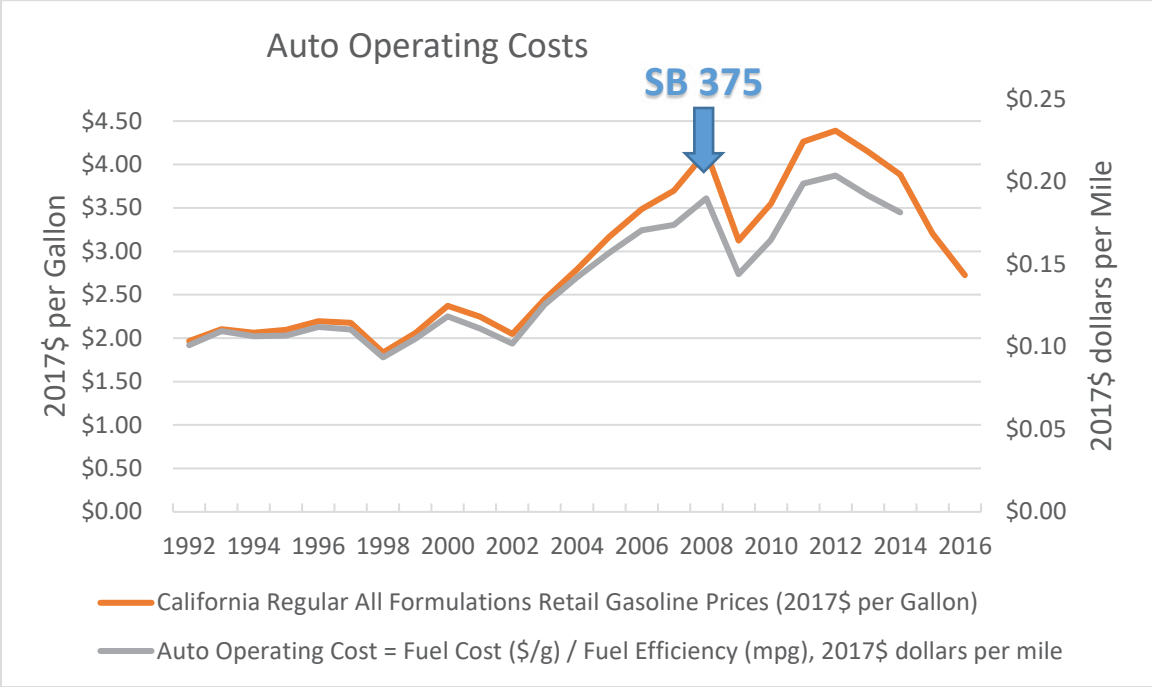
For the first and second RTP/SCS rounds, ARB set targets for the ABAG/MTC region of a 7 percent per capita reduction from 2005 levels by 2020, and a 15 percent per capita reduction from 2005 by 2035. These targets were exceeded in the 2013 RTP/SCS, which was forecast to reduce per capita greenhouse gas emissions by 10 percent by 2020 and by 16 percent by 2035. We are on track to exceed these targets by comparable margins in Plan Bay Area 2040 as well.

Bay Area Greenhouse Gas Target Considerations

On March 23, 2017, Executive Directors from the other large California Metropolitan Planning Organizations (MPOs) along with MTC Planning Director Ken Kirkey presented challenges and stress test results to the ARB board[1]. During this presentation, MPO staff emphasized that:

- MPOs continue to push the envelope in terms of focused growth in land use, but feasible land use strategies are not sufficient to achieve the needed reductions in GHG emissions.
- Low fuel prices and increased fuel efficiency is resulting in reduced auto operating costs. This, in turn, is causing California residents to drive more (the rebound effect), making it more challenging for MPOs to achieve greenhouse gas emissions reduction targets based on less driving (see chart on next page).

[1] March 2017 Planning Committee memo on stress test results: https://mtc.legistar.com/View.ashx?M=F&ID=5003116&GUID=4871AE42-408D-45C4-88ED-B76655BB6A8E
ARB meeting webcast: http://cal-span.org/unipage/index.php?site=cal-span&owner=CARB&date=2017-03-23



- MPOs need more state funding to incentivize focused growth and transit connectivity to support state climate goals.
- In studying aggressive policies to lower GHG emissions, we are concerned about the equity impacts of both displacement as well as roadway pricing, which has a greater proportional impact on lower income travelers.

Despite these challenges, and given the urgency of reducing the impacts of climate change, we believe that it is very important to reduce GHG emissions related to metropolitan growth and transportation. To further California's leadership in this effort, the four largest California MPOs — Southern California Association of Governments (SCAG), San Diego Association of Governments (SANDAG), Sacramento Area Council of Governments (SACOG) and MTC — aspire to make our Regional Transportation Plans/Sustainable Communities Strategies both "ambitious and achievable."

Bay Area Greenhouse Gas Target Reduction Recommendation

With these considerations in mind, MTC staff recommend increasing the 2035 target to 18% per capita reduction in GHG from 2005 levels for the 2021 RTP/SCS and beyond. This recommendation has been developed in coordination with the other three largest California MPOs, which are also recommending a standard 18% per capita reduction for their regional plans based on similar experiences with reductions in previous RTP/SCS rounds, stress test results and rebound effect challenges. This recommendation is **conditional** on several factors that we believe are critical to achieving this target:

- The state will grant pricing authority to MPOs so they can bring user auto operating costs back to levels commensurate with 2008 levels (the conditions under which SB 375 was enacted). Because roadway pricing is regressive, equity exemptions and mitigations should be included.
- The state will dedicate funding to support transit, ridesharing, and non-motorized transportation from pricing mechanisms and new state sources and programs.

- The state will provide additional funding to ensure implementation of regional plans/sustainable communities strategies, on a scale commensurate with the defunct redevelopment law.
- ARB will commit to address issues resulting from any update to the Emission Factor emissions model for target setting and target compliance, including any model-related impacts on target attainment.

In addition to the factors above, during the March 23rd Air Resources Board meeting, ARB Board Member and UC Davis Professor Daniel Sperling proposed a best practices roundtable to include representatives from ARB, the MPOs and other entities to identify and define new initiatives, incentives and regulations for achieving the RTP/SCS targets. We foresee the following strategies being part of this discussion:

- Potential regulations requiring that autonomous vehicles and Transportation Network Company (TNC) fleets such as Uber and Lyft be zero emissions.
- Enabling the reduction of emissions related to school and public transit trips through accelerating the turnover of these fleets to electric.
- Potential to strengthen requirements to site state-funded and state-licensed facilities (state agency offices, hospitals, etc.) in transit-served locations. These are large job centers and the destinations for many trips, so locating them in transit-accessible areas would reduce their impact on GHG emissions and provide significant equity benefits to low income/transit dependent individuals. (See attachment A for *San Francisco Hospital Transportation Challenges and Impacts*.)
- Potential to increase enforcement of California's Parking Cash Out law[2]. Parking Cash Out refers to the California's 1992 legislation requiring that employers who subsidize parking for workers must also offer them the option to take an equivalent cash allowance instead of the parking subsidy. This law only applies to larger employers (50 or more employees) that rent the parking spaces they provide to their workers free or below cost.
- Expand the availability of efficient first and last mile transit solutions to provide for more carbon efficient commuting.
- In partnership with the state's air districts, consider advancing the development of an Indirect Source Review rule or similar mechanism to mitigate emissions from larger employment centers located in areas with high levels of vehicle miles traveled due to inadequate transit service or a lack of workforce housing.

With these measures in place, we believe the proposed target will be achievable in the third (2021) RTP/SCS. In short, we believe that continued progress on achieving tougher GHG targets will require a new funding and policy partnership between the state and its major metropolitan regions.

[2] Donald Shoup's Parking Cash Out (American Planning Association Planning Advisory Service Report Number 532): http://shoup.bol.ucla.edu/ParkingCashOut.pdf

Next Steps

Upon Commission approval, MTC staff will issue a report to the Air Resources Board recommending the 18% per capita greenhouse gas emissions reduction target from 2005 levels for 2035 for the next round of RTP/SCSs, conditional on the factors outlined in this memo. ARB will release a Draft Staff Report and Environmental Document in late spring/early summer 2017 including updated targets for California MPOs. Following a set of CEQA workshops in the summer, ARB plans to adopt final targets in fall 2017 and update their technical methodology for reviewing MPO SCS greenhouse gas quantification. MTC staff will engage with ARB, other MPO staff and additional participants in the best practices roundtable to advance successful attainment of the GHG targets.

Recommendation

Staff recommends that the Planning Committee refer Resolution No. 4271 to the Commission, which sets forth the conditional "Bay Area Greenhouse Gas Target Reduction Recommendation" to inform and guide ARB in setting these targets for the Bay Area.

Steve Heminger

Attachment:

- Attachment A: SF Hospital Transportation Challenges & Impacts

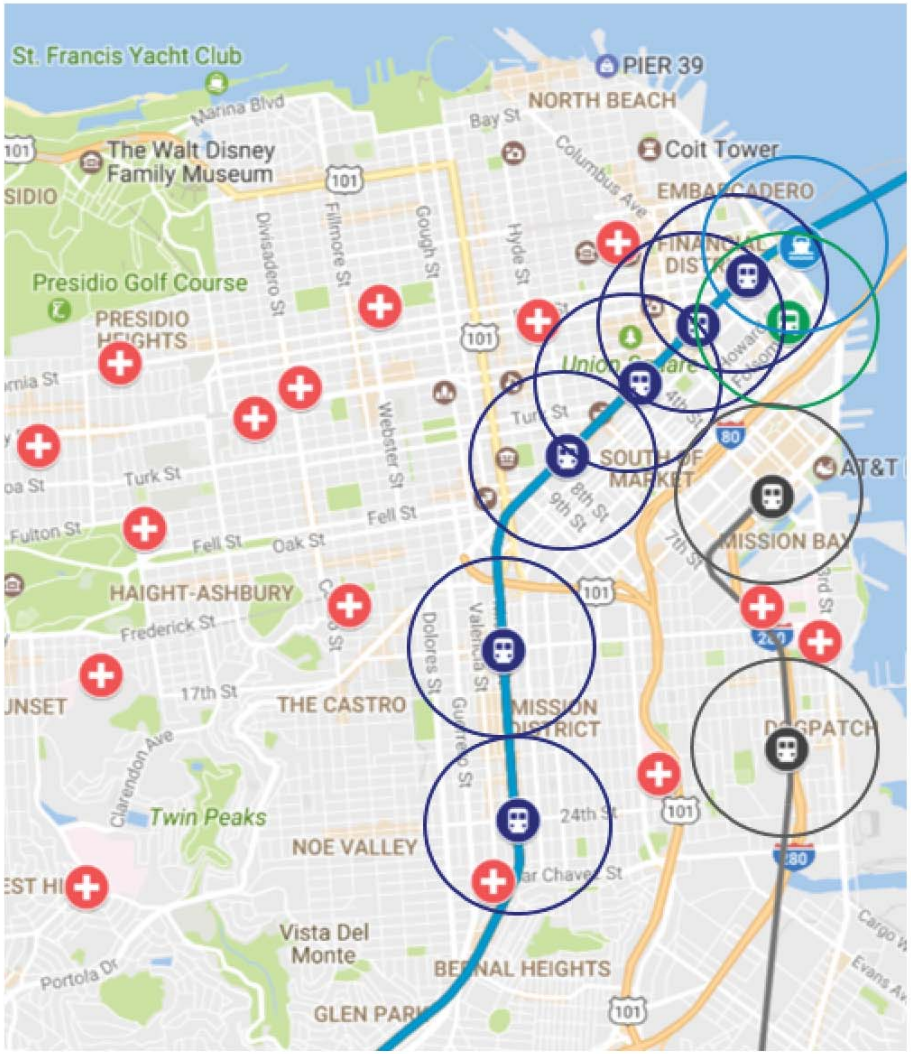
SH:lz

J:\COMMITTE\Planning Committee\2017\04_PLNG_Apr 2017\3a_MTC Res. 4271-SB 375 GHG Target Reco_v2.docx

SF Hospital Transportation Challenges & Impacts

- Hospitals are dense employment centers and are not located near regional transit stations
- Many employees (48%*) live outside SF (23% East Bay*)
- Working and middle class employees can't afford to live close to best employment opportunities
- High turnover of frontline employees who transfer to jobs closer to home
- High cost of recruiting and training new employees

No direct service by BART, AC Transit, WETA, or WestCAT



= ½ mile radius (10 min walk)

Hospitals & Medical Buildings

BayBridge Forward

* UCSF Mt Zion Campus, 2013 Transportation Impact Study - Employee Survey

Target Recommendation

Sacramento Area Council of Governments

SACOG

SACOG Board of Directors

Item #17-4-17
Action

April 13, 2017

Approve SB 375 Greenhouse Gas Emissions Reduction Target Setting

Issue: What SB375 greenhouse gas (GHG) emissions reduction target for 2035 should be recommended to the Air Resources Board?

Recommendation: The Transportation Committee unanimously recommends that the Board of Directors recommend an increase of 2035 GHG emissions reduction target from 16 to 18 percent, conditional on: 1) the State taking actions outlined below to facilitate reaching a greater GHG emissions reduction; and 2) SACOG taking actions outlined below through the next update of the MTP/SCS.

Committee Action/Discussion: The action on SB 375 targets contains two decision points:

1) Should SACOG take the opportunity to comment to the ARB on the resetting of the targets?
2) If SACOG decides to take this opportunity, what should the recommendation be?

Staff recommends that the Board take the opportunity to recommend our own target. The ARB is authorized by SB 375 to set GHG emissions reduction targets, and will do so absent a recommendation. However, the ARB was very cooperative and inclusive of SACOG in setting the current targets. Additionally, several other MPOs have indicated they will recommend targets to the ARB, and staff recommends that the SACOG Board add its voice to this dialog, particularly to ensure that the target remains ambitious but achievable. Finally, in forming our own recommendation on a reset of the target, SACOG can identify and include in the recommendation key issues of concern regarding State policy and actions, and can identify key assumptions and expectations about State actions needed to support SACOG, as well as other MPOs, in reaching higher GHG emissions reduction targets. This opportunity to attach assumptions and expectations to SACOG's target would be missed if a recommendation were not made.

Staff recommends an increase in SACOG's 2035 GHG emissions reduction target from 16 to 18 percent, conditioned on assumptions outlined below.

Required Future Actions by SACOG to Support Achievement of Higher GHG Emissions Reductions and Implementation of SCSs

The actions described below list the major steps needed to reach a higher target. However, there is a range of options available within each action, and different levels of implementation could be combined to reach the recommended higher target. All the actions are consistent with policy priorities in the current MTP/SCS, although the specific implementation strategies are variable and would be up to the discretion of the Board and implementing agencies. Note that many of

these actions require additional funding, over and above the revenues currently projected; this issue will be addressed below, in a section describing required actions by the state to achieve higher GHG emissions reductions.

- ***Incentivize early growth in infill and transit-oriented development (TOD) areas***. Residents of infill and TOD areas tend to have shorter vehicle trips, and more trips by transit, biking, and walking, than residents of other areas. Finding ways to create incentives for growth in those areas will assist in meeting higher GHG targets. The stress tests done for the ARB included a scenario which shifted modest growth into infill and TOD areas in the early years (before 2035) of the next plan (6 percent of total dwelling unit growth), added more transit service to those areas, and added more pedestrian and bicycle facilities. The scenario generated 4 percent more GHG emissions reductions. The full extent of this scenario ***would not*** need to be implemented, but some pieces of it would. Examples include:
    - Accelerating development in TOD areas like the Downtown/Riverfront Streetcar corridor and the Folsom corridor in Rancho Cordova;
    - Accelerating employment growth in centers serving housing-rich areas (e.g., El Dorado County and the City of Elk Grove); and
    - Early implementation of maintenance and rehabilitation projects in infill areas, where a single project can both advance goals on state of good repair (SOGR), and complete street projects, which will encourage alternative modes of travel and activate infill development.

- ***Increase transit service and modernize deployment of transit services***. In concert with acceleration of growth in infill and TOD areas, additional transit service both supports growth and provides options for residents to shift out of vehicle modes. Over the last 10 years, we have all observed what happens to transit ridership as major cuts in service are made. To reach higher GHG emissions reduction targets, this trendline needs to be reversed. Additionally, disruptive changes in transportation services and new mobility options have created an imperative to reinvent transit to focus on travel markets it can efficiently serve, and to find ways to leverage new mobility options to provide better access to and from fixed-route/fixed-schedule corridors. Examples include:
    - Elk Grove Transit's "Comprehensive Operational Analysis"; and
    - Regional Transit's "Station Link" partnership with Uber, Lyft, and Yellow Cab.

- ***Continue to prioritize maintenance and state of good repair***. Through the development of the current MTP/SCS, fix-it-first, SOGR, and addressing a long-term backlog in infrastructure maintenance was a high priority. The adopted plan shifted $2 billion from other expenditures to maintenance and rehabilitation, relative to the 2012 MTP/SCS. However, fully addressing the maintenance backlog would have required significantly more funding (estimated at $4 billion based on the currently adopted MTP/SCS). Additionally, the potential for long-term net savings through early spending on the maintenance backlog, totaling up to $10 billion, was presented and discussed in the development of our current MTP/SCS. These long-term net savings result from the avoided cost of future major maintenance projects (e.g., doing earlier and cheaper roadway resurfacing and other maintenance on a regular schedule to avoid major

reconstruction at a much higher cost later). This condition aligns with similar provisions related to cost savings and efficiencies in SB 1/AB 1 and the 2016 Sacramento Measure B proposal.

- ***Innovation and investment in specific programs that generate additional GHG emissions reductions.*** The stress tests prepared by SACOG and the other MPOs looked at the potential effect of locally-initiated programs to accelerate the rate of electric vehicle market penetration. Our ability to reach higher GHG emissions reductions will require continued exploration of new ideas and investments in expanding deployment of successful programs. Examples include:
    - SMUD, PG&E, and El Dorado County all provide vehicle purchase incentives to local residents, over and above the state and federal purchase incentives;
    - The much-publicized Volkswagen settlement could fund a significant expansion of local, supportive EV infrastructure (e.g., public charging stations), which could significantly expand on SACOG's current EV infrastructure program; and
    - SACOG's own TDM Innovation Grant Program is intended to inspire new ideas for providing mobility and managing the impact of transportation, which could provide significant GHG reductions if successful pilot programs are scaled up.

Required Future Actions by the State to Support Achievement of Higher GHG Emissions Reductions and Implementation of SCSs

The actions described below are necessary for the state to lead to offset some of the unintended consequences of policies on vehicles and fuels, and to support the MPOs' ability to reach higher GHG emissions reduction targets.

- ***Offsetting the long-term decline in driving cost.*** By our estimates, the average cost of driving will decline by 17 percent per mile over the long term, in part due to state policy initiatives on vehicle efficiency and fuels. This decline results in a "VMT rebound," which, while very positive, adversely impacts SACOG's ability to reach higher GHG emissions reduction targets.

- ***Offsetting the loss of fuel-based tax revenues.*** The flip side of the decline in driving cost is a decline in fuel sales and taxes on a per-mile traveled basis. This is a historic trend, which will be exacerbated by the more aggressive state policies implementing SB 32. This would result in $1-2 billion in reduced fuel tax revenues for our next MTP/SCS update, relative to the current MTP/SCS.

The ARB has recognized both concerns in staff conversations, and most recently in a hearing of the Board in March. The ARB also has acknowledged that these concerns might be addressed by transitioning from the current fuel-sourced taxes to a mileage-based user fee. Such a fee addresses the first concern, in part because the fee is more directly tied to actual use of the roadway than the current fuel-based taxes. Second, such a fee would broaden the base of drivers paying for the use of roadways by including non-fossil fuel powered vehicles. Finally, a mileage-based user fee would not be subject to the erosion of revenues caused by vehicles becoming more fuel efficient over time.

The State has already begun steps to address these two concerns. The California Road Charge Pilot Test explicitly recognizes the concerns and is exploring options, including changes to vehicle license fees, tolling, increases to the fuel tax, and mileage-based user fees (or "road charges"). SB 1, approved by the legislature on April 6, increases fuel taxes, but also includes a vehicle charge for ZEVs to offset partially the loss of revenue from ZEV roadway users.

State action on these two concerns would both address the VMT rebound issue and provide additional revenues for transportation-related investments. For those investments to generate additional GHG emissions reductions, and to achieve other policy goals of the MTP/SCS, such as investments in system maintenance and rehabilitation, the state would also need to support and promote use of additional revenues for those purposes.

- ***Return to source of any additional revenues.*** Based on the goals of the MTP/SCS and the state imperative to play a role in achieving higher GHG emissions reductions, additional funding is needed. Although the current MTP/SCS shifted resources into maintenance and SOGR, additional progress requires greater revenues. SACOG's stress tests demonstrated that additional GHG emissions reductions could be achieved through coordinated land use and transportation measures, but without additional funding none of that could be achieved. The GHG emissions reduction target recommendation assumes a return to source for any new revenues.

- ***Additional revenues used to achieve multiple objectives.*** In order for any new revenues to be available to implement multiple MTP/SCS policy priorities, including achieving higher GHG emissions reductions, SACOG needs flexibility in using the revenues. Flexibility would provide the ability to pursue projects that achieve multiple goals, such as advancing SOGR with a street reconstruction and including a complete street improvement within the project.

- ***Normalization of exogenous factors related to calculation of the target reductions.*** In order for the work of MPOs on SB 375 and GHG emissions reductions to focus on the combined effects of land use and transportation on vehicle travel and GHG emissions, some of the technical assumptions in SACOG's first two SCSs, such as long-range fuel price forecasts and long-range emissions rate estimates, should be consistent with those used to set the targets.

Framework for Reaching Higher GHG Reductions

The key actions by the state and by SACOG outlined above are critical to achievement of higher GHG emissions reductions. However, the recommendation of 18 percent, though clearly ambitious, is achievable with a range of possible "levels" of actions by the state and SACOG. The different "levels" of aggressiveness will depend on the preferences of the Board and the state, practical constraints on their ability to take action, and the opportunities to take specific steps implementing each action. For example, if the state pursued a mileage-based user fee to both replace the existing fuel tax and offset the decline in driving cost, that action would both fully offset the "VMT rebound" and provide a significant revenue source for activating more

land use and transportation strategies. In such a case, less would be required from innovative programs to achieve the recommended 18 percent target. Other combinations of implementation levels of the key actions could result in reaching the same level of reduction. Attachment C provides a matrix of "scenarios" of differing implementation levels of these key actions, each of which could reasonably get to the 18 percent target. The main point is that though reaching 18 percent will be ambitious and challenging, the Board will have options in formulating the policy framework of the next plan.

Potential Risks if Future MTP/SCS does not Meet the GHG Emissions Reductions Targets

As we have discussed with the Board over the last cycles, when an MTP/SCS cannot demonstrate that the proposed plan meets the SB 375 GHG emissions reduction targets, an Alternative Planning Strategy (APS) which does meet the target must be prepared. The APS can ignore some constraints that apply to the development of the MTP/SCS. For example, additional revenues over and above those reasonably expected for the MTP/SCS could be assumed to be available and fund transportation improvements. Transportation investments and land use changes deemed to be infeasible for political or practical reasons also could be included in the APS. In effect, the APS is a separate scenario to the MTP/SCS, which identifies some of the additional steps that would be needed to meet the GHG emissions reduction targets. Development of the APS would require staff time and potentially other resources (e.g., consultants) to prepare.

To date, no MPO has prepared and relied on an APS, so the risks, beyond the extra cost of preparing it, are not known. However, some of the cap-and-trade funding programs include consistency with an SCS as one of the evaluation criteria, so there is some uncertainty around the competitiveness of a project relying upon an APS.

Attached to this item are summaries of prior information and discussion from the February and March Committee and Board meetings:

- Attachment A provides a summary of background information on:
    - State transitioning from AB 32 climate change goals to more aggressive SB 32 goals;
    - SB 375 Sustainable Communities and Climate Change Act;
    - SB 375 target metric: percent reduction in per capita GHG, compared to year 2005;
    - Current SB 375 targets for SACOG: 7 percent by 2020, 16 percent by 2035;
    - SACOG's history on SB 375: adopted MTP/SCS in both 2012 and 2016 meets targets;
    - Dialog with ARB and other MPOs on resetting SB 375 targets—ARB expects MPOs to assist in meeting higher statewide GHG emissions reduction goals, other MPOs will be recommending higher reduction targets;
    - "Stress tests" performed by the four large MPOs (including SACOG) to help inform the target resetting;
    - "VMT rebound effect"—the expected long range decline in cost of driving, caused in part by increasing vehicle efficiency (i.e., more miles per gallon), increasing percentage of electric and hydrogen vehicles, and declining gasoline

prices, results in an increase in driving, which makes achieving GHG emissions reductions more difficult; and
  - Expected long-range decline in fuel sales and gas tax revenues—less funding for infrastructure and maintenance, and further evidence that the current excise tax will continue to fall behind needs.

- Attachment B includes responses to several key questions that were raised on issues related to the SB 375 targets.

Approved by:

James Corless
Chief Executive Officer

JC:BG:ds
Attachments

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SB375 Background Material

The following summarizes information provided to the SACOG Board through Committee meetings and presentations to the Board in February and March.

AB 32 and SB 32 Statewide Climate Change Policies and Goals

AB 32 was landmark legislation on climate change, and set statewide goals for greenhouse gas (GHG) emissions reductions. AB 32 set the first statewide target for GHG emissions reductions: rolling back total GHG emissions reductions from all sectors in the state to 1990 levels by the year 2020. The California Air Resource Board (ARB) has a key role in implementation of AB 32, and adopted the first "Scoping Plan," which outlines implementing policies to achieve the AB 32 targets, in 2008.

https://www.arb.ca.gov/cc/ab32/ab32.htm

In 2015, Governor Brown signed an executive order increasing the state goals for overall GHG emissions reductions, and in 2016 those goals were adopted into law (SB 32). SB 32 added a new GHG reduction target for the state: 40 percent below 1990 levels by the year 2030. ARB is actively assessing how to set policies to implement those larger reduction goals in a major update of the "Scoping Plan."

https://www.arb.ca.gov/cc/scopingplan/scopingplan.htm

SB 375—Sustainable Communities & Climate Protection Act

With regard to transportation sector GHG emissions reduction, the state's policy is often described as a "tripod" with three "legs":

1. Vehicles: policies and regulations to increase the efficiency and reduce the tailpipe emissions of the fleet of vehicles operating within the state.
2. Fuels: promoting fuels and power sources with lower GHG emissions (e.g., lower-carbon fossil fuels, electricity, and hydrogen cell).
3. Reducing the amount of vehicle travel: promoting policies for reducing the amount of vehicle miles traveled and, by extension, the amount of GHG emissions, through better land use and transportation planning.

SB 375 is the portion of the third "leg" to be achieved by the combined effects of land use patterns and transportation investments on passenger vehicle travel. SB 375 is assigned to MPOs like SACOG for implementation, with oversight by the Air Resources Board (ARB). The "Sustainable Community Strategy" (SCS) is the land use allocation and future transportation investment strategy which achieves the GHG reduction targets for each MPO.

https://www.arb.ca.gov/cc/sb375/sb375.htm

SB 375 Targets and Target Metric

The "target" metric for GHG emissions reduction for SB 375 is stated as a percentage decrease in per capita GHG, compared to 2005. SACOG has targets for 2020 and 2035. SACOG's SB375 targets are:

- 7 percent by 2020; and

- 16 percent by 2035.

Through its quadrennial Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS), SACOG must demonstrate that its combined future land use and transportation plans would lead to per capita GHG 7 percent less than the 2005 level by 2020, and 16 percent less by 2035. SACOG adopted MTP/SCSs in 2012 and 2016 that achieved these GHG emissions reduction targets, and has had programs in place for supporting lead agencies in utilizing the various CEQA relief options provided by SB 375.

The ARB has the authority to reconsider SB 375 targets every 4 years. In 2014, after the first 4 years of SB 375, the ARB chose to leave the initial targets in place. Now approaching eight years in, the ARB has decided to reevaluate the SB 375 targets, with an eye toward increasing them, consistent with the intent of the SB 32.

SACOG's SB 375 History

SACOG has adopted two SCSs that achieve the SB 375 GHG emissions reduction targets: the first in 2012, the second (and current) in 2016. Both SCSs were adopted as integral parts of SACOG's Metropolitan Transportation Plan (MTP), which is updated every four years. As part of SACOG's MTP/SCS implementation activities, SACOG provides SCS consistency findings on request to member agencies for their use in CEQA.

http://www.sacog.org/pod/determination-mtpscs-consistency-worksheet

http://sacog.maps.arcgis.com/apps/StoryMapBasic/index.html?appid=5a6452c96f6c4ac88c49721411a0db8b

Dialog with ARB and Other MPOs on the Target Setting

Over a year ago, an active dialog between the four largest MPOs (Southern California Association of Governments or SCAG, MPO of the Los Angeles Basin; Metropolitan Transportation Commission or MTC, MPO of the San Francisco Bay Area; San Diego Association of Governments or SANDAG; and SACOG) and the ARB was initiated related to SB 32, the Scoping Plan, and SB 375 targets.

The ARB requested that the MPOs look at their current SB 375 targets and recommend new targets for 2035 that assist the state in achieving the higher GHG emissions reduction goals set by SB 32. In other words, in SACOG's case, to recommend GHG reduction targets higher than the current 16 percent reduction by 2035. As part of this request, the ARB requested that the MPOs perform various "stress tests," which may assist in identifying a higher target as well as potential means for achieving the higher target. The stress tests are NOT constrained by revenues or other practical concerns—they were intended to be speculative "what if" scenarios.

The stress tests looked at the following policies:

- Land Use—More growth in focused in compact, infill, TOD, and other lower-VMT areas.
- Transit—More transit investments and service.

- Active Transportation Projects—More investments in pedestrian and bike projects and amenities.
- Greater Zero Emission Vehicle (ZEV) Penetration—Projects and policies which accelerate penetration of ZEV's into the passenger vehicle fleet, over-and-above the aggressive state policies in place now, or expected to be in place with implementation of SB 32.
- Pricing—Impact of transportation pricing policies, such as mileage-based user fees.
- Enhanced Mobility—These policies relate to all the new modes of travel (e.g., Uber, Lyft, car share, bike share, etc.) which actually EXIST, and are increasing in utilization and importance over time. They also include the effects of new travel modes and transportation services which either do not exist, or are not fully deployed, such as automated or connected vehicles.

The four largest MPOs agreed to evaluate the potential impact of these policies on achieving GHG emissions reductions over and above the achievement in their current adopted SCSs.

The additional GHG emissions reductions for SACOG stress tests are shown below:

- Land Use / Transit / ATP Combined: 4 percent (at a cost of $3-5 billion over life of MTP/SCS)
- Greater ZEV Penetration: 1 percent (at a cost of $100M over life of MTP/SCS)
- Pricing: 4 to 6 percent (depending on the level of user fee charged—tests assumed $0.04 to $0.08 per mile)
- Enhanced Mobility: No result provided—too early to tell how these new modes/services will affect VMT and GHG.

Other MPOs also performed the stress tests. In general, they found: less potential on Land Use / Transit / ATP (results ranging from 0-2 percent); greater potential on ZEV penetration (up to 20 percent!); similar results for Pricing (although some MPOs looked at much higher mileage fees); and agreement on Enhanced Mobility (too early to build effects into targets).

See the following for more details on the SACOG stress test results.
http://www.sacog.org/sites/main/files/file-attachments/7-sb_375.pdf

Stress Test Land Use/Transit/Active Transportation Project Scenario

The Land Use/Transit/Active Transportation Project combined scenario was based on "Scenario 3" from the alternatives analysis of the current adopted MTP/SCS. The alternatives analysis was done and presented to the SACOG Board to provide an idea of the range of potential land use and transportation scenarios, and their relative performance across a range of indicators. In the analysis, Scenario 2 was the 2012 MTP/SCS. Scenario 1, relative to Scenario 2, included slightly less compact development and growth in Centers & Corridor areas, and included less transit and more highway investments. Scenario 3, relative to Scenario 2, included more compact development and growth in Center & Corridor areas, and included more transit and active transportation projects. These alternatives were also used in the California Environment Quality Act (CEQA) analysis of the current adopted MTP/SCS. Table 1 provides a comparison of the Scenario 3 to the current adopted SCS.

Table 1. SACOG Scenario 3

Scenario Variable	Adopted MTP/SCS	Scenario 3
Share of 2012-2036 Dwelling Unit Growth in…		
…Center & Corridor Communities	30%	36%
…Established Communities	28%	27%
…Developing Communities	40%	36%
…Rural Residential areas	2%	1%
Share of 2012-2036 Job Growth in…		
…Center & Corridor Communities	35%	35%
…Established Communities	49%	53%
…Developing Communities	16%	12%
…Rural Residential areas	<1%	<1%
Transportation System Inputs		
Transit Service Hours (% change from 2012)	+122%	+143%
Major Roadway Lane Miles (% change from 2012)	+21%	+18%
Bike Lane Miles (% Change from 2012)	+123%	+137%

Source: SACOG, March 2017.

Scenario 3 was ruled out as a reasonable alternative in part because of assessments of the marketability of the location and type of development it included, and in part due to financial constraints. The MTP/SCS draft environmental impact report states that "To achieve this level of transit performance for Alternative 3, land use assumptions were made that go beyond the federal requirements of what is reasonable to assume. For instance, the alternative relies on a higher amount of attached housing, especially near transit, than the market and financial incentives currently will support. Additionally, Alternative 3 includes a high funding allocation for transit and relies on an exceptionally high farebox recovery rate, which are unlikely to occur under current operations."

2016 MTP/SCS DEIR:
http://www.sacog.org/general-information/2016-mtpscs-draft-environmental-impact-report

SACOG staff has estimated the cost of additional transit service included in Scenario 3, compared to the current adopted MTP/SCS, as $2-3 billion. This additional funding would primarily be required to operate transit at higher service frequencies in areas where the underlying demographics and land uses would support high frequency transit. Further, estimates of the land-side infrastructure needed to make some of the targeted growth in Center & Corridor communities and transit-oriented development (TOD) areas are $1-2 billion over and above the current adopted MTP/SCS. These funds would be used for upgrading utilities, upgrading street and pedestrian environments, providing other lands-side infrastructure like parks, etc., in Center & Corridor communities and TOD areas. These investments would make development in these areas more likely, and, in combination with more frequent transit service in those areas, would make Scenario 3 more achievable.

VMT Rebound Effect

One key issue came up in the dialog between the ARB and the MPOs regarding the target setting. The ARB, as part of the vehicle efficiency and lower-carbon fuels policies ("legs" #1 and #2 of the state's transportation GHG emissions reduction program) have the effect of reducing the average cost of driving over time, as vehicles become more efficient and lower-cost power sources like electricity become more prevalent in the vehicle fleet. Although the overall impact of these "legs" of the state's program result in significant decreases in overall tailpipe emissions, the declining average cost of driving also results in a slight increase in vehicle travel. This slight increase in VMT due to declining driving costs is known as the "VMT rebound effect." Due to the method of modeling and accounting for vehicle travel and GHG emissions from passenger vehicles in the SB 375 targets, the VMT rebound effect decreases the overall GHG emissions reductions accounted for in the SB 375 target metrics.

Table 2 provide a tally of the average driving costs (or auto operating cost) for the first two SACOG SCSs. For 2035 forecasts:

- Average driving cost decreased by 12 percent between the first SCS (adopted in 2012) and the second SCS (adopted in 2016). This decline in driving cost resulted in a 1.8 percent increase in VMT for the second SCS. This "rebound" had to be covered by a combination of slightly more compact land uses, and additional investments in supporting EV infrastructure programs. The decline in driving cost was caused by a decline in the Department of Energy long range forecast of the cost of gasoline.
- Based on the currently available projections of vehicle fleet efficiency and DOE gasoline price forecasts, the expected average driving cost will drop by 17 percent going from the second SCS to the third SCS (expected adoption in 2020). This decline in driving cost will cause a 2.5 percent increase in VMT for the third SCS. This "rebound" is a major topic of discussion with the ARB regarding the potential for getting to higher SB 375 targets.

Table 2. Auto Operating Costs, Round 1, 2 and 3 SCS's

		Fuel Price $2010	Fleet Avg. MPG	Fuel/Mile	Non Fuel/Mile	Total Auto Op. Cost/Mile
2005	Round 1*	$2.70	20.6	$0.131	$0.066	$0.197
	Round 2**	$2.72	19.5	$0.139	$0.050	$0.189
2035	Round 1*	$5.30	29.3	$0.181	$0.108	$0.289
	Round 2**	$4.68	28.2	$0.166	$0.088	$0.253
	Round 3***	$4.84	39.4	$0.123	$0.088	$0.210
	Round 2 Diff from Round 1 for 2035					-12.4%
	Round 1 to 2 VMT Rebound:					+1.8%
	Round 3 Diff from Round 2 for 2035					-16.9%
	Impact on VMT:					+2.5%

Source: SACOG, March 2017.

Shaded are the main "drivers" of the VMT rebound. From Round 1 to Round 2, the main driver was a drop in the DOE long range forecast for gasoline. From Round 2 to the expectation of Round 3, the main driver is the major increase in average MPG.

*From SACOG 2012 SCS. Estimated from 2009 Dept. of Energy fuel price forecasts & EMFAC2007 + Pavley Post-processor passenger vehicle fleet efficiency projections.

**From SACOG 2016 SCS. Estimated from 2013 Dept. of Energy fuel price forecasts & EMFAC2011 passenger vehicle fleet efficiency projections.

***Estimated based on 2015 Dept. of Energy fuel price forecasts & EMFAC2014 passenger vehicle fleet efficiency projections. Note that 2017 Dept. of Energy fuel price forecasts will be used for 2020 SCS, and may be different than the 2015 forecasts.

Attachment B: SB375 Target Setting
Responses to Questions from March TC, LUNR and GRPA

-Won't SB 1/AB1 offset both the user cost decline and VMT rebound, as well as the revenue decline, raised as a concern for the target setting?
The impact of SB 1 /AB 1 on the per-gallon price of fuel is significant, adding $0.12 per gallon to the forecast year, which is a significant increase in the taxes paid per gallon in 2020 and 2035 (16 to 18 percent increase—see Table 1). However, that increment in taxes, once factored into the average cost of driving on a per-mile basis, is minimal (1 to 2 percent increase). Note that these figures were calculated from a draft of the bill, not the current bill language.

In terms of revenue expected over the life of the MTP/SCS, a verbal briefing will be provided at the Committee meetings based on the version of the bill passed by the State legislature.

Attachment B: SB375 Target Setting
Responses to Questions from March TC, LUNR and GRPA

Table 1. Effect of SB 1 / AB 1 On Fuel Prices and Driving Costs

		Pass. Vehicle	Gas Price	Fuel Tax per Gallon				Driving Cost Per Mile			
Year	**Scenario**	**MPG**	**($2015)**	Current	SB1/AB1	Diff	% Diff	Current	SB1/AB1	Diff	% Diff
2012		20.0	$4.19	$0.638				$0.270			
2020	AB 32	24.9	$4.33	$0.678				$0.250			
2035	AB 32	28.2	$5.14	$0.737				$0.278			
2020	SB 32	24.7	$4.17	$0.666	$0.786	$0.120	+18%	$0.245	$0.250	$0.005	+2%
2035	SB 32	39.4	$5.36	$0.753	$0.873	$0.120	+16%	$0.232	$0.235	$0.003	+1%
SB1 / AB1 Differences											
2020		-0.2	-$0.16	-$0.012	+$0.108			-$0.005	-$0.000		
2035		+11.2	+$0.22	+$0.016	+$0.136			-$0.046	-$0.043		
2035 % Diff		**+40%**	**+4%**	**+2%**	**+18%**			**-17%**	**-15%**		

Source: SACOG, March 2017.
Notes:
/1/ Projections based on best available information on passenger vehicle fleet efficiency (ARB EMFAC 2011) and fuel prices (per Department of Energy 2013 "Outlook" report). This is the fleet efficiency and fuel price forecast used by SACOG for the 2016 MTP/SCS.
/2/ Projections based on best available information on passenger vehicle fleet efficiency (ARB EMFAC ****2014****) and fuel prices (per Department of Energy 2013 "Outlook" report). This is the fleet efficiency and fuel price forecast used by SACOG for the 2016 MTP/SCS.

-What share of total GHG is accounted for by passenger vehicles today? How does that share change over time to the 2035 horizon?
The ARB shows significant decrease over time in passenger vehicles by 2035 (current Scoping Plan shows decline from 112 to 78 million metric tonnes, a 30% decline in total, based on AB32 GHG emissions reduction goals). The SB32 goals will be lower still, but even these forecasts of aggressive change to vehicles, fuels, and power sources for passenger vehicles show passenger vehicles emitting a significant amount of GHG.

2014: passenger vehicles generate 111.85 MMT CO2e (25.4% of all GHG emissions)
Source: ARB 2016 GHG Inventory,
https://www.arb.ca.gov/cc/inventory/data/graph/treemap/scopingplan_2000-14.htm
2035 (AB32): passenger vehicles generate 78 MMT CO2e
Source: ARB, "First Update to the Climate Change Scoping Plan", May 2014.
2035 (SB32): passenger vehicles generate 78 MMT CO2e

-Are there any estimates of how much GHG is thrown up by a forest fire?
One estimate of GHG release from fires collectively in the US is 290 million metric tonnes per year (compared to about 1,800 million metric tonnes emitted collectively by the transportation sector, and 6,870 million metric tonnes in total). If forest fires increase in frequency or severity, this share would increase, and clearly is a concern if reduction of total GHG is a goal.

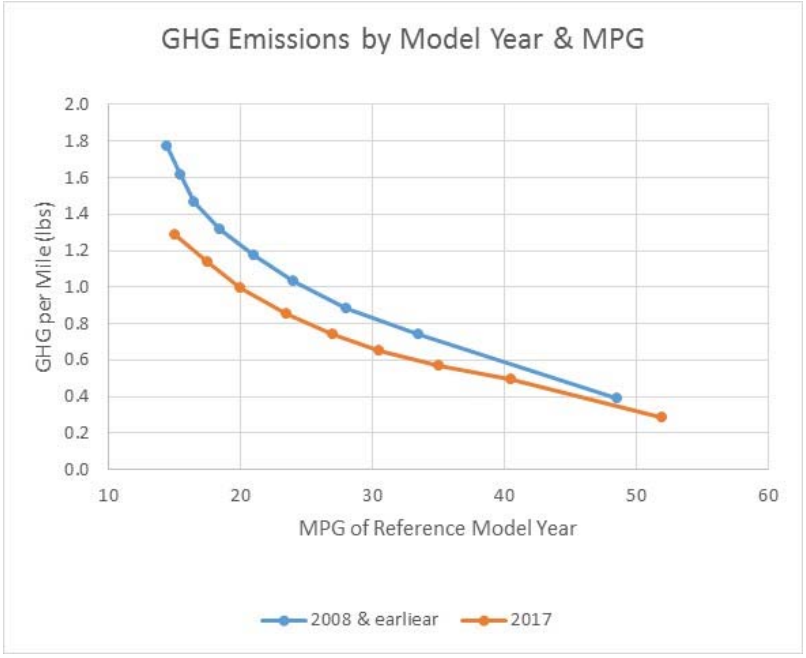
Source: University of California, reported in the journal *Carbon Balance and Management.*

-How do tailpipe emissions for passenger vehicles compare on a per-mile and per-gallon fuel burned between 2005 and 2017?

Based on the per-mile GHG emissions rates of vehicles 2008 and earlier, compared to 2017 model year vehicles, rates have decreased by 15 to 20 percent, depending on the fuel economy of the vehicle. However, for purposes of SB 375 emissions reduction targets, the vehicle technology and fuel changes which drive this decline are largely excluded from the reduction calculation. The SB 375 target focuses on the amount of vehicle travel per capita. The reductions generated by vehicle technology and fuel are tracked and tallied as part of the state's GHG emissions reduction programs, and are not double-counted in the SB 375 target calculation.

Attachment B: SB375 Target Setting
Responses to Questions from March TC, LUNR and GRPA

Figure 1. 2008 vs. 2017 GHG Emissions per Mile



Source: SACOG, March 2017, based on:
https://www.epa.gov/greenvehicles/greenhouse-gas-rating

-What is the hit on jobs and the economy of California's GHG emissions reduction policies?
The ARB draft Scoping Plan recognizes potential impact of GHG regulations on businesses and jobs in California, but does not put a specific number to it:

> "Further, some sources may not be able to achieve a required percent reduction in GHGs each year, forcing them to cut production to meet their annual caps, potentially affecting jobs and the price of their products. This would negatively impact both the California economy and global GHG emissions. Goods that are currently produced in California would be produced elsewhere potentially reducing in-state employment. Assuming California residents still want buy these products, they would be produced out-of-state and imported in, potentially increasing GHG emissions. Under Alternative 4, there are limited mechanisms to address emissions leakage, which may increase under this scenario."

The Scoping Plan also references potential threats of climate change to other industries within the state (e.g., impact of increasingly frequent or severe droughts on agriculture), and the effect of attracting other jobs to the state based on the same policies (e.g., alternative energy industry). All of the references at this point are not detailed or quantified.

Source: ARB, draft Scoping Plan, January 2017.

-Is there research & development on reducing CO2 output of vehicles?
In the meeting, the active parts of the California GHG emissions reduction policies (increasing vehicle efficiency, increasing the percentage of non-fossil fuel burning vehicles in use, reducing the carbon intensity of fossil fuels burned by vehicles) were all mentioned.

Attachment B: SB375 Target Setting
Responses to Questions from March TC, LUNR and GRPA

UC Davis supports two active research centers on low-carbon vehicles and fuels: Plug-In Hybrid and Electric Vehicle Research Center and the Sustainable Transportation Energy Pathways (STEPS) program.

Additionally, UC Davis supports two active research centers on sustainable transportation and land use planning: National Center for Sustainable Transportation, and the Urban Land Use and Transportation Center.

SACOG has collaborated or actively used research from all of these research programs in our planning work. For example, the Plug-In Hybrid and Electric Vehicle Research Center assisted in formulating SACOG's Plug-In Electric Vehicle Plan.

Attachment C
SB 375 GHG Emissions Reduction Targets

Framework for Higher GHG Reductions

Implementing Actions	Going from…	Potential Scenarios				…to
State Offset Decline in Driving Cost	State partially offsetting decline in cost	◔	◑	◕	●	State fully offsetting decline in driving cost
New Revenues Return to Source	Nearly all new revenues return	◕	◑	◔	◔	Half or less of new revenues return
Enable/Encourage Use of New Revenues for Achieving Multiple Objectives (funding flexibility plus "two-fer" projects = revenue multiplier)	High flexibility = 20% revenue multiplier	●	◔	◔	○	Low Flexibility = no multiplier
Prioritize Maintenance and SOGR (based on share of new revenue available ro maintenance)	80% or more of new revenue dedicated to maintenance	●	◕	◑	◑	50% or less of new revenue dedicated to maintenance
Incentivize Early Growth in Infill and TOD Areas (share of new revenue available for land use activation, transit, ATP investment)	20% or less of new revenue to LU, transit, ATP	◔	◔	◑	◑	50% or less of new revenue to LU, transit, ATP
Innovative Programs (e.g. EV infrastructure, shared mobility, etc.)	Maximum investment in innovative programs ($200M+)	●	◑	◑	◔	Minimum investment in innovative programs ($100M or less)
Potential Additional GHG Reduction:		2%	2%	2%	2%	
GHG Reduction Target:		18%	18%	18%	18%	

Key:
- ● High
- ◕ Medium-High
- ◑ Medium
- ◔ Low-Medium
- ○ Low

Target Recommendation

San Diego Association of Governments

AGENDA ITEM NO. 17-04-11

BOARD OF DIRECTORS
APRIL 28, 2017

ACTION REQUESTED – APPROVE

GREENHOUSE GAS REDUCTION TARGET SETTING PROCESS

File Number 3102000

Introduction

The next update of the Regional Plan will include the third Sustainable Communities Strategy (SCS) subject to the provisions of Senate Bill 375 (Steinberg, 2008) (SB 375). SB 375 requires that the Regional Plan include an SCS that demonstrates how development patterns and the transportation network, policies, and programs can work together to achieve per capita greenhouse gas (GHG) emission reduction targets for cars and light trucks (SB 375 targets) for the years 2020 and 2035 from a 2005 baseline as established by the California Air Resources Board (ARB).

Recommendation

The Board of Directors is asked to: (1) approve the 2035 per capita greenhouse gas (GHG) emission reduction target recommendation for the San Diego region of 18 percent; and (2) authorize the Executive Director to submit the proposed target to the California Air Resources Board pursuant to Senate Bill 375 for its use in the GHG emissions reduction target setting process.

Pursuant to SB 375, ARB is required to update the SB 375 targets by 2018. Before updating these targets, ARB is required to exchange technical information with SANDAG and other Metropolitan Planning Organizations (MPOs) as well as other agencies, and engage in a consultative process with public and private stakeholders. Toward that end, ARB has requested that SANDAG and other MPOs provide recommendations for the updated 2035 targets, along with technical analysis and documentation to support the recommendations. ARB will consider this information in establishing the updated SANDAG target, which will apply to the next update of the SANDAG Regional Plan, anticipated for adoption in 2019.

At the March 23, 2017, ARB Board meeting, ARB staff presented an informational update on the SB 375 Target Update process. Executive Directors of the four largest MPOs from the Sacramento Area Council of Governments (SACOG), Bay Area Metropolitan Transportation Commission (MTC), Southern California Association of Governments (SCAG), and SANDAG made a joint presentation at this meeting and summarized findings from the technical analyses presented to their respective boards.

Discussion

Existing SB 375 Targets for the San Diego Region

Established by ARB in 2010, the existing SB 375 targets for the San Diego region are to reduce GHG emissions from cars and light trucks by 7 percent, per capita, by 2020, and by 13 percent, per capita, by 2035, compared with a 2005 baseline. Table 1 shows that the Regional Plan adopted in 2015 would exceed the San Diego region's SB 375 targets for 2020 and 2035.[1]

Table 1:
SB 375 Greenhouse Gas Reduction Targets and San Diego Forward: The Regional Plan Greenhouse Gas Emissions Reductions Results

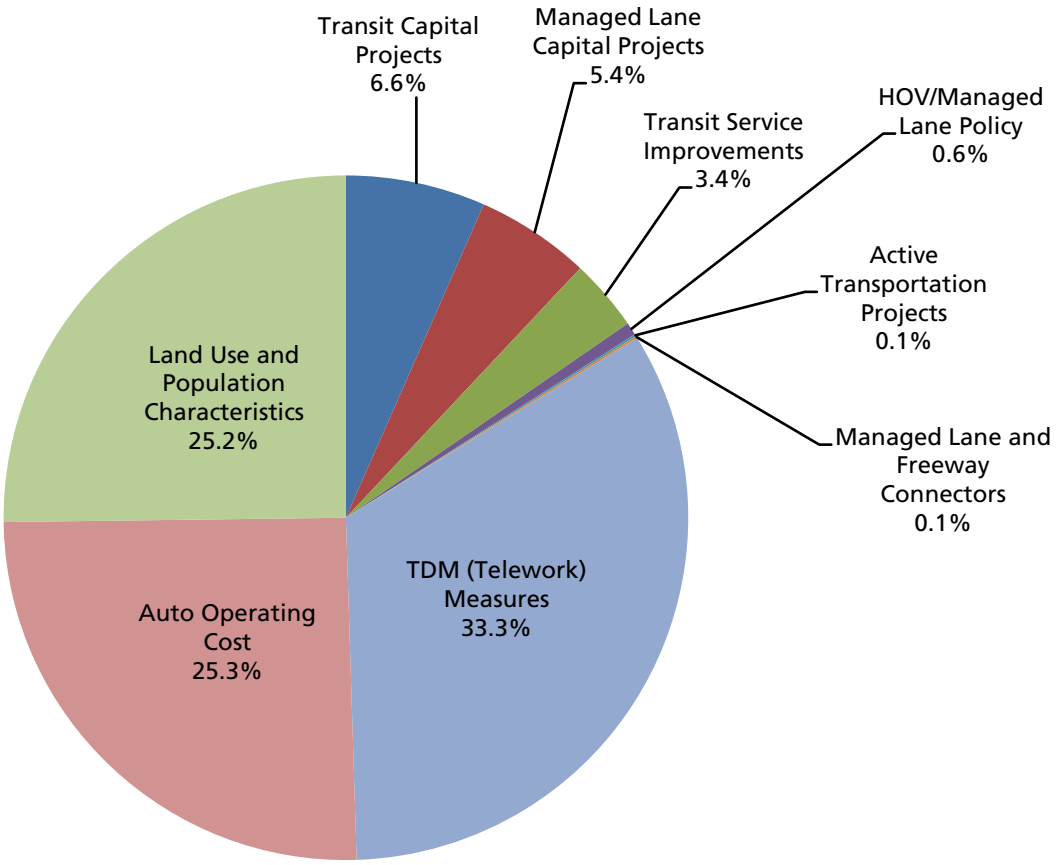
	2020	2035
Existing SB 375 Targets	7 percent	13 percent
San Diego Forward: The Regional Plan GHG Reductions (2015)	15 percent	21 percent

Note: Average weekday per capita carbon dioxide reductions for cars and light trucks from 2005.

Figure 1 identifies the contributions made by specific components of the Regional Plan's SCS toward SB 375 per capita GHG reductions from passenger vehicles in 2050. The chart shows that about half of the reductions are due to the Regional Plan's investments in transportation capital projects, operations improvements, and Transportation Demand Management (TDM) measures that support teleworking (i.e., working from home or telecommuting). About one quarter of the reductions are due to changing land use and population characteristics, and another quarter are due to increases in auto operating costs.

[1] While the SB 375 analysis focuses on per capita GHG reductions from passenger vehicles, an analysis of *total* GHG emissions was included in the Regional Plan Environmental Impact Report (EIR) (Section 4.8). The EIR analysis showed that total GHG emissions in 2050 are projected to be 26 Million Metric Tons CO2e (Carbon Dioxide Equivalent), or 25.9 percent lower than GHG emissions in 2012 (Table 4.8-8).

Figure 1:
Contribution of Regional Plan Components to Passenger Vehicle Per Capita GHG Reductions in 2050



Source: Final EIR for San Diego Forward: The Regional Plan, Appendix K-1 Responses to Comments on the Draft EIR, Figure 4-1

Findings of Technical Stress Tests

On March 10, 2017, staff presented the Board of Directors with results of the technical "stress tests" that were conducted to inform the target update process (Attachment 1). The purpose of the stress tests was to evaluate the potential effectiveness of various transportation and land use strategies, pricing, technology innovations, and other variables that would help the state achieve its GHG reduction goals.

The findings of this analysis indicate that the 2015 Regional Plan GHG reductions, shown in Table 1, represent an ambitious performance. The 2015 Regional Plan reflects the land use transformation that has taken place in the past 15 years due to updates of local jurisdiction land use plans, robust transit investments, the Regional Bike Plan Early Action Program mobility hubs, and transportation demand and system management strategies.[2]

In the 2019 update of the Regional Plan, future revenue assumptions may differ from the 2015 Regional Plan. They will depend in part on whether the next Regional Plan assumes a new local transportation funding source, and on future state funding initiatives, such as transportation bond measures and mileage-based user fees.

In addition to challenges represented by funding constraints, there are new challenges that the region will face during the update of the Regional Plan. New targets must account for progress that the state is making in other climate programs, such as zero-emission vehicle market penetration and increases in overall fleet efficiency from the Advanced Clean Cars (ACC) program. As shared with the Board of Directors in March, the ACC program has some unintended consequences; that is, by increasing passenger vehicle fuel efficiency, the cost of driving is decreasing, which leads to projections that people will drive more and GHG will increase. This is known as the Vehicle Miles Traveled (VMT) "rebound effect" and has the impact of limiting the ability of agencies like SANDAG to reduce GHG emissions from passenger vehicles through regional transportation and land use planning.

The technical stress tests presented at the March 10, 2017, SANDAG Board meeting evaluated strategies that are aspirational and fiscally unconstrained, and may not be feasible under existing circumstances. The findings of the stress tests indicate that only limited additional GHG reductions are achieved from aggressive land use changes and transit investment assumptions. Additionally, the stress tests showed that the best options to further reduce passenger vehicle GHG emissions are to increase the cost of driving and increase the amount of zero-emission miles that are driven on the region's roadways—two factors that are outside the direct control of SANDAG and outside the framework of what MPOs can take credit for under SB 375.

Based on these factors, and through coordination with the other large MPOs (described further below), SANDAG staff believes an 18 percent per capita GHG reduction in 2035 is ambitious and achievable in the 2019 update to the Regional Plan, subject to the state successfully developing some combination of the following actions, which are consistent with current state sustainability policies:

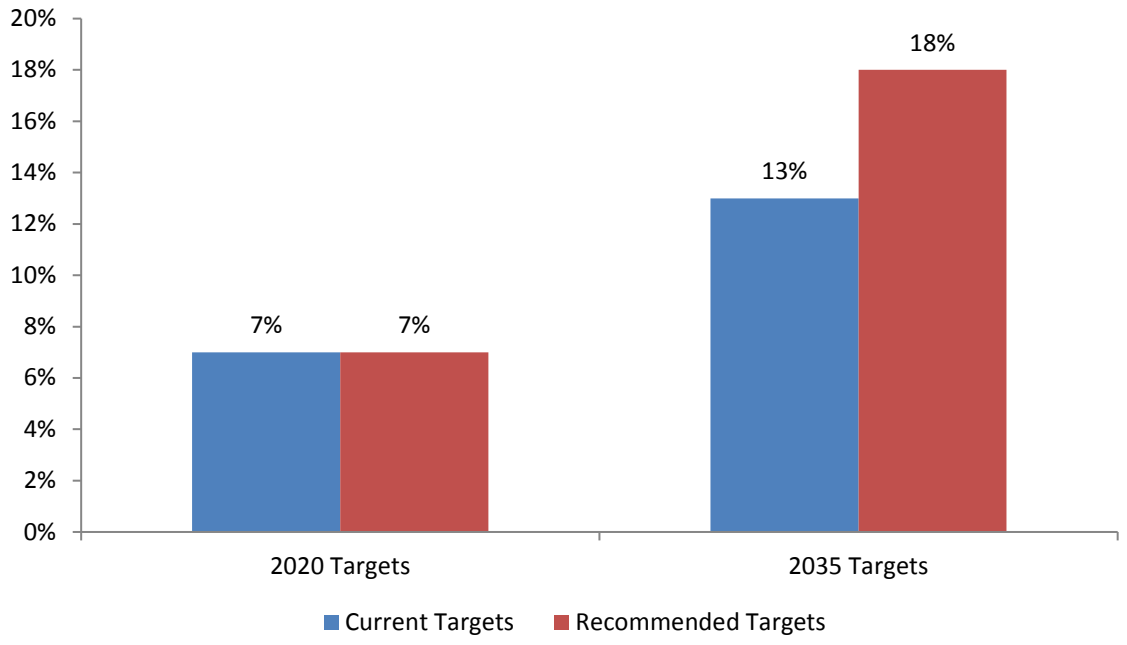
(1) The state to lead the development of pricing mechanisms that reverse the VMT rebound effect caused by the lower cost of driving due to increased vehicle fuel efficiency and lower fuel prices. Pricing mechanisms should include equity considerations. The California Road Charge Pilot Program is an example of a pricing program under evaluation by the state.

[2] SANDAG regularly collaborates with ARB on the review of its modeling assumptions, and SANDAG makes its transportation model source code available online (https://github.com/SANDAG/ABM). Additionally, MPOs across the state have collaborated to standardize the core assumptions used in the travel models (e.g., auto operating costs) and SANDAG uses those standardized assumptions.

(2) Given that the funding contained in the recent transportation legislation largely is focused on maintaining and rehabilitating the existing transportation system, the state also should recognize the lasting impacts of the elimination of redevelopment funding and provide additional funding to support implementation of Regional Transportation Plans/Sustainable Communities Strategies.
(3) ARB to address any impacts from updates to the Emission Factor emissions model used to calculate target achievement.

Figure 2 illustrates the current targets that were set by ARB in 2010 and a recommended target of an 18 percent reduction for 2035. This would represent an increase of 5 percentage points over the current target (13 percent).

Figure 2:
Target Comparison – Current and Recommended Targets



MPO Coordination on Target Recommendations

The four largest MPOs in the state (SACOG, MTC, SCAG, and SANDAG) along with the California Association of Councils of Governments (CALCOG) have been collaborating in the target setting process using a consistent technical methodology. Each of the MPOs are anticipated to request approval from their respective boards in April for an 18 percent 2035 GHG reduction target. Therefore, it is possible that the recommendations from the four major MPOs could align and result in a uniform target being recommended to ARB.

Next Steps

SANDAG will continue to participate in the SB 375 GHG target setting process with ARB, other MPOs, and CALCOG to advocate for targets that are both ambitious *and* achievable. The following schedule outlines the anticipated steps toward approval of the final targets by the ARB Board.

Activity	***Date***
SANDAG submits target recommendation and target-setting analysis to ARB	April 2017
ARB releases draft target setting staff report	Late Spring/early Summer 2017
ARB workshop	Summer 2017
SANDAG provides comments on draft targets (as needed)	Summer 2017
ARB releases final staff report and ARB Board adopts targets	Fall 2017

GARY L. GALLEGOS
Executive Director

Attachment: 1. March 10, 2017, Board of Directors Agenda Item No. 17-03-2

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AGENDA ITEM NO. 17-03-2

BOARD OF DIRECTORS
MARCH 10, 2017

ACTION REQUESTED – DISCUSSION

GREENHOUSE GAS REDUCTION TARGET SETTING PROCESS

File Number 3102000

Introduction

SANDAG will initiate the update of San Diego Forward: The Regional Plan (Regional Plan) in 2017. This Regional Plan will include the third Sustainable Communities Strategy (SCS) subject to the provisions of Senate Bill 375 (Steinberg, 2008) (SB 375). SB 375 requires that the Regional Plan include an SCS that demonstrates how development patterns and the transportation network, policies, and programs can work together to achieve per capita greenhouse gas (GHG) emission reduction targets for cars and light trucks (SB 375 targets) for the years 2020 and 2035 from a 2005 baseline as established by the California Air Resources Board (ARB). The Board of Directors has adopted two Regional Plans (in 2011 and 2015) since ARB first established SB 375 targets for the San Diego region in 2010. Both Regional Plans have demonstrated that SANDAG would meet or exceed its SB 375 targets for 2020 and 2035.

Pursuant to SB 375, ARB is required to update the SB 375 targets by 2018. Before updating these targets, ARB is required to exchange technical information with SANDAG and other Metropolitan Planning Organizations (MPOs) as well as other agencies, and engage in a consultative process with public and private stakeholders. Toward that end, ARB has requested that SANDAG and other MPOs provide recommendations for the updated targets, along with technical analysis and documentation to support the recommendations. Once established, the updated targets will apply to the next update of the SANDAG Regional Plan, which is due in 2019. Because the updated targets also will apply to California MPOs with SCS's due after 2020, ARB is not expected to update the 2020 targets and instead will focus its efforts on the 2035 target setting.

This report discusses the scenario framework developed by ARB to update the targets, share the technical information and results, and provide information for future action by the Board of Directors on target recommendations to ARB.

Discussion

Statewide Planning for Greenhouse Gas Reductions

The SB 375 GHG reduction targets for cars and light trucks is one of several programs that California has put in place to reduce GHG emissions from various sources throughout the state. The overall framework for reducing GHG emissions in California is established in the Climate Change Scoping Plan (Scoping Plan) prepared by ARB. As required by Assembly Bill 32 (Nunez, 2006) (AB 32), the Scoping Plan (first adopted in 2008 and updated in 2014) shows the various programs the state has put in place to achieve the AB 32 goal of returning statewide GHG emissions to 1990 levels by 2020.

With the adoption of a statewide goal for 2030 included as part of Senate Bill 32 (Pavley, 2016) (SB 32), ARB now is working on a new Scoping Plan Update to show how California will achieve a 40 percent GHG reduction to 1990 levels by 2030. ARB published a draft of its 2017 Climate Change Scoping Plan Update (Draft Scoping Plan) on January 20, 2017, and is expected to consider adoption of a final Scoping Plan at its June 2017 meeting. Separately, while a 2005 Governor's Executive Order (S-3-05) calls for an 80 percent statewide GHG reduction from 1990 levels by 2050, the State Legislature has not adopted a 2050 statewide goal.

The Draft Scoping Plan's Proposed Scenario includes the following major elements by 2030:

- 50 percent of electricity from renewable sources
- Doubling of energy efficiency savings
- Cleaner transportation fuels
- More than 4 million zero-emission vehicles
- More than 100,000 zero-emission trucks
- Continuation of the cap-and-trade program[1] with declining caps
- 20 percent reduction in GHG emissions from the refinery sector
- "Increased stringency" of SB 375 targets for 2035

The Role of SB 375 Targets in Statewide Planning for GHG Reductions

The Draft Scoping Plan does not quantify how much SB 375 targets might be increased, or quantify the contribution of GHG reductions from the SB 375 targets to the statewide 2030 goal.[2] However, it does state that "most of the GHG reductions from the transportation sector in this (draft) Plan will come from technologies and low carbon fuels," and adds that, "a reduction in the growth of VMT (vehicle miles traveled) is also needed" to achieve the statewide 2030 goal. The Draft Scoping Plan further explains ARB's position that, "(s)tronger SB 375 GHG reduction targets will enable the state to make significant progress toward this goal" of reducing the growth in VMT, but the SB 375 targets "alone will not provide all of the VMT growth reductions that will be needed." The Draft Scoping Plan also acknowledges that, "(t)here is a gap between what SB 375 can provide and what is needed to meet the state's 2030 and 2050 goals." Furthermore, ARB recognizes that the burden for reducing VMT growth does not fall solely on MPOs like SANDAG, acknowledging that the state government also needs to take action "in parallel to SB 375" if the state's GHG goals are to be achieved.

Existing SB 375 Targets for the San Diego Region

Established by ARB in 2010, the existing SB 375 targets for the San Diego region are to reduce GHG emissions from cars and light trucks by 7 percent, per capita, by 2020, and by 13 percent, per capita, by 2035, compared with a 2005 baseline. Table 1 shows that the two Regional Plans (the 2050 Regional Transportation Plan [RTP]/SCS in 2011 and San Diego Forward: The Regional Plan in 2015) adopted since ARB first established SB 375 targets would meet or exceed the San Diego region's SB 375 targets for 2020 and 2035.

[1] According to ARB, "The Cap-and-Trade Program is a key element of California's climate plan. It sets a statewide limit on sources responsible for 85 percent of California's greenhouse gas emissions, and establishes a price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy."

[2] The currently adopted Scoping Plan (2014) shows that statewide implementation of SB 375 (not just SANDAG, but all California regions) provides just under four percent of the GHG reductions needed to meet the statewide 2020 goal. https://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf

There are several reasons for the difference between the 2011 and 2015 Regional Plan's GHG emissions in terms of meeting the 2035 targets. These include a reduction in low-density development in the rural unincorporated areas of the county, more compact land use pattern in the 2015 Regional Plan, advancement of transit investments, changes in auto operating cost assumptions, reductions in projected household income, and new information from the most recent travel studies about short walking and bike trips.

Table 1:
SB 375 Greenhouse Gas Reduction Targets and Regional Plan Greenhouse Gas Emissions Reductions Results

	2020	2035
Existing SB 375 Targets	7 percent	13 percent
Our Region, Our Future 2050 RTP/SCS (2011)	14 percent	13 percent
San Diego Forward: The Regional Plan GHG Reductions (2015)	15 percent	21 percent

Note: Average weekday per capita carbon dioxide reductions for cars and light trucks from 2005.

Technical Work to Inform the Target Setting Update

As part of the collaborative process for updating the targets set forth in SB 375, SANDAG, other MPOs, and the California Association of Councils of Governments (CALCOG) have been working with ARB staff to conduct technical "stress tests" to inform the target setting update process. MPOs developed individual stress tests that all evaluated the potential effectiveness of various transportation and land use strategies, pricing, technology innovations, and other social and economic variables in helping the state meet its GHG reduction goals. These stress test scenarios include the Regional Plan adopted in 2015, along with six alternative scenarios consisting of strategies that are aspirational and fiscally unconstrained (e.g., they are not based on available funding), and may not be feasible under existing circumstances. Some scenario elements previously were studied in the Environmental Impact Report (EIR) for the 2015 Regional Plan.

The findings of the stress tests indicate that only limited additional GHG reductions are achieved from aggressive land use changes and transit investment assumptions. Additionally, the stress tests clearly show that the best options to further reduce passenger vehicle GHG emissions are to increase the cost of driving and increase the amount of zero emission miles that are driven on the region's roadways — two factors that are outside the direct control of SANDAG and outside the framework of what MPOs can take credit for under SB 375. The effectiveness of these policies is confirmed by ARB's own Scoping Plan.

Stress Test Scenarios

Strategies evaluated in the stress tests include (a) drastic changes in local land use patterns; (b) accelerated completion of transit capital projects and more frequent services; (c) a VMT user fee; (d) aggressive implementation of technology solutions (e.g., electric vehicles, autonomous vehicles); and (e) changes to other factors outside the control of SANDAG and other MPOs (e.g., increasing the cost of driving). Each of the stress test scenarios evaluated by SANDAG as part of this process is shown below and the descriptions and results are described in more detail in Attachment 1.

1. Revenue Constrained Regional Plan SCS (San Diego Forward)
2. San Diego Forward + Multiple Dense Cores Land Use
3. San Diego Forward EIR Alternative 2 (Advancing Transit)
4. San Diego Forward EIR Alternative 2 + Multiple Dense Cores
5. San Diego Forward 2035 Revenue Constrained SCS + 18-cent VMT User Fee
6. San Diego Forward EIR Alternative 2 + Multiple Dense Cores + 15-cent VMT User Fee
7. San Diego Forward Revenue Constrained SCS + additional 25 percent penetration of non-carbon VMT beyond Advanced Clean Cars[3] standard

Focus on Revenue Constrained Planning

While SANDAG evaluated the seven scenarios as part of the stress tests, it is important to focus on Scenario 1, which reflects the adopted land use plans and revenue constraints of the 2015 Regional Plan. A focus on Scenario 1 is necessary (rather than on the aspirational or implausible nature of the other scenarios), because Regional Plans are required to include a financial element that is fiscally constrained. Setting higher targets not grounded in fiscal constraint and achievability will not automatically yield greater performance and may undermine the ability of the region to focus on the mandated revenue constrained planning required by federal law.

Complicating matters further, new targets set by ARB also must account for progress that the state is making in other climate programs, such as zero-emission vehicle market penetration and increases in overall fleet efficiency from the Advanced Clean Cars (ACC) program. The ACC program has some unintended consequences; that is, by increasing passenger vehicle fuel efficiency, the cost of driving is decreasing, which leads to projections that people will drive more and GHG will increase.[4] This is known as the VMT "rebound effect" and has the impact of limiting the ability of agencies like SANDAG to reduce GHG emissions from passenger vehicles through regional transportation and land use planning. As a result, the focus on developing targets that are grounded in available

[3] The Advanced Clean Cars (ACC) Program is part of California's requirements to reduce the state's impact on climate change and improve ambient air quality. The components of the ACC program are the Low-Emission Vehicle regulations that reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles, and the Zero-Emission Vehicle (ZEV) regulations, which require manufacturers to produce an increasing number of pure ZEVs (meaning battery electric and fuel cell electric vehicles), with additional provisions to produce plug-in hybrid electric vehicles in the 2018 through 2025 model years.

[4] As a simple example, if gas costs $3 per gallon and you own a car that gets 20 miles to the gallon, your cost per mile to drive is $0.15 / mile. However, if you have a car that is twice as efficient and get 40 miles to the gallon, your cost of driving is cut in half to $0.075 / mile. SANDAG modeling and independent academic studies all conclude that reducing the cost of driving leads to more driving. This is the "rebound effect" of the ACC; SANDAG expects the impact of the ACC could lead to a 1 percent increase in regional VMT, albeit with much cleaner vehicles.

funding and other real-world constraints (i.e., ambitious and achievable) takes on greater importance.

Scenario 1 Analysis

Since the Board of Directors adopted the Regional Plan in 2015, SANDAG has updated its transportation model data and procedures. These model updates combined with changing revenue and income projections and the VMT rebound effect could lower GHG reduction results by as much as 3 percent in 2035. The next update of the Regional Plan will include an updated growth forecast based on changes to local land use plans and other updated economic and demographic assumptions. Furthermore, future revenue assumptions may differ from the 2015 Regional Plan and will depend in part on whether the next Regional Plan assumes voter approval of a new local transportation funding measure. Based on the analysis of all of these factors, SANDAG staff believes a reasonable range between 18 percent and 21 percent reduction in 2035 is achievable in the update to the Regional Plan.

Additional Stress Test Results

The results of the other six stress tests (Scenarios 2 through 7) help to provide some data around the evaluation of select variables that are outside the direct control of SANDAG and the other MPOs. Scenarios 2 through 4 focus on achieving passenger vehicle GHG reductions through major changes to local jurisdiction land use plans. Local land use plans have been updated over the past 14 years to concentrate growth within the urbanized areas of the region and closer to existing and planned transportation infrastructure. The planned land use changes between the late 1990s and 2015 resulted in an estimated per capita GHG reduction of between 25 and 30 percent. As shown by the stress tests, additional land use concentration within the San Diego region would do little to achieve additional passenger vehicle GHG reductions since so much progress already has been made. The stress test assumption that focuses forecasted housing and employment growth into four existing urban cores around high-quality transit stops (Multiple Dense Cores) (see map in Attachment 1) reveals an additional 2 percent passenger vehicle GHG reduction relative to Scenario 1.

The results of Scenarios 5 and 6 focus on the addition of pricing strategies in the form of a "Vehicle Miles Traveled user fee." For purposes of the stress test, a per-mile fee of 15 to 18 cents is charged for every mile driven. This would effectively add $150 to $180 to the cost of every 1,000 miles driven. The VMT user fee is being explored actively by the State of California through a pilot study, but such a fee structure currently is not allowed at the regional or municipal level. It would require either state implementation or changes to existing state law to allow for such a regional VMT fee to be collected. The VMT fee analysis revealed that a six to seven percent reduction could be achieved over Scenario 1 from these pricing assumptions.

Finally, the evaluation of additional penetration of zero-emissions travel beyond ARB's aggressive ACC standard was the focus of the Scenario 7 analysis. This scenario revealed that an additional 20 percent GHG reduction could be achieved over Scenario 1 by assuming that an additional 25 percent of miles traveled are on zero-emission vehicles beyond what ARB is assuming in the ACC standard. This much larger reduction points to ARB's own conclusion that most of the GHG reductions from the transportation sector (as stated in the draft Scoping Plan) will come from technologies and low carbon fuels. As stated previously, ARB acknowledges that the state

government needs to take action "in parallel to SB 375" if the state's GHG goals are to be achieved, and there are other factors not controlled by regional agencies that go well beyond the SB 375 targets and contribute far more to the achievement of the GHG goals.

Regional Targets or Uniform Targets

Rather than setting unique targets for each region, as was done in 2010, ARB has the option of setting a single statewide uniform target. ARB could set a uniform target for the four largest MPOs in the state (Sacramento Area Council of Governments, Bay Area Metropolitan Transportation Commission, Southern California Association of Governments, and SANDAG). SANDAG is working actively with those MPOs on the development of a single and uniform target.

Next Steps

Over the next several weeks SANDAG staff will continue to participate in the SB 375 GHG target setting process with ARB, other MPOs, and CALCOG. Additionally, ARB has scheduled three workshops on the target updates between March 7 and March 14, 2017. Staff will provide an update on the target setting process and expects to propose a recommended 2035 per capita GHG reduction target for Board action in the March/April timeframe. It is anticipated that the recommended target pursuant to SB 375 would be submitted to ARB for use in its target setting process in April 2017.

GARY L. GALLEGOS
Executive Director

Attachment: 1. Stress Test Scenario Summaries

Key Staff Contacts: Phil Trom, (619) 699-7330, phil.trom@sandag.org
Elisa Arias, (619) 699-1936, elisa.arias@sandag.org

Stress Test Scenario Summaries

The following are descriptions of each stress test scenario, and a summary of results is included as Table 1.

Scenario 1: Revenue Constrained Regional Plan Sustainable Communities Strategy ("San Diego Forward")

This scenario is consistent with the phased transportation investments and revenue constrained financial estimates of San Diego Forward: The Regional Plan (Regional Plan) and land uses consistent with local General Plans.

Scenario 2: San Diego Forward + Multiple Dense Cores Land Use

The Multiple Dense Cores (MDC) scenario focuses all forecasted housing and employment growth into four existing urban cores around high-quality transit fixed-route stops. In this alternative, approximately 70 percent of the future housing growth is located within the Dense Cores, with the remaining 30 percent being mostly located in the surrounding Transit Priority Areas. Under this scenario, land development is prohibited in the remainder of the region. The Multiple Dense Cores land use assumption differs greatly from adopted local general plans. A map showing the Multiple Dense Cores is included as Figure 1.

Scenario 3: San Diego Forward Environmental Impact Report Alternative 2 (Advancing Transit)

Environmental Impact Report (EIR) Alternative 2 includes the following transportation investments:

- Complete all public transit capital projects and public transit operations improvements in the adopted plan by 2025 (the plan horizon year is 2050)
- Complete managed lanes (MLs) and ML connectors in the proposed Plan that support *Rapid* routes by 2025
- Implement ten-minute all-day frequencies for Urban Core local bus routes by 2025
- Complete all active transportation projects in the adopted plan by 2025

Significant new funding would be required to implement and operate the accelerated capital program of EIR Alternative 2, which is estimated at approximately $34 billion by 2025. This would require approximately $30 billion in new capital funds within a ten-year period. The cost to operate the transit facilities would expand from approximately $350 million annually in FY 2015, to nearly $1.1 billion annually in FY 2025. Total operating costs over the 35-year period (by 2050) would be nearly $49 billion.

Scenario 4: San Diego Forward EIR Alternative 2 + Multiple Dense Cores

This scenario represents the combination of the EIR Alternative 2 along with the Multiple Dense Cores land use from Scenarios 2 and 3. A map showing the Multiple Dense Cores is included as Figure 1.

Scenario 5: San Diego Forward 2035 Revenue Constrained Sustainable Communities Strategy + 18-cent Vehicle-Miles-Traveled User Fee

Scenario 5 includes the Regional Plan assumptions along with an 18-cent Vehicle-Miles-Traveled (VMT) fee. For this scenario, SANDAG analyzed how different VMT user fees could—in combination with the adopted Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS)—potentially achieve VMT reductions comparable to those assumed in the California Air Resources Board (ARB) Draft Scoping Plan (i.e., a 7.5 percent reduction in total light-duty VMT in 2035, relative

to 2035 levels under adopted RTP/SCS's). The VMT fees used in this scenario increase auto operating costs by 67 percent beyond the baseline cost agreed to by the four large Metropolitan Planning Organizations (MPOs) for Round 2 SCS development.

Scenario 6: San Diego Forward EIR Alternative 2 + Multiple Dense Cores + 15-cent VMT User Fee

This scenario combines Scenario 4 with a 15-cent VMT fee. A map showing the Multiple Dense Cores is included as Figure 1. For this scenario, SANDAG analyzed how different VMT user fees could—in combination with aggressive land use and transportation investment assumptions described above—potentially achieve VMT reductions comparable to those assumed in the ARB Draft Scoping Plan (i.e., a 7.5 percent reduction in total light-duty VMT in 2035, relative to 2035 levels under adopted RTP/SCS's). The VMT fees used in this scenario increase auto operating costs by 56 percent beyond the baseline cost agreed to by the four large MPOs for Round 2 SCS development.

Scenario 7: San Diego Forward Revenue Constrained SCS + additional 25 percent penetration of non-carbon VMT beyond Advanced Clean Car standard

This scenario combines the Regional Plan with an additional 25 percent penetration of non-carbon emitting VMT beyond the current Advanced Clean Car (ACC) standard set by ARB.

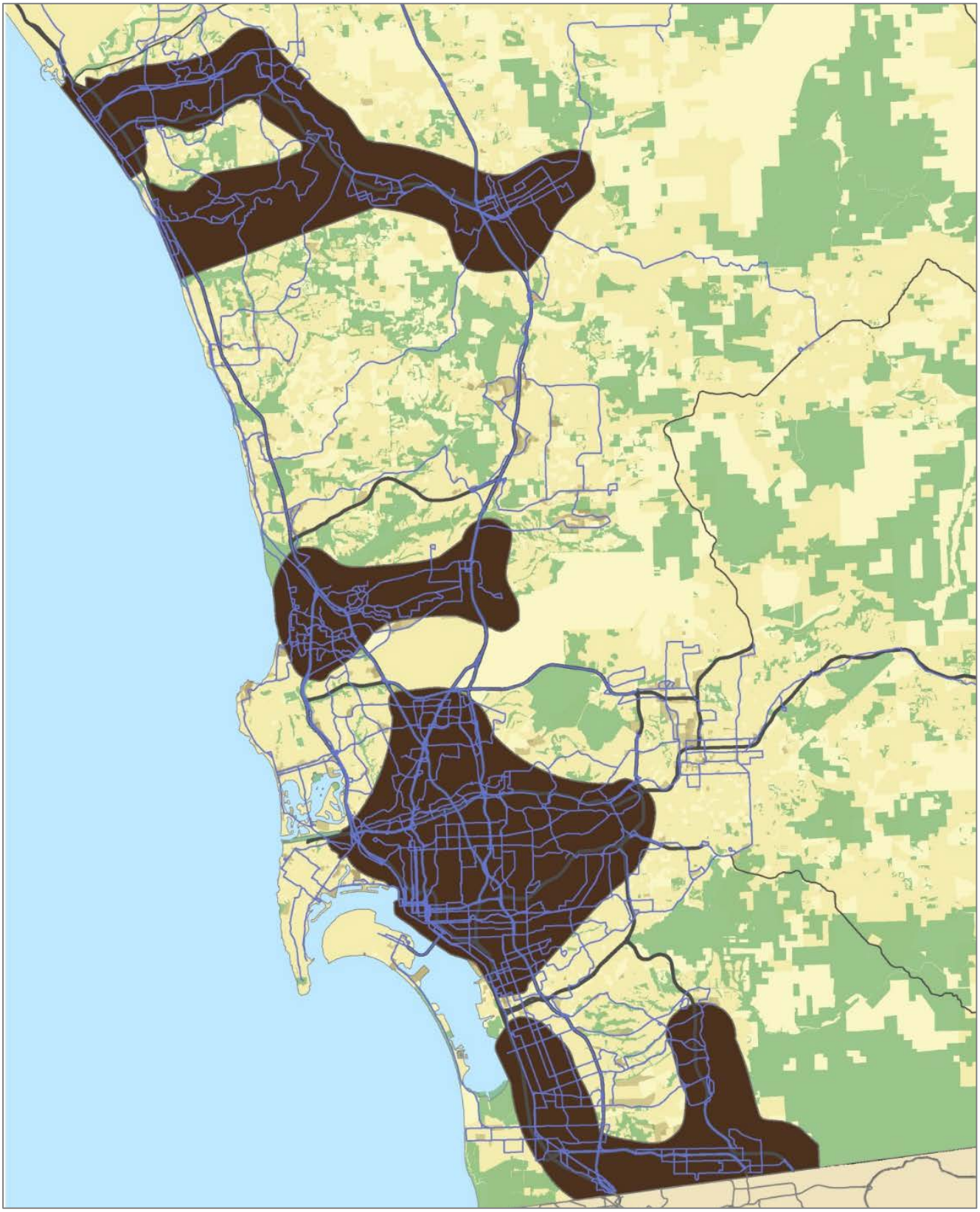
Table 1:
SB 375 GHG Stress Test Scenario Results

Scenario	2035 GHG Reduction (per capita)
1. Revenue Constrained Regional Plan SCS	-18 to -21 percent
	Additional Change from Scenario 1
2. San Diego Forward + Multiple Dense Cores Land Use	-2 percent (-20 to -23 percent)
3. San Diego Forward EIR Alternative 2 (Advancing Transit)[1]	<1 percent (-18 to -21 percent)
4. San Diego Forward EIR Alternative 2 + Multiple Dense Cores	-2 percent (-20 to -23 percent)
5. San Diego Forward 2035 Revenue Constrained SCS + 18-cent VMT User Fee	-7 percent (-25 to -28 percent)
6. San Diego Forward EIR Alternative 2 + Multiple Dense Cores + 15-cent VMT User Fee	-6 percent (-24 to -27 percent)
7. San Diego Forward Revenue Constrained SCS + additional 25 percent penetration of non-carbon VMT beyond ACC[2] standard	-20 percent (-38 to -41 percent)

[1] EIR Alternative 2 has minimal impacts in 2035 because the scenario is similar to the base SCS scenario. Alternative 2 accelerates deployment of transit to 2025 that would have occurred later in the plan.

[2] The ACC Program is part of California's requirements to reduce the State's impact on climate change and improve ambient air quality. The components of the ACC program are the Low-Emission Vehicle regulations that reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles, and the Zero-Emission Vehicle (ZEV) regulation, which requires manufacturers to produce an increasing number of pure ZEVs (meaning battery electric and fuel cell electric vehicles), with additional provisions to produce plug-in hybrid electric vehicles in the 2018 through 2025 model years.

Figure 1: Multiple Dense Cores



Target Recommendation

Southern California Association of Governments

REPORT

AGENDA ITEM NO. 2

DATE: April 6, 2017

TO: Regional Council (RC)
Executive/Administration Committee (EAC)
Community, Economic and Human Development (CEHD) Committee
Energy and Environment Committee (EEC)
Transportation Committee (TC)

FROM: Hasan Ikhrata, Executive Director, (213) 236-1944, ikhrata@scag.ca.gov

SUBJECT: SCAG SB 375 Regional GHG Target Recommendations for the 2020 Regional Transportation Plan/Sustainable Communities Strategy (2020 RTP/SCS) and Beyond

EXECUTIVE DIRECTOR'S APPROVAL:

RECOMMENDED ACTION FOR CEHD AND TC:
For Information Only – No Action Required.

RECOMMENDED ACTION FOR EAC AND EEC:
Recommend that the RC approve SCAG's submittal to the California Air Resources Board (CARB) of a recommended greenhouse gas (GHG) per capita reduction target for the region that is the same as the achievement in the 2016-2040 RTP/SCS — 18% in 2035. This recommendation would apply to the 2020 RTP/SCS and subsequent cycles of the SCS, and is conditioned upon a combination of actions or alternative equivalent measures further described below in the staff report (see Section entitled "SCAG'S TARGET RECOMMENDATIONS AND CONDITIONS").

RECOMMENDED ACTION FOR RC:
Approve SCAG's submittal to CARB of a recommended greenhouse gas (GHG) per capita reduction target for the region that is the same as the achievement in the 2016-2040 RTP/SCS — 18% in 2035. This recommendation would apply to the 2020 RTP/SCS and subsequent cycles of the SCS, and is conditioned upon a combination of actions or alternative equivalent measures further described below in the staff report (see Section entitled "SCAG'S TARGET RECOMMENDATIONS AND CONDITIONS").

EXECUTIVE SUMMARY:
SB 375 directs Metropolitan Planning Organizations (MPOs) in California to develop a Sustainable Communities Strategy in concert with their Regional Transportation Plan that can meet State-determined regional GHG emission reduction target, if it is feasible to do so. CARB is presently working to update the reduction targets for the subsequent round of the RTP/SCS, and SCAG has been coordinating with the other large MPOs to develop recommendations to CARB. Based on SCAG's SB 375 Stress Test results, additional considerations of impacts from Metro's Measure M, potential VMT rebound effects from enhanced fuel efficiency, and consensus reached about likely ranges of GHG reduction targets among the four largest MPOs in California, staff recommends that CARB should adopt a regional GHG per capita reduction target that is the same as SCAG's 2016 RTP/SCS achievement—18% in 2035 for the 2020 RTP/SCS and beyond. This recommended target in 2035 is very ambitious and cannot be achieved simply with strategies in the adopted 2016-2040 RTP/SCS. However, it can be

achieved through a bottom-up collaboration process with stakeholders and through leadership of policy makers and state agencies through the development of the 2020 RTP/SCS.

STRATEGIC PLAN:
This item supports SCAG's Strategic Plan, Goal 1: Improve Regional Decision Making by Providing Leadership and Consensus Building on Key Plans and Policies; Objective: a) Create and facilitate a collaborative and cooperative environment to produce forward thinking regional plans.

BACKGROUND:
Codified in 2009, California's Sustainable Communities and Climate Protection Act (referred to as "SB 375"), calls for the integration of transportation, land use, and housing planning, and also establishes the reduction of greenhouse gas (GHG) emissions as part of the regional planning process. SCAG, working with the individual County Transportation Commissions (CTCs) and the subregions within the SCAG region, is responsible for complying with SB 375 in the Southern California region. One key element of compliance with SB 375 is the establishment of GHG emissions reduction targets for each region, which is done by CARB with input from the State's MPOs.

The last time that CARB established GHG emissions reduction targets was in 2010, to which CARB utilized a Regional Targets Advisory Committee (RTAC) to undertake a public process for determining the regional targets. In September 2010, SCAG's Regional Council approved a recommendation to CARB that the SCAG regional GHG emission targets be 8% for 2020 and 13% in 2035. The RTAC and CARB ultimately approved SCAG's recommendation, and these represent the current SB 375 GHG emission reduction targets for the SCAG region. In accepting the targets proposed by CARB in 2010, SCAG's Regional Council identified 11 conditions/actions or alternative equivalent measures that must be met for SCAG to be able to comply with those targets. The conditions outlined below in this staff report can be considered as an update to those conditions. Most of those conditions were related to increasing funding, securing higher levels of funding commitments to specific modes/programs, such as Active Transportation, Transit, and Transportation Demand Management. With the exception of securing higher level of funding for Active Transportation through the Active Transportation Program (ATP) and Los Angeles County's recently passed Measure M, most of the other measures/actions to increase transportation funding have not come to fruition. The new target must take into consideration the challenges associated with making progress and bringing those actions and equivalent measures to fruition.

For the upcoming cycle of the RTP/SCS, staff has reported to Regional Council and Policy Committees regularly beginning in September 2016 on the status and progress on finalizing SCAG's GHG target recommendation to the CARB. There are several factors that impact SCAG's recommendation of an 18% per capita GHG reduction target for 2035 – one being that SCAG's 2016-2040 RTP/SCS (also referred to as the "Plan") achieved this target and represents an ambitious and balanced Plan that pushes the envelope in all strategies while protecting economic growth, job creation, and accessibility. In fact, the Plan exceeds CARB's GHG reduction target of 13% for 2035 by five percentage points. With the anticipated impacts from the VMT rebound effect and other factors, the same level of resolve would likely not achieve this 18% target. To reach 18% for the 2020 RTP/SCS, SCAG will need to conduct additional research in GHG reduction strategies and must promote innovation and collaboration with regional stakeholders to formulate an achievable SCS.

Indeed, the SCAG region has been ambitious in implementing the Plan as well. There has been overwhelming evidence showing progress on implementation of the RTP/SCS: (1) the share of growth in single family and multifamily housing has been consistent with the assumptions in the Plan since adoption, (2) the proportion of growth in High Quality Transit Areas (HQTAs) is higher on the ground than was projected (49% actual vs. 43% projected), (3) the SCAG region has secured additional active transportation investments as prescribed, and (4) requests for funding on SCAG's Sustainability Planning Grants dramatically exceeds available funding ($35 million requested vs. $11 million available) indicating the desire from local jurisdictions to implement sustainability practices. With all of this progress, local efforts will still need substantial funding support to meet an ambitious GHG reduction target.

CARB SB 375 Target Update:
SB 375, as codified in State law in Government Code Section 65080(b)(2)(B), requires that each MPO adopt, as part of its regional transportation plan, a "Sustainable Communities Strategy" that sets forth plans to meet regional GHG reduction targets set by CARB. SB 375 also requires that CARB update the regional targets at least every eight years.

SCAG has completed two cycles of the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) in 2012 and 2016 that met or exceeded these required CARB targets. The latest Plan, SCAG's 2016-2040 RTP/SCS was adopted in April 2016, and met the per capita GHG reduction target of 8% in 2020 and demonstrated 18% per capita GHG reductions in 2035 (exceeding the target of 13% by five percentage points).

For this round of the SB 375 Target Update Process, CARB will utilize a similar GHG reduction target for year 2020 as each MPO's GHG reductions in previous cycle – 8% for the SCAG Region, and future SCS evaluations for 2020 will focus on performance monitoring. CARB will develop statewide performance indicator database to monitor the performance of SCS.

CARB is in the process of updating the regional GHG reduction targets for each MPO. These new CARB targets will form the basis of the next round of RTP/SCS plans, which for SCAG will be the 2020 RTP/SCS. The SB 375 Target Setting Process has been informed by a suite of concurrent planning activities and technical exercises, including: CARB SB 32 Scoping Plan Update, the CARB Mobile Source Strategy; and the MPO Stress Test.

CARB released the Draft SB 32 Scoping Plan Update in January 2017 and completed three scheduled public workshops on SB 375 Regional Target Update Process in March 2017. The four largest MPOs—MTC, SACOG, SANDAG, and SCAG are planning to submit their respective GHG target recommendations in April 2017. CARB's current schedule is to issue Draft SB 375 regional GHG reduction targets in 2035 for MPOs in June and adopt final targets in Fall 2017.

SCAG STRESS TEST RESULTS AND CONSIDERATIONS:
SCAG, along with the other three major MPOs in California, have collaborated and each conducted a technical "Stress Test" aimed to test GHG reduction strategies that would yield the most ambitious yet achievable GHG emission reductions. The purpose of the Stress Test is to quantify potential GHG emission reductions that would result from deployment of various land use and transportation strategies, such as accelerated deployment of zero emission vehicles and mobility innovations. The technical analysis and off-

model assessment of potential additional GHG emission reductions from strategies included in the Stress Test are the technical basis for SCAG's 2035 target recommendations to CARB.

Since SCAG has already adopted very ambitious strategies in land use, mileage-based user fees, pricing, and transit investment in both the 2012 and 2016 RTP/SCS, staff focused the agency's "Stress Test" and potential additional GHG emissions reductions in three strategy buckets: (a) active transportation, (b) zero emissions vehicles and (c) mobility enhancement and innovations. As indicated in the November 3, 2016 RC and Policy Committees staff reports, SCAG's Stress Test results show that about 2 to 2.5 percentage points (2.0%-2.5%) of per capita GHG emissions could be reduced further above the 18% in 2035— but this carries with it an additional funding need of $10 billion on active transportation programs, investments, and more refined off-model assessment of mobility enhancements and innovations.

It is important that the ultimate SB 375 targets continue to be set at levels that MPOs can meet with an SCS, not an Alternative Planning Strategy (APS). The targets should also take into account federal requirements that MPOs must meet for financial constraints, among other requirements. As indicated, SCAG staff estimate that it will cost roughly $10 billion in additional investments and programs to achieve the higher GHG emission reduction results in the Stress Test. This cost, however, is not within the financial constraints of the 2016 RTP/SCS financial plan. Stress Test results also predict that improved vehicle technology and fuel efficiency through 2035 will have an attendant reduction in vehicle operating costs, which will likely increase household driving and VMT.

In addition to the Stress Test results, staff also identified and assessed likely ranges of GHG impacts from the following factors:

Impacts from Transit Investments in Measure M passed by voters on November 8, 2016

- May result in <u>additional</u> per capita GHG reductions in the SCAG Region
- Active Transportation investments are estimated to reduce the $10 billion funding gap identified in the Stress Test to just under $5 billion

Automotive Technology Improvements in Fuel Efficiency

- It will induce up to a 4 to 5 percentage points <u>increase</u> in per capita GHG and VMT in the SCAG region due to the decreased cost of driving (i.e., VMT rebound effect)
- This negative effect on per capita GHG reductions might be mitigated through additional mileage based user fees and/or other strategies beyond what was assumed and assessed in the 2016 RTP/SCS

MPO Coordination, Consensus in Target Recommendation:

Since the four largest MPOs (SCAG, SACOG, SANDAG, and MTC) follow similar RTP/SCS development processes and address similar issues, these agencies have been closely coordinating with each other in conducting their respective Stress Tests and in developing each MPO's SB 375 GHG target recommendations. The goal of this collaboration is to develop parallel, independent, but comparable Stress Test results and ranges of target recommendations based on consistent modeling and off-model analysis framework and assumptions. As a result of this effort, here is a summary of consensus items among the MPOs:

- ➢ The ranges of additional GHG emissions reductions from each MPO's Stress Tests are between two to four percentage points per capita for land use, transportation expenditures, and pricing scenarios.

However, some of these reductions are based on "extreme land use, transportation expenditure, and pricing scenarios" which are not expected to be adopted by each MPO's governing board.

- CARB's advance clean car & fuel regulations will have some unintended consequences.
  - VMT rebound effect: by increasing fuel efficiency (i.e., higher fuel efficiency standards), the cost of driving is decreasing, and both per capita VMT and GHG will likely increase in the future
  - Transportation revenues will continue to fall due to declining fuel sales from more efficient vehicles and zero emission vehicles.
  - What does this mean? There will be gaps between CARB's GHG targets and the MPOs' existing and subsequent RTP/SCS' GHG reduction strategies, requiring MPOs to assess additional "aggressive" strategies to fill the "gaps" through the next RTP/SCS development process. So far, no MPO has clear answers for addressing the gaps.

- Each of the four major MPOs is anticipated to request board action in April. Considering the GHG reductions achieved by MPOs in the previous two rounds of their RTP/SCSs, the "Stress Test" results, and the VMT/GHG rebound effect, there is a possibility that the four major MPOs may ultimately align on the same recommended target, which would allow the four to recommend a single and uniform target for CARB's consideration and adoption.

SCAG'S TARGET RECOMMENDATIONS AND CONDITIONS

Based on SCAG's SB 375 Stress Test results, additional considerations from Metro's Measure M, the likelihood of VMT rebound effects from enhanced fuel efficiency standards and vehicle technology, and likely consensus among the four largest MPOs in California, staff recommends for CARB to adopt a regional GHG per capita reduction target for the SCAG region at the same level as the 2016 RTP/SCS's achieved GHG reduction—that is, 18% in 2035 for the 2020 RTP/SCS and beyond. This recommended target in 2035 is very ambitious and cannot be achieved simply with strategies in the adopted 2016-2040 RTP/SCS. The performance gap between the 2016-2040 RTP/SCS and this ambitious recommended target may be resolved or surpassed with new and innovative strategies that can be developed through advanced research, regional leadership, and collaboration with private sector entities, state agencies, and local jurisdictions.

It is important to note that this GHG target recommendation is built upon SCAG's 2016 RTP/SCS and its successful and timely implementation. As such, key conditions and assumptions in the 2016 RTP/SCS, including but not limited to policies, funding, strategies, and assistance from all levels of government, private business, advocacy groups, stakeholders, and technology innovation enablers will need to be coordinated and secured to ensure the attainment of the recommended targets.

In addition, SCAG's recommendation for a regional GHG per capita reduction target of 18% in 2035, the same as achieved in the 2016-2040 RTP/SCS, is conditioned upon a combination of actions or alternative equivalent measures. Ambitious and achievable initiatives that were included in the previous Plan will need to be carried through into subsequent RTP/SCSs:

1. Successfully transitioning from an excise tax on gasoline to a mileage based user fee, starting in 2025 to serve as one of the primary sources of funding our roadways and transit infrastructure in the 2016 RTP/SCS

2. Successful implementation of the Regional Express Lane Network (HOT Lane Network) within the timeframe specified in the 2016 RTP/SCS
3. Implementation of over $38 billion in passenger rail improvements, including CA High Speed Rail Phase 1 connecting the Bay Area and Central Valley to the SCAG region including LA Union Station and Anaheim (the same level of investment identified in the 2016 RTP/SCS)
4. Implementation of over $56 billion in transit improvements, including expansion of the Metro Rail heavy and light rail system in Los Angeles County (representing a doubling of service compared to baseline), expansion of commuter rail service in the Inland Empire, implementation of streetcar service in Orange County, and region wide expansion of bus rapid transit services (the same level of investment identified in the 2016 RTP/SCS)
5. Targeted increase in funding commitments and enabling information technology for Transportation Demand Management (TDM) from federal, state and local agencies
6. Improvements in land use planning, with technical and information assistance, and funding in cooperation with local governments, mostly at the neighborhood scale along growth opportunity areas, including for example, the high quality transit areas (HQTA), neighborhood mobility areas and livable corridors
7. Continuing partnership and commitment from each County Transportation Commission (CTC) to support the SCS development process, including a focus on non-motorized transportation solutions
8. Promote potential efficiency gains from quick deployment of autonomous transportation systems and identify policy priorities to maximize sustainable outcomes from autonomous vehicles
9. Promote shared-use mobility, such as bike sharing, car sharing and ride sourcing
10. Continued leadership and partnership of state and regional partners to increase availability of State funding for the region
11. Continued leadership by the regional leaders to increase availability of federal funding through the next transportation authorization and through climate change legislation
12. ARB will commit to working with MPOs, local governments, state agencies and the Legislature to identify, pursue and secure adequate incentives and sustainable sources of funding for local and regional planning and other activities related to the implementation of SB 375
13. Expanded funding from Cap-and-Trade and other sources to fund AHSC and ensure fair and adequate funding allocation and award to the SCAG region to implement SCAG RTP/SCS
14. Support regulatory incentives and dedicated funding sources at the state level for affordable housing
15. Promote and incentivize development of infrastructure for zero emission vehicle and alternative transportation fuel system

Moreover, SCAG's target recommendation is also contingent on ARB's leadership in the following technical and modeling areas:

16. Acknowledgement of the VMT rebound effect as it will be difficult to repeat SCAG's 2016 RTP/SCS achievement of 18% under CARB's clean car and fuel technology assumptions (as fuel efficiency rises, the cost of driving decreases and may result in VMT and GHG emission increases)
17. Commitment to address the issues resulting from update to the EMFAC emissions model—there should be a consistent use of the same EMFAC emissions model for target setting and target compliance
18. CARB's commitment to address off-model adjustments – consistent treatment/analytical review for the quantification of off-model strategies in target setting, as used in the CARB RTP/SCS technical review process

FISCAL IMPACT:
Work associated with this item is included in the Fiscal Year 16/17 Overall Work Program (17-080.SCG00153.04: Regional Assessment).

ATTACHMENT/S:
PowerPoint Presentation: SCAG SB 375 Regional GHG Target Recommendations for the 2020 RTP/SCS and Beyond

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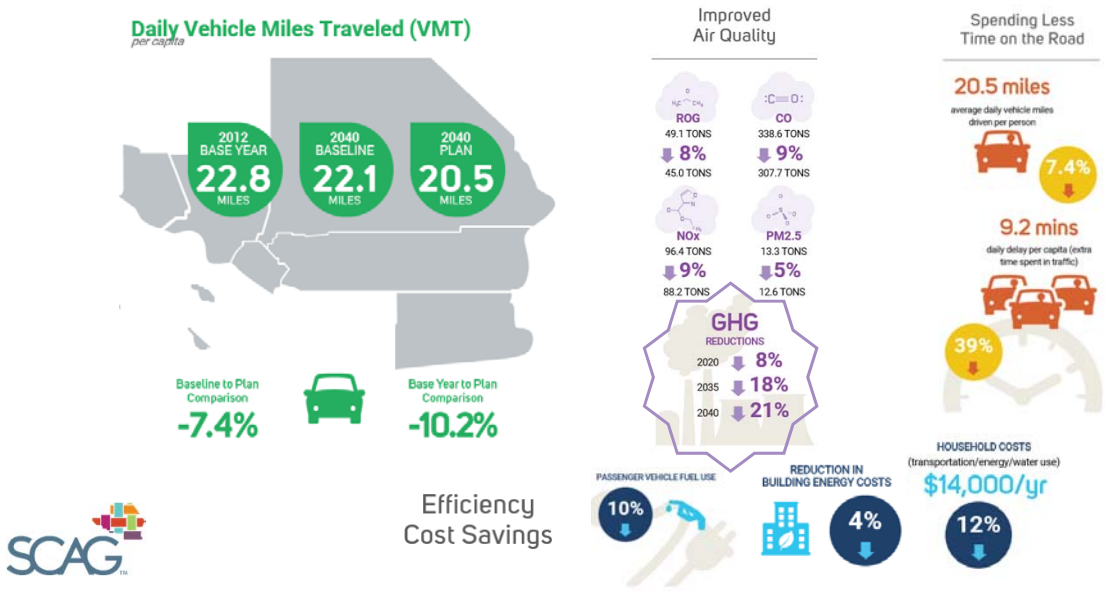
SB 375 Regional GHG Target Recommendations for the 2020 RTP/SCS and Beyond

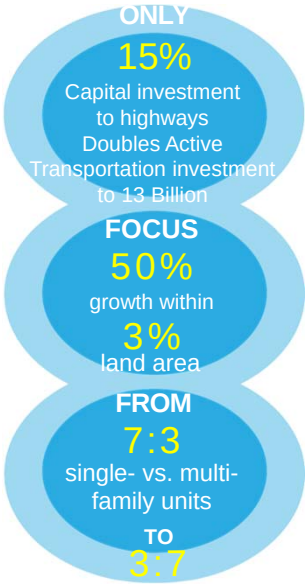
April 6, 2017

Outcomes of SCAG's 2016 RTP/SCS



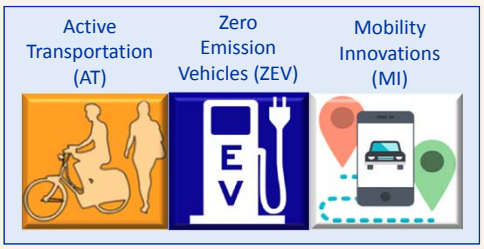
Strategies of SCAG's 2016 RTP/SCS

- Includes a revenue neutral Mileage (VMT) Based User Fee
  - $0.04/Mile in 2015 dollars; starts in 2025 and replaces gas taxes; indexed at 2.4% per year
- Fix it First — Focus on O & M
- Incentives future growth in areas well served by transit
- Increase first/last mile investments within High Quality Transit Areas (HQTAs)
- Promote mixed-use walkable communities, avoid new developments in sensitive habitats
- **To implement the plan, SCAG will continue supporting local initiatives through our Sustainability Planning Grants**
  - **$11 Million in funding over 3 years and $5+ Million set aside for Active Transportation; local request totaled $35 Million**

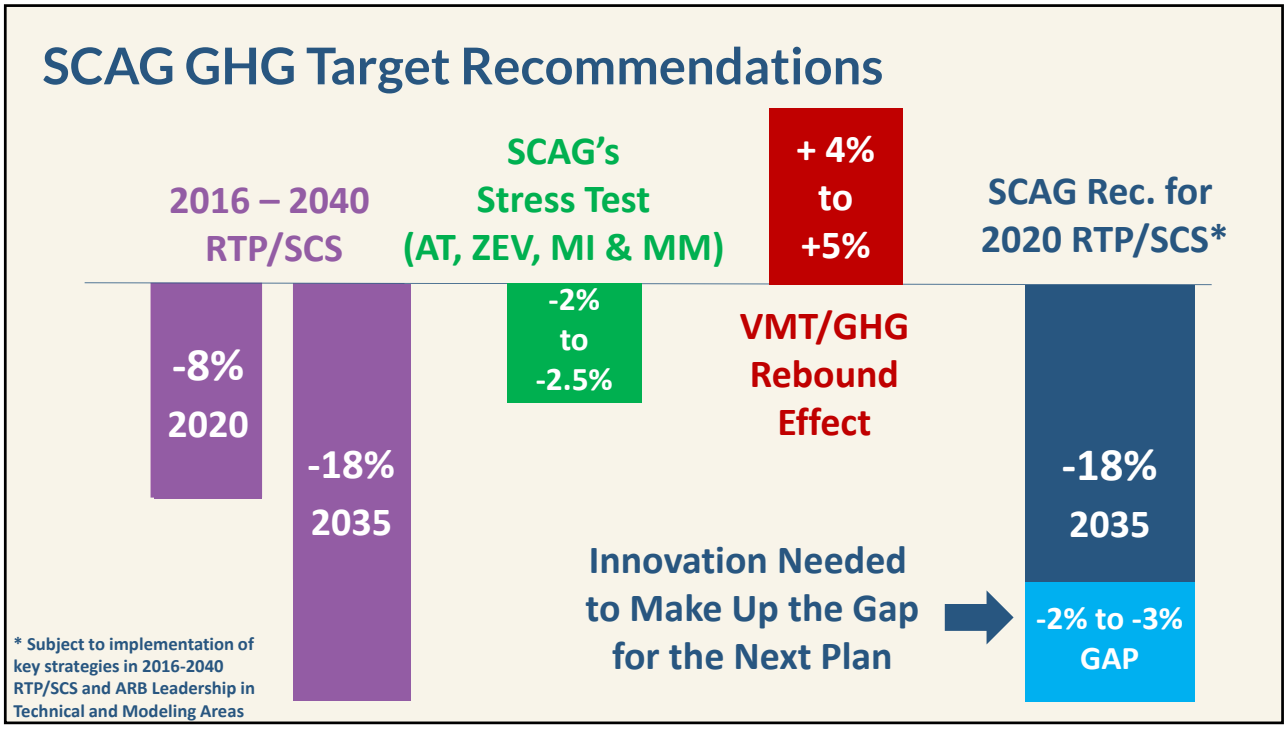


Build Upon 2016-2040 RTP/SCS Findings of SCAG's Stress Test & Additional Considerations

- **Summary of Findings**
  - Focused on: AT, ZEV, and MI
  - 2.0 to 2.5 percentage points GHG can be reduced above our 2016 RTP/SCS achievement – through additional programs, investments, and mobility innovations
  - With an estimated cost of $10 billion



- **Impacts From Transit Investments in Measure M**
  - May result in **additional** **and moderate** per capita GHG reductions
  - AT investments estimated to reduce funding gap to less than approx. $5 billion
- **Automotive Technology Improvements in Fuel Efficiency**
  - Could lead to a substantial **increase** in per capita GHG due to the decreased cost of driving



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Thank you!

Kurt Karperos, Deputy Executive Officer
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814
cc: Terry Roberts

December 30, 2016

Dear Mr. Karperos,

The San Joaquin Valley Regional Planning Agencies' Directors' Committee comprises the Executive Director from each Metropolitan Planning Organization (MPO) that serve a region with 8 counties, 62 cities, whose collective population is more than four million, with an anticipated 2035 population of approximately six million. The counties include: Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare.

These eight counties, home to some of the most disadvantaged communities in the state, share an air basin challenged by weather and topography that creates an ideal setting for extreme air pollution. The Valley MPOs are sensitive to the need for air quality improvement, and are committed to the intent of SB 375. In advance of 2014 RTP/SCS efforts, ARB established one set of uniform targets for the Valley: a 5 percent per capita reduction in greenhouse gas (GHG) by 2020, and 10 percent by 2035. Since the adoption of the 2014 RTP/SCS, the Valley MPOs have been actively implementing strategies to reduce GHG emissions, and have been able to demonstrate that the targets can be met.

Following the completion of the 2014 RTP/SCS, ARB identified areas of improvement, including updates to the travel demand model. The Valley has been responsive to this feedback through the development of the San Joaquin Valley Model Improvement Plan, Phase 2 (VMIP2). VMIP2 validation is preliminary at this time, and as such, model output is subject to changes as the validation is finalized. Valley staff has been in regular contact with ARB staff to discuss VMIP2 progress. In recent discussions it has been established by ARB staff that the Valley MPOs may refine their target recommendations based on the finalized model validation in early 2017.

The attached document describes the many efforts underway (both locally and valley-wide) in support of SB 375, as well as the various challenges that impact the Valley's ability to match or expand upon the GHG reductions reported as part of the 2014 RTP/SCS. At the conclusion of the document, each Valley MPO has prepared a preliminary SB 375 target recommendation based on data currently available. However, as noted, Valley MPOs will be refining their target recommendations as model validation concludes.

Tulare County Association of Governments
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Thank you for this opportunity to prepare SB 375 target recommendations ahead of the 2018 RTP/SCS. The eight San Joaquin Valley regional planning agencies look forward to continued dialogue with ARB as this important planning process moves toward finalization.

Sincerely,

Ted Smalley

Tulare County Association of Governments
Ted Smalley – Committee Chair

SANDAG

“SUMMARY OF MODEL CHANGES SINCE SD FORWARD”

RECEIVED MAY 26, 2017

Executive Summary

The SANDAG Activity-Based Model (ABM) is always evolving as new information becomes available, the science of travel modeling evolves, and software updates are implemented. San Diego Forward: The Regional Plan used an initial implementation of the SANDAG ABM. SANDAG brought its ABM online in November 2013, and the initial evaluation criteria runs for the Regional Plan began the next month. In the three years since the ABM was first brought online, SANDAG has published three major updates (i.e., version 13.1.0, 13.2.0, and 13.3.0), and each of these updates has had minor sub-releases to software enhancements and other data improvements (e.g., version 13.2.1, 13.2.2).

Because of these changes, the SANDAG estimation of future trip activity always reflects the most recent information available. This also means that the SANDAG estimation of future trip activity is always evolving. Since the Board of Directors adopted the San Diego Forward in 2015, SANDAG has continued updating its travel model, and, as a result, the current estimates for greenhouse gas reductions have declined from 21 percent to 18 percent in 2035. Since the adoption of San Diego Forward, SANDAG has not implemented any revisions of fuel costs or fleet efficiency.

The decline in greenhouse reduction primarily stems from enhancements to the SANDAG Population Synthesizer. The population synthesizer builds a synthetic population that mimics the demographic and economic characteristics of San Diego neighborhoods. The ABM uses this synthetic population to model each individual's travel behavior. SANDAG updated the population synthesizer to better match population targets from the SANDAG regional Demographic and Economic Forecasting Model (DEFM) resulting in 3 percent decrease in greenhouse gas reductions. SANDAG also refreshed numerous calibration datasets contributing to the change in greenhouse gas reductions. The report describes these changes in more detail.

SB 375 GHG Reductions and Revisions

Plan and Revisions	2035 GHG Reductions (per capita)
San Diego Forward: The Regional Plan	-21 percent
	Updates included in Stress Test
PopSyn III Update	+3 percent (-18 percent)
Calibration Update	<1 percent (-18 percent)
	Updates Not Included in Stress Test
Reduction in Fuel Price	+2 percent (-16 percent)
Increased Fleet Efficiency	+2 percent (-14 percent)
Lower Income Forecasts	-2 percent (-16 percent)

The 18 percent revision does not include any updates to fuel forecasts or increased fuel efficiency due to the Advanced Clean Car program. These reductions in the cost of driving a vehicle most likely will increase SB 375 greenhouse gas emissions in the region by 3 to 4 percent potentially decreasing SB 375 greenhouse gas reductions to 14 or 15 percent in 2035.

Population Synthesizer Update

After the adoption of San Diego Forward, SANDAG updated the population synthesizer for its ABM. The population synthesizer builds a synthetic population that mimics the demographic and economic characteristics of San Diego neighborhoods. The ABM uses this synthetic population to model each individuals travel behavior. SANDAG develops the synthetic characteristics to mimic U.S. Census data or the SANDAG forecasting model, DEFM.

The SANDAG ABM initially implemented a second-generation population synthesizer, PopSyn II, developed by Parsons Brinkerhoff. PopSyn II is only able to precisely balance on one variable (e.g., households, population) while minimizing differences in other demographic and economic controls. Due to this single balance constrained, the PopSyn II synthetic households match the regional controls precisely, but PopSyn II under generates the total population by 3.9 percent.

After the adoption of San Diego Forward, SANDAG implemented the next generation population synthesizer, PopSyn III, developed by the Maricopa Association of Governments (Phoenix MPO).[1] PopSyn III precisely balances on multiple variables through a prioritization process. With this new enhancement, the synthesizer now balances both total households and persons precisely. The table below summarizes the 2035 results of PopSyn II and PopSyn III compared the SANDAG Regional Forecast.

Population Synthesizer Comparisons (Scenario Year = 2035)

	SANDAG DEFM Forecast (Series 13)	Population Synthesizer II (San Diego Forward)		Population Synthesizer III (SB 375 Stress Tests)	
	Series 13	Total	Difference	Total	Difference
Population	3,853,698	3,707,675	-3.9%	3,853,705	0.0%
Households	1,326,445	1,326,433	0.0%	1,326,445	0.0%

San Diego Forward Per Capita Calculations

[1] Vovsha, Peter, et al. *New Features of Population Synthesis.* Submitted for presentation at the 94th Annual Meeting of the Transportation Research Board and publication in the Transportation Research Records.

San Diego Forward uses the population forecasts from its regional forecasting model, DEFM, as the denominator in all the per capita calculations. The DEFM forecast as the denominator created better consistency across all the reported outputs from DEFM, the ABM, and other performance measures in the plan.

Depending on the denominator used in the calculation of per capita emissions, the reported SB 375 reductions range from -21 percent using the DEFM population to -18 percent using the PopSynII population. After the switch to PopSyn III, the synthetic population aligned better with the DEFM forecast, and the estimate for SB 375 reductions is -18 percent regardless of the population source.

SB 375 Reductions Comparison (Scenario Year = 2035)

	SB 375 GHG	DEFM Population	PopSyn II (San Diego Forward)	PopSyn III (SB 375 Stress Tests)
San Diego Forward	38,327.4	19.9 (-21%)	20.7 (-18%)	N/A
SB 375 Stress Tests	40,089.4	20.8 (-18%)	N/A	20.8 (-18%)

Additional Model Enhancements

Since the adoption of San Diego Forward, SANDAG has made several other enhancements to the ABM. These results have not been modeled independently, so it is difficult to ascertain their exact, individual impacts on the greenhouse gas emissions in the model. The most significant changes beyond the population synthesizer are highlighted below. Complete documentation on these changes and the overall impact on the travel model are available in the November 2016 report, *Activity-Based Travel Model Calibration and Validation For Base Year 2012.*[2]

- *Land Use Inputs*: Revised total employment including a base year increase in civilian employment and a reduction in uniformed military.

- *Traffic Counts*: Updated and validated both roadway traffic counts and transit ridership from PeMS, Caltrans District 11 Traffic Census counts, arterial counts from local jurisdictions, and some special counts collected by SANDAG.

- *Military Re-Calibration*: SANDAG conducted traffic counts at military base gates in 2016, and the data was used to calibrate the loadings onto the network from the regions military bases.

- *American Community Survey Updates*: SANDAG staff updated calibration targets using the 2010-2014 ACS five-year estimates, specifically auto ownership and work trip mode choice models targets.

Change in Auto Operating Cost

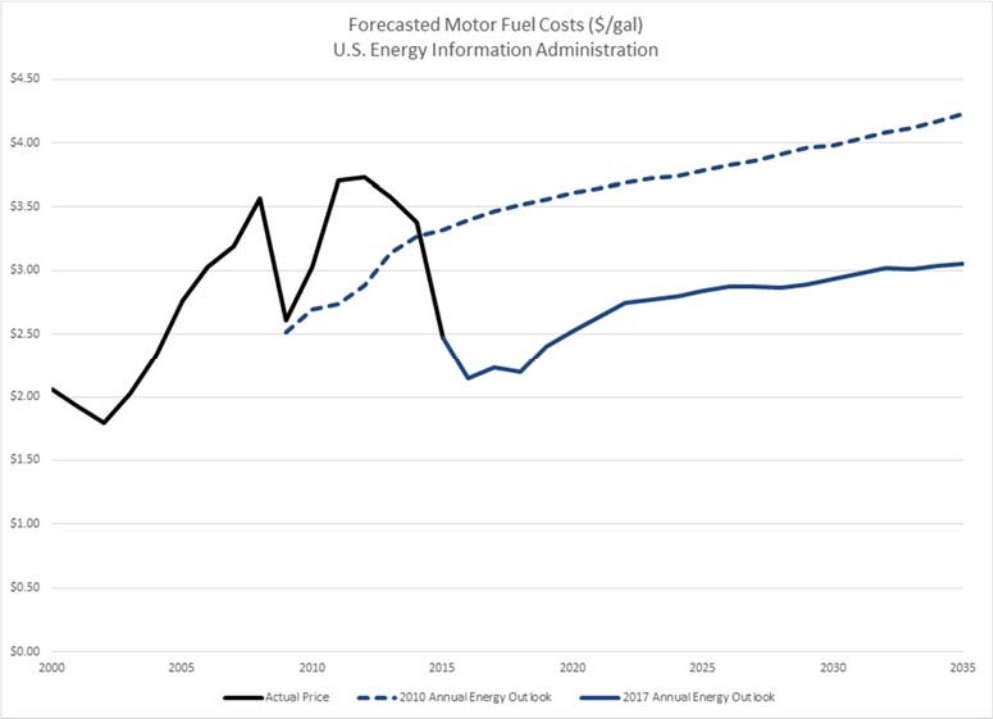
SANDAG did not include any updated pricing assumptions or fleet efficiency settings in its SB 375 stress tests. The auto operating costs and fleet efficiency are consistent with San Diego Forward. These updates, if modeled, most likely will increase greenhouse gas emissions by up to 4 percent in the San Diego region.

In San Diego Forward, the assumed fleet efficiency is 27.2 MPG for 2035. The fleet efficiency was derived using EMFAC 2011 and is consistent with the 26-29 MPG range used in other regions across the state. Using EMFAC 2014 and the same efficiency methodology developed by the Big 4 MPOs for the Round 2 SCS, the fleet efficiency would increase to 38.5 MPG for 2035, a 42 percent more efficient fleet. Because of some fixed costs associated with driving (e.g., insurance, maintenance), the change to auto operating cost is reduced by 20 percent

[2] *Activity-Based Travel Model Calibration and Validation For Base Year 2012 is available for download at: http://www.sandag.org/index.asp?publicationid=2097&fuseaction=publications.detail*

from $0.27 to $0.21 per mile. A 20 percent increase in auto operating cost would increase greenhouse gas emissions up to 2 percent in the region.

On top of the changes related to fleet efficiency in EMFAC 2014, the U.S. Department of Energy continues to lower their forecasts for the cost of motor gasoline into the future (see chart below). Since 2012, the forecasted price of fuel in 2035 has decreased by 30 percent. Combining new fuel efficiency targets and the latest fuel forecast information, the cost of driving would drop from $0.27 / mile in San Diego Forward to $0.17 / mile in 2035. This is a 36 percent drop in the cost of driving. This would result in a 3-4 percentage increase in greenhouse gases in the San Diego region.



Income

Finally, SANDAG recently revised its median household income forecast downward by 12.5 percent in May 2017. These revisions were not included in the SB 375 stress tests, but the latest model runs with the income revisions decrease VMT and greenhouse gas emissions by 2 percent.

March 10, 2017 SANDAG Board of Directors Staff Report

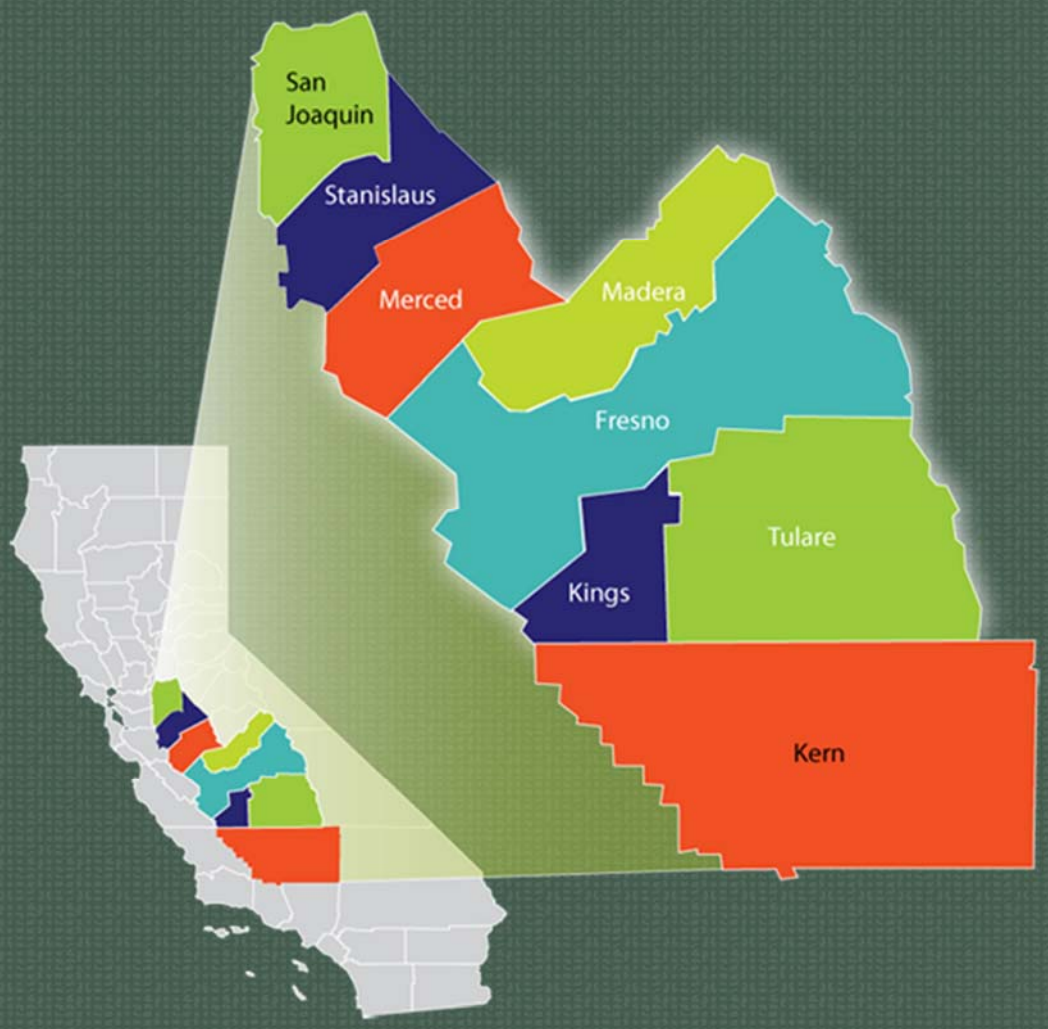
The information included in Table 1 (SB 375 GHG Test Scenarios Results) in Attachment 1 of the March 10, 2017 Board report contained some typographical errors. The table below highlights the corrections in the table within the staff report.

Table 1: (REVISED)
SB 375 GHG Stress Test Scenario Results

	Scenario	2035 GHG Reductions (per capita)
1.	Revenue Constrained Regional Plan SCS	-18 to -21 percent
		Additional Change from Scenario 1
2.	San Diego Forward + Multiple Dense Cores Land Use	-2 percent (-20 to -23 percent)
3.	San Diego Forward EIR Alternative 2 (Advancing Transit)	<1 percent (-18 to -21 percent)
4.	San Diego Forward EIR Alternative 2 + Multiple Dense Cores	-2 percent (-20 to -23 percent)
5.	San Diego Forward 2035 Revenue Constrained SCS + 18-cent VMT User Fee	~~-7 percent (-25 to -28 percent)~~ -6 percent (-24 to -27 percent)
6.	San Diego Forward ~~EIR Alternative 2~~ + Multiple Dense Cores + 15-cent VMT User Fee	~~-6 percent (-24 to -27 percent)~~ -7 percent (-25 to -28 percent)
7.	San Diego Forward Revenue Constrained SCS + additional 25 percent penetration of non-carbon VMT beyond ACC standard	-20 percent (-38 to -41 percent)

The implied elasticity between auto operating cost and SB 375 greenhouse gas emissions for the two pricing scenarios, Scenario 5 and 6, is -0.11. In other words, for every 10 percent increase in the relative cost of driving, SB 375 greenhouse gas emission would be expected to decrease by 1.1 percent.

	Scenario	Auto Operating Cost Change	Implied Elasticity
5.	San Diego Forward 2035 Revenue Constrained SCS + 18-cent VMT User Fee	+18 cents	-0.11
6.	San Diego Forward ~~EIR Alternative 2~~ + Multiple Dense Cores + 15-cent VMT User Fee	+ 15 cents	-0.11



SB 375 Target Setting Recommendations

For the San Joaquin Valley's Metropolitan Planning Organizations

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TABLES

1. BACKGROUND

Metropolitan Planning Organizations (MPOs) across the state are currently undergoing the target-setting process required by California Air Resources Board (ARB) for SB 375, the Sustainable Communities and Climate Protection Act of 2008. MPOs utilize current data and assumptions on demographics and travel behavior in order to forecast regional per capita greenhouse gas emissions reduction in future years such as 2020 and 2035. The ARB reviews target recommendations and adopts greenhouse gas emissions reduction targets for each MPO every four to eight years, which are then set as goals to achieve in the future Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS). For the eight MPOs in the San Joaquin Valley (herein referred to as the "Valley"), this new round of target-setting will provide targets that are effective as of January 1st, 2018, in time for the 2018 RTP/SCS.

A. Recent Valley Performance with Targets

ARB finalized the first targets for all MPOs on February 17, 2011. One set of uniform targets for the 2014 RTP/SCS was assigned for all eight Valley MPOs: the greenhouse gas emissions target for the year 2020 was a 5 percent per capita reduction, and the target for the year 2035 was a 10 percent per capita reduction. Since the adoption of the 2014 RTP/SCS, the Valley MPOs have been actively implementing strategies identified in the long-term plans to reduce greenhouse gas (GHG) emissions and vehicle miles traveled (VMT) in the region.

Table 1 below summarizes the most recent GHG reduction targets, and the demonstrated reductions per capita, for all MPOs across the State.

As shown in the table, the eight Valley MPOs are making a significant contribution toward attaining the SB 375 GHG reduction goals; as shown in the 2014 RTP/SCS, the Valley MPOs demonstrate achieving some of the highest GHG reductions per capita from throughout the state. All eight Valley MPOs have been able to demonstrate that their 2020 target of a 5 percent reduction goal can be met, with the Valley as a whole achieving a 13.9 percent CO2e reduction on average. Similarly, the Valley MPOs have demonstrated that they will surpass the 2035 target of a 10 percent reduction goal, and are achieving an average reduction of 16.3 percent.

Table 1: Summary of Recent GHG Reductions

California MPO	Most Recent CO2e 2020 & 2035 Targets	Demonstrated Year 2020 CO2e Reductions per Capita	Demonstrated Year 2035 CO2e Reductions per Capita
Fresno COG(1)	-5 & -10%	-9.0%	-11.0%
Kern COG(1)	-5 & -10%	-14.1%	-16.6%
KCAG(1)	-5 & -10%	-5.0%	-12.1%
MCTC(2)	-5 & -10%	-5.0%	-14.0%
MCAG(3)	-5 & -10%	-10.1%	-12.7%
SJCOG(1)	-5 & -10%	-24.4%	-23.7%
StanCOG(1)	-5 & -10%	-26.0%	-22.0%
TCAG(1)	-5 & -10%	-17.5%	-19.6%
Valleywide Average	**-5 & -10%**	**-13.9%**	**-16.3%**
AMBAG(1)	0 & -5%	-3.5%	-5.9%
BCAG(1)	+1 & +1%	-2.0%	-2.0%
MTC(4)	-10 & -16%	-10.0%	-16.0%
SACOG(4)	-7 & -16%	-8.0%	-16.0%
SANDAG(4)	-7 & -13%	-15.0%	-21.0%
SBCAG(1)	0 & 0%	-10.5%	-15.4%
SCAG(4)	-8 & -13%	-8.0%	-18.0%
SLOCOG(5)	-8 & -8%	-9.4%	-10.9%
SRTA(6)	0 & 0%	-4.9%	-0.5%
TRPA(1)	-7 & -5%	-12.1%	-7.2%

Notes: (1) ARB Technical Evaluation for GHG Reductions Web Page Nov 2014
(2) MCTC staff - 11/3/16
(3) MCAG 2014 RTP Amendment 1
(4) ARB SCS Fact Sheets.
(5) SLO Adopted RTP Website
(6) ARB Technical Evaluation from Shasta Website

B. Valleywide Efforts in the Spirit of SB 375

In addition to the San Joaquin Valley's extensive efforts to comply with state climate change goals via each agency's 2014 Sustainable Communities Strategy, the San Joaquin Valley is committed to accomplishing multiple Valley-wide initiatives as well as local projects and policies to demonstrate progress toward achieving SB 375 goals. By collaborating with various regional agencies and local partners, the Valley MPOs are able to assist in developing and implementing successful sustainable programs in all eight counties.

i. UC Davis Institute of Transportation Studies – Rural Transit Alternatives Study

One such initiative is the Valley-wide study of rural transit, which includes a partnership with the UC Davis Institute of Transportation Studies to examine if shared access services (car, bike, and ridesharing) can provide an alternative for meeting transportation needs in rural areas of the Valley. Traditional fixed route rural transit has been found to not be cost effective, which

contributes to the limitation of services available to residents in rural areas. The Valley along with the UC Davis Institute of Transportation Studies is exploring whether shared access services may be a better alternative at reducing VMT/GHG, costs, and inefficiencies. The Institute is currently developing a pilot project to test innovative transit solutions in a disadvantaged community, and have this serve as a model for other areas. A primary outcome of the study will be to establish a replicable transit model that can be used throughout the Valley, thereby decreasing the amount of passenger vehicle trips that occur in rural areas and across county lines. The strategies developed through this study will be incorporated into upcoming Valley Sustainable Communities Strategies, depending on cost and funding availability.

ii. San Joaquin Valley Sustainable Goods Movement Strategy

The San Joaquin Valley Goods Movement Sustainable Implementation Plan (SJVGMSIP) is a valley-wide effort between Caltrans and the MPOs in building upon the previously completed San Joaquin Valley Interregional Goods Movement Plan. The previous plan identified first- and last- mile connectivity issues from freight hubs, truck routing and parking needs, rural priority corridors, and included a goods movement performance and modeling framework for the Valley. The SJVGMSIP aims to prioritize goods movement investments for the multimodal infrastructure of the entire San Joaquin Valley – including its highways and roadways, rail facilities, air cargo facilities, intermodal centers, and ties to inland and marine ports. A critical outcome of the Plan will be the development of prioritized investments of project improvements and strategies to increase the efficiency and reliability of the region's goods movement system, and reduce the impact of goods movement on Valley air quality.

iii. Air District Initiatives

The San Joaquin Valley Air Pollution Control District (SJVAPCD) develops and administers various grant and incentive programs for public agencies, residents, businesses, and technology advancement in the San Joaquin Valley. These successful programs include providing funds for those looking to electrify their fleet or vehicles, resources for alternative fuel training, vanpool vouchers, agricultural and goods movement vehicle replacement, and many more additional benefits.

One of the grant and incentive programs that the San Joaquin Valley Air Pollution Control District offers is the Drive Clean! Rebate Program. The Program allows residents, businesses, non-profit organizations, and government entities to apply for rebates of up to $3,000 for the purchase or rebate of eligible new clean-air vehicles. This benefit is provided in addition to vehicle rebates provided by ARB to allow for disadvantaged communities and individuals to more easily purchase clean-air vehicles. To combat the air pollution problems in the Valley, the District also encourages businesses and transit fleets to purchase new hybrid and electric truck and buses. These incentives, in addition to educational resources such as the Plug In Electric Vehicle Resources Center, lower the total amount of greenhouse gases emitted through travel by impacting driving behavior and fleet mixes.

For the 2018 RTP/SCS, the MPOs will continue to collaborate with the SJVAPCD to further reduce air pollution throughout the eight Valley counties. By coordinating with the Air District, the MPOs can use these incentive programs in tandem with other GHG reduction policies if additional funding becomes available.

iv. Contributions from Other Sectors

The San Joaquin Valley is one of the top agricultural regions in the United States, producing more than double the amount of agricultural products than the rest of California combined, including crops and livestock. The agricultural industry accounts for 12% of the Valley's jobs, whereas the industry only accounts for 3% and 2% of the state's and nation's jobs, respectively. According to the ARB Scoping Plan, the agriculture sector represents 8% of total California greenhouse gas (GHG) emissions due to methane emitted from livestock, enteric fermentation, and manure management. Agriculture also accounts for most N2O emissions that come from soil fertilizer. In addition, ARB's Discussion Draft of the 2030 Scoping Plan states, "California's climate objective for natural and working lands is to maintain them as a resilient carbon sink (i.e., net zero or even negative GHG emissions) to 2030 and beyond…" Implementation of this goal will require many policy and program pathways, in addition to partaking in activities related to sustainable agricultural practices and lands protection.

As such, the San Joaquin Valley is anticipated to play a significant role in meeting the state's agricultural and lands preservation GHG reduction goals concurrent to SB 375 goals. Strategies include investment in anaerobic digesters and manure management in dairies to curb methane, as well as optimization of fertilizer application to reduce N2O emissions and protect water quality. SCS strategies that increase density, thus preserving agricultural lands, provide significant co-benefits in this area. Not only do the SCS strategies reduce transportation related GHG emissions, but they minimize the conversion of valuable agricultural land to more intensified uses enhancing the resiliency of and potential for carbon sequestration on those lands.

Portions of the Valley continue to be major oil and gas producers, particularly Kern County. The refineries and oil production facilities are subject to strict national and state "greening" requirements, which may include GHG performance standards in the future. Currently, the Valley oil and gas business are participating in the California's cap-and-trade program, and implementing energy efficiency and sequestration projects measures in order to continue to comply with the annually declining GHG cap. The SJV counties are dedicated to supporting state GHG reduction goals across many sectors, and will continue to partner with state and local agencies to ensure the implementation of sustainable projects and programs.

2. PRELIMINARY ANALYSES AND VALLEYWIDE CHALLENGES FOR TARGET SETTING

Despite ongoing SB 375 efforts, there exist outstanding variables that will negatively affect the extent to which the Valley can expand upon previously set targets. The outstanding variables outlined in this section present challenges for not only this the region, but also for other regions in the state; these variables present an obstacle for MPOs to be able to match the per capita greenhouse gas reductions achieved with the previous RTP/SCS. Specifically, these variables include:

- Impact of model improvements from the San Joaquin Valley Model Improvement Plan (VMIP), phase 2;
- Impact of updated emissions calculation tool (EMFAC2014);
- Impact of an increased rate of economic recovery on VMT;
- Challenges associated with interregional travel; and
- Impact of lower automobile operating costs on VMT.

The extent to which these factors affect the Valley's target recommendations is described in this section.

A. Impact of Software Improvements – VMIP2

The San Joaquin Valley Model Improvement Plan (VMIP) began in 2010 and made substantial enhancements to the modeling capabilities of the Valley MPOs. Due to the timing of the original VMIP, many data sources necessary to understand and model travel behavior were not available. As such, older sources were used to supplement data for the base year, making calibration and validation difficult due to the economic downturn relative to the 2001/2003 CHTS and 2000 Census which were collected before the calibration efforts began. In the technical evaluations of the Valley's SCS documents, ARB staff identified areas of improvement, including updates to the travel demand model. The Valley has responded to this feedback through the development of the San Joaquin Valley Model Improvement Plan, Phase 2 (VMIP2).

VMIP2 utilizes the most recent Census, American Community Survey, California Household Travel Survey data, and the model structure enhancements developed as part of the VMIP. In addition to the updated data, VMIP2 implements changes to the model structure based on ARB feedback received. Key enhancements to model sensitivity and usability include:

- Land Use: simplified residential and employment categories
- Socio-economic: employee salary and household income relationship for home-work trips
- Interregional Travel: updated based on the newly released California Statewide Transportation Demand Model, and based on place and purpose, rather than having internal and interregional travel combined and distributed based on time\cost of travel
- Modified Assumptions: adjustments to employment density, intersection density, and access to jobs and houses

The combination of these updates amount to substantial changes to current planning assumptions, and have resulted in different interactions between land use location, demographics, trip purpose, built environment, and travel compared to the existing VMIP models. In some cases, the same input data as analyzed in the 2014 RTP/SCS is producing higher VMT levels when entered into VMIP2, as opposed to the original VMIP. This type of result does suggests that it will be challenging for Valley MPOs to able to match the per capita GHG reductions achieved with the previous RTP/SCS.

It should be noted that VMIP2 validation is preliminary at this time, and may be subject to changes as the model validation is finalized. As a result, model output discussed in this report is also subject to change. Valley staff has been in regular contact with ARB staff to discuss VMIP2 progress, and in recent discussions it has been established that Valley MPOs may refine their target recommendations based on the finalized model validation in early 2017.

B. Impact of Software Improvements – EMFAC2014

On December 14, 2015, the Environmental Protection Agency announced the availability of the latest version of the California emission factor model, EMFAC2014, for use in State Implementation Plan development in California. EMFAC2014 will be required for conformity analysis on or after December 14, 2017. However, since Valley MPOs will be required to use EMFAC2014 for their 2018 RTP/SCS, the new model will also be used to develop numeric target recommendations.

Valley MPOs have conducted preliminary tests of the impacts of EMFAC2014 on their SB 375 GHG reductions adopted as part of their 2014 RTP/SCS. The results revealed significant differences in GHG emissions in both the SB 375 2005 base year, and analysis years 2020 and 2035. The primary reason for the observed differences appears to be in the light-duty vs. heavy-duty vehicle distribution between the two models. Table 2 summarizes VMT and GHG results for base year 2005 under EMFAC2011 and EMFAC2014 for all Valley MPOs.

Table 2: EMFAC2011 vs. EMFAC2014 Comparison

County	Light Duty VMT (Miles, in thousands)			Light Duty CO2 Emissions (Tons)		
	EMFAC11	EMFAC14	% Change	EMFAC11	EMFAC14	% Change
Fresno	14,868	14,427	-3.0%	6,870	6,594	-4.0%
Kern	13,391	14,229	+6.3%	6,357	6,868	+8.0%
Kings	1,534	1,618	+5.5%	760	789	+3.8%
Madera	2,038	2,122	+4.1%	1,068	1,092	+2.2%
Merced	3,297	3,207	-2.7%	1,593	1,537	-3.5%
San Joaquin	13,087	13,493	+3.1%	6,410	6,510	+1.6%
Stanislaus	8,451	8,271	-2.1%	4,004	3,955	-1.2%
Tulare	7,209	7,157	-0.7%	3,440	3,394	-1.6%

As shown, differences in light-duty VMT and CO2 emissions from EMFAC2011 to EMFAC2014 range from 13% less to 8% more, and they vary by county. Given the observed differences, the Valley MPOs plan to use EMFAC2014 to update the 2005 base emission levels to account for the

vehicle distribution inconsistencies. In order to produce comparable GHG emission reductions that are calculated as a reduction from 2005 levels for target setting purposes, Valley MPOs have concluded that this is the only technically correct approach to arrive at a meaningful and real SB 375 target number. Although emission model changes did not produce the same level of impact on all Valley counties, all eight agencies plan to use EMFAC2014 to model SB 375 base and analysis years for target recommendation and demonstration purposes in order to employ a consistent technical quantification methodology across all Valley MPOs.

C. Economic Recovery

The recovery rate and economic forecasts in the Valley's 2014 Regional Transportation Plans and Sustainable Communities Strategy were developed prior to the recovery from the recession, and with the best information at the time. Leading up to the development of the RTP/SCS, the Valley had been slow to recover from the 2008 Recession, and this was forecast to continue in the development of the housing and employment represented in the future scenarios. The region has experienced relatively high unemployment, slow growth in jobs and rapid growth in housing. Depending on the individual county, this has resulted in a large number of residents commuting outside of the region in order to achieve or retain employment, high household vacancy rates, and lower job salary.

The Valley expects economic recovery to occur at a faster rate than previously assumed in 2014 RTP/SCS documents. As such, the potential exists for substantial increases in employment and income levels, as well as a revised distribution of low, medium, and high paying jobs. The Valley's models can be applied to forecast of future conditions that reflect real world employment and income. In order to understand the influence of these factors on travel and greenhouse gas emissions, the Valley MPOs have prepared an economic recovery test that supposes valley employment levels and household income levels approaching state averages by 2035.

Approach

Specifically, after comparing households by the income ranges, demographic data for each of the Valley counties were modified to reflect the statewide average percentage. Although the magnitude varies by county, the representation of low income households was reduced, and the representation of medium and high income households was increased. The distribution of salary between the high, medium, and low income jobs was similarly adjusted to represent statewide employment trends. In addition to the income of jobs being reallocated to match statewide average, the total jobs per household was also increased from approximately 0.8 (Valleywide average) to 1.28 (Statewide average). The reallocation of jobs by salary and the increase in jobs per household was implemented uniformly across all geographies.

Data was gathered from the following sources to establish household income and industry of employment in all eight counties in the region:

- U.S. Census 2010
- American Community Survey 2009, 2012, and 2014
- Economic Census Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistic (LODES) 2005, 2008, 2014

The LODES data was broken down into average salary by job sector, then household income ranges and the job salary types were compared to determine low, medium, and high income and salary. LODES data was also used to establish how many jobs were offered in each industry. This

data was used to translate reported salaries by industry into income levels for both 2005 and 2014 LODES data. This breakdown was applied to 2005 and 2035 employment outputs from the base Valley models to determine how many jobs are offered in each income category.

No land use, transportation network, or population adjustments have been assumed as part of this analysis. This exercise has been prepared solely to understand how adjustments to employment and income may affect travel and emissions in the Valley.

Results

Model runs for the year 2035 were performed with shifted economic inputs to represent economic recovery to a state-average level. The model output was processed and compared with the 2014 RTP/SCS model output for the year 2035 to see the effects of the potential economic recovery on mode share, interregional travel, VMT per capita, and GHG per capita. Table 3 summarizes the impacts on GHG and VMT by county for the year 2035.

Table 3: Impact of Economic Recovery on VMT and GHG

County	Change in VMT per Capita	Change in GHG per Capita
Fresno	+6.8%	+7.4%
Kern	+0.5%	+0.7%
Kings	+13.4%	+14.1%
Madera	+0.2%	+0.2%
Merced	+3.0%	+2.8%
San Joaquin	+4.6%	+4.8%
Stanislaus	+6.7%	+6.3%
Tulare	+1.1%	+1.1%

Although the results may vary in intensity, this economic recovery test indicates that the application of these hypothetical economic adjustments to the existing model inputs does produce higher VMT and GHG emissions results. As shown in the table, increases in VMT for year 2035 forecasts range from 1–13 percent, and increases in light-duty vehicle CO2 per capita emissions range from 1–14 percent.

Though Valley staff does not anticipate economic recovery to occur at a level such that the Valley is on par with State averages for income and employment, it is clear that the level of economic recovery realized in the Valley will have a direct impact on the extent to which VMT and GHG can be reduced. The impact of economic recovery on the Valley will be captured through the use of VMIP2, with updated 2015 baselines.

D. Challenges Associated with Interregional Travel

The unique characteristics of the San Joaquin Valley, including socioeconomic conditions, travel behaviors, and geography all greatly impact long-term transportation planning in the region. Forecasted 2035 daily interregional trips through the Valley region averages much higher than the respective counterpart statistics from other regions in the State. Further, the proportion of commuter trips to interregional travel is also higher in the Valley on average than other regions in the State. The calculated "In and Out" commute trips in Valley is approximately 16.1 percent of interregional travel, whereas the same commute trips only account for 3.4 percent and 9.3 percent of total interregional travel in the largest four MPOs in the State (SACOG, MTC, SCAG,

SANDAG) and Northern/Coastal California regions, respectively. These "In and Out" trips represent a challenge with respect to GHG reduction, as these trips neither originate nor terminate within a given County in the Valley. As the economy recovers and employment becomes increasingly available, residents will continue to travel long distances in order to secure jobs.

E. Automobile Operating Costs

The Valley will utilize the methodology previously established by the "Big Four" California MPOs (Sacramento Area Council of Governments, Metropolitan Transportation Commission, Southern California Association of Governments, and San Diego Association of Governments) to revise its assumptions regarding automobile operating costs in the VMIP2 models. That methodology for calculating perceived automobile costs consists of two separate components: fuel costs and non-fuel-related costs. Calculating fuel costs requires using a consistent growth in fuel price between the SB 375 base year of 2005 and the forecast years 2020 and 2035 based on Department of Energy annual forecasts. For non-fuel-related operating costs, consistent data sources for the price of car maintenance and tires are utilized. Additionally, the Valley MPOs will use a representative fleet-wide fuel efficiency estimate in computing operating costs. Based on recent trends in fuel costs, current fuel price estimates for future years are considerably lower than those assumed as part of prior SB 375 Target Setting efforts.

Lower fuel prices have certain impacts on travel behavior, which are then reflected in the travel demand models. As single-occupancy vehicle driving is seen as an economically feasible alternative to riding the bus or carpooling, many choose to commute or travel alone in their cars due to convenience.

A decrease in automobile operating cost will directly contribute to higher levels of VMT, and will have a negative impact on the extent to which GHG per capita can be reduced. To understand the magnitude of this impact, the Valley has prepared an "Automobile Operating Cost" test to examine the difference in percentage change in CO2 emissions per capita (from 2005 to 2035), between what was reported during the 2014 RTP/SCS cycle and new estimates that factor in a change in auto operational cost methodology and changes to base year assumptions. The results of this test are summarized in Table 4 below. It should be noted Madera and Merced counties have not been included in this summary, as these regions have had either substantial land use adjustments, or base year model adjustments after the 2014 RTP/SCS adoption that do not allow for a direct comparison of scenarios.

Table 4: Impact of Revised Automobile Operating Costs

County	Change in CO2e per Capita from 2005 to 2035	
	2014 RTP/SCS (Old Baseline, EMFAC2011)	Auto Ops Cost Test (New Baseline, EMFAC2014)
Fresno	-11.0%	-10.3%
Kern	-16.6%	-12.2%
Kings	-12.1%	-9.1%
San Joaquin	-23.7%	-17.1%
Stanislaus	-22.0%	-16.5%
Tulare	-19.6%	-14.9%

Notes: *Madera and Merced do not have exact comparisons between the two scenarios due to changes in land use modeling and base year adjustments after the 2014 RTP/SCS adoption. Please see specific MPO sections for more detail on changes that have been made to their modeling process.

As shown, with calibrated base years and renewed auto operating cost assumptions, the change in CO2 per capita from the base year 2005 to 2035 is significantly different than the results reported on last round. With the revised automobile operating cost methodology, the degree to which Valley MPOs can reduce GHG emissions has been lessened by 1-7 percent by the year 2035. Again, it should be noted Madera and Merced counties were not included in this summary due to land use and/or modeling adjustments that do not allow for a direct comparison of scenarios; however, the negative impact of adjusted automobile operating costs would have a similar impact on all Valley MPOs. In fact, this impact will result in MPOs and local agencies needing to pursue additional reduction strategies to simply match the demonstrated GHG reductions per capita as reported previously in the 2014 RTP/SCS.

The effects of increased VMT from current assumptions are compounded with the economic recovery process that the Valley is currently undergoing. During the 2014 RTP/SCS development, assumptions on job growth and fuel prices were made in the wake of nationwide recession and emission reductions were forecasted based on the best information at the time. The Valley had been slow to recover from the recession and this was projected to continue in the development of the housing and employment represented in future scenarios. The region has experienced relatively high unemployment, slow growth in jobs, and rapid growth in housing. Depending on the individual county, this has resulted in high household vacancy rates, lower job salaries, and a large number of residents commuting outside of the region in order to achieve or retain employment. As such, when considering the effect of lower automobile operating costs, it must also be understood that an increased rate of economic recovery will compound the overall impact on VMT and GHG generation.

3. INDIVIDUAL VALLEY MPO EFFORTS AND TARGET RECOMMENDATIONS

A. Fresno Council of Governments

In 2010, The California Air Resources Board set the greenhouse gas emission reduction targets for Fresno COG and the other seven COGs in the San Joaquin Valley at 5% per capita reduction by 2020 and 10% reduction by 2035. Fresno COG's 2014 RTP/SCS demonstrated that Fresno region would be able to exceed the targets by achieving 9% reduction by 2020 and 11% reduction by 2035 if the SCS was implemented.

i. Fresno COG SCS Implementation Programs

Since the adoption of the 2014 RTP/SCS, Fresno COG, its member agencies and other local and state partners have been working closely on the implementation of the land use and transportation strategies identified in the 2014 RTP/SCS. Fresno COG Policy Board directed COG staff to develop three SCS implementation programs, among which two have been completed and one is undergoing committee and community process.

The Transportation Needs Assessment Program, which was completed in September 2016, evaluated the transportation needs and gaps in the region, especially in the disadvantaged communities. The Program incorporated the health assessment at census tract level developed by the Fresno County Public Health Department, which provided a solid base for planning for healthy communities. The study identified a list of inter-city/community bike and pedestrian projects that aim to improving inter-city connectivity by closing the gaps and providing continuity for bike/pedestrian travel. The study also recommended improvements of accessibility and connectivity of 10 regional/sub-regional facilities that provide basic services such as health care, grocery, etc. to the residents in the region. The Needs Assessment study provided detailed project information and cost estimates that can be directly applied in funding applications.

The Agricultural Land Mitigation Program, another Fresno COG's SCS implementation program, made a policy recommendation that construction of transportation projects in Fresno County should minimize the loss of farmland. It also recommended that member agencies shall indicate that they will address the COG farmland mitigation policy when transportation projects are submitted for consideration in the RTP process. In addition, Fresno COG shall address agricultural land impacts by establishing scoring criteria (established within the appropriate scoring committee) to minimize the loss of prime farmland, unique farmland, farmland of statewide importance and farmland of local importance consistent with the recommended policy.

The Sustainable Infrastructure Grant Program is the third SCS implementation program, and is currently going through committee process to identify goals and objectives for the program, have a healthy discussion about funding opportunities and develop potential program policies and guidelines. The original intent of this requested program from the community groups was to establish a special funding program that will fund sustainable transportation projects after the transportation needs, especially in the disadvantaged communities are studied and identified.

ii. Land use: General Plan Activities

While the 2014 SCS was being developed, the City of Fresno was going through a comprehensive update process for its general plan. The City of Fresno's new general plan was adopted in December 2014, 6 months after COG Policy Board approved the region's first SCS. The new Fresno General Plan envisions a balanced city with an appropriate proportion of its growth and reinvestment focused in the central core, Downtown, established neighborhoods and along BRT corridors. The City sets a goal of directing approximately 50% of new growth towards infill area within existing city limits, and the other half within the existing sphere of influence area by 2035. Around 20% of entire region's housing growth and 36% of new employment by 2035 is planned to take place within ½ mile of the BRT corridors inside the City of Fresno. In December 2015, the City of Fresno approved a new Development code/Zoning Ordinance, which is an essential tool to implement the 2014 General Plan.

The City of Clovis also adopted a new general plan in the summer of 2014 right after the adoption of the first SCS. Clovis' new general plan also set "goals and policies to seek to foster more compact development patterns that can reduce the number, length, and duration of auto trips." The Clovis General Plan introduced the concept of urban centers that require higher density and more mixed use around the community centers and such requirement for density gradually decreases as the development is further away from the center. The master-planned urban centers are also required to provide bike/trail connection within the communities.

Since the adoption of the 2014 SCS, City of San Joaquin has also completed the general plan update, and Fresno County and City of Sanger have started their general plan review/update process.

iii. Affordable Housing and Sustainable Communities (AHSC) Funded Projects

The Fresno region has been working diligently on putting together projects that would provide affordable housing, minimize vehicle miles traveled and greenhouse gas emission, improve the air quality and contribute to the sustainable growth in the region. Under the AHSC program, 3 Fresno projects have been funded with a total of $25 million in the first two cycles. CalVans, a vanpool program that provides vanpool services to farmworkers and commuters in the rural counties including Fresno County also received $3 million from the AHSC program.

Hotel Fresno: The Hotel Fresno Apartments Development was awarded $4.8 million by the AHSC program. With a density of 96 units/acre, the project will convert the vacant commercial Hotel Fresno building in Downtown Fresno into a 79-unit new multifamily residential rental housing development. Forty of the units will be affordable housing units, 38 will be market rate, and 1 unit will be reserved for an on-site manager office. The project also includes common areas, office space on the ground floor and construction of a new parking garage with 81 parking spaces.

Kings Canyon Connectivity Project: The Kings Canyon Connectivity Project was awarded $15 million by the AHSC program. The project consists of 135 affordable multi-family units. The proposed project provides improved walking paths and dedicated bike paths and crosswalks, which connect residents to services and amenities such as retail, social service, education, employment and planned BRT stations. It also contains a workforce training and employment strategies program which will offer construction apprenticeships in addition to a career training and placement program.

South Stadium Phase I TOD: The South Stadium Phase I was awarded $5.7 million. The project consists of a five-story, mixed use structure with 51 residential units and about 10,000 square feet of retail/office space in Downtown Fresno. 20% of the housing units will be exclusively for households making 50% or lower of local median income. This infill project also includes active transportation components including wider sidewalks, Class II and IV bike lands and additional pedestrian lighting and smart meters.

Vanpool Expansion Project: CalVans received $3 million from the AHSC program for the Vanpool Expansion project, which will provide farmworkers located in the rural areas with a van to travel between home and work. The counties that will be covered by the project include Merced, Madera, Fresno, Tulare, Kings, Kern, Monterey and Imperial.

iv. Transit Activities

Bus Rapid Transit: With a Very Small Starts funding from FTA and other supplemental funding from the State and local sources, City of Fresno has started constructing its first Bus Rapid Transit in 2016, and is expected to launch the BRT service in late 2017. The Fresno BRT features 10 minute peak time service, off-board fare collection, traffic signal prioritization, fewer stops, etc. The Fresno BRT's initial route spans 15.7 miles on Blackstone Avenue, from North Fresno Street to downtown, then out to Venture Avenue/Kings Canyon Road to Clovis Avenue. The project includes 51 stations, two terminal stations and one transit center with a shared platform station. The BRT will serve major shopping centers, hospitals and other significant destinations.

FCRTA New College Routes: The Fresno County Rural Transit Agency (FCRTA) has started 3 brand new college routes since the adoption of the 2014 RTP/SCS. As a new part of the Sanger Transit subsystem, Sanger Express began service in August 2014 to provide inter-city services between Sanger and Reedley College. The Kingsburg-Reedley College route started in January 2016 with fixed routes service at the Reedley College via city of Kingsburg, Fowler and Selma, and Parlier. In addition to providing students in the small communities with a transit option for their daily trips to school, this route will also open the door to educational and economic opportunities for these communities by providing access not only to Reedley College but also other services in Reedley. The West Hills/Firebaugh College route also started in early 2016 and provides fixed routes service to college students, staff and the general public. The West Hills/Firebaugh College routes starts in city of Kerman to City of San Joaquin to Tranquility to Mendota with a final destination of Firebaugh North District Campus.

Transit Services to the National Parks: FCRTA started a demonstration project, Big Trees Transit, during 2015-2016 that provided bus service from Fresno, Sanger and Squaw Valley to Kings Canyon and Sequoia National Parks in the summer. The Big Tree Transit stopped at the major destinations such as the Fresno Yosemite International Airport, Fresno State University, Fresno Greyhound/Amtrak Station, Sanger Depot Museum, etc. and took the riders directly into the breathtaking outdoors inside the Kings Canyon and Sequoia National Parks.

Transit service to the Yosemite Nation Park has also been launched in 2015. Funded by Fresno COG and operated by the Yosemite Area Transportation System or YARTS, the transit service on SR 41 from the Fresno region to the Yosemite National Park provides tourists and employees easy access to the world-known national park. The YARTS are connected with other local and intercity transit services such as the airport, Amtrak station, Greyhound station, Fresno Area Express (FAX) and FCRTA. The YARTS service to Yosemite will be provided daily in the summer from May 15 to September 15 in 2017.

Clovis Transit Center: City of Clovis is breaking ground in early 2017 to construct a multi-modal transit center in downtown Clovis. The transit center will be used as a route transfer center and easy-to-access outlet for the public to purchase transit passes and get transit information. As part of the project, a senior activity center and a new county public library branch will be built at the project site. The Transit Center will provide the seniors and the general public with easy access to the Senior Activity Center, the new library, and the many amenities in Downtown Clovis.

Fresno County Regional Long Range Transit Plan: Fresno COG has been persistently seeking funding to develop a regional long range transit plan to guide the future transit investment in the Fresno Region. In 2016 $370,000 was awarded to Fresno COG by Caltrans through the Sustainable Transportation Planning Funding Program to develop the region's first regional long range transit plan. A long range vision for a sustainable and efficient transit system will be developed; a preferred transit scenario will be presented to the public and the elected officials; a list of long range transit improvement projects will be recommended as part of the transit strategies for the future RTP/SCS; strategies will be developed for the efficient collaboration and coordination of the three major transit operators in the region. The Regional Long Range Transit Plan project will be completed in early 2019, and will be able provide guidance for long term transit improvement in the region.

v. Active Transportation

Transportation Needs Assessment: As discussed under the SCS Implementation, the Transportation Needs Assessment study evaluated and identified the transportation needs and gaps in the region, especially in the disadvantaged communities. A list of gap projects to address inter-city/community connectivity for bike/ped. activities was identified; another list of recommended improvement to 10 major regional/sub-regional facilities that provide basic services to residents was also provided by the study. The study also provided project specific information for the priority projects that can be directly utilized in the funding applications.

City of Fresno ATP: After 10 months of intensive public outreach, committee process and technical analysis, City of Fresno's ATP was presented to the City Council on December 15th, 2016. The draft plan calls for adding 937 miles of new bike facilities and 805 miles of sidewalks to significantly improve safety and connectivity in City of Fresno. The Plan prioritized a priority network that features 24 miles of Class I bike paths and 55 miles of sidewalks for the next 10 years. Building out the entire proposed network would cost a total of $ 1.4 billion. The final plan is scheduled to go to the City Council for adoption in January 2017.

City of Clovis ATP: With a vision for a "connected and complete network of trails, walkways, and bikeways that provides safe, convenient, and enjoyable connections to key destinations and neighborhoods around the City", the City of Clovis adopted their Active Transportation Plan in October 2016 that proposed to add 140 miles of bike facilities and 33 miles of sidewalks, which will bring the total miles of bike/pedestrian (including existing) in City of Clovis close to 1000 miles. Costs to implement the entire network are estimated to be around $42 million. The proposed network includes Class I bike paths (trails & paseos), Class II bike lanes, Class III bike routes and sidewalks.

City of Coalinga ATP: The City of Coalinga envisions a safe and efficient multi-modal transportation system that meets the needs of all users. The Plan provides a strategy for the development of a comprehensive bicycle and walking network to provide access to schools, jobs and downtown as

wells as strategies for support facilities and education, encouragement, enforcement and evaluation programs. The Plan recommended addition of a total of 20 miles of bike facilities. Locations for sidewalk improvement were also identified in this Plan as wells as in the City's ADA Transition Plan. The Coalinga ATP is in the public process, and is expected to be adopted soon.

Fresno COG Regional ATP: Fresno COG has successfully secured funding to develop a regional Active Transportation Plan that covers the County areas and other small cities that don't have their own ATPs. The RFP for the regional ATP is expected to be released in the early Spring of 2017, and the prospective projects from the Regional ACT as well as projects from other ATPs, will be incorporated into the future RTP/SCS.

FHWA Pedestrian/Bicycle Counter Count Pilot Program: In order to support the active transportation activities in Fresno region, Fresno COG sought and received a grant funding from the FHWA to be part of the FHWA's Bike/Pedestrian Count Pilot Program. Under the program, Fresno COG purchased portable bike/pedestrian counters, which were used by the member jurisdictions to take bike/pedestrian counts at various locations. Fresno COG and the member jurisdictions also participated in a series of technical trainings on bike/pedestrian counts. The portable bike/pedestrian counters will be used in taking before/after counts for project funding purpose. In addition to the counts taken by the member agencies for funding purposed, Fresno COG will be collecting more bike/pedestrian counts under COG's Traffic Monitoring Program. All the bike/pedestrian counts collected will be used in supporting the development of the bike/pedestrian trip assignment in Fresno COG's Activity-based Model. Fresno COG is taking steps to develop modeling tools to forecast bike/pedestrian activities in hopes that the benefits of the planned aggressive investment in active transportation in the region can be measured, and the investment can be justified to the public and the elected officials.

Cycle Track Feasibility Study: Fresno COG has funded a Cycle Track Feasibility Study that has kicked off in the spring of 2016. The studies will exam the existing street conditions and evaluate options for potential routes for the Class IV separated bikeways. It will also provide cost estimate for construction and maintenance for the selected route options. An extensive outreach will be conducted for public input on the potential route options. A demonstration project will be identified by the study.

Bike & Walk Trip Assignment in Fresno COG's Activity-based Model: Fresno COG is investing in an activity-based model that contains a bike/walk trip assignment component. The 4-step model that Fresno COG currently runs does not have the capability to assign bike/pedestrian trips to the network. It is not sensitive to the bike/pedestrian activities despite of the large investment in active transportation in the region. When completed, the Fresno ABM will have the capability of forecasting bike/pedestrian activities based on the infrastructure improvement. A true-shape bike/pedestrian network will be applied, and a skim matrix for the bike/ped trips will be created in the ABM.

vi. CalVans

CalVans provide vanpool services to farmworkers and commuters in the rural counties. The counties that are currently served by Calvans are: Fresno, Kern, Kings, Madera, Merced, Monterey, San Benito, Santa Barbara, Santa Cruz, Tulare, Imperial and Ventura. In year 14/15, vans out of Fresno County traveled 29 million passenger miles; in 2015/16, the vans (out of Fresno County) traveled a total of 2.6 million miles with total 528,510 passengers, and the passenger miles for the vans reached 28.8 million, which is equivalent to 13,459 MT CO2e reduction.

vii. Electric Vehicle

The Fresno County Rural Transit (FCRTA) has set a goal of converting 100% of its fleet into electric vehicles by 2025 and has been working diligently towards achieving the goal.

Four Zenith 10 passenger vans which are 100% electric with a battery range of 110 miles have been purchased and delivered to the FCRTA. A total of $368,000 for the 4 electric vans are funded by the Caltrans LCTOP program, the San Joaquin Valley Air Pollution Control District and Fresno County's ½ cent sales measure, Measure C.

In addition, six 35-foot electric buses have been ordered by FCRTA, which will serve the inter-city and intra-city routes in Fresno County. These buses have extended range capability of 165-185 miles and will serve the outer rural cities in the Fresno County. This effort has been funded by the California Air Resources Board, the Air District and Measure C with a total amount of $5.8 million.

To complement the electric vans and buses that have been purchased, FCRTA has secured $830,000 to install thirteen level-two solar charging units in the municipal yards of the thirteen incorporated cities that are served by the FCRTA. Each of the charging units has two charging stations, one for the general public and the other for the transit buses and city vehicles.

For the near term, FCRTA is actively seeking funding to install level three solar trees and direct level three charging units, and build a central maintenance facility for the electric vehicles on their fleet.

viii. Public health

Integrated Transport and Health Impact Model (ITHIM): Since 2015, Fresno COG has been working with Dr. Neil Maizlish, the developer of ITHIM California models and formerly epidemiologist at the State Public Health Department, on developing a Fresno COG ITHIM model. The ITHIM model can estimate the health benefits generated from increased physical activities such as biking and walking. It also measures the fatality/injuries from transportation activities. The Fresno COG ITHIM model is completed and ready for application in the 2018 RTP/SCS.

Fresno County Health Improvement Partnership (FCHIP): The FCHIP is a region-wide community effort to try to improve the health conditions in the Fresno region through collaboration, alignment and leveraged resources. It brings together leaders and professionals from health care, education, housing, business, law, community planning, transportation and other fields to build a cohesive Fresno County health improvement plan that is focused on achieving measurable improvements in public health in the region. Fresno COG is an active participant of the FCHIP effort, and has been working with the Fresno County Public Health Department closely on various projects.

ix. EJ Advisory Committee

In the spring of 2016, the Environmental Justice Advisory Committee was approved by Fresno COG Policy Board. This is a standing committee that reports directly to the Transportation Technical Committee (TTC) on environmental justice issues. In the past, the Environmental Justice Task Force was formed only during the early stages of the RTP to serve in an advisory fashion for

development of the Environmental Justice Plan, as is common practice amongst MPOs. The EJ Advisory Committee has a representative at the TTC, and the TTC's recommendation on the environmental justice issues would be referred to the Policy Advisory Committee and the Policy Board as needed. There are nine membership positions on the EJ Advisory Committee: local agency urban, east side cities rural, west side cities rural, 3 minority representatives (Hispanic, African American & Asian), 2 low income representatives, one senior, and one person with disability.

x. Target Recommendation

As is the case with each of the Valley MPOs, Fresno COG is working towards finalizing its model validation. Specific numerical targets will be submitted to the ARB in early 2017 as an addendum to this report. This target recommendation documentation will include target scenario and process discussion, land use & transportation strategies in the target scenario and a discussion of technical methodology applied in the target recommendation including off-model GHG quantification methodologies. Based on the information currently available, and the nearly finalized VMIP2, it is expected that Fresno COG will be able to recommend strengthened targets that are higher than the 9% and 11% reduction achieved in the first SCS.

B. Kern Council of Governments

Kern COG has been implementing regional strategies identified in the adopted 2014 RTP/SCS to reduce GHG and passenger-related vehicle miles traveled (VMT). ARB staff concluded that the 2014 Kern COG RTP/SCS, if implemented, would meet the ARB Board-adopted reduction targets in both 2020 and 2035. In a technical evaluation of the Kern COG SCS, ARB staff identified areas in the plan development process that could be improved, such as updates to the travel demand model, methods, and data inputs. Kern COG has responded to this feedback by improving its modeling assumptions and analysis tools. The results and associated challenges can be found in the "Proposed Targets" section below. Kern is making good progress toward the current targets and is proposing new targets significantly higher than the existing targets based on improved, but still preliminary modeling. Kern COG will be providing updates to ARB the current range of targets by the end of February 2017.

i. Kern's Technical Modeling Methodology Overview

Kern COG's modeling methodology for calculating emissions uses a three-model process shown in Figure 1. This is the same process that was thoroughly evaluated and approved by ARB for SB 375 target demonstration in 2015.[1] Kern's models are updated every four years and are in the process of being updated for the 2018 RTP/SCS. Kern's complete modeling methodology and updates documentation are made available on Kern COG's website.[2]

[1] ARB Technical Evaluation of GHG Quantification for Kern COG SB 375 Sustainable Communities Strategy, 2015, https://www.arb.ca.gov/cc/sb375/kerncog_staff_evaluation_final.pdf
[2] Kern COG Transportation Modeling Documentation, http://www.kerncog.org/transportation-modeling

Figure 1 – Transportation Modeling Methodology Flow Chart

ii. Kern's Unique Circumstances

It is important that ARB targets reflect each MPO's unique characteristics. One size does not fit all for SB 375 target setting, and modeling methods and techniques need to be custom tuned to local situations. Kern COG agrees with ARB that each MPO receive a target based on the latest available modeling and assumptions for that MPO, and not a multi-MPO target as ARB adopted in 2011.

The San Joaquin Valley is located between the two largest regions in the state -- Bay Area and Southern California – and has the greatest percentage of through County trips which are not counted using the SB 375 methodology. Even with all the through travel, Kern County has seen the second greatest reduction for an MPO in per capita VMT at minus 4.4%. During that time Caltrans reported observed total VMT in Kern increasing 57% from 14.3M to 22.5M miles traveled while population increased 38% from 537,000 to 872,000.

With only a small percentage of workers commuting outside the county, Kern is unlike most regions in the San Joaquin Valley. Two-thirds of Kern's population reside in metropolitan Bakersfield at the heart of the county, which only makes up 1/20th of the county's geography. The metropolitan Bakersfield area has an ex-urban commute pattern to jobs in outlying resource areas within the MPO boundary. So, unlike other MPOs, the Kern model captures more of the full commute travel distance for more than 90% of households in the region.

This ex-urban commute pattern makes infill housing projects in downtown Bakersfield less effective at reducing VMT than might be seen in larger metropolitan areas with major employment and transit hubs downtown. This is because in Kern, downtown housing is further away from outlying resource job centers such as the renewable energy, agriculture processing and logistics industries. Still, infill housing is a moderately effective strategy in Kern because it reduces travel to shopping and recreation; just not as effective as in larger metropolitan areas. The Kern 2014 SCS included a unique strategy that addresses this issue by encouraging balanced future employment, shopping and housing -- especially in outlying communities closer to the numerous outlying jobs of the county.

Note that like other regions in the Valley, Kern is proposing changes to the target that not only reflect the latest planning assumptions, but changes and improvements to modeling that affect the base line. Four major changes in modeling have occurred since the 2014 RTP/SCS, and reflect recommendations by ARB staff as part of their Technical Evaluation of Kern COG 2014 SCS.

1) Revisions to ARB's EMFAC Model – ARB periodically updates EMFAC to account for the latest state/national policy changes and to update local vehicle mix information affecting the vehicle fleet forecast. The model is used to estimate vehicle emissions for

both SB 375 and federal conformity. The new version is EMFAC 2014. Another update is just starting but will not be ready in time for the 2018 RTP/SCS.

2) Revisions to the Regional Growth Forecast – Kern's base year forecast has been updated from 2010 to 2015, making it some of the most up-to-date modeling assumptions in the state.
3) Revisions to Auto Operating Cost (AOC) Assumptions – Methodology updated by the eight San Joaquin Valley MPOs in coordination with the Big Four MPOs to include tire, insurance and other costs.
4) Revisions to the Regional Travel Demand Model – The travel model was updated to include improved network, speed data, income balanced home/work trip distribution and improved auto operating costs. However, the model validation is preliminary and may be subject to changes as the model validation is refined.

These modeling changes do not affect Kern's aggressive commitment to the strategies in the SCS, but merely update them to incorporate the latest planning assumptions and data. The changes do NOT alter strategy commitments in the 2014 Kern RTP/SCS.

iii. Kern SCS Progress, and Efforts Above and Beyond

SB 375 encourages MPOs to work with local jurisdictions to achieve state greenhouse gas reduction goals. Kern COG has collaborated with local agencies by encouraging land use and transportation decisions that minimize GHG emissions. In partnership with the MPO, member agencies and regional transit providers have pursued smart-growth land-use planning, transit system maintenance and upgrades, Greenhouse Gas Reductions Funds (GGRF) and Active Transportation Program (ATP) funds, as well as local alternative vehicle technology adoption. Kern COG plans to build upon these ongoing efforts in the upcoming 2018 RTP/SCS to continue encouraging sustainable communities. Examples of more than 45 success stories (included in Attachment D) clearly demonstrate how state visions and goals are realized on a local and regional level. The following section includes examples from the success stories.

<u>2014 RTP/SCS</u>
Many of the projects in the 2014 RTP/SCS have been completed or are in construction. These projects showcase Kern's commitment to create vibrant neighborhoods and a sustainable future.

- *Kern Highway Projects Advancing Complete Street Strategies* – Thomas Roads Improvement Program (TRIP) includes: SR 58 Centennial Corridor; State Route (SR) 46 Segment 4A; SR 14 Segment 1; SR 58 Rosedale Highway; SR 178 & the Morning Drive Interchange; SR 99 Hosking Interchange; SR 178/24th Street Improvements. The projects include the following complete street facilities:
    - More than 21 miles of new bike lanes
    - More than 18 miles of new sidewalks
    - More than 120 new ADA curb cuts
    - Three new interchanges with ramp metering

  TRIP is an example of just one program that is implementing Kern COG's Complete Streets Study recom-mendations from 2012. Other programs include: the Metropolitan Bakersfield Traffic Impact Fee Program; County of Kern's Land Division Ordinance and; private sector investment in active transportation projects in disadvantaged communities, such as Lost Hills.

- *Rail Transit*
    - Additional service and improvements: The San Joaquin Joint Powers Authority (SJJPA) added a seventh round-trip train per day to the Amtrak San Joaquins in 2016, which connect Bakersfield to Oakland/Sacramento.
    - The City of Bakersfield is expanding overnight parking availability at the Bakersfield Amtrak Station, including solar/electric vehicle charging using Proposition 1B bond funds.
    - Kern Transit is adding two electric buses that connect east Kern to the Metrolink station in Lancaster, providing service to L.A.'s Union Station.

- *Active Transportation Planning* - Kern COG is developing a countywide, collaborative Active Transportation Plan that is scheduled to be completed in 2017. The Plan will include an inventory of existing active transportation infrastructure, identify deficiencies in the system and prioritize new facilities that will

Kern's 45 SCS Success Stories

1. City of Tehachapi General Plan (Form-Based Code, Transect Zone, Mobility Element, Town Form Element)
2. Infill Incentive – Lower Transportation Impact Fee Core Area
3. City of Taft General Plan – Sustainability Principles
4. City of Ridgecrest General Plan and Multi-Modal Circulation Element
5. General Plan Sewer Policy – Hook-up required for less than 6 acres
6. City of Bakersfield Required Lot Area Zoning Strategies
7. San Joaquin Valley Air District's Indirect Source Review
8. City of Bakersfield Redevelopment Projects – Mill Creek and Baker Street
9. Transit Priority Areas in the Kern COG SCS
10. Metropolitan Bakersfield General Plan Centers Concept – Transit Priority & Strategic Employment Place Types
11. Commuter Rail Feasibility Study
12. Rideshare Program – Commute Kern
13. Three New Park and Ride Lots
14. GET Short-Term Service Plan (2012–2020)
15. GET X-92 Commuter Express bus service to Tejon Industrial Complex
16. Dial-A-Ride and Local Transportation Services
17. Kern County Bicycle Master Plan & Complete Streets Recommendations/City of Tehachapi Bicycle Master Plan
18. City of Bakersfield Bicycle Facilities
19. Westside Station Multi-modal Transit Center
20. Kern511 – Traveler Information System
21. San Joaquin Valley Vanpool Program (CalVans)
22. San Joaquin Valley Blueprint Integration Project
23. Caltrans Vehicle Detection System – State Route 43 Intersection Improvements and East Bakersfield Vehicle Detection Systems
24. California Highway Patrol's Safety Corridors
25. Kern County Wind Farm Areas (Largest in U.S.)
26. Purchase of CNG Buses (80+ bus fleet)
27. The Electric Cab Company of Delano
28. City of Shafter Container Yard and Intermodal Rail Facility Expansion
29. Downtown Elementary School Expansion (Bakersfield)
30. Intersection Signalization/Synchronization
31. Traffic Control Devices
32. Kern Region Energy Action Plans (Kern REAP) and Kern Energy Watch Goal 3
33. Tejon Ranch Conservation and Land Use Agreement
34. Kern County Community Revitalization Program
35. Bakersfield High Speed Rail Station Area Plan
36. City of Bakersfield 4 New Downtown Infill Housing Projects
37. Bakersfield Bus Stop Improvements Collaboration
38. Cities of McFarland and Shafter – Conversion of transit fleet to electric vehicles
39. Golden Empire Transit – Purchase of 2 Electric Buses
40. Kern COG Active Transportation & Demand Management
41. Kern Active Transportation Plan
42. Lost Hills Wonderful Park and Communitywide Improvements
43. Kern Transit – Route Connection with Antelope Valley Transit Authority
44. Wasco Active Transportation Project
45. Taft Transit Center

improve system safety, connectivity and user convenience. Further, with financial assistance from both Golden Empire Transit District and the County of Kern's Regional Transit, the active transportation/public transit interface will be examined to improve transit opportunities to active transportation users. These improvements will be included in the 2018 RTP/SCS.

Above and Beyond: Efficient and Equitable Development

- *General Plan Updates*: The City of Tehachapi completed the first form-based code general plan in the state in 2012, with significant development driven by the world's largest renewable energy wind and solar fields. This general plan implements the 2014 RTP/SCS policy 29.1, which encourages form-based codes, transit-oriented place types and centers.

  The cities of Taft and Ridgecrest have also completed general plan updates referencing the regional SCS principles for growth and providing a commitment to participate. In addition, all 12 of Kern's local jurisdictions have now updated their general plan housing elements to be consistent with the SCS as well as their circulation elements to include multi-modal/complete-street circulation plans. The housing element updates were supported by the regional housing data book developed by Kern COG, and many of the circulation plan updates were funded by Kern COG's technical assistance grant program.

  In addition, the City of Bakersfield is scheduled to complete the High-Speed Rail Station Area Plan in 2017 and anticipates adopting a specific plan for the downtown area surrounding the station. The draft plan calls for diverting 8,500 housing units and balanced number of jobs from being built on the periphery of the city to a vibrant downtown station area that promotes active transportation and transit modes.

  Kern County's general plan update (now under way) is addressing farmland and habitat conservation planning efforts. The County is already requiring farmland preservation easements to offsets farmland lost to solar projects, and is also developing or implementing 29 habitat conservation plans and natural communities' conservation plans. Just one of these efforts -- the Tejon Ranch Conservancy -- is the largest of its kind in the state, setting aside 375 square miles for habitat preservation, and is representative of the Kern region's commitment to open space preservation.

Above and Beyond: Infrastructure Investment Consistent with the State's Conservation, Development, and Health Goals

- *Affordable Housing and Sustainable Communities (AHSC) Program*: The AHSC program is a competitive, statewide funding source for housing and transportation projects that work toward reducing GHG. The program receives its budget from California's Cap-and-Trade Program, one of the state's major initiatives for reducing climate change impacts. AHSC awards projects that can demonstrate emissions reductions through active transportation improvements, increasing housing density, and/or encouraging alternative transportation options. To date, two projects in Kern (Bakersfield Mill Creek Senior Housing and the Wasco Farmworker Housing Project) have received AHSC funding as examples of how the State envisions new growth and sustainable developments. Kern COG found that both developments aligned with the 2014 RTP/SCS goals and policies.
- *Reduced Traffic Impact Fee Infill Incentive*: The joint City of Bakersfield, County of Kern, Metropolitan Bakersfield Transportation Impact Fee incentivizes residential and non-residential development projects in the core area of Bakersfield by reducing fees to half that of developing on the periphery of the city. Not only is this program in line with state

goals for infill but is promoting growth in the HSR station area prior to the system's completion through Bakersfield. The City of Tehachapi has a similar incentive program for its core area.

Above and Beyond: Pricing Policies

- *Parking* - In 2016 the City of Bakersfield approved an increase in the parking cost at the city owned downtown parking structure, and downtown parking is being evaluated as part of the HSR Station Area Plan.
- *HOT Lanes* - New FastPass lanes on I-5 and SR 14 are planned to be extended through Santa Clarita towards Kern County. These corridors are used by more than 10,000 Kern commuters per day and will likely benefit vehicle occupancy in Kern as well as Southern California. Interestingly, not many people commute from Kern. Over 90% of Kern workers both live and work in Kern County and most make occasional trips to Southern California.

Above and Beyond: Transportation System Efficiency

- *Commuting Services:* Commuting accounts for a large share of VMT in Kern County. Kern COG is working to improve the mass transit experience and encourage ridership. Increasing the options and efficiency of alternative transportation is key to reducing single-passenger vehicle trips. According the latest household travel survey and regional travel model, since 2005 single occupancy vehicles (SOV) are down 4.1% to 41.6%, compared to 49.5% in the Bay Area. Historically, van and carpools are the primary contributor the low SOV Kern COG and local transit providers are implementing projects and policies that offer commuters with more eco-friendly travel options.
    - Regional rail in Kern County includes the Amtrak San Joaquins which is seeking funding for capital improvements for an 8th round trip (FY 18-19).
    - Improving the consistency and reliability of public transit travel times encourages riders to take a bus over driving a personal vehicle. The Golden Empire Transit District (GET) has added three express bus corridors including the employer subsidized X-92 run, a daily commuter bus service, fueled by CNG, with an average annual ridership of 19,000 passengers. GET also operates 2 rapid bus corridors with 15 minute headways, and is in the process of upgrading them to electric Bus Rapid Transit (BRT) routes in Bakersfield through funding from multiple sources.
    - In 2015-16, the CommuteKern's TDM Program was enhanced through an online multimodal trip planner and Guaranteed Ride Home program. CommuteKern initiated the development of a marketing plan to assist large employer groups with their Rule 9410 compliance with the San Joaquin Valley Air Pollution Control District while also maintaining the program's website and social media platforms. The program has added 1,610 new members to the trip planning database and added 65 new vanpools in the past year. In addition, Rideshare Week attracted nearly 1,220 participants with more than half of them participating in ridesharing for the first time. Increasing the number of participants enrolled in carpool and vanpool allows for an immediate and long-lasting reduction of VMT and associated greenhouse gas emissions with a cost effectiveness of $56 per lb. and a reduction of up to 125,000 vehicle miles travelled that year.
    - Since 2014, the Kern region has been gradually installing High-Occupancy Vehicle (HOV) lane ramps and metering on all interchanges in Metropolitan Bakersfield to better control stop & go vehicle emissions during peak congestion on the

freeways while providing a greater incentive for vanpooling and carpooling. In addition, the 2014 RTP/SCS has identified funding for two HOV lane projects. Also, Southern California is extending its HOV/ toll lanes closer to Kern County, which is anticipated to improve vehicle occupancy in Kern for those traveling to Southern California during peak periods.

- *Above and Beyond Sustainable Transportation Solutions:* Kern COG is implementing an aggressive plan to promote alternative technology vehicles in the 2018 RTP/SCS. Starting with the 2015-16 Overall Work Program, Kern COG is coordinating with local non-profit Project Clean Air and the San Joaquin Valley Electric Vehicle Partnership to find funding for 4,000 electric vehicle charging stations in Kern County by 2025. The program will leverage existing grant sources with emerging local funding from development mitigation and a new County oil & gas drilling permit fee ordinance. We are also increasing the region's alternative fueling stations and working with the San Joaquin Valley Air Pollution Control District to address obstacles in implementing the Plug-in Electric Vehicle Readiness Plan. In 2016, the City of Shafter officials purchased four electric vans for their dial-a-ride system, making it the first fully electric municipal transit system in the state. In addition, GET is purchasing five electric buses for the BRT system, and Kern Regional Transit has partnered on a grant with Antelope Valley Transit to purchase electric buses that will serve as feeder buses between the Metrolink rail station in Lancaster and communities in East Kern.
- *Active Transportation Program (ATP)* – Kern COG and its members have been aggressive and successful with the highly competitive Active Transportation Program (ATP). That success is due in part to Kern COG requiring its member agencies to compete for statewide funds first, and then using unfunded projects from the same prioritized list to which regional share funds are applied. The City of Wasco has already successfully completed two projects from the first round of grants. Between ATP and AHSC, Kern County has already been awarded more than $50 million in state grants. These funds, combined with local private sector funding, are resulting in sustainable projects completed earlier than anticipated by the 2014 RTP/SCS. In addition, Kern COG has the highest percentage of funds going to active transportation projects in the state, at 7 percent of available funding.

<u>Co-benefits</u>

- *Benefitting Disadvantaged Communities* - There are numerous short- and long-term co-benefits associated with the ongoing projects and SCS policies in Kern County. According to CalEnviroScreen, the City of Bakersfield has the second highest number of disadvantaged census tracts in the State -- in the 95th percentile. In addition, Arvin, Buttonwillow, Lamont, Lost Hills, Delano, Greenfield, McFarland, Shafter, Wasco and Weedpatch rank among the most disadvantaged communities in California. Kern's member agencies have been very aggressive and successful in applying new programs such as ATP and AHSC for these communities.
- *Making Healthier Communities* - According to the Robert Woods Johnson Foundation, Kern County ranks last in the state for weighted key health factors, with the lowest scores in health behaviors (weighted 30 percent, ranked 57th out of 57 counties); social & economic factors (40 percent, 54th); best scores in physical environment (10 percent, 45th) and; available clinical care (20 percent, 50th).[3] Unfortunately, part of Kern's success in competitive grant programs such as ATP, has been its disadvantaged region status. The

[3] Robert Woods Johnson Foundation, 2016, http://www.countyhealthrankings.org/app/california/2016/overview

region's best score was in its physical environment, which measures air & water quality, housing and transit. This reflects our region's low housing cost and the 80 percent improvement in air quality over the last 30 years—thanks to the most stringent regulations in nation. Health behaviors and social/economic factors need to remain a primary focus of our RTP/SCS -- areas where active transportation and goods movement projects play an important role. These two areas are the highest priority in Kern's adopted RTP/SCS.

iv. Kern Target Recommendation

Balancing technical justification and accomplishments – As with any forecast, travel modeling forecasts beyond 5 years are a challenge. SB 375 provides for regular updates to the targets and modeling forecast using the latest planning assumptions. These updates provide important course corrections as progress is made toward the goals. Even with model limitations, Kern's modeling passed one of the most rigorous and lengthy modeling evaluations performed by ARB. The resulting document was twice the size of the Kern COG 2014 SCS chapter to the 2014 RTP.

In addition to the technical justification, it is important to take into account the aggressive turn in the region towards more sustainable growth and transportation projects. Kern's member agencies have 45 success stories demonstrating the region's grass roots commitment toward meeting both the goals of SB 375 and federal Clean Air Act standards. It is these accomplishments that were the real intent behind SB 375. Things are clearly no longer business as usual in Kern. Balancing modeling results in light of the real world success stories is a key element to the success of SB 375.

Kern COG staff recommends that the targets be set for 2020 and 2035 consistent with the modeling provided in Attachment A and Table 5 below. The increase is based on Kern's aggressive, successful implementation of the SCS to meet both state climate change goals and the federal health based criteria pollutant standards. Also included are adjustments of off-model reductions and preliminary validation. It is also important to note that early reductions have the greatest potential for combating the effects of climate change.

Table 5: Proposed 2020 & 2035 Percent Per Capita GHG Reduction Target for Kern

Scenario	2020 Percent Per Capita GHG Reduction	2035 Percent Per Capita GHG Reduction
Current ARB Targets for Kern 2014 RTP/SCS	-5%	-10%
Proposed Targets for Kern 2018 RTP/SCS	-9 to -12%	-13 to -14%

Note: Values in this table are preliminary, subject to future model run updates.

C. Kings County Association of Governments

In its analysis of the 2014 Kings County RTP/SCS, ARB staff concluded that if implemented, it would meet the ARB Board adopted reduction targets in both 2020 and 2035. In a technical evaluation of the Kings County SCS, ARB staff identified areas in the plan development process that could be improved upon such as updates to the travel demand model and data inputs. KCAG

is responding to this feedback by improving its assumptions and analysis tools. For the next RTP update KCAG plans to continue to refine its travel demand model to better estimate trips and VMT in the region. The immediate and ongoing model improvement efforts include using the latest regional or local demographic data and using the 2010 Census, 2012 American Community Survey (ACS), and the 2012 California Household Travel Survey (CHTS) travel data for model recalibration and revalidation. These model improvements will increase the accuracy of estimates and forecasts of external trips, trip modes, distribution for internal and interregional travel, and vehicle speeds. These model improvements are still in the process of being completed and the updated model was not available for use in developing a target recommendation, but will be used in evaluating scenarios for the 2018 RTP/SCS process.

i. SCS Implementation, and Efforts Above and Beyond

KCAG has been collaborating with local agencies to ensure that the region is working toward the State's 2030 and 2050 climate change goals by encouraging land use and transportation decisions that minimize greenhouse gas emissions. The adopted scenario within the 2014 RTP/SCS incorporated land use policies from recently updated general plans and transportation policies that were included in the Transit Development Plan. KCAG plans to build upon these ongoing efforts in the upcoming 2018 RTP/SCS.

Our member agencies and regional transit providers have already begun taking several proactive steps by implementing additional sustainability measures. These include the investment of alternative fuel vehicle fleet replacement and installation of charging stations; pursuing competitive grant funds to build active transportation projects to further incentivize the use of bicycle and pedestrian trips; enhanced existing transit service with additional routes of the regional bus transit system; an additional Amtrak San Joaquin's round trip passenger train that will increase ridership from the Hanford station; consideration of smart growth strategies in local agency General Plan updates and in planning for new residential and commercial development that embrace complete streets transportation strategies.

In planning for the 2018 SCS, KCAG is dedicated to identifying additional measures that will reduce greenhouse gas emissions while simultaneously decreasing our vehicle miles traveled. These strategies include looking for opportunities that are financially sound and that fit into the context of our local communities.

<u>2014 RTP/SCS</u>

Many of the projects listed in the 2014 RTP/SCS under the preferred scenario have been successfully completed, or are currently in the process of implementation. In fact, transit projects included in the enhanced alternative scenario have also been implemented. The following projects highlight the efforts that Kings County is pursuing as part of the SCS implementation that clearly demonstrates how state visions and goals are realized on a local and regional level.

<u>Transit</u>

- *KART Service improvements:* Additional transit service and operational improvements were implemented for the Kings Area Rural Transit (KART) system as part of the 2014 RTP/SCS. An additional morning route for the Hanford to Avenal fixed route was added in 2014, an additional morning route was added to the Hanford to Corcoran fixed route, and a bus intelligence system was deployed that provides transit location and schedule information

through a mobile app to increase operational efficiency and increase ridership. In June of 2016 a new fixed route within the City of Lemoore was implemented. Existing fixed routes within the City of Hanford will be modified in early 2017 to accommodate service to a new commercial development and a new courthouse, which will also provide service to several environmental justice communities. As with all new transit services, they are being evaluated to determine if the services are cost effective and if any modifications are necessary. The Kings County Area Public Transit Agency (KCAPTA) is proposing to start a pilot Flex Route in Avenal that operates similar to a demand response system, but instead of picking up an individual at their home they would be directed to a general pickup location. This would allow residents to get to the neighboring City of Coalinga in Fresno County for college classes and medical appointments. The planned construction of a new transit hub within the City of Avenal will support these expanded transit services.

- *Transit Marketing Plan:* In September 2016, a KART Marketing Plan was adopted to increase transit ridership using measures that are actively being implemented.

- *Electric Buses and Infrastructure:* KCAPTA is constructing a new transit hub within the City of Avenal that will include solar panels and two public electric vehicle charging stations. Construction is expected to start in early 2017. Although most KART buses currently operate on CNG fuel, in an effort to convert transit buses to electric, an electric charging station at the bus maintenance facility will be constructed in 2019 to accommodate this planned conversion of the bus vehicle fleet, as funding becomes available.

Intercity Rail

- *Additional Trains:* The Amtrak San Joaquins inaugurated their 7th Daily Round-Trip on June 20, 2016. The additional daily round-trip train service is being added between Bakersfield and Oakland and deploying the "Early Morning" schedule, making it more convenient for passengers to travel between the Bay Area, San Joaquin Valley cities, and other destinations throughout California. This is the first expansion of train service on the San Joaquins in over 14 years. Providing increased frequency of service is essential to the continued growth of ridership and revenue for the San Joaquins. It is also a high priority to work with the State to secure the funding necessary for the capital improvements and the additional operating funds to enable the deployment of the 8th Daily Round Trip between Oakland and Bakersfield within the next three years. Initiating early San Joaquin trains mid-corridor and having the last San Joaquin trains end mid-corridor may result in substantial increases in ridership and revenue. By making this route a viable commuting alternative, congestion on major Valley roadways such as SR 99 or I-5 will decrease and bring down the levels of air pollution emitted through interregional passenger vehicle travel.

Mobility Enhancements

- *SR 198/12th Avenue:* The purpose of this project was to improve traffic operations and safety at an existing interchange on SR 198 at 12th Ave., a major north/south collector street within the City of Hanford. This interchange was previously a modified partial diamond configuration with ramps controlled by signals. The completed project modified the interchange to a partial cloverleaf configuration including a loop on-ramp. The project was completed and open to traffic in Spring of 2016.

- *SR 198/19th Avenue:* The SR 198/19th Ave. interchange project in the City of Lemoore provides route continuity, increases capacity, improves local access to the regional highway system, and improves safety on SR 198 by upgrading a segment of expressway to freeway between the SR 41/198 separation and the Lemoore Ave. interchange and eliminated two uncontrolled at-grade crossings within the project limits where accident rates are above the expected levels. The project included the conversion of an at-grade access to SR 198 at 19th Ave. to a partial cloverleaf interchange and was completed in 2015.

Vanpools

- *CalVans Growth:* In 2012, the California Vanpool Authority (CalVans) was established as a joint powers agency, of which KCAG is a member, and currently operates within 17 counties. CalVans is able to provide safe, affordable vans to eligible agricultural farmworkers traveling to the field and general vanpools for employment destinations and for students. CalVans' general and agricultural vanpools show a trend in growth over a 5 year period, and as a result, CalVans is planning to increase the number of available vans in its fleet. In FY 15-16 there were approximately 150 vanpools operating within Kings County with a reported 368,358 vanpool passengers that drove a total of 1.6 million miles annually; the expansion of CalVans has resulted in a significant amount of GHG emission reductions.

- *AHSC Grants:* The California Vanpool Authority (CalVans) was awarded a $3 million Affordable Housing and Sustainable Communities (AHSC) grant for the Agricultural Worker vanpool expansion project that would provide increased access to clean transportation vanpools for agricultural workers in the San Joaquin Valley's disadvantaged communities. A total of 80 vehicles were purchased in 2015 using the award and are being placed into service.

- *AQIP Grants:* ARB has committed $3 million each year for 3 years in funding from the Air Quality Improvement Program's (AQIP) Low Carbon Transportation allocation in support of additional vehicles for the agricultural worker vanpool program. The funds will be used to purchase zero-emission, plug-in hybrid, or hybrid passenger vans and installation of electric charging equipment at multiunit dwellings and other appropriate locations in disadvantaged communities, providing increased access for lower-income consumers to clean transportation.

Active Transportation

- *Cinnamon Drive Bicycle/Pedestrian Project:* Cinnamon Drive is a busy collector roadway that is a common route used to access schools, parks, and a major city community recreational facility. The area attracts all ages of pedestrians and bicycle riders that previously had no designated areas to travel on. This project constructed a Class 2 bicycle facility in the roadway and ADA compliant pedestrian facilities off the roadway. The project was completed in 2016.

- *Kettleman City:* The County of Kings was awarded Safe Routes to Schools grants for the unincorporated disadvantaged community of Kettleman City. The project involves improving pedestrian facilities through constructing new sidewalk and curb/gutters within a 2 block radius of Kettleman City Elementary School. Bicycle racks and a lighted in-ground crosswalk are also included in this project in order to increase the safety of the students. Construction on this project will begin soon and is expected to be completed by March of 2017.

- *Home Garden:* The County of Kings was awarded a Safe Routes to Schools grant for the unincorporated disadvantaged community of Home Garden. The completed project involved the construction of pedestrian and bicycle improvements along the central roadway of Garden Drive and Shaw Place. The improvements included new sidewalk curb/gutter and some drainage improvements to provide children with safe access to Gardenside Elementary School.

- *Hanford Active Transportation Plan:* The city recently adopted its Active Transportation Plan with a principal goal to provide the means to support bicycling and walking as an alternative mode of transportation for work, daily activities, and recreational trips. The Plan includes a prioritized list of bicycle and pedestrian projects on numerous streets and in close proximity to various local school sites. KCAG has programmed these projects in the Federal Transportation Improvement Program utilizing $500,000 in FY 2016-17 Congestion Mitigation and Air Quality funds.

- *Avenal Active Transportation Plan and Safe Routes to School Plan:* The City of Avenal adopted their Active Transportation Plan and Safe Routes to School Plan in December 2016. These plans are intended to promote Avenal to become a more sustainable community. The goals of the Active Transportation Plan and Safe Routes to School Plan are to 1) encourage Avenal residents to walk and bike more; 2) create a safer walking and biking environment that results in lower pedestrian- and bicyclist-related collision rates; and 3) reduce automobile use and consequently reduce air pollution.

- *Regional Active Transportation Plan:* KCAG is developing a countywide, collaborative Active Transportation Plan that is scheduled to be completed in early 2018. The Plan will include an inventory of existing active transportation infrastructure, identify deficiencies in the system and prioritize new facilities that will improve system safety, connectivity and user convenience.

<u>Electric Vehicle Infrastructure</u>

- *Local Agency Implementation:* KCAG supports the development of infrastructure for the use of alternative fuel vehicles in government and private business. Local agencies have applied for and received grant funds from the San Joaquin Valley Air Pollution Control District and Southern California Edison to purchase electric vehicles and install electric vehicle charging stations. The County of Kings will be installing 9 electric vehicle charging stations at the County Motor Pool for their electric vehicle fleet of which they will be purchasing 6 electric vehicles in FY 2016-17. The City of Hanford installed electric vehicle charging stations at two city locations with one that is open to the public, purchased 5 electric vehicles and will soon be purchasing more. The City of Corcoran purchased 2 electric vehicles in FY 2016-17 and participates in the HERO program that will enable property owners to finance electric vehicle charging infrastructure on their properties.

- *Regional Electric Vehicle Readiness Plan:* KCAG will be preparing a Regional Electric Vehicle Readiness Plan in FY 2017-18 to facilitate additional implementation of electric vehicle charging stations to encourage the continuing growth of electric vehicle use throughout the County.

<u>Efficient and Equitable Development</u>

- *City of Hanford General Plan Update*: The City of Hanford is currently undergoing the process of updating its General Plan. The draft 2035 Hanford General Plan released in July of 2016 includes many proactive smart growth strategies that encourage both compact and infill

development designed to minimize resource consumption and reduce automobile dependency. A lower growth rate is being projected and the average housing units per acre has increased resulting in increased densities. The Hanford General Plan directs growth toward walkable and mixed-use areas that are planned to integrate housing with regional transit, employment, service, and amenities. In addition, several new community design policies have been developed that propose to increase mixed use within residential zoning, and transit oriented development within the central business district and mixed use corridors. Two targeted transportation corridor planning areas have been identified that will be revitalized to accommodate a mix of nonresidential and residential uses. Four new growth areas have been established which will be guided by policies that will encourage higher density residential uses, decrease automobile dependency and allow more people to walk, bike, or take transit for daily trips by encouraging new growth within compact, walkable neighborhoods.

- *City of Lemoore General Plan Update:* The 2040 Lemoore General Plan update process recently got underway in November of 2016 with community meetings and focus group sessions designed to provide visioning for how the citizens want the city to develop in the future. It is assumed that the updated General Plan will continue and expand upon the many smart growth principles adopted within the current General Plan that were utilized in the 2014 RTP/SCS.

- *City of Avenal General Plan Update:* The City of Avenal received a Sustainable Communities Planning grant to develop a series of "Sustainability Implementation Programs" that will facilitate the implementation of the General Plan goals and policies and allow Avenal to become a more sustainable community. The Sustainability Implementation Programs include two planning documents, an Active Transportation Plan and a Safe Routes to School Plan. Adoption of the updated General Plan is scheduled for February of 2018.

- *Climate Action Plan (CAP):* The cities of Avenal and Hanford collaborated to develop a Regional Climate Action Plan (CAP) in 2014 that identifies voluntary, cost effective measures to reduce GHG emissions. It includes measures to encourage low carbon and alternative fuel vehicles, electric vehicle readiness, and employer-based transportation demand management. The CAP also includes performance criteria for transit ridership and infill and mixed use development. Elements of the CAP are being incorporated into the Avenal and Hanford General Plan updates.

- *Public Health:* KCAG, in collaboration with other Kings County organizations, is involved in the Kings Partnership for Prevention efforts to develop a County Nutrition Action Plan in a way to achieve health equity through climate action. The goals are to promote active transportation, prioritizing infill and transit-oriented development, encourage local food systems and healthy diets, and green the built environment to provide access to trees, parks, and open spaces. Surveys during the community needs assessment process identified the lack of transportation as a barrier to eating healthy foods, participating in active living, access to health care, and having a healthy environment. We hope to work together to identify transportation alternatives in order to remove these barriers to increase physical activity, improve health, and improve air quality.

ii. Target Recommendation

Despite the ongoing efforts in implementing measures in the 2014 RTP/SCS in support of SB 375, there exist outstanding variables beyond the control of KCAG that negatively affect the extent to which targets can expand beyond previously set targets. Specifically, these variables include:

- Transition to EMFAC2014 emissions model – testing with the latest version of the California emissions factor model required to be used suggests that it is calculating higher GHG levels in the future than were calculated with the previous EMFAC2011 version used.
- Impacts of automobile operating costs on vehicle miles of travel (VMT) and emissions – revised assumptions in the growth of fuel prices show that estimates for future years are considerably lower, and as a result there is an increase in VMT and GHG associated with the reduced cost of automobile operation.
- Impact of economic recovery on VMT and emissions – it is expected that economic recovery will occur at a faster rate than previously assumed in the 2014 RTP/SCS and an increase in employment will result in an increase in VMT and GHG.

As stated previously, the model improvements are still in the process of being completed and the updated model was not available for use in developing a target recommendation. Preliminary testing of the KCAG model used in the 2014 RTP/SCS effort by applying the EMFAC2014 emissions model and revisions to the auto operating costs assumptions shows that the GHG reductions will be less than the 12% achieved previously. However, given the efforts underway and those committed to above and beyond those previously identified in the 2014 RTP/SCS, reaching the previously achieved GHG reductions may be accomplished utilizing off-model adjustments to estimate GHG emissions reductions from strategies to which the travel model and land use model are not sensitive. These off- model adjustments would be based on evidence from studies and research which demonstrate the potential for GHG emissions reductions from several SCS strategies, including ride-sharing (i.e. carpool, vanpool), employer-based commute strategies, active transportation and complete streets, Intelligent Transportation System (ITS) deployment, electric vehicle purchase incentives, transit and rail, and eco-driving.

KCAG recommends that the ARB establish an SB 375 target equivalent to the per capita GHG reductions previously achieved with the 2014 RTP/SCS at 5% for 2020 and 12% for 2035.

D. Madera County Transportation Commission

Development of the 2014 Madera County RTP/SCS was a collective effort, which required meaningful collaboration with each of the three local governments (cities of Chowchilla and Madera and Madera County), State and federal agencies, local tribal governments, community interest groups, and public stakeholders to identify land-use and transportation opportunities within the region that will address the needs of the growing population and ensure compliance with State and federal requirements. As a result of this effort, MCTC developed varying planning scenarios built-up from a status quo planning assumption. Each scenario introduced new planning principles and parameters meant to address the intent of SB 375 and reduce GHG generated in Madera County. At all levels of outreach, the most aggressive planning scenario developed was received amiably and recommended to be forwarded in the process. This aggressive planning scenario would be selected as the preferred planning scenario of the 2014 RTP/SCS. The preferred scenario calls for a variety of shifts in planning parameters including, but not limited to, a demographic shift in housing share, changes to lot sizes, shift in employment share, enhancements to public transit systems, and enhancement of the non-motorized transportation

network. These principles are most heavily emphasized in Madera County's established or planned urban cores and less emphasized in rural areas, which lack adequate population densities.

The parameters of the preferred RTP/SCS Scenario were utilized in the then newly developed Madera County Transportation Model. Unfortunately, the technical results of the modeling effort yielded GHG reduction results opposite of their anticipated outcome. The 2014 Madera County RTP/SCS was adopted with emission results that did not meet the GHG budgets established by the California Air Resources Board (ARB).

Since the adoption of the 2014 RTP/SCS, MCTC staff has worked to amend the adopted plan and create an SCS Scenario which will meet the GHG reduction goals set in place by SB 375. This this undertaking began with a thorough analysis of the technical tools utilized in the development of the RTP/SCS and requisite enhancement or upgrading of these tools to receive more accurate results.

This analysis concluded the tools used by MCTC for the RTP/SCS to account for GHG emissions could be enhanced to greatly improve accuracy in the reporting of emission results, particularly the newly developed forecasting model. An extensive effort was commenced to review the input data used in the transportation model. The bulk of the MCTC staff review focused on how land use and socioeconomic data (SED) was allocated in the model's base years (2010) and SB 375 comparison years (2005, 2020 and 2035 respectively), the composition of significant roadway network utilized in the model, and the boundaries of traffic analysis zones (TAZs) used to distinguish individual geographic areas in Madera County.

A great amount of effort has gone into making sure MCTC possesses the most adequate and accurate planning tools possible for utilization in the RTP/SCS development process. The results of this effort have proven beneficial. All changes made to the model have been scrutinized internally and by professional traffic engineering and modeling consultants to make sure that nothing implemented is inconsistent with the established and adopted measures prescribed in the preferred 2014 RTP/SCS scenario.

As a result, MCTC is able to amend the existing 2014 RTP/SCS to show compliance with the GHG reduction targets established through SB 375. **Recommendations for the current SB 375 GHG reduction target setting will be based upon the 2014 RTP/SCS Amendment work MCTC has been engaged in.**

i. 2014 Madera County RTP/SCS GHG Targets

In 2010, the California Air Resources Board (ARB) issued a 5% and 10% Green House Gas (GHG) reduction target to each of the eight San Joaquin Valley Metropolitan Planning Organizations. ARB agreed that the targets would be applicable to each MPO independently of other Valley MPOs. The targets included a percentage reduction of per capita greenhouse gas emissions from 2005 of 5 percent by the year 2020 and a reduction in GHG emissions of 10 percent by the year 2035. Developing the SCS requires meaningful collaboration with each of the local agencies, as well as stakeholders to identify land use and transportation planning opportunities around the region that will address the needs of the growing population and ensure compliance with State and federal requirements.

ii. A Preferred Scenario for the Madera Region

The 2014 RTP/SCS Preferred Scenario details how the region will reduce GHG to state mandated levels over time. MCTC approached the SCS development as an opportunity to enhance integration of transportation, land use and the environment in the Madera region.

MCTC began with the land use modelling process developed under the San Joaquin Valley Blueprint process using UPLAN software. Several land use scenarios were developed ranging from status quo to a hybrid of moderate change principles from the Blueprint process.

Using the Blueprint as the foundation for scenario development, MCTC coordinated with the cities and County staffs, as well as stakeholders to ensure a realistic and implantable scenario was developed. Four distinct scenarios were developed in the Blueprint process: Status Quo, Low Change, Moderate Change and High Change.

The parameters of the Blueprint Scenarios examined demographic shifts in housing share, changes in lot size, persons and employment per household, demographic shift in employment share, changes in employment intensities, spatial shifts in jobs and household's ratio, enhancements to the transportation system, changes in local General Plans, new infill considerations and demand characterizations. The scenarios developed were:

- **Status Quo** - No meaningful change. Consistent growth pattern based on historical trends.
- **Low Change** – Reflective of the Blueprint Low Change Scenario for the Madera Region. Applies Low Change Parameters to be used throughout the entire Madera Region with a highlight on enhancing transit.
- **Hybrid Change** – This scenario utilized Moderate Change Blueprint parameters in the most urban areas of Madera County (City of Madera and the South East County Growth Area). In the remainder for the region, Blueprint Low Change Scenario parameters were again applied. This was the most aggressive scenario developed for the 2014 RTP/SCS. Even greater enhancements to the transit system are called for in this scenario as well as higher density housing shifts in appropriate urban Areas, greater levels of infill development and shits in socio-economic factors.

iii. Sustainable Communities Strategy Outreach

The 2014 RTP/SCS Preferred Scenario was developed in collaboration with a large and diverse group of stakeholders. Throughout the development of the plan numerous workshops, roundtables and public hearings were held with the intent of allowing anyone who wanted to participate and contribute to the planning process to have ample opportunity to do so. Online communication also played a vital role in this plan development where it had not before.

MCTC held two series of public workshops in the various communities in the Madera Region. In total, eight public workshops were conducted, three of which were focused on environmental justice communities specifically.

Five roundtable committee meetings were held in the development of the plan. These roundtable meetings were attended by a wide variety of stakeholders including members of the public, elected officials, local agency staffs, state agency staff, community group organizers, economic development staff, farmland and farming representatives, health officials and environmental advocates.

A web survey tool was developed to gather input on developments of the plan. This tool was valuable in its opening a new door for participation not often experienced in the Madera region. The tool could ask questions in English or Spanish about different features of the 2014 RTP/SCS. The feedback mechanism was simple, it gauged how well the different ideas in the scenarios resonated with those who live, worked or travelled through the Madera Region. The tool was able to be used by 300 English speakers and 100 Spanish speakers.

Upon being presented with information regarding the SCS scenario development process and receiving meaningful commentary from outreach activities, MCTC was able to begin developing scenarios.

The selected preferred SCS scenario was met with approval from all stakeholders and voted to be forwarded for the final plan by the roundtable committee. The most aggressive planning scenario, the Hybrid Scenario, was preferred. The MCTC Policy Board approved the Hybrid Scenario for advancement as the preferred scenario for the 2014 RTP/SCS development.

iv. Off-Model Transportation Strategies

MCTC believes it has improved the technical capability of the transportation model to convey meaningful emission results based on adopted planning principles of the preferred 2014 RTP/SCS scenario; however new or previously unutilized tools also exist and are being implemented by MCTC staff for the 2014 RTP/SCS Amendment and 2018 RTP/SCS development process. As a result of legislation such as The Global Warming Solutions Act of 2006 and SB 375, great emphasis has been placed on establishing a variety of means to meet broad GHG emission reduction goals. As they pertain to transportation, not all of these measures are able to be accounted for in the Madera County Transportation Model. These strategies, as they relate to the RTP/SCS development process, are referred to as Off-Model strategies. MCTC believes it is very important to account for transportation investments capable of reducing GHG emissions that are not able to be accounted for in the Madera County Transportation Model.

v. Planning for Climate Change

The City of Madera Climate Action Plan (CAP), dated August 2015, was adopted by the City Council in September, 2015. It estimates GHG reductions from dozens of strategies and measures, including several transportation measures, four of which reduce vehicle miles traveled (VMT). As discussed below, three of these strategies represent VMT reductions that are not captured by the MCTC model because they represent local incentives for use of alternatives to driving.

The CAP first forecasts a "business as usual" (BAU) scenario for GHG emissions in two horizon years, 2020 and 2030. The year 2020 was selected for the forecast in order to maintain consistency with the AB 32 target year. The year 2030 was selected to maintain consistency with the City of Madera General Plan horizon year and to support California's larger effort to reduce statewide emissions under Executive Orders S-3-05 and B-30-15.

The forecast is based on projected growth trends in population, jobs, and VMT. The forecast relies on population and job projections provided by the City and VMT projections provided by Fehr & Peers using the MCTC travel model. The forecast is based on the assumption that the number of drivers, electricity and natural gas consumption, solid waste tonnage, water usage, and

wastewater generation will increase over time in proportion to the growth in population, jobs, and VMT.

As noted, among other GHG reductions strategies, the CAP describes four transportation mode shift strategies to reduce per capita VMT, and identifies associated VMT reductions in the City by 2020. All of these reductions represent reductions in VMT for trips that begin or end in the City of Madera from a baseline estimate from MCTC 2020 model runs. The next section describes the transportation reduction strategies and the associated VMT reduction factors applied in the 2020 analysis. MCTC has been working to further project the results forecasted in the Madera CAP to applicable to later years such as 2035.

vi. Vanpooling

Vanpooling is projected to experience robust growth through cooperative efforts between Madera County governmental agencies, employers and the CalVans Program. CalVans is sponsored by the California Vanpool Authority, a joint cooperative comprised of twelve California counties, and includes nearly 400 vanpools tailored to commuters/farm workers. Increased use of vouchers or subsidized trips is highly promoted by CalVans and is anticipated to incentivize County riders.

A reduction of 8,358 daily VMT from vanpooling is projected by 2020 based on recent historical growth trends. This projection assumes a total of 45 vans carrying 492 passengers per day. Vanpools operate six days per week traveling approximately 20 miles per round trip. Net VMT reduction calculations for vanpooling considered single-occupancy vehicle trips that would be made without vanpooling and vanpool-generated VMT including the number of miles participants drive to their vanpool pickup point. Eighty percent of CalVans participants are picked up directly at their homes while 20 percent drive less than three miles to a pick-up point. Projections for 2035 vanpooling ridership are expected to continue to see rising ridership.

The 2010 CAPCOA study cites a VMT reduction range of 2% to 20% from vanpooling ("TRT-11 Provide Employer-Sponsored Vanpool/Shuttle"). For comparative purposes, the CAPCOA study methodology for vanpooling results in a daily VMT reduction of 12,883 to 64,416 at a 2% and 10% employer participation rate, respectively. Implementation of successful voucher programs under consideration in Madera County would be expected to result in even higher VMT reductions.

vii. Ridesharing

Ridesharing is projected to grow through coordinated efforts with Valleyrides, a program sponsored by the Fresno Council of Governments. The 2010 CAPCOA study cites a ridesharing range of effectiveness of 1% to 15% commute VMT reduction and like reductions in GHG emissions ("TRT-3 Provide Ride-Sharing Programs").

viii. Active Transportation

MCTC is currently developing a comprehensive Active Transportation Plan for the Madera Region. This plan will identify needs and where gaps can be feasible and most effectively filled in the non-motorized network. Improving health, improved access to transit and alternative modes, improved safety and improved mobility of disabled are the key areas of focus for implantation with

a lateral goal of reducing GHG in the region. The Plan is expected to be completed in the summer of 2017 and will directly apply to the greater planning effort of the 2018 RTP/SCS.

ix. Additional Considerations

Madera County is in the unique position of having being the link of the future California High Speed Rail System and the existing National Amtrak System. The pieces are already moving to see this connection become as successful as possible for local, state, national travelers as well as the many international travelers who access Yosemite National Park and the Sierra National Forrest each year. Options to achieve an array of lateral benefits to health, travel efficiency and economy are being considered including planning of a robust transit-orientated-development around the station and improving multi-modal regional access between he station and college campuses and urban cores. Additionally, MCTC and the Madera Region work closely with our partners to ensure the continued expansion of the San Joaquin Amtrak system to provide better commuter access from the Valley to Sacramento.

Installation of new electric vehicle charging stations has been taking place at an increasingly rapid rate. Corralling the data from these charging units and better understanding their benefits for the purpose of maximizing their effective use will be a new feature implemented into future transportation planning regarding Sustainable Communities in the Madera Region.

An additional measure to consider the existing technical tools will not be able to adequately account for is implementation of transit rider incentives with vouchers. New programs are expected to result in further decreases in single-occupancy vehicle usage and GHG and VMT reductions. Proposed transit improvements, including bus stop shelters, benches, and amenities; and installation of park-and-ride lots also will provide synergistic or complementary effects to transit service expansions.

It is worth noting that there are also numerous programs in the Madera region that will serve to reduce per capita GHG emissions without affecting VMT. These include City of Madera CAP strategies to improve traffic flow (reducing idling emissions) and to increase use of low-carbon fuels. As noted, there are also numerous projects incentivizing the use of emission-free electric vehicles, e.g. through provision of public charging stations.

x. Setting a Higher Target

Currently MCTC has not been able to deeply test the newest tools available in order to gauge an appropriate new GHG reduction target. The work that has been done with the 2014 RTP/SCS including the effort made towards amending the plan to be SB 375 compliant have yielded positive results towards meeting the common goal of reducing GHG emissions. MCTC is confident it can develop a plan in the 2018 RTP/SCS which will surpass the existing targets of 5% per capita in 2020 and 10% in 2035 and would **recommends the ARB increase these targets to 10 percent in 2020, and between 15-20 percent in 2035**. These values are subject to adjustment, as model validation is completed.

E. Merced County Association of Governments

In response to challenges in meeting targets established for the County of Merced during the 2014 RTP development process, a Steering Committee of community organizations and stakeholders

was established to address the issue. The Steering Committee developed an outreach strategy, a survey tool, performance measures, programs, and policies to achieve the additional GHG reductions.

The hard work of the Steering Committee paid off in a recommendation to amend the 2014 RTP to meet the target reductions in the form of a SCS—rather than submitting an APS. The 2014 RTP Amendment was adopted by the MCAG Governing Board in May 2016 and achieves the reductions via:

- More Compact Growth and Infill Development
- Aggressive Transit Expansion, Express Transit, and Fare Reduction Strategies
- Substantial Increases in Bicycle and Pedestrian Infrastructure Investment
- Subsidies and Incentives for Alternative Fuel Programs and Electric/Zero Emission Vehicles
- Increases in Passenger Rail Service
- Enhanced TDM Programs (Commute Connection) through Online Multimodal Trip Planner Website
- Additional Funding Investments from CMAQ and Cap and Trade (LCTOP)

Building off the reductions achieved in the May 2016 RTP Amendment, the Merced County region is aggressively moving forward in the development and implementation of strategies to reduce VMT, enhance transportation mobility options, improve transportation system safety and efficiency, promote equitable and efficient land uses, and encourage co-benefits such as public health, clean air, vibrant neighborhoods and a sustainable future.

i. Tools to Support More Efficient and More Equitable Development

Infill Development and Land Conservation

- *In May 2016, the MCAG Governing Board approved the 2014 RTP/SCS Amendment One. The amended RTP includes a Sustainable Communities Strategy that promotes a higher rate of compact growth than the previous Alternative Planning Strategy—approximately 9 units per acre of new growth instead of 7.4*
- *MCAG is developing a Sustainable Planning & Infrastructure Grant Program to provide incentives for Transit-Oriented Development and Infill Development*
- *MCAG will mitigate at a 1:1 ratio any loss of farmland or natural lands due to projects funded by MCAG*

Equity

- *The Sustainable Planning & Infrastructure Grant Program will provide flexibility for selected projects to be community-specific and context-sensitive. One size does not fit all—projects will reflect individual community and neighborhood needs and preferences.*
- *MCAG is developing a regional Complete Streets Program to improve mobility options and transportation safety in Merced County and its municipalities, including disadvantaged communities and neighborhoods.*

ii. Infrastructure Investment that is Consistent with the State's Conservation, Development and Health Goals

Performance Measures and Targets

- *MCAG is updating its Project Selection Policy & Criteria as part of the 2018 RTP development process. As part of this planning effort, MCAG will explore the development and adoption of project performance measures and targets to inform the selection of transportation projects.*

Transit

- *MCAG will provide an efficient, effective and coordinated regional transit system that increases mobility for urban and rural populations, including the transit-dependent and disadvantaged communities.*
    - *Aggressive transit expansion to serve both urban and rural populations. Utilize funding from recently passed Countywide Transportation Sales Tax Measure to fund expansion of transit system and infrastructure.*
    - *Development of express transit routes.*
    - *Explore transit pass subsidies and fare-reduction strategies, particularly for disadvantaged communities, students, elderly, disable riders, and other transit-dependent residents.*
        - *Support the California High Speed Rail planning process*
        - *Partner with local jurisdictions to improve bicycle and pedestrian connectivity to existing transit options (The Bus, YARTS, Amtrak, and START).*
        - *Support incentives and programs that promote increases in passenger rail service.*

Active Transportation

- *MCAG is committed to developing and implementing a regional transportation system for bicycle and pedestrians.*
    - *As part of the 2018 RTP planning process, MCAG is coordinating with local municipalities and community advocacy groups to develop a regional Bicycle and Pedestrian Program.*
    - *Through the recently passed Countywide Transportation Sales Tax Measure, MCAG will develop and promote a Safe Routes to School Program as well as additional alternative transportation/mobility choice programs.*
    - *MCAG will aggressively pursue state and regional funding opportunities to provide a significant increase in investment in bicycle and pedestrian infrastructure.*

Shared Mobility

- *MCAG is exploring shared mobility options to both increase mobility choice and to address first-last mile connection challenges in rural and disadvantaged communities.*
- *Bike share, ride share, and car share.*
- *Public-Private Partnerships.*

Green Construction Practices

- *MCAG is committed to working with our local, state and federal partners on exploring ways to identify and implement sustainable practices for transportation infrastructure and capital projects.*

Equity

- *In partnership with County Health Providers and Social Equity Advocates, MCAG is conducting a County-wide needs and opportunities assessment. The assessment will identify and catalog health indicators, housing needs, transportation and mobility infrastructure, and access to basic services necessary to ensure the health and safety of Merced County residents. The completed County-wide Needs and Opportunities Assessment will be used to inform future transportation and infrastructure investment needs in Merced County and its municipalities, including disadvantaged communities and neighborhoods.*

iii. Transportation System Efficiency

Commute Trips

- *Support and expand existing Commute Connection TDM program via online multimodal trip planner website and enhanced marketing/outreach program.*
- *Support the Valley Air District Rule 9410 implementation efforts as part of the Commute Connection TDM program*
- *Substantially increase vanpooling through addition of CALVANS program.*
- *Through the recently passed Countywide Transportation Sales Tax Measure, MCAG will develop and promote incentives programs aimed at increasing ridesharing and vanpools.*

Eco-Driving

- *Build upon recent MCAG/CivicSpark Transportation and Climate Activities study to identify and implement Alternative Fuel and Electric Vehicles/Infrastructure strategies in Merced County.*
- *Support and implement Valley Air District ZEV and autonomous vehicles programs.*

Equity

- *MCAG, along with the seven other MPOs of the San Joaquin Valley and the Institute of Transportation Studies at UC Davis, will conduct a comprehensive assessment of transit needs in the rural, primarily disadvantaged areas of the eight-county region. The intent is to engage stakeholders in developing new, innovative, and technology driven alternatives for effectively meeting the mobility needs of our most disenfranchised residents.*

iv. Target Setting – MCAG 2014 RTP/SCS Amendment #1 – May 2016

Building off the reductions achieved in the May 2016 RTP Amendment, the Merced County region is aggressively moving forward in the development and implementation of strategies to reduce VMT and GHG. However, as noted throughout this report, there continue to exist outstanding variables beyond the control of MCAG that negatively affect the extent to which targets can expand. As such, MCAG's target recommendation for the 2018 RTP/SCS is to match the per capita GHG reductions achieved through the May 2016 RTP Amendment:

- 2020 Target -10.1%
- 2035 Target -12.7%

F. San Joaquin Council of Governments

ARB staff concluded that the 2014 San Joaquin Council of Governments (SJCOG) RTP/SCS, if implemented, would meet the ARB Board adopted reduction targets in both 2020 and 2035. In a technical evaluation of the SJCOG SCS, ARB staff identified areas in the plan development process that could be improved upon such as updates to the travel demand model and data inputs. SJCOG has responded to this feedback by improving its assumptions and analysis tools, and by finding additional projects and programs to pursue in the spirit of SB 375.

i. Individual Circumstances

SJCOG made use of the VMIP model during the preparation of the 2014 RTP/SCS. SJCOG's modeling efforts are combined with StanCOG and MCAG, as part of a "Three-County Model."

This model made use of the best travel behavior data available at the time of its development in 2010, including the 2000 US Census. Following the completion of the 2014 RTP/SCS, ARB prepared a sensitivity analysis which examined the impacts of more recent travel survey data on the model output, such as the 2010 Census, American Community Survey, and the California Household Travel Survey. This sensitivity analysis kept all other model inputs unchanged (such as land use, network characteristics, and socioeconomic data), in order to isolate the effect of the updated travel survey and census data on VMT and GHG results.

The ARB sensitivity analysis found that the VMT per capita reduction from the year 2005 to 2035 was 15.7 percent using the updated travel survey and census data, as compared to the 26.9 percent reduction identified in the 2014 RTP/SCS. This represents over a 40 percent difference when using up-to-date travel survey and census data. Even with this level of VMT difference, SJCOG would still exceed the GHG emissions targets of 5 percent by 2020 and 10 percent 2035 for the 2014 RTP/SCS. However, given the results of the ARB sensitivity analysis, ARB recommended that SJCOG use the most current data available in future SB 375 Target Setting and RTP/SCS efforts. SJCOG has followed through on this feedback through the implementation of the VMIP2 model, and through further quality control of model input data.

Though the GHG reduction numbers calculated as part of the 2014 RTP/SCS were accurate given the information available at the time, it is clear that with up-to-date travel survey and census data, the same model inputs will yield smaller GHG reduction numbers. Smaller GHG reduction numbers would not represent backsliding, as smaller values would simply be a more accurate representation of what was previously achieved in the 2014 RTP/SCS. As such, SJCOG anticipates that the GHG reduction levels achieved as part of the 2014 RTP/SCS will be more in line with the reductions observed in the ARB sensitivity analysis, and will fall within a range of 12-15 percent when using VMIP2. SJCOG is working to calculate what this precise value is, as it will establish a baseline for what the 2014 RTP/SCS was able to achieve. SJCOG will confirm this number upon completion of the VMIP2 model validation, which is currently in progress.

ii. 2014 RTP/SCS Implementation

SB 375 encourages MPOs to work with local jurisdictions in order to achieve greenhouse gas reductions required by state law. SJCOG has been collaborating with local agencies to ensure that the region is working toward the State's 2030 and 2050 climate change goals by encouraging land use and transportation decisions that minimize greenhouse gas emissions. In partnership with the MPO, member agencies and regional transit providers have pursued smart growth land use planning, transit system maintenance and upgrades, GGRF and ATP funds, and alternative vehicle adoption.

SJCOG plans to build upon these ongoing efforts in the upcoming 2018 RTP/SCS in order to continue facilitating the growth of sustainable communities. Examples of such efforts clearly demonstrate how State visions and goals are realized on a local and regional level.

Many of the projects listed in the 2014 RTP/SCS have been successfully completed or are currently in the process of construction. These projects showcase the efforts that San Joaquin County is putting toward creating vibrant neighborhoods and a sustainable future.

- <u>Mainline Highways:</u>
    - SR 99 Manteca Widening: The reconstruction of Lathrop Road interchange added sidewalks to the existing infrastructure to enhance the safety of crossing

pedestrians. On Main Street, Class II Bicycle Lanes and sidewalks were added to encourage active transportation and alternative travel modes.

- SR 99 South Stockton widening: A new Park and Ride Lot was added at the Mariposa Road interchange. Pedestrian and bicycle facilities were added at the new Mariposa Road and Golden Gate Avenue interchanges, in addition to the new MLK Jr. Blvd and Main St. overcrossings.
- SR 4 Crosstown Freeway Extension: A new freeway structure was built to remove truck traffic going from the highly disadvantaged community of Boggs Tract to the Port of Stockton. Improved air quality, reduced congestion and traffic, and better public health are some of the benefits that the Boggs Tract neighborhood received through this project.
- The Boggs Tract neighborhood benefitted from this project through improved air quality and reduced congestion and traffic.

- <u>Interchanges:</u>
  - SR 120/Union Road: The City of Manteca is currently designing this project to reduce costs and waste by reusing the existing overpass structure and modifying it into a Divergent Diamond interchange configuration, the first of its kind in California. Reusing the existing structure decreases greenhouse gas emissions through avoiding having to demolish and recycle the concrete of the old structure, in addition to decreasing the amount of new concrete needed. The design will include a fully separated bicycle and pedestrian undercrossing and bridge to improve the safety and convenience for those traveling on foot or by bicycle.

- <u>Regional Roadways</u>
  - Lockeford Street Improvements: Lodi had previously planned to widen Lockeford Street from two to four lanes, but the city will instead widen the street to add a center two-way left turn lane, Class II bicycle lanes, and sidewalks. This project is a prime example of how cities in the San Joaquin County are prioritizing active transportation infrastructure and designing roadways with new goals in mind. Construction will start in FY 17/18.
  - Hammer Lane Phase III Widening: Stockton is widening a bottleneck segment of Hammer Lane from four to six lanes; this project will be complete in Fall 2017. This widening project will include adding sidewalks and filling a gap in their bicycle network by adding Class II bicycle lanes. The widening will help to improve the time performance and reliability for SJRTD's Route 43 Metro Express BRT route.
  - Thornton Road Widening: Stockton is widening a bottleneck segment of Thornton Road from two to four lanes and adding sidewalks. The original plan was to widen to six lanes; however, using SJCOG's traffic model the City decided the full widening was unnecessary and instead will use the space to install the first buffered green painted bicycle lanes in San Joaquin County. This will provide connectivity between two Class I Bicycle Paths to activity centers like schools, retail stores, and SJRTD's Hammer Triangle Transfer Station. This project is scheduled for completion by Fall 2017.
  - Tracy Eleventh Street Bridge Replacement: An 80 year old bridge is being replaced with a new structure that will include wide pedestrian-friendly sidewalks and 8-foot wide Class II Bicycle Lanes.

- <u>Maintenance Facilities:</u>

- SJRTD Regional Transportation Center Maintenance Facility: Construction began in March 2014 and was completed in Fall 2015. The Regional Transportation Center (RTC) replaced an aging and overcrowded facility originally designed for a fleet of 50 buses. The RTC will improve the operational efficiency and safety of RTD, and allows for the necessary infrastructure to expand capacity and services. Increased services will lead to more ridership on the regional public transit network.
- ACE Rail Maintenance Facility: The state of the art LEED-Silver facility opened in 2014, and will allow for future ACE expansion. The facility is currently used to service and maintain the commuter trains that take daily trips from Stockton to Santa Clara, but the potential for rail service expansion may lead to increased commuters taking rail and less single-occupancy vehicles on the road.

- Rail Transit:
  - ACEforward: This expansion plan calls for 10 trains to San Jose and a potential direct connection to BART in Livermore. The Draft EIR is being released in Winter 2016.
  - Additional Service and Improvements: SJJPA is coordinating with CalSTA to negotiate with Union Pacific to allow for additional trains from Fresno to Sacramento during the early morning commuter service. There are currently only two trains a day between Sacramento and Bakersfield that run at times that are not suitable for commuter service. By making this route a viable commuting alternative, congestion on major Valley roadways such as SR 99 or I5 will decrease and bring down the levels of air pollution emitted through passenger vehicle travel. SJCOG, as part of the Central Valley Rail Working Group, testified to the Senate, Assembly, and High Speed Rail Authority to advocate for near-term rail improvements between Merced and Sacramento, between Sacramento and San Jose, and Stockton and San Jose. As a result, the High Speed Rail Authority altered their 2016 Business Plan to include the connection to Merced as part of the initial Operating Segment of HSR, and committed to working with the SJJPA and SJRRC to advance the environmental review for improvements between Merced and Sacramento.
  - Grants Awarded: ACE received a TIRCP grant for lengthened station platforms and new Tier IV low emission locomotives to allow for future expansion.

- Complete Streets:
  - South Stockton Sidewalks Phase 2: The County is adding sidewalks on three streets in a severely disadvantaged community in South Stockton; this project is being funded in part by CMAQ funds.
  - Cherokee Road Improvements: The County is adding sidewalks on Cherokee Road in a severely disadvantaged community in East Stockton as part of a roadway reconstruction project; this project is also being funded in part by CMAQ funds.
  - Weber Avenue Beautification Phase 2: Completed in 2015, this three-block road diet project added a center landscaped median, wide sidewalks with bulb outs and landscaping, benches, bicycle racks, street lighting, and street trees. This has led to increased commercial activity and events in the downtown area, which is tied with increased foot traffic and improved safety.
  - Harrison Elementary SRTS: This project will add sidewalks and a crosswalk near a school in a severely disadvantaged community, providing safer access to and

from school for children that walk every day in the neighborhood. The City of Stockton will begin construction on this project soon.

- SJCOG is coordinating with the California Bicycle Coalition, Amador County Transportation Commission, Calaveras Council of Governments, Alpine County Local Transportation Commission, and Tuolomne County Transportation Council on Caltrans Sustainable Transportation Planning grant for an interregional study of bicycle tourism and safety improvements.

iii. Efforts Above and Beyond the 2014 RTP/SCS

In addition to the continued delivery of the 2014 RTP/SCS in support of SB 375 mission, the San Joaquin County region is contributing positively with projects above and beyond those outlined in the 2014 RTP/SCS. Given the impacts of automobile operating costs and economic recovery on VMT and GHG levels, these efforts will be critical in allowing the region to be able to even match previously achieved GHG reduction levels. These efforts above and beyond are outlined below:

Above and Beyond: Efficient and Equitable Development

Changes to the built environment – such as increasing density, improving accessibility to transit, and increasing the diversity of land uses within developed areas – have been demonstrated through extensive research to be among the most significant and critical factors in achieving VMT reductions to a degree that is consistent with California's longer-term GHG reduction goals (i.e. 2050 and beyond). SJCOG is committed to this goal, and has the following programs and projects under way, above and beyond those previously identified in the 2014 RTP/SCS:

- General Plan Updates: The City of Stockton is currently undergoing the process of updating its 2035 General Plan – Envision Stockton. The draft preliminary statement showcases a community that strives to be a hub for economic activity, higher education, improved public health, and cultural events by 2040. The Plan strives to promote future growth in existing urban areas, while preserving the agricultural lands near the city edges. Similarly, the County of San Joaquin is updating their 2035 General Plan, with the plan scheduled to be adopted by the Board of Supervisors by the end of the year. The San Joaquin County General Plan update also encourages infill development and land conservation, while minimizing growth in areas outside of existing communities.

- Open Window Master Development Plan: In addition to protecting the natural and working lands in the region, infill developments are needed in the San Joaquin Valley to reduce VMT by placing residents close to amenities and transit. The Open Window Project is an approved high-density and mixed-use development project located near major transit hubs in downtown Stockton, consisting of over 1,000 residential units, 200,000 square feet of retail space, 90,000 square feet of commercial space, and 110,000 square feet of industrial/art studio space. This development plan recently received the California Chapter of the American Planning Association's 2016 Award of Excellence in Urban Design. The project is ready to commence construction on Phase 1 of the development, which will include 150 market-rate housing units, 62 affordable housing units, and approximately 92,400 square feet of commercial/retail space. This development ties into the Downtown Infrastructure Infill Incentive Program, a funding mechanism created by the Stockton City Council to encourage infill development and defray the costs of public infrastructure improvements in downtown Stockton.

- Cal Weber 40 Apartments: This adaptive re-use development project in downtown Stockton took two existing buildings that were in serviceable condition and transformed the space into modern affordable family housing. Adaptive re-use has the smallest carbon footprint out of all methods of development, including infill, since existing infrastructure is partially conserved and construction costs are minimized. This 40 unit apartment was able to preserve the history of the city by repurposing the 123 year-old Cal Weber Building and the 88 year-old McKeegan Building. In order to be eligible to rent units at Cal Weber 40, residents must earn between 30 and 60 percent of the Area Median Income as defined by the Department of Housing and Development, and four units were reserved for households with incomes at or below 30 percent of Area Median Income. All units are currently inhabited with a waiting list of future tenants as the apartments showcase how downtown Stockton can be revitalized with higher densities and affordable housing options.

Above and Beyond: Infrastructure Investment Consistent with the State's Conservation, Development, and Health Goals

State infrastructure investments shape land use and development patterns, contribute to the accessibility of transportation options and other services, and thus help determine to our ability to advance sustainable, equitable communities and meet our climate goals. SJCOG is committed to this goal, and has the following programs and projects under way, above and beyond those previously identified in the 2014 RTP/SCS:

- Affordable Housing and Sustainable Communities (AHSC) Program: The AHSC Program is a competitive statewide funding source for housing and transportation projects that work toward reducing greenhouse gas emissions. The Program receives its budget from the Cap-and-Trade Program, one of California's major initiatives for reducing climate change impacts. AHSC awards projects that can demonstrate emissions reductions through implementing active transportation improvements, increasing housing density, and/or encouraging alternative transportation options. Two projects in Stockton (Anchor Village and Hunter Street Housing), one from each round of funding, were chosen to receive AHSC funding as examples of how the State envisions new growth and sustainable developments. The Hunter Street Housing project, awarded in October 2016, is estimated to reduce a total of 13,916.4 metric tons of CO2e. MPOs have a role in the AHSC process to determine whether projects are consistent with the regional SCS, and SJCOG found that both developments aligned with the 2014 RTP/SCS goals and policies.

- Jobs Balancing Investment Fund (JBIF): The SJCOG Jobs Balancing Investment Fund Program, created using Regional Transportation Impact Fees, incentivizes non-residential development projects that are considered a high priority to meet economic development policy objectives. The JBIF provides the SJCOG Board, in conjunction with the San Joaquin Partnership and other economic development specialists, with a more tactical tool to attract employers to the region. Not only is this program in line with state goals of economic prosperity in the San Joaquin Valley, but the JBIF is intended to create more jobs in the region which will ultimately decrease VMT to the Bay Area and Sacramento. The full program implementation will occur as part of the ongoing five-year update to the Regional Transportation Impact Fee plan to be completed in 2016.

Above and Beyond: Transportation System Efficiency

Maximizing the efficiency of existing transportation infrastructure is key to ensuring the effective movement of people and goods to their destinations and reducing transportation costs. SJCOG

is committed to this goal, and has the following programs and projects under way, above and beyond those previously identified in the 2014 RTP/SCS:

- Commuting Services: Commuting accounts for a large share of interregional VMT in the San Joaquin County as residents travel daily to their jobs in the Bay Area, Sacramento region, Stanislaus or Merced County. In San Joaquin County, we are working to improve the mass transit experience and encourage ridership. Increasing the options and efficiency of alternative transportation is key to reducing single-passenger vehicle trips. A majority of these daily commutes are single-occupancy passenger vehicle trips, so SJCOG and transit providers are implementing projects and policies that offer commuters with more eco-friendly travel options.
    - Regional rail in San Joaquin County include the Amtrak San Joaquins and Altamont Corridor Express (ACE) passenger rail service; both rail services are looking to increase capacity and daily trips due to the rising demands of increased passengers. Amtrak San Joaquin added an additional 7th round trip in 2016 and is seeking funding for capital improvements for an 8th round trip (FY 18-19). SJCOG coordinated with UPRR on a federal TIGER Grant that will allow for improvements to both the Amtrak and ACE service, while decreasing greenhouse gas emissions from idling freight locomotives traveling to the Port of Stockton.
    - Improving the consistency and reliability of public transit travel times encourages riders to take a bus over driving a personal vehicle. The San Joaquin Regional Transit District (RTD) operates a daily commuter bus service, fueled by diesel, with an average daily ridership of 800 passengers. A recent grant of $8.2 million from the Federal Transit Administration will fund the RTD Commuter Bus Replacement Project and allow RTD to purchase 10 hybrid diesel-electric buses. Not only does this reduce greenhouse gas emissions through fuel efficiency, but the hybrid buses may entice new riders and take additional personal vehicles off the road. RTD is also in the process of implementing two new BRT routes in Stockton through funding from the Transit and Intercity Rail Capital Program, bringing the total of BRT lines in the city up to five.
    - In 2015-16, the Commute Connection TDM Program (servicing the three counties of San Joaquin, Stanislaus, and Merced) was enhanced through an online multimodal trip planner, new vanpool voucher program, an enhanced Emergency Ride Home program and initiated the development of a marketing plan and new website. The program added 1,091 new members to the trip planning database and added 47 new vanpools. In addition, Bike to Work month attracted nearly 600 participants tracking over 21,000 miles biked/walked. Increasing the number of participants enrolled in carpool and vanpool allows for an immediate and long-lasting reduction of VMT and associated greenhouse gas emissions with a cost effectiveness of $26 per lb, below the SJCOG threshold goal of $30 per lb.
    - In Fall of 2016, a new High-Occupancy Vehicle (HOV) lane was opened on northbound Interstate 5 with plans for the southbound HOV lane to be completed by the end of the year. Caltrans and SJCOG collaborated to bring the first HOV lanes to Stockton, and all of San Joaquin Valley, in order to help relieve congestion for carpoolers going to and from the Sacramento region. More than 130,000 motorists use I-5 North during peak commute hours and these new HOV lanes will impact travel behavior by encouraging single drivers to carpool to work. In addition to decreasing congestion and commute times, the reduction in number of cars being driven during peak hours will allow for air quality benefits since less pollutants are being emitted.

- Sustainable Transportation Solutions: SJCOG plans to include more aggressive strategies for adopting alternative fuel vehicles in the 2018 RTP/SCS. We want to increase the region's alternative fuel stations and work with the San Joaquin Valley Air Pollution Control District to address obstacles in implementing the Plug-in Electric Vehicle Readiness Plan. In 2015, the San Joaquin Regional Transit District (SJRTD) awarded Federal Transit Administration Section 5312 funds to procure five additional zero-emission electric buses. Furthermore, member agencies have worked toward implementing active transportation projects in the region. The City of Stockton has received a considerable amount of funding from the first two cycles of the Active Transportation Program, with multiple projects being prepared for construction in the spring of 2017. Stockton is currently is currently undergoing a Bicycle Master Plan Update and will soon be beginning the process to create its first Greater Downtown Active Transportation Plan.

- Manteca Waste Management and Compressed Natural Gas (CNG) Fueling: The City of Manteca is planning on generating CNG by combining food waste with methane gas from a municipal wastewater treatment plant. The facility is predicted to produce 140,000 diesel gallon equivalents of CNG in the first few years of operation, with an ultimate yield of 256,000 diesel gallon equivalents on an annual basis. The compressed natural gas is slated to power the Manteca solid waste division fleet to meet tightening San Joaquin Valley air quality standards, and the remaining gas will be sold to private sector vehicle owners at the planned fueling station at the wastewater treatment plan. In addition to reducing landfill waste and repurposing food waste, the CNG facility is reducing greenhouse gas emissions through the use and production of biofuels; increasing fuel efficiency and the use of alternative fuels in the San Joaquin County are strategies being used to support sustainable communities.

iv. Target Setting Recommendation

Despite the ongoing efforts in implementing measures in the 2014 RTP/SCS, which have been successful in achieving and exceeding previously established targets, there exist outstanding variables beyond the control of SJCOG that negatively affect the extent to which targets can expand beyond previously achieved GHG reduction levels. Specifically, these variables include:

- **Transition to VMIP2** – Following the completion of the 2014 RTP/SCS, ARB prepared a sensitivity analysis to examine the impacts of more recent travel survey and census data on the model output. This sensitivity analysis reported VMT per capita reduction 40 percent smaller than had been reported in the 2014 RTP/SCS. Based on this finding, ARB recommended that SJCOG use the most current data available in future SB 375 Target Setting and RTP/SCS efforts. SJCOG has followed through on this recommendation with the VMIP2 model, which is in the process of final validation.

- **Transition to EMFAC2014** – testing with the latest version of the California emissions factor model suggests that it is calculating higher GHG levels in the future than were calculated with the previous EMFAC2011. In San Joaquin County specifically, EMFAC2014 is reporting 1.6 percent higher emissions than with EMFAC2011. Such a change does not represent backsliding with respect to an SB 375 target; rather, it is a more accurate representation of what had been achieved in the 2014 RTP/SCS. However, it should be

noted that this change does impact SJCOG's ability to match the GHG reduction levels established in the 2014 RTP/SCS.

- **Automobile Operating Costs** – revised assumptions in the growth of fuel prices show that estimates for future years are considerably lower, and as a result there is an increase in VMT and GHG associated with the reduced cost of automobile operation. In San Joaquin County specifically, using 2014 RTP/SCS data, the GHG reduction value was found to drop from 23.7 percent to 17.1 percent, representing nearly a 28 percent smaller GHG reduction value as a result of using more accurate automobile operating cost assumptions. This change will substantially impact SJCOG's ability to match the GHG reduction levels established in the 2014 RTP/SCS.

- **Economic Recovery** – it is expected that economic recovery will occur at a faster rate than previously assumed in the 2014 RTP/SCS and an increase in employment will result in an increase in VMT and GHG. Though the quantification of these increases has yet to be finalized, they are expected to impact SJCOG's ability to match the GHG reduction levels established in the 2014 RTP/SCS.

VMIP2 model improvements are still in the process of being finalized. However, based on the discussion provided in the "Individual Circumstances" section of this chapter, it is anticipated that VMT and GHG reduction levels by the year 2035 could be lessened by approximately 40 percent, associated with the use of use of current travel survey and census data in VMIP2. Such a change would be in line with the reductions observed in the ARB sensitivity analysis, and the GHG reduction level would fall within a range of 12-15 percent when using VMIP2. As noted, this adjustment is actually a more accurate representation of the GHG reductions achieved in the 2014 RTP/SCS. As such**, SJCOG recommends that ARB establish SB 375 targets of 12-13 percent by the year 2020, and 14-15 percent by the year 2035 for SJCOG, which is in line with the GHG reduction levels achieved as part of the 2014 RTP/SCS**. These values are subject to adjustment, as model validation is completed.

The impact of revised automobile operating costs will be accounted for in the validated / finalized VMIP2 model. The impact of economic recovery will be understood through 2018 RTP/SCS development, and is not currently accounted for in the VMIP2 model. In each case, these impacts will cause the SJCOG GHG reduction levels to drop below the 12-15 percent range SJCOG is recommending. However, given the efforts underway as part of the 2014 RTP/SCS, those committed to above and beyond outlined in this chapter, and efforts that will come along with the 2018 RTP/SCS, SJCOG staff believes that the region can make up the difference and meet targets in line with previously achieved GHG reduction levels.

G. Stanislaus Council of Governments

StanCOG submitted its adopted SCS and related GHG determination to ARB for review on April 10, 2015. ARB staff conducted a technical evaluation of StanCOG's adopted 2014 RTP/SCS and affirmed that, if implemented, StanCOG's 2014 SCS would meet ARB's per capita GHG emissions reduction targets of 5 percent in 2020 and 10 percent in 2035. Stanislaus Council of Governments (StanCOG) and its member jurisdictions are actively working to implement strategies to reduce VMT and greenhouse gas emissions. The following paragraphs provide a description of the variety of programs and projects that are being undertaken in support of SB 375 goals.

i. Individual Circumstances

StanCOG made use of the VMIP model during the preparation of the 2014 RTP/SCS. StanCOG's modeling efforts are combined with SJCOG and MCAG, as part of a "Three-County Model." This model made use of the best travel behavior data available at the time of its development in 2010, including the 2000 US Census. Following the completion of the 2014 RTP/SCS, ARB prepared a sensitivity analysis which examined the impacts of more recent travel survey data on the model output, such as the 2010 Census, American Community Survey, and the California Household Travel Survey. This sensitivity analysis kept all other model inputs unchanged (such as land use, network characteristics, and socioeconomic data) in order to isolate the effect of the updated travel survey and census data on VMT and GHG results.

The ARB sensitivity analysis found that the VMT per capita reduction from the year 2005 to 2035 was 15.7 percent using the updated travel survey and census data, as compared to the 26.9 percent reduction identified in the 2014 RTP/SCS. This represents over a 40 percent difference when using up-to-date travel survey and census data. Even with this level of VMT difference, StanCOG would still exceed the GHG emissions targets of 5 percent by 2020 and 10 percent 2035 for the 2014 RTP/SCS. However, given the results of the ARB sensitivity analysis, ARB recommended that StanCOG use the most current data available in future SB 375 Target Setting and RTP/SCS efforts. StanCOG has followed through on this feedback through the implementation of the VMIP2 model, and through further quality control of model input data.

Though the GHG reduction numbers calculated as part of the 2014 RTP/SCS were accurate given the information available at the time, it is clear that with up-to-date travel survey and census data, the same model inputs will yield smaller GHG reduction numbers. Smaller GHG reductions would not represent backsliding, as smaller values would simply be a more accurate representation of what was previously achieved in the 2014 RTP/SCS. As such, StanCOG anticipates that the GHG reduction levels achieved as part of the 2014 RTP/SCS will be more in line with the reductions observed in the ARB sensitivity analysis when using VMIP2, and will fall within a range of 12-15 percent. StanCOG is working to calculate what this precise value is, as it will establish a baseline for what the 2014 RTP/SCS was able to achieve. StanCOG will confirm this number upon completion of the VMIP2 model validation, which is currently in progress.

ii. SCS Implementation, and Efforts Above and Beyond

StanCOG's 2014 Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS) was the culmination of a nearly 3-year planning effort that was conducted with the participation of local agencies, community groups and the general public. The planning approach was one that was driven by local and public input and truly embraced the intent of Senate Bill (SB 375) to reduce Greenhouse Gas Emissions by integrating land use and transportation planning to address those issues that cross jurisdictional boundaries.

Since the completion of the 2014 RTP/SCS, StanCOG has undertaken numerous efforts in support of SB 375 goals. StanCOG is working to encourage local agency efforts to implement policies and programs that support sustainable communities through more compact, transit oriented, mixed use and infill development and more efficient development patterns that enhance a connection between land use and transportation choices, all of which are the basis of StanCOG's 2014 RTP/SCS.

The local jurisdictions within the Stanislaus region are implementing land use and transportation strategies identified in the 2014 RTP/SCS through various efforts. In early 2016, the City of Modesto, submitted a grant application to the California Air Resources Board (CARB) through the San Joaquin Valley Air Pollution Control District (SJVAPCD) for Fiscal Year 2014-2015 and 2015-2016 funds in response to a CARB Air Quality Improvement Program and Low Carbon Transportation Greenhouse Gas Reduction Fund Investments solicitation for purchasing four zero emission buses, four bus yard chargers and two fast chargers. The application was submitted as part of the San Joaquin Valley Transit Electrification Project, which was undertaken for deployment of commercially available heavy-duty, zero-emission (battery-electric), public transit buses by the City of Modesto and the City of Visalia, the Fresno County Rural Transit Agency and the California State University Fresno. The project is anticipated to reduce greenhouse gas emissions and other criteria pollutants and demonstrate the practicality and economic viability of wide-spread adoption of zero-emission public transit buses.

Additionally, the City of Modesto has secured funding through the Low Carbon Transit Operations Program (LCTOP) for a new route that is providing additional service to a heavily travelled corridor (Route 21 and 23), cutting headways in half, increasing transit ridership by 130,000 passengers per year, and decreasing VMT and GHG emissions.

The City of Modesto submitted a project proposal in response to the recent ATP Cycle 3 Statewide Call for Projects and has been awarded funding to implement bicycle and pedestrian improvements along Paradise Road near Modesto High School. The City's aim is to reduce VMT by encouraging an increase in walking and biking by installing a road diet, bike lanes, ADA curb ramps, bicycle storage (racks and boxes), mid-block pedestrian refuges, speed tables, and rapid flashing beacons at pedestrian crossings.

StanCOG administered the CMAQ program with funds to support a new Stanislaus Regional Transit (StaRT) commuter bus service. The service transports commuters from the west side of Stanislaus County (from the cities of Turlock and Patterson) to the Dublin/Pleasanton Bay Area Rapid Transit (BART) station. Modesto Area Express is providing a similar service from the City of Modesto to the BART station in Dublin and the ACE train station in Lathrop/Manteca.

As a member of the Stanislaus County Health Services Agency's (HSA's) Built Environment Committee, StanCOG participates in regular meetings of the HSA to explore opportunities to further their mission for promoting healthy lifestyles, preventing injury, and preserving access to healthcare for underserved populations within the region. It is through this partnership that StanCOG and the HSA collaborate to improve access and mobility, health and safety, environmental quality, social equity and other fundamental goals of StanCOG's 2014 RTP/SCS. StanCOG and the HSA are coordinating to identify opportunities for joint planning and implementation projects. Most recently, StanCOG has provided input into the County's development of performance measures for the HSA's Framework for a Thriving Stanislaus, the County's Public Health Improvement Plan. HSA is seeking input to assist them in their identification of bicycle and pedestrian measures to assess accessibility to opportunities for physical activity, greenspace, healthy and affordable food, and public transit.

StanCOG's Consolidated Transportation Services Agency known as "MOVE" offers a free travel training program, which teaches seniors, persons with disabilities, and low income populations within the Stanislaus region how to independently use bus transit throughout Stanislaus County. In FY 15/16, the program provided greater independence to 157 trainees by encouraging the use of fixed route transit.

Through StanCOG's Travel Demand Management (TDM) program ("Commute Connection"), StanCOG continues to offer commuter programs and services, such as the Ride Match (online), emergency ride home services and a recently deployed online multimodal trip planner website (mycommuteconnection.com). Commute Connection has also implemented a new vanpool subsidy program which offers $200 per month during the first year of operation for new vans and $100 per month thereafter. Commute Connection recently completed a long-term Strategic Marketing Plan, which will be rolled out in early 2017 with a re-branding strategy to broaden outreach and encourage changes in travel behavior to promote more widespread use of travel options, such as transit, ridesharing, bicycling, walking, and telecommuting, as alternatives to driving alone. Commute connection is also planning conduct an analysis of the feasibility of a Bike to School program to accompany the Bike to Work campaign and for integrating a "school pool" feature in the TDM System (trip planner, mycommuteconnection.com). Additionally, Commute Connection is launching a new recognition program to acknowledge Stanislaus County employers when they successfully implement TDM strategies.

StanCOG has started exploring available funding opportunities for increasing the penetration of plug-in hybrid electric vehicles (PHEV) and zero-emission vehicles (ZEV) through development of charging infrastructure. StanCOG is also making our member jurisdictions aware of available Federal and State funding opportunities to promote transit operators to plan and implement the use of zero or near zero emission vehicles to encourage their transition of transit fleets to ZEB technology by 2040.

In an effort to cost effectively expand low-carbon transportation options in rural communities, StanCOG in partnership with the San Joaquin Valley MPOs is working with the Institute of Transportation Studies at UC Davis to provide assistance on a regional Rural Transit Study. StanCOG is providing support to the Study Team to develop a pilot program that leverages new technology-driven, shared access services (such as ridesharing, car-sharing, and bike-sharing) to enhance and/or complement traditional fixed-route transit serving rural communities. This rural transit planning effort is being funded by Caltrans through its Sustainable Transportation Planning Grant program. The Study seeks to identify Tech-Driven Transit Alternatives and potential pilot locations. The representatives of the Institute of Transportation Studies at UC Davis are assessing the demographic and travel characteristics of rural, disadvantaged communities in the San Joaquin Valley as well as the transit services currently available to these communities and unmet transit needs. The Study Team has also conducted interviews and has led focus group meetings with area stakeholders, with StanCOG's support, to learn more about transportation and technology barriers facing Stanislaus County residents (e.g., access to a smart phone) and potential solutions for overcoming these barriers. The study plans to develop alternatives and potential pilot locations for testing strategies. A detailed plan for technology-driven, shared access pilot programs will be developed to address the needs, constraints and opportunities of specific communities or a sub-region in the San Joaquin Valley. This planning effort is anticipated to include an operational cost assessment and proposed funding strategy as well as estimated VMT and GHG emission reductions. The study is also anticipated to provide guidance on potential cost effective strategies for expanding low-carbon transportation options in Stanislaus County's rural communities.

StanCOG recently applied for an Alternative Transportation Program (ATP) grant for a regional Bicycle/Pedestrian Safety and Encouragement Program that, if funded, will include open street events offering bike safety and bike repair training clinics, a safety and education advertising campaign and other activities designed to encourage the use of alternative transportation modes.

StanCOG's application submitted in response to the 2017 ATP Cycle 3 call for projects received the highest project evaluation score. StanCOG staff will be presenting the proposal evaluation team's findings to the StanCOG Policy Board for approval of the award at upcoming January 18, 2017 Board meeting.

StanCOG is devising its strategy for updating the Regional Non-Motorized Transportation Plan that will be updated in 2018. StanCOG envisions a planning effort that could employ bicycle and pedestrian counts collected using crowdsource-based mobile applications, permanent or temporary automated counters, or manual counts collected by StanCOG staff and trained volunteers. The plan is anticipated to provide updated/revamped bike/ped maps for identifying existing and future planned and programmed improvements and for identifying gaps and planning future improvements to address needs and increase bicycle/pedestrian mode share.

On November 8, 2016, Stanislaus County voters approved a 1/2 cent sales tax measure (Measure L) initiated by StanCOG. The 1/2 cent sales tax will take effect on April 1, 2017. The tax is expected generate approximately $38 million a year with an estimated total of $958 million over the next 25 years to fund transportation improvements in Stanislaus County. With these voter-approved local transportation funds we will be better equipped to compete for funding and leveraging a larger share of state and federal dollars. A portion of the funding will be used to implement roadway operational improvements, such as the installation of ramp metering/ITS improvements along State Route (SR) 99. The revenue will also go toward funding transit operations, maintenance and infrastructure improvements and enhancing transit connectivity to regional rail services, such as ACE, BART, and AMTRAK, and enhancing bike/ped connectivity between communities, local schools, trails and recreational facilities.

This is just a sample of the numerous initiatives that are being undertaken to advance the Region's sustainable community strategy and contribute to meeting State climate action goals to reduce VMT and greenhouse gas (GHG) emissions.

iii. Target Recommendation

Despite the ongoing efforts in implementing measures in the 2014 RTP/SCS, which have been successful in achieving and exceeding previously established targets, there exist outstanding variables beyond the control of StanCOG that negatively affect the extent to which targets can expand beyond previously achieved GHG reduction levels. Specifically, these variables include:

- **Transition to VMIP2** – Following the completion of the 2014 RTP/SCS, ARB prepared a sensitivity analysis to examine the impacts of more recent travel survey and census data on the model output. This sensitivity analysis reported VMT per capita reduction 40 percent smaller than had been reported in the 2014 RTP/SCS. Based on this finding, ARB recommended that StanCOG use the most current data available in future SB 375 Target Setting and RTP/SCS efforts. StanCOG has followed through on this recommendation with the VMIP2 model, which is in the process of final validation.

- **Transition to EMFAC2014** – testing with the latest version of the California emissions factor model suggests that the updated air quality model is calculating higher GHG levels in the future than were calculated with the previous EMFAC2011 for the majority of the MPOs that were analyzed. In contrast, for Stanislaus County, testing with EMFAC2014 showed a slight decrease in emissions of 1.2 percent when the results are compared with EMFAC2011. While a minor increase was observed as a result of transitioning to

EMFAC2014, the benefits of that transition appear to be far outweighed by the substantial negative impacts of an update of auto operating costs assumptions in the model and economic recovery, as discussed below.

- **Automobile Operating Costs** – revised assumptions in the growth of fuel prices show that estimates for future years are considerably lower, and as a result there is an increase in VMT and GHG associated with the reduced cost of automobile operation. In Stanislaus County specifically, using 2014 RTP/SCS data, the GHG reduction value was observed to drop from 22 percent to 16.5 percent, representing nearly a 25 percent smaller GHG reduction value as a result of using more accurate automobile operating cost assumptions. This change will have a significant impact on StanCOG's ability to match the GHG reduction levels established in the 2014 RTP/SCS.

- **Economic Recovery** – it is expected that economic recovery will occur at a faster rate than previously assumed in the 2014 RTP/SCS, and an increase in employment will result in an increase in VMT and GHG. Though the quantification of these increases has yet to be finalized, they are expected to impact StanCOG's ability to match the GHG reduction levels established in the 2014 RTP/SCS.

VMIP2 model improvements are still in the process of being finalized. However, based on the discussion provided in the "Individual Circumstances" section of this chapter, it is anticipated that VMT and GHG reduction levels by the year 2035 could be lessened by approximately 40 percent, associated with the use of current travel survey and census data in VMIP2. Such a change would be in line with the reductions observed in the ARB sensitivity analysis, and the GHG reduction level would fall within a range of 12-15 percent when using VMIP2. As noted, this adjustment is actually a more accurate representation of the GHG reductions achieved in the 2014 RTP/SCS. As such, **StanCOG recommends that ARB establish SB 375 targets of 12-13 percent by the year 2020, and 14-15 percent by the year 2035 for StanCOG, which is in line with the GHG reduction levels achieved as part of the 2014 RTP/SCS.** These values are subject to adjustment, as model validation is completed.

The impact of revised automobile operating costs will be accounted for in the validated / finalized VMIP2 model. The impact of economic recovery will be understood through 2018 RTP/SCS development, and is not currently accounted for in the VMIP2 model. In each case, these impacts will cause the StanCOG GHG reduction levels to drop below the 12-15 percent range StanCOG is recommending. However, given the efforts underway as part of the 2014 RTP/SCS, those committed to above and beyond outlined in this chapter, and efforts that will come along with the 2018 RTP/SCS, StanCOG staff believes that the region can make up the difference and meet targets in line with previously achieved GHG reduction levels.

H. Tulare County Association of Governments

The Tulare County Association of Governments (TCAG) region is located in the south-central San Joaquin Valley (Valley) with a population of approximately 466,339 people (DOF, 2016) concentrated on the valley floor in the western third of the county. It contains the eight incorporated cities of Dinuba, Exeter, Farmersville, Lindsay, Porterville, Tulare, Visalia, and Woodlake. These cities and numerous, mostly smaller, unincorporated communities are largely surrounded by prime agricultural land and intensive farming. The central third is foothills of the Sierra Nevada largely dedicated to extensive agriculture and grazing. The mountainous eastern third is mostly State and federal lands, including all of Sequoia and the south most portions of

Kings Canyon National Parks. Approximately 31% of the population lives in unincorporated areas. Tulare County is the top milk producer for the State of California, with a total gross value of over $1.7 billion in milk production for 2015 (Tulare County Agricultural Commissioner, 2016). The transportation system is primarily auto-dependent, although public transit ridership has increased in the last five years from 2.87 million riders in 2010 to 3.57 million in 2015. The urban pattern is more multi-centric than in most of the other valley counties. Commuter patterns are correspondingly diverse. A substantial amount of employment is scattered in agricultural areas.

i. SCS Implementation and Efforts Above and Beyond

SB 375 encourages regional planning that better integrates land use and transportation policy with the purpose of lowering greenhouse gas and air pollution emissions, reducing time spent in traffic and improving the cost efficiency of transportation infrastructure investment. Focus shifts to transportation solutions that fit the higher densities reflected in the approved RTP/SCS. TCAG's 2018 RTP/SCS will build on the success of the previous plan that focused increased density of future development within communities, as envisioned in the 2009 Tulare County Regional Blueprint, supported by infrastructure improvements. Ongoing implementation strategies for the RTP/SCS consist of a combination of planning projects; transit incentive programs; and public information campaigns.

"Walk 'n Bike Tulare County", the Regional Active Transportation Plan for the Tulare County Region (RATP), was adopted in May of 2016. The RATP serves as the foundation of the pedestrian and bicycle component for the RTP/SCS update by compiling and incorporating the high-priority pedestrian and bicycle projects among TCAG's member agencies. These high-priority projects are therefore better positioned to compete for funding from federal state and regional sources.

TCAG is also undertaking the county's first ever Long Range Transit Plan (LRTP), called Destination 2040, with the objective of adding a comprehensive transit component to the RTP/SCS update. This is not an insignificant undertaking: nine different transit operators, as well as eight incorporated communities and other governing agencies, provide some type of fixed-route, demand response, or intercity transit service within the county. The goal of this project is to provide a development and investment plan that will result in real mobility and transit mode split gains in the near and long term. Achieving this goal will require a thoughtful and thorough strategy that addresses current needs, emerging needs and markets, and future markets.

The California High Speed Rail Authority sponsored Cross Valley Corridor Study has the potential to connect cities in Kings and Tulare Counties with the High Speed Rail (HSR) station and job centers in Visalia and NAS Lemoore. The study focuses on the Cross Valley Corridor (Corridor), an existing rail corridor between the cities of Huron and Porterville, with a proposed California High-Speed Rail Station to be located in the middle of the Corridor (east of Hanford). Other forms of transportation, such as walking, bicycling, and automobiles will be included in the planning effort to ensure that the planned Corridor and proposed High-Speed Rail Station are equally accessible for all communities and their residents. In addition to supporting planning efforts for the Corridor and the proposed High-Speed Rail Station, this planning effort will enable communities and cities in the study area to promote walkable, mixed-use (residential and commercial uses developed together) communities with easy access to public transit facilities, encourage revitalization and economic development, and facilitate growth in the region. The end result of the Plan will be to identify how transportation mobility can be improved using various modes including walking, biking, driving a car, taking a bus, or riding a train to visit surrounding communities.

Creative implementation strategies for the 2018 RTP/SCS are being considered including: matching funds for transportation investment to leverage cap and trade funds for mixed use development, transit enhancement, and active transportation projects; and an incentive program for electric vehicle (EV) charging stations for large employers, parking structures, and shopping centers will help the transition to a zero emission vehicle fleet mix envisioned by ARB. TCAG Staff is committed to RTP/SCS implementation and leveraging opportunities that transform communities and that integrate transit and active transportation accessibility.

Efficient and Equitable Development

- TCAG also plans to continue to expand Transit and ATP public awareness through the continued promotion of the highly successful CalVans and education programs like Bike & Stride.
- Affordable housing developments in disadvantaged communities throughout the county.
- TCAG has developed a strategic partnership with Self Help Enterprises, Inc. and Calvans to build integrated communities including affordable housing with transit and ATP enhancements and Calvans vanpool and rideshare programs with onsite electric charging stations.
- The city of Visalia's General Plan Update, adopted in October, 2014, increased density and constricted the urban growth boundaries. These policies remain in place.
- Goshen Transportation & Community Plan Preparation- A Caltrans Transportation Grant for the community of Goshen was awarded to the County of Tulare for preparation of a Transportation and Community Plan. When completed, the plan will be used as the basis for an amendment to the current Goshen Community Plan.
- Sustainable Highway 99 Corridor Plan Preparation- A Strategic Growth Council Grant was awarded to the County of Tulare for preparation of a sustainable highway corridor plan. Planning for the 55 mile long Highway 99 corridor will affect the unincorporated communities of Traver, Goshen, Tipton, Pixley and Earlimart.
- Based upon the adopted 2030 Tulare County General Plan Update, an implementation work program for community plans is being prepared. All community plans and proposed hamlets identified in the General Plan Update are being evaluated for prioritization and eventual work initiation.
- Tulare County has adopted the following Community Plans 2014-Present (which address, among other things, complete streets implementation):
    - Traver Community Plan
    - Tipton Community Plan
    - Pixley Community Plan
    - Strathmore Community Plan
    - Terra Bella Community Plan
    - Ducor Community Plan
    - Porterville Area Community Plan

Infrastructure Investment Consistent with the State's Conservation, Development and Health Goals

- TCAG Staff is committed to RTP/SCS implementation and leveraging opportunities that transform communities and that integrate transit and active transportation accessibility.
- TCAG also plans to continue to expand Transit and ATP public awareness through the continued promotion of the highly successful CalVans and education programs like Bike & Stride.

- An inter model freight facility and expansion of short haul rail spurs that connect Visalia's west side industrial park is being planned.
- Transit incentive programs for veterans and college students have already been implemented region wide resulting in increased ridership.
- Transit EV fleet conversion is well underway with 12 electric buses recently procured.
- Downtown Woodlake has been transformed by an innovative streetscape and pedestrian access project recently completed in partnership with Caltrans.
- New transit line to major facilities in Fresno- airport, 4-year public university, and medical and government centers.

Pricing Policies

- The city of Visalia is studying adjustments to its downtown parking fee program.

Transportation System Efficiency

- TCAG's Congestion Management Process (CMP) Committee uses a "fix it first" approach to the highway system that values operational improvements and ITS improvements over capacity enhancement.
- Transit incentive programs for veterans and college students have already been implemented region wide resulting in increased ridership.
- An update to the existing Intelligent Transportation Systems Regional Deployment Strategy is underway.
- TCAG's transit model upgrade, including the first full transit network, allow for mode choice analysis that should produce a better integrated land use/ transportation system.

ii. Target Recommendation

TCAG has completed an initial evaluation of the VMIP2 model that has thus far been calibrated for the 2015 base year to regional VMT for the purposes of SB 375 Target Setting. Backcast testing for the SB 375 base year 2005 produced lower VMT for 2005 than VMIP1 but that result was actually closer to the actual HPMS estimate of regional VMT. Consequently TCAG will calculate GHG reductions from reset 2005 emissions levels. This will mean that future development scenarios equivalent to those in the 2014 RTP/SCS will show less reductions.

EMFAC 2014 also impacts the results of both the base year 2005 and RTP/SCS analysis year 2035 which masks somewhat the effect of the year 2005 base reset producing an equivalent per capita GHG reduction of **10%** for 2020 and **12%** for the RTP/SCS analysis year 2035. Combined with **3%-4%** additional off model Moving Cooler calculations to capture ongoing SCS implementation measures, **TCAG recommends ARB set the SB 375 Target for the Tulare County region for the year 2020 to 13%-14% and for the year 2035 to 15%-16% per capita GHG reductions from the reset VMIP2 2005 base year**. TCAG reserves the option to submit an updated target recommendation following the completion of final VMIP2 highway calibration.

TCAG is committed to the 2014 RTP/SCS Blueprint Scenario principles of compact development with a 25% overall increase in land use density supported by an integrated system that focuses on the user experience for all modes of transportation in a way that preserves agricultural, resource, and habitat lands for future generations.

4. SUMMARY OF SB 375 TARGET RECOMMENDATIONS

The Valley has been successful in implementing projects and programs in support of SB 375 that are making a significant contribution to air quality improvement. In addition to the implementation of these projects and programs outlined in each Valley MPO's 2014 RTP/SCS, the Valley has initiated additional projects and programs that align with the California Air Resources Board's recommended strategies of efficient and equitable development, transportation system efficiency, pricing policies, and infrastructure investment consistent with the state's conservation, development, and health goals.

Nevertheless, that there exist outstanding variables beyond the Valley's control that negatively affect the extent to which the Valley can meet (let alone expand upon) previously achieved GHG reduction levels as part of the 2014 RTP/SCS. As detailed in Chapter 2 of this report, these variables include:

- Impact of model improvements from the San Joaquin Valley Model Improvement Plan (VMIP), phase 2. VMIP2 makes use of up-to-date travel survey and census data, and allows for more sophisticated travel behavior. As a result of these changes, in some cases, VMIP2 is producing higher VMT levels as compared with the previous VMIP.
- Impact of updated emissions calculation tool (EMFAC2014). Similarly, in some cases, EMFAC2014 is calculating higher GHG levels in the future than were calculated with the previous EMFAC2011.
- Impact of an increased rate of economic recovery. With increased economic recovery comes additional VMT and GHG. Though the quantification of these increases has yet to be finalized, they are expected to impact the Valley's ability to match the GHG reduction levels established in the 2014 RTP/SC.
- Challenges associated with interregional travel. The proportion of interregional trips through the Valley are much higher than the respective counterpart statistics from other regions in the State. The calculated "In and Out" commute trips represent a challenge with respect to GHG reduction, as these trips neither originate nor terminate within a given County in the Valley.
- Impact of lower automobile operating costs. With a reduced automobile operating cost comes additional VMT and GHG. With calibrated base years and renewed auto operating cost assumptions, the degree to which Valley MPOs can reduce GHG emissions has been lessened by 1-7 percent by the year 2035.

The Valley asserts that a combination of the projects and programs identified above and beyond those outlined in the previous RTP/SCS, off-model strategies, and efforts that will come along with the 2018 RTP/SCS will be sufficient to negate the impact of these variables. As such, Valley MPOs are recommending targets comparable to previous GHG reduction achievement levels. These target recommendations are summarized in Table 6.

Table 6: Summary of SB 375 Target Recommendation

County	Percent Per Capita GHG Reduction Target Recommendation: Year 2020	Percent Per Capita GHG Reduction Target Recommendation: Year 2035
Fresno	Anticipated to be larger than -9%	Anticipated to be larger than -11%
Kern	-9 to -12%	-13 to -14%
Kings	-5%	-12%
Madera	-10%	-15 to -20%
Merced	-10.1%	-12.7%
San Joaquin	-12 to -13%	-14 to -15%
Stanislaus	-12 to -13%	-14 to -15%
Tulare	-13 to -14%	-15 to -16%

Note: Values in this table are preliminary, subject to future model run updates.

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April 25, 2017

Mary Nichols, Chair
California Air Resources Board
1001 I Street
Sacramento, CA 9581

Re: SB 375 Greenhouse Emission Reduction Target for the Fresno County Region

Dear Chair Nichols,

First of all, I would like to express my appreciation for your leadership in addressing air quality and climate change issues in the state and in the San Joaquin Valley. I would also like to thank your staff for working with the regions on the SB 375 target recommendation process, taking into consideration the different needs and resources available at the regions.

As pointed out in the valley-wide letter to ARB in December 2016, the San Joaquin Valley MPOs have made significant achievement towards the targets set in 2010, and are continuing our efforts to reduce VMT through integrated transportation and land use planning.

Fresno COG's first SCS, if implemented, would achieve 11% of GHG reduction by 2035, exceeding the -10% target set by the ARB for the Valley. However, due to the new clean car/fuel measures that will be implemented state-wide, it will be much cheaper to drive and thus more VMT will be generated, which is known as the "VMT effect". The new clean car/fuel programs are reflected in EMFAC 2014 and the VMT effect has been tested and proved by MPO models. With the VMT effect, MPOs will have to look for additional VMT reduction beyond the previous SCS even if just to reach what was achieved in the pre-EMFAC 2014 SCS.

With that said, Fresno COG is committed to working with the state on developing ambitious and achievable targets. The Region will be looking at enhanced alternative transportation strategies and implementation of the newly updated general plans to help the state achieve SB 32 goals. Fresno COG is proposing 13% per capita reduction of GHG by 2035 as the new target for the region. This new target is ambitious given the VMT effect described above, but can be achieved if the general plans are implemented on schedule and there is no major disruption of funding flowing into the region. The draft target will be brought to the COG Policy Board for approval in late May.

Thank you for the opportunity to recommend the target. Should you have any questions regarding the proposed draft target, please feel free to contact me or my staff Kristine Cai at 559-233-4148 or kcai@fresnocog.org.

Sincerely,

Tony Boren

Executive Director

Fresno COG 2016-2017 Target Recommendation Report

I. Overview of Fresno COG Target Recommendation

In 2010, The California Air Resources Board set the greenhouse gas emission reduction targets for Fresno COG and the other seven MPOs in the San Joaquin Valley at 5% per capita reduction by 2020 and 10% reduction by 2035. Fresno COG's 2014 RTP/SCS demonstrated that Fresno region would be able to exceed the targets by achieving 9% reduction by 2020 and 11% reduction by 2035 if the SCS is implemented.

Since the adoption of the 2014 RTP/SCS, Fresno COG has been working collaboratively with the local governments, the San Joaquin Air Quality Control District, transit operators, Caltrans, community organizations and other local and state partners in implementing the first SCS. As the implementation efforts continue in full strength in the land use area in the Fresno region, Fresno COG anticipates that transportation related SCS strategies will be strengthened compared to the 2014 RTP/SCS for the following reasons: 1) emerging technology in zero-emission vehicles and near-zero-emission vehicles becomes more accepted by consumers 2) funding from the State and other sources provides incentives for installation of more charging stations for electric vehicles, which helps to expedite the market penetration of the clean vehicles. 3) the Transportation Network Companies (TNC) such as Uber and Lyft has been expanding in the Valley, although mostly in the urban areas. Other shared mobility service such as CalVans' vanpool program for farmworkers and commuters in the rural counties has received more support due to its high cost-effectiveness. Two non-profit community groups in Fresno County have just recently received grants from Just Transit to address the transportation needs in the rural communities through shared mobility programs (Green Raiteros serving Huron area and Van y Vienen serving Cantua Creek and El Porvnir). 4) With the completion of several Active Transportation Plans(ATP) in the region and a couple of more in the pipeline, it is expected that many more active transportation projects will be carried through the planning and funding process compared to the first SCS. 5) Fresno COG has initiated efforts to develop the first regional long range transit plan in the Fresno region, which will provide input to the long range transit strategies in the future SCSes. Although the long range transit plan will be completed in 2019, and can't provide direct input to the target recommendation process, additional transit services beyond the 2014 SCS that have been initiated by the transit operators are added in the 2017 target.

Although the GHG reduction benefits from the above transportation strategies can't be captured 100% due to the limitation of existing tools and data scarcity, Fresno COG has

been working closely with the ARB and other fellow MPOs on developing quantification methodologies while actively promoting and supporting such transportation strategies. The land use and transportation strategies applied in the target scenario have been run through the land use-travel forecasting-air quality modeling process. Off-model methodology was applied for strategies that the traffic model is not sensitive to, and is documented in the modeling section of this report.

II. Scenario and Process

Due to the time constraint and the availability of the modeling tools, the 2016-2017 target setting has largely remained an internal technical exchange with ARB. Fresno COG is bringing the draft target recommendation to the RTP Roundtable in April 2017, which consists of representatives from COG member agencies, the Air District, Caltrans, transit operators, community organizations, agriculture, building industry, education, health, tribal governments, etc. The RTP Roundtable is an advisory committee that provides guidance and recommendation on RTP/SCS related issues. The recommendation will also be presented to Fresno COG's Transportation Technical Committee (TTC), Policy Advisory Committee (PAC), and the Policy Board for approval in May 2017.

The target scenario is largely based on the 2014 SCS with enhancement in transportation strategies and a few general plan updates. The 2014 SCS contained draft conceptual information for City of Fresno's new 2035 general plan, which was finalized after the adoption of the 2014 SCS. The final map of City of Fresno's new general plan is incorporated into the target scenario. City of Sanger and the County of Fresno are updating/revising their general plan and the latest assumptions from the draft plans are also included in the target scenario. In addition to the transportation strategies in the 2014 SCS, the target scenario takes into consideration additional transit investment; more aggressive deployment of bike and pedestrian strategies region-wide; CalVans' vanpool program expansion with $ 3 million from the AHSC program for the Vanpool Expansion Project; more electric vehicle (EV) charging stations in the region; high speed rail operational in 2035, etc.

III. Land Use Strategies in the Target Scenario

The 2017 target scenario mostly retains the land use strategies applied in the 2014 RTP/SCS. Increased density and mixed use development are proposed in the target scenario at a scale that is appropriate for the size of the cities. Residential density will increase from an average of 4.6 units per acre to 7.4 units per acre. A range of housing opportunities and

choices are provided with a more balanced supply of various housing type. More than 45% of new housing will be multifamily and town homes, compared to 22% in the pre-SCS plans. Over 20% of new housing and 36% of new employment are allocated along the proposed high-capacity transit corridors and activity centers, which provide foundation for potential Transit Oriented Development. The target scenario reflects the sustainability principle of directing and strengthening development towards existing communities. The City of Fresno's new general plan directs about 50% of new growth in the central core, Downtown, established neighborhoods and along Bus Rapid Transit (BRT) corridors, and the rest inside the existing sphere of influence. The City of Fresno's plan proposes no sphere of influence expansion by 2035, which is a significant stride towards reining in fringe development in a traditionally sprawling region. The plan emphasizes increased land use intensity and mixed-use development at densities supportive of greater transit usage. The plan also calls for building healthy communities with safe, well maintained, and accessible streets, public utilities, education and job training, proximity to jobs, retail services, and health care, affordable housing, youth development opportunities, open space and parks and transportation options.

The target scenario also includes elements of complete neighborhood, with efficient and diverse mix of residential densities, building types and affordability which are designed to be healthy, attractive and centered by schools, parks, and public and commercial services to provide a sense of place and that provide as many services as possible within walking distance. The complete neighborhood concepts foster distinctive and attractive communities with a strong sense of place.

Farmland conservation and resource land protection are also emphasized in the target scenario. As pointed out in the 2014 SCS, farmland, open space and natural resource land are critical for the region's environmental and economic health. Farmland conversion is minimized to the extent possible with increased density and more focused development within existing urban cities. Resources lands such as critical habitat, wetlands, vernal pools riparian forest, groundwater recharge zones, Williamson Act land were identified during the 2014 SCS process. City of Fresno's new general plan set goals that "emphasize conservation, successful adaption to climate and changing resource conditions, and performance effectiveness in the use of energy, water, land, building, natural resources and fiscal resources required for long-term sustainability". The policies in the Plan preserve farmland by incentivizing new development within and adjacent to already-urbanized land. City of Clovis' updated general plan requires mitigation at 1:1 ratio of converted to preserved acreage, or payment of its valuation equivalent if the conversion of Important Farmland is deemed significant; City of Reedley's 2014 general plan provided direction for the City to develop a farmland mitigation program that requires new development within the existing

sphere of influence to fund farmland preservation efforts. The mitigation program will require applicants seeking to annex important farmland within the existing city sphere of influence to pay a fee to city of Reedley equivalent to the cost of preserving Important Farmland on a 1 to 1 basis with land converted to urban uses. The San Joaquin Valley Greenprint project, which has been funded by the Strategic Growth Council, has been a huge undertaking in resource conservation and management in the San Joaquin Valley. It has identified challenges and opportunities for lands, waters and living resources in the Valley. The study recommends a series of strategies for the conservation and management of the resources. The results of the Greenprint will reinforce local efforts and serve as a guide to local, state, federal and private sector decision-makers as they make choices about the future of the Valley's resources.

IV. Transportation Strategies in the Target Scenario

As discussed in the Overview, transportation strategies are strengthened in the target scenario compared to the 2014 SCS. Fresno region envisions increased investment in bike, pedestrian and transit facilities, and is supportive of the emerging shared mobility service to address various transportation needs. Fresno COG and the region will continue to support the State's efforts to have cleaner vehicles and fuels through building EV charging stations and electrification of bus fleets when funding becomes available.

- Transit
  Although Fresno COG has obtained funding to develop a long range transit plan, the project will not be completed until 2019 and would not be able to provide direct input to the transit investment strategies in the target recommendation. However, in addition to all the transit projects planned in the 2014 RTP/SCS (including 5 BRT routes in the City of Fresno), the target scenario assumes increased frequency of major transit routes in the existing urban areas to 15 minutes from 30 minutes service, expanded services to new development areas in the metropolitan areas based on the updated general plans, all of which will be subject to revision after the long range transit plan is developed. Furthermore, the target scenario includes the three new college routes started by FCRTA. The bus service to the Yosemite National Park is also an addition to the transit system in the Fresno regional although the target scenario did not take credit for it since the service is only available during summer.
- Active Transportation
  As discussed in the December 2016 submittal, Fresno region has been taking a big stride in active transportation planning and investment. Fresno COG conducted a

Transportation Needs Assessment study that evaluated and identified the (active) transportation needs and gaps in the region. City of Fresno, Clovis and Coalinga have completed and adopted their individual ATPs and Fresno COG is developing a regional ATP on behalf of the rest of Fresno County. Projects from the ATPs will feed into the 2018 RTP and the subsequent RTPs. With the aggressive active transportation planning, and the funding from the existing ATP program and the SB1 for active transportation projects, Fresno COG assumes aggressive deployment of bike/ped projects in the off-model quantification of GHG reduction.

- CalVans and other vanpool and shared mobility programs
  CalVans provides vanpool services to farmworkers and commuters in the rural counties. In year 20 14/15, vans out of Fresno County traveled 29.1 million passenger miles; in 2015/16, the vans (out of Fresno County) traveled a total of 2.7 million miles with total 528,510 passengers, and the passenger miles for the vans reached 28.8 million, which is equivalent to 13,459 MT CO2e reduction. CalVans received $3 million in 2015/2016 from the AHSC program for the Vanpool Expansion project. The counties that will be covered by the project include Merced, Madera, Fresno, Tulare, Kings, Kern, Monterey and Imperial. Fleet expansion for CalVans is assumed to continue into the future target year and off-model quantification of GHG reduction benefits for the CalVans and other vanpool programs have been captured in the proposed target.

- Measure C Carpool program
  Fresno County Measure C ½-cent sales tax funded carpool program provides incentives to commuters who carpool. In year 2015/16, program participants reported 58,527 daily commute carpool VMT. It is assumed that the level of participation in this program will continue into the future target year at the same rate as the reported year.

- Electric Vehicle (EV) charging stations/infrastructure
  Regional efforts to enhance EV charging infrastructure came from both public and private sectors. A good example of the effort is the Fresno Rural Transit Agency secured funding to install public accessible solar powered charging stations at all municipal yards of the small cities that it serviced throughout the Fresno COG region. PG&E recently announced that it will significantly expand access to EV charging stations throughout Northern and Central California over the next three years. Up to 7,500 EV charging stations will be installed at apartment, condominium complexes and workplaces. An EV Regional Charger Program Off-Model spreadsheet

was developed by SANDAG. Fresno COG adopted SANDAG spreadsheet and scaled regional VMT and vehicle populations to match the Fresno Region. Within the spreadsheet, regional charger programs were assumed to increase electric mode to 41% (MTC Assumptions), and consequently increase eVMT by 11%. Factoring in CO2 emissions from electricity associated with the eVMT, the net CO2 reduction from enhanced EV charging program was calculated.

- High Speed Rail
  California High Speed Rail (HSR) is currently under construction in Fresno and other sections of its planned route through Central Valley. Once completed, the HSR will connect the region with the LA and Bay Areas with a fast and convenient mode of travel. Its impact on regional travel was implemented as a module within the VMIP2 model and can be turned on and off depending on the modeling purposes. For vehicular trips, HSR will reduce through trips trip at the model gateways, and will redirect a portion of the inter-regional trips from the gateways to the planned HSR station in downtown Fresno. The HSR module adjusted trip productions (P) and attractions (A) accordingly. The estimated ridership was based on projections found in the HSR 2012 Revised Business Plan, where high and low projected numbers were given. To be conservative, the projected low numbers were used as the HSR model input.

V. Modeling Tools and Planning Assumptions applied in the Target Scenario

Fresno COG has developed a new population/employment growth forecast that took into consideration factors such as economic development, land use planning, infrastructure investments, local demographic characteristic, regional commute patterns, etc. The new growth forecast is scheduled to be adopted by the Policy Board in late April, and is applied in the target scenario. Attached is the draft growth forecast report.

Since Fresno COG is in the process of developing 2018 RTP/SCS, the projects proposed fromin the 2014 RTP/SCS are applied in the target scenario with some additional transit projects as described in the Transportation Strategies Section. Additional bike/ped projects are assumed in the target scenario and quantified through the off-model quantification methodology from the “Moving Cooler, An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions” by Cambridge Systematics. High Speed Rail is a post processor in the MIP2 model, and ridership information from the HSR Authority was applied in the modeling of the target scenario.

The land use and transportation assumptions were run through the MIP2 model, which is newly updated with latest survey data and revised auto-operation cost that is consistent with the Big Four MPOs. Fresno COG is in the process of producing the final documentation for the MIP2 model, and will post it on the website once it is available.

EMFAC2014, the latest air quality model developed and approved by ARB, was run to produce the GHG results. Fuel efficiency from EMFAC2014 was an input to the auto operation cost in MIP2.

Off-model quantification was applied to strategies that the traffic model is not sensitive to. Vanpool VMT was derived from statistics submitted by CalVans and the rate of growth applied to the Vanpool program was based on the projection from the operator and smoothed by an algorism developed by Fresno COG. Percent of VMT reduction from carpool was assumed constant into the future. The target scenario also included GHG reduction benefits from the boost of numbers of EVs in the Fresno due to the EV charging stations that are planned to be built in the region. Quantification methodology from ""Moving Cooler, An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions" by Cambridge Systematics was also applied to active transportation projects and other operational improvement such as ITS. Aggressive deployment was assumed for bike and pedestrian projects in the target scenario. The San Joaquin Air District's Rule 9410: Employer Based Trip Reduction was also included as part of the off-model quantification for GHG reduction.

VI. Target Recommendation

Based on the modeling of the above land use and transportation strategies in combination with the latest growth forecast, Fresno COG recommends 13% per capita GHG reduction by 2035 as the target for the Fresno County region. The -13% target is very ambitious to the Fresno region given that cars are becoming cleaner and more efficient, and thus it is less expensive to drive, which produces the VMT effect of more VMT being produced due to the cleaner cars. The region has to look for additional VMT reduction from the land use/transportation strategies to counter the VMT effect. With that said, the Fresno region will be able to achieve the proposed target if the latest general plans are implemented on schedule, and the revenue assumed for the programs and projects in the target scenario will be coming through as projected. The State will need to provide more tools for VMT reduction should any target number beyond -13% is expected for the Fresno region.

Fresno COG is taking the draft target number to the Policy Board for approval in May 2017. The -13% target will be subject to the final approval of the Fresno COG Policy Board.

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May 10, 2017

Mary Nichols, Chair
California Air Resources Board
1001 I Street
Sacramento, CA 9581

Re: 2020 Greenhouse Emission Reduction Target for the Fresno County Region

Dear Chair Nichols,

I hope this letter finds you well. Although the California Air Resources Board (ARB) did not request a GHG reduction target for 2020, Fresno COG has determined that a 2020 target recommendation will inform ARB's target setting process. Based on the latest population numbers released by the Department of Finance (DOF) and the employment numbers by the Employment Development Department (EDD), the Fresno region is recovering faster from the recession in employment but is experiencing slower population growth than foreseen by the last growth forecast, which was applied in the 2014 RTP/SCS. The different recovery rates in employment and population have significant impacts on the new 2020 population/employment projection and thus the 2020 target which is based on the new projection. The higher recovery rate in employment and slower population growth contribute to a new 2020 projection with approximately 29,000 more jobs and 35,000 less population in the region. The following table provides a comparison of two sets of growth projection for the region. The 2012 projection, conducted by the Planning Center in 2012, was based off the 2010 population/employment numbers and applied in the 2014 SCS. The 2017 projection, which was just adopted by Fresno COG Policy Board in April 2017, was based on the 2015 population/employment numbers.

	The Planning Center (2012)			ADE (2017)		
	Population	Employment	Unemployment rate	Population	Employment	Unemployment rate
2010	929,758	326,900	16.1%	932,642	334,059	16.1%
2015	1,010,080	348,282	16.8%	972,300	372,400	9.1%
2020	1,082,097	369,665	17.1%	1,047,440	398,050	9.1%
2035	1,300,597	433,812	17.9%	1,258,860	460,100	12.6%

*The highlighted cells indicate historical values at time of study; the rest of the cells are projected numbers.

The Fresno COG region has historically been plagued by double digit unemployment rates, and is one of the areas in the State with highest poverty concentration. The region also has the most disadvantaged communities in the State. The added jobs coming out of the recession are timely and celebrated opportunities to an impoverished region such as Fresno County where the majority of residents are minorities. It shows that the most disadvantaged communities are also benefiting from the economic recovery, which, to some extent, helps to address geographic social inequity issues in the State.

However, higher employment rates mean that more people are traveling to work, which leads to higher per capita VMT/GHG with a smaller projected population.

Due to the economic recovery effect described above, Fresno COG is recommending a 6% per capita GHG reduction for 2020. Land use and transportation strategies applied in the 2020 target scenario are consistent with the 2014 SCS, which was described in the submittal for the 2035 target to ARB on April 25, 2017. Alternative transportation strategies such as vanpool, carpool, bike and pedestrian projects, ITS, Electric Vehicle (EV) charging stations and the San Joaquin Valley Air Pollution Control District's Employer Based Trip Reduction Program (Rule 9410) are also built in the 2020 target, but scaled down to the 2020 level.

Although the 2014 SCS projected to achieve 9% per capita GHG reduction in 2020, it was based on a projection with a less optimistic employment future and faster population growth. 6% per capita reduction is, however, based on the latest employment/population projection with better economic opportunities for the region, and still exceeds the 5% target for 2020 that was set in 2010.

Thank you for considering the recommended 2020 target. Should you have any questions regarding the proposed draft target, please feel free to contact me or my staff Kristine Cai at 559-233-4148 or kcai@fresnocog.org.

Sincerely,

Tony Boren

Tony Boren

Executive Director

April 25, 2017

Mary Nichols, Chair
California Air Resource Board
1001 I Street
Sacramento, CA 95814

Re: SB 375 Greenhouse Emission Reduction Target for the Kern County Region

Dear Chair Nichols,

We would like to thank you and your staff for working closely with us on development of the SB375 Target recommendation for Kern. As pointed out in the valley-wide letter to ARB dated December 30, 2016, Kern has achieved and exceeded targets set in 2010 and since the adoption of our first SCS in 2014, we are expanding our efforts to reduce passenger vehicle emissions by better coordinating land use and transportation planning.

Based on the modeling results to date, Kern COG's Regional Planning Advisory Committee and governing Board unanimously recommend the following targets.

Table 1 – Kern COG Recommended Targets for the Kern Region

Preliminary Per Capita GHG Reduction	**2020**	**2035**
Current Targets (2011)	-5%	-10%
Recommended Targets	**-9%***	**-13%***

*Preliminary recommendation subject to change as improved modeling warrants.

The latest modeling for target setting expands on the strategies and assumptions in the 2014 RTP as well as incorporates the improved methods recommended in ARB's evaluation of the 2014 RTP/SCS. Attachment A provides an overview of the assumptions used in the target modeling.

The target setting report in Attachment B spends considerable time discussing the latest technical improvements and challenges for target setting created by the improved methods. It demonstrates Kern's continued commitment and good faith effort by opening up the modeling black box and helping better inform decision makers and the public on target setting for SB 375. However, while considering these technical details, keep in mind that Kern's member agencies are some of the most aggressive and successful in pursuing funding and implementing strategies that meet both air quality and greenhouse gas emission reduction goals.

Attachment C documents 53 strategies or “success stories” of new, enhanced and continuing strategies our region is undertaking to achieve these goals. Real projects like these strategies on the ground are an even more effective indicator of the success of SB 375 and the regional transportation planning process, and illustrate the effectiveness Kern COG’s grass roots public outreach process that has garnered input of more than 1% of Kern’s citizens.

Thank you for the opportunity to recommend targets. Should you have any questions regarding the this effort, please feel free to contact me or my staff Rob Ball at 661-635-2900 or rball@kerncog.org.

Sincerely,

Ahron Hakimi
Executive Director

Enclosures

ATTACHMENT A

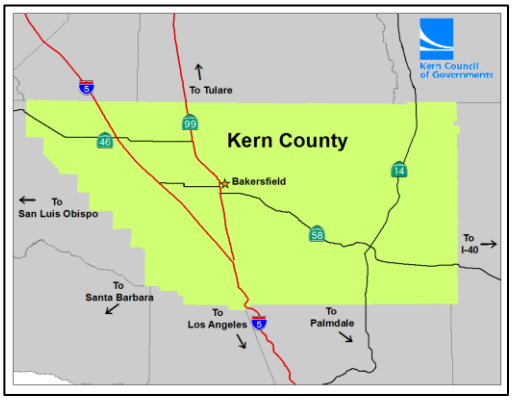
Kern RTP/SCS Assumptions

Sustainable Community Strategy Assumptions Overview

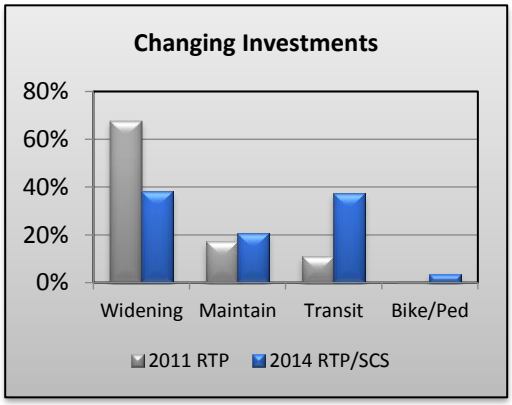
Kern Council of Governments (Kern COG)

Kern COG's Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS) will help the State of California meet its climate change goals and the requirements of Senate Bill 375.

Kern COG Draft 2018 - 2042 RTP/SCS Plan



Located at the crossroads of California, Kern COG is a single county region that serves as the Northern gateway to the Southern California as well as the gateway between Northern California and the national I-40 corridor. The region is roughly home to 900,000, and is expected to add over ½ million people, 150,000 jobs and 160,000 households by 2042. The RTP/SCS is the Kern region's strategy to meet the near-term and future needs of its residents. As with the previous Plan, implementation is expected to increase the region's transportation options and access to jobs while reducing the distance traveled between jobs and housing. Kern COG's 2014 RTP/SCS is expected to help California meet its greenhouse gas reduction goals by meeting its SB 375 targets to be updated by 2018.



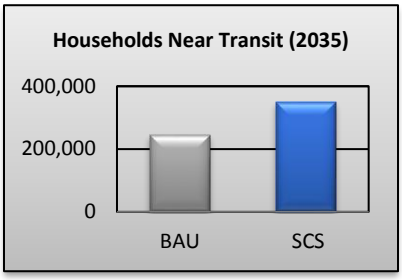
RTP/SCS Key Strategy Highlights

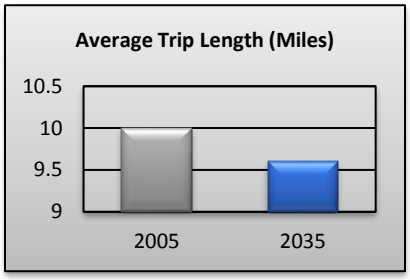
Kern COG's 2014 RTP/SCS Included strategies that signal a major change from the prior plans, promoting a more efficient land use pattern/transportation system. The 2018 RTP/SCS will build on this success:

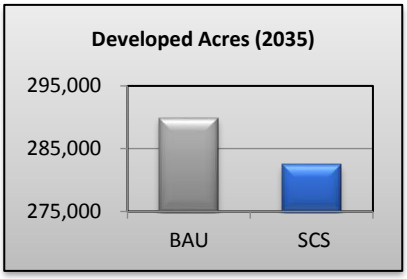
- **Advancing All Communities** – Environmental Justice communities receive **36%** of highway investment and **60%** of transit investment but only account for **18%** and **48%** of passenger miles traveled respectively.
- **Active Transportation** - **1000+** miles of new/safer bike facilities by 2040, funded in-part by a **700%** increase in existing sources re-directed to bike and pedestrian infrastructure resulting in a **5+%** decrease in household medical costs by promoting cleaner air and more active life-styles. And these facilities are being built faster than anticipated with Kern receiving 20 years of anticipated Active Transportation Program funding in the first 3 years of the plan.
- **Improved Transit Access** - **4,000%** increase (10,600 to 473,000) in homes + jobs within 1/2 mile of passenger rail stops and high frequency transit (<15 min.).
- **Improved Transit Investment** – Over a **700%** increase in transit related capital spending over prior plan including BRT, express bus, transit/HOV lanes, park & ride facilities, vanpooling, and commuter rail (not including high speed rail expenditures in Kern).
- **Revitalization of Existing Communities** - **46%** reduction in the rate of farmland loss to urban uses compared to the previous 22 years (from 1.8 mi^2/yr to <1), **11%** decrease in infrastructure costs, and a **10%** reduction in water use by providing a full range of housing choices.

- **Transportation System/Demand Management** – Improved system management and technology is helping to slow travel growth, allowing the delay of two beltways and the redirection of up to **$2B** in highway funding to transit and active transportation.

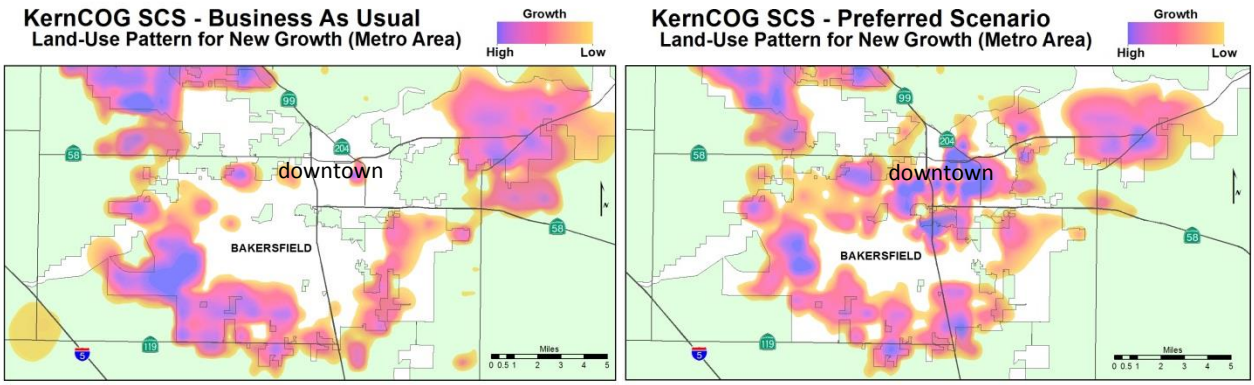
Measuring the Benefits of the 2014 RTP/SCS







Forecasted Development Pattern – Metropolitan Bakersfield (Growth Only)



2040 transportation analysis zone data is based on UPlan land use model. For the latest growth planning assumptions refer to local general plans.

Bakersfield is seeing an accelerating resurgence in downtown development. In the past 10 years 434 infill housing units have been built in central Bakersfield, an increase of over 400% compared to the previous 16 years.

RTP/SCS Key Outreach Highlights

After more than three years of extensive public input garnered from **over 8,000 participants**, the Kern COG Board approved a slate of alternatives for inclusion in the EIR including the plan alternative to move forward with during the 55 day public comment period in 2014. Key Outreach Activities Included:

- Business/Industry and Environmental/Social Equity Roundtable stakeholder meetings;
- Twenty-seven community workshops and meetings;
- Directions to 2050 website with two online activities and an online survey to garner input;
- Presentations before the eleven member agency City Councils and the Kern County Board of Supervisors; and
- Presentations to local organizations upon request.

Similar outreach efforts are underway for the 2018 RTP/SCS.

For More Information

The Kern COG RTP/SCS can be found at the following web address www.kerncog.org/regional-transportation-plan . For additional information regarding the Kern COG 2018 RTP/SCS, please contact Becky Napier or Rob Ball by phone 661-635-2900 or by email at bnapier@kerncog.org or rball@kerncog.org.

ATTACHMENT B

KERN COG 2016-17 TARGET RECOMMENDATION REPORT

Based on the San Joaquin Valley Planning Agencies December 30, 2016 Letter & SB 375 Target Setting Recommendations (Kern related sections only, full document available at: https://www.arb.ca.gov/cc/sb375/sb375_target_update_analysis_sjvalley_123016.pdf)

KERN COG 2016-17 TARGET RECOMMENDATION REPORT

BACKGROUND

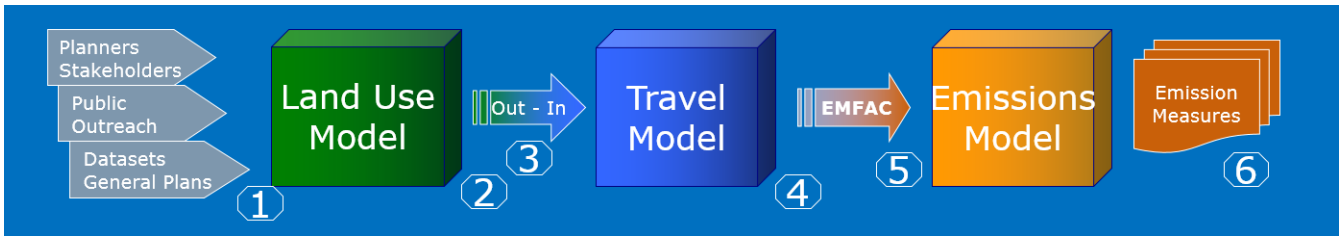
Metropolitan Planning Organizations (MPOs) across the state are currently undergoing the target-setting process required by California Air Resources Board (ARB) for SB 375, the Sustainable Communities and Climate Protection Act of 2008. MPOs utilize current data and assumptions on demographics and travel behavior in order to forecast regional per capita greenhouse gas emissions reduction in future years such as 2020 and 2035. The ARB reviews target recommendations and adopts greenhouse gas emissions reduction targets for each MPO every four to eight years, which are then set as goals to achieve in the future Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS). For the eight MPOs in the San Joaquin Valley (herein referred to as the "Valley"), this new round of target-setting is anticipated to provide targets that are effective as of January 1st, 2018, in time for the 2018 RTP/SCS.

Kern COG has been implementing regional strategies identified in the adopted 2014 RTP/SCS to reduce GHG and passenger-related vehicle miles traveled (VMT). ARB staff concluded that the 2014 Kern COG RTP/SCS, if implemented, would meet the ARB Board-adopted reduction targets for both 2020 and 2035. In a technical evaluation of the Kern COG SCS, ARB staff identified areas in the plan development process that could be improved, such as updates to the travel demand model, methods, and data inputs. Kern COG has responded to this feedback by improving its modeling assumptions and analysis tools. The results and associated challenges can be found in the "Preliminary Analysis" section below. Kern is making good progress toward the current targets and is proposing new targets significantly higher than the existing targets based on improved, but still preliminary modeling.

A. KERN'S TECHNICAL MODELING METHODOLOGY OVERVIEW

Kern COG's modeling methodology for calculating emissions uses a three-model process shown in Figure 1. This is the same process that was thoroughly evaluated and approved by ARB for SB 375 target demonstration in 2015.[1] ARB has recommended changes in the modeling methodology used by the Valley MPOs. Kern's model is updated every four years and is still in the process of being updated for the 2018 RTP/SCS. Kern's complete modeling methodology and updates documentation are made available on Kern COG's website.[2]

Figure 1 – Transportation Modeling Methodology Flow Chart



[1] ARB Technical Evaluation of GHG Quantification for Kern COG SB 375 Sustainable Communities Strategy, 2015, https://www.arb.ca.gov/cc/sb375/kerncog_staff_evaluation_final.pdf

[2] Kern COG Transportation Modeling Documentation, http://www.kerncog.org/transportation-modeling

B. KERN'S UNIQUE CIRCUMSTANCES

It is important that ARB targets reflect each MPO's unique characteristics. One size does not fit all for SB 375 target setting, and modeling methods and techniques need to be custom tuned to local situations. Kern COG agrees with ARB that each MPO receive a target based on the latest available modeling and assumptions for that MPO, and not a multi-MPO target as ARB adopted in 2011.

The San Joaquin Valley is located between the two largest regions in the state -- Bay Area/Sacramento and Southern California – and has the greatest percentage of through County trips which are not counted using the SB 375 methodology. Even with all the through travel, Kern County has seen the second greatest reduction for an MPO in per capita VMT at minus 4.4%. During that time Caltrans reported observed total VMT in Kern increasing 57% from 14.3M to 22.5M miles traveled while population increased 38% from 537,000 to 872,000.

With only a small percentage of workers commuting outside the county, Kern is unlike most regions in the San Joaquin Valley. Two-thirds of Kern's population reside in metropolitan Bakersfield at the heart of the county, which only makes up 1/20th of the county's geography. The metropolitan Bakersfield area has an ex-urban commute pattern to jobs in outlying resource areas within the MPO boundary. So, unlike other MPOs, the Kern model captures more of the full commute travel distance for more than 90% of households in the region.

This ex-urban commute pattern makes infill housing projects in downtown Bakersfield less effective at reducing VMT than might be seen in larger metropolitan areas with major employment and transit hubs downtown. This is because in Kern, downtown housing is further away from outlying resource job centers such as the renewable energy, agriculture processing and logistics industries. Still, infill housing is a moderately effective strategy in Kern because it reduces travel to shopping and recreation; just not as effective as in larger metropolitan areas. The high speed rail station area plan underway recognizes this benefit and is considering an aggressive infill strategy for downtown Bakersfield. The Kern 2014 SCS included a unique strategy that addresses this issue by encouraging balanced future employment, shopping and housing -- especially in outlying communities closer to the numerous outlying jobs of the county. The SCS identifies transit priority place types in all the outlying communities to help facilitate this strategy. This focus on vibrant outlying communities is exemplified by the remote community of Ridgecrest, primarily because it is a self-contained community with full amenities, serving a military base, and consequently has one of the lowest VMT per capita in the region.

Note that like other regions in the Valley, Kern is proposing changes to the target that not only reflect the latest planning assumptions, but changes and improvements to modeling that affect the base line. Four major changes in modeling have occurred since the 2014 RTP/SCS, and reflect recommendations by ARB staff as part of their Technical Evaluation of Kern COG 2014 SCS.

1) Revisions to ARB's EMFAC Model – ARB periodically updates EMFAC to account for the latest state/national policy changes and to update local vehicle mix information affecting the vehicle fleet forecast. The model is used to estimate vehicle emissions for both SB 375 and federal conformity. The new version is EMFAC 2014. Another update is just starting but will not be ready in time for the 2018 RTP/SCS.

2) Revisions to the Regional Growth Forecast – Kern's base year forecast has been updated from 2010 to 2015, making it some of the most up-to-date land use modeling assumptions in the state.

3) Revisions to Auto Operating Cost (AOC) Assumptions – Methodology updated by the eight San Joaquin Valley MPOs in coordination with the Big Four MPOs to include tire, insurance and other costs as recommended by ARB.

4) Revisions to the Regional Travel Demand Model – The travel model was updated to include improved network, speed data, income balanced home/work trip distribution and improved auto operating costs. However, the model validation is still preliminary and may be subject to changes as the model validation is refined.

These modeling changes do not affect Kern's aggressive, grass roots commitment to the strategies in the SCS, but merely update them to incorporate the latest planning assumptions and data. The changes do NOT alter strategy commitments in the 2014 Kern RTP/SCS.

C. SCS TARGET SETTING SCENARIO ASSUMPTIONS

SB 375 encourages MPOs to work with local jurisdictions to achieve state greenhouse gas reduction goals. Kern COG has collaborated with local agencies by encouraging land use and transportation strategies that minimize GHG emissions. In partnership with the MPO, member agencies and regional transit providers have pursued smart-growth land-use planning, transit system maintenance and upgrades, Greenhouse Gas Reductions Funds (GGRF) and Active Transportation Program (ATP) funds, as well as local alternative vehicle technology adoption. Kern COG plans to build upon these ongoing efforts in

Kern's 53 SCS Success Stories (see attachment C)

NEW STRATEGIES

1. Bakersfield High Speed Rail Station Area Plan – Specific/General Plan Update
2. Kern COG 4,000 Workplace Charging Spaces by 2025
3. Improvements to 51 Bus Stops – Metro Bakersfield/Disadvantaged Neighborhoods
4. New Taft Transit Center / Regional Transit Hub
5. Early Delivery of Wasco Disadvantage Community Active Transportation Projects
6. Bakersfield Disadvantage Communities Bike Share & Downtown Bicycle Connectivity Project
7. Kern Highway Projects Advancing Complete Streets
8. Kern Regional Active Transportation Plan Including Disadvantaged Communities
9. Kern COG IntelligentTransportation System Plan Update
10. SJV Rural Transit Shared Mobility Study for Disadvantaged Communities
11. Kern County General Plan Update – Land Use, Conservation, Open Space, Circulation, Housing, and other key elements
12. Early Deployment Pricing Policies for Parking and FastPass HOT Lanes

ENHANCED STRATEGIES

13. City of Bakersfield Redevelopment Projects – Mill Creek and Baker Street
14. Commuter Rail Feasibility Study – Amtrak Improvements
15. Rideshare Program – Commute Kern
16. Expanding Park and Ride Lots
17. Dial-A-Ride and Local Transportation Services
18. Kern County Bicycle Master Plan & Complete Streets Recommendations/City of Tehachapi Bicycle Master Plan
19. City of Bakersfield Bicycle Facilities
20. Westside Station Multi-modal Transit Center
21. San Joaquin Valley Vanpool Program (CalVans)
22. Kern County Wind Farm Areas (Largest in U.S.)
23. City of Shafter Container Yard and Intermodal Rail Facility Expansion
24. Intersection Signalization/Synchronization
25. City of Bakersfield 4 New Downtown Infill Housing Projects
26. Cities of McFarland and Shafter – Conversion of transit fleet to electric vehicles
27. Golden Empire Transit – Purchase of 2 Electric Buses
28. Lost Hills Wonderful Park and Communitywide Improvements
29. New Developments Innovative Green Tech

EXISTING/CONTINUING STRATEGIES

30. City of Tehachapi General Plan (Form-Based Code, Transect Zone, Mobility Element, Town Form Element)
31. Infill Incentive Zone – Lower Transportation Impact Fee Core Area
32. City of Taft General Plan – Sustainability Principles
33. City of Ridgecrest General Plan and Multi-Modal Circulation Element
34. Metro Bakersfield General Plan Sewer Policy – Hook-up required for parcels less than 6 acres
35. City of Bakersfield Required Lot Area Zoning Strategies
36. San Joaquin Valley Air District's Indirect Source Review to Mitigate Off-Site Impacts of Development
37. Transit Priority Areas in the Kern COG SCS
38. Metropolitan Bakersfield General Plan Centers Concept – Transit Priority & Strategic Employment Place Types
39. GET Short-Term Service Plan (2012–2020)
40. GET X-92 Commuter Express bus service to Tejon Industrial Complex
41. Kern511 – Traveler Information System
42. San Joaquin Valley Blueprint Integration Project
43. Caltrans Vehicle Detection System – State Route 43 Intersection Improvements and East Bakersfield Vehicle Detection Systems
44. California Highway Patrol's Safety Corridors
45. Purchase of CNG Buses (80+ bus fleet)
46. The Electric Cab Company of Delano
47. Downtown Elementary School Expansion (Bakersfield)
48. Traffic Control Devices
49. Kern Region Energy Action Plans (Kern REAP) and Kern Energy Watch Goal 3
50. Tejon Ranch Conservation and Land Use Agreement
51. Kern County Community Revitalization Program
52. Kern Transit – Route Connection with Antelope Valley Transit Authority
53. CSU Bakersfield – Public Transit Center

the upcoming 2018 RTP/SCS to continue encouraging sustainable communities. Examples of more than 50 success stories on strategies in Attachment C, clearly demonstrate how state visions and goals are realized on a local and regional level.

Consistent with the 2014 RTP/SCS modeling methodology, the modeling assumptions for the proposed targets account for the majority if not all of these strategies. No off model adjustments were made due to the difficulty in determining how much overlap there is in a strategy that is covered by the modeling and how much is not. This also gives stakeholders more transparent comparability on how the region is actually doing compared to prior SCSs.

Local Transportation Strategies in the Target Scenario

Many of the projects in the 2014 RTP/SCS have been completed or are in construction. These projects showcase Kern's commitment to create vibrant neighborhoods and a sustainable future.

- *Complete Street Strategies* -- Thomas Roads Improvement Program (TRIP) includes: SR 58 Centennial Corridor; State Route (SR) 46 Segment 4A; SR 14 Segment 1; SR 58 Rosedale Highway; SR 178 & the Morning Drive Interchange; SR 99 Hosking Interchange; SR 178/24th Street Improvements. The projects include the following complete street facilities:
    - More than 21 miles of new bike lanes
    - More than 18 miles of new sidewalks
    - More than 120 new ADA curb cuts
    - Three new interchanges with ramp metering

  TRIP is an example of just one program that is implementing Kern COG's Complete Streets Study recommendations from 2012. Other programs include: the Metropolitan Bakersfield Traffic Impact Fee Program; County of Kern's Land Division Ordinance and; private sector investment in active transportation projects in disadvantaged communities, such as Lost Hills.

- *Rail Transit*
    - Additional service and improvements: The San Joaquin Joint Powers Authority (SJJPA) added a seventh round-trip train per day to the Amtrak San Joaquins in 2016, which connect Bakersfield to Oakland / Sacramento.
    - The City of Bakersfield is expanding overnight parking availability at the Bakersfield Amtrak Station, including solar/electric vehicle charging using Proposition 1B bond funds.
    - Kern Transit is adding two electric buses that connect east Kern to the Metrolink station in Lancaster, providing service to L.A.'s Union Station.

- *Active Transportation Planning* - Kern COG is developing a countywide, collaborative Active Transportation Plan that is scheduled to be completed in 2017. The Plan will include an inventory of existing active transportation infrastructure, identify deficiencies in the system and prioritize new facilities that will improve system safety, connectivity and user convenience. Further, with financial assistance from both Golden Empire Transit District and the County of Kern's Regional Transit, the active transportation/public transit interface will be examined to improve transit opportunities to active transportation users. These improvements will be included in the 2018 RTP/SCS.

Local Land Use Strategies in the Target Scenario

- *General Plan Updates*: The City of Tehachapi completed the first form-based code general plan in the state in 2012, with significant development driven by the world's largest renewable energy wind and solar fields. This general plan implements the 2014 RTP/SCS policy 29.1, which encourages form-based codes, transit-oriented place types and centers.

  The cities of Taft and Ridgecrest have also completed general plan updates referencing the regional SCS principles for growth and providing a commitment to participate. In addition, all 12 of Kern's local jurisdictions have now updated their general plan housing elements to be consistent with the SCS as well as their circulation elements to include multi-modal/complete-street circulation plans. The housing element updates were supported by the regional housing data book developed by Kern COG, and many of the circulation plan updates were funded by Kern COG's technical assistance grant program.

  In addition, the City of Bakersfield is scheduled to complete the High-Speed Rail Station Area Plan in 2017 and anticipates adopting a specific plan for the downtown area surrounding the station. The draft plan calls for diverting 8,500 housing units and balanced number of jobs from being built on the periphery of the city to a vibrant downtown station area that promotes active transportation and transit modes.

  Kern County's general plan update (now under way) is addressing farmland and habitat conservation planning efforts. The County is already requiring farmland preservation easements to offsets farmland lost to solar projects, and is also developing or implementing 29 habitat conservation plans and natural communities' conservation plans. Just one of these efforts -- the Tejon Ranch Conservancy -- is the largest of its kind in the state, setting aside 375 square miles for habitat preservation, and is representative of the Kern region's commitment to open space preservation.

<u>Infrastructure Investment Consistent with the State's Conservation, Development, and Health Goals in the Target Scenario</u>

- *Affordable Housing and Sustainable Communities (AHSC) Program*: The AHSC program is a competitive, statewide funding source for housing and transportation projects that work toward reducing GHG. The program receives its budget from California's Cap-and-Trade Program, one of the state's major initiatives for reducing climate change impacts. AHSC awards projects that can demonstrate emissions reductions through active transportation improvements, increasing housing density, and/or encouraging alternative transportation options. To date, two projects in Kern (Bakersfield Mill Creek Senior Housing and the Wasco Farmworker Housing Project) have received AHSC funding as examples of how the State envisions new growth and sustainable developments. Kern COG found that both developments aligned with the 2014 RTP/SCS goals and policies.

- *Reduced Traffic Impact Fee Infill Incentive*: The joint City of Bakersfield, County of Kern, Metropolitan Bakersfield Transportation Impact Fee incentivizes residential and non-residential development projects in the core area of Bakersfield by reducing fees to half that of developing on the periphery of the city. Not only is this program in line with state goals for infill but is promoting growth in the HSR station area prior to the system's completion through Bakersfield. The City of Tehachapi has a similar incentive program for its core area.

<u>Pricing Policy Strategies in the Target Scenario</u>

- *Parking* - In 2016 the City of Bakersfield approved an increase in the parking cost at the city owned downtown parking structure, and downtown parking is being evaluated as part of the HSR Station Area Plan.

- *HOT Lanes* - New FastPass lanes on I-5 and SR 14 are planned to be extended through Santa Clarita towards Kern County. These corridors are used by more than 10,000 Kern commuters per day and will likely benefit vehicle occupancy in Kern as well as Southern California. Interestingly, not many people commute from Kern. Over 90% of Kern workers both live and work in Kern County and most make occasional trips to Southern California.

Transportation System Efficiency Strategies in the Target Scenario

- *Commuting Services:* Commuting accounts for a large share of VMT in Kern County. Kern COG is working to improve the mass transit experience and encourage ridership. Increasing the options and efficiency of alternative transportation is key to reducing single-passenger vehicle trips. According the latest household travel survey and regional travel model, since 2005 single occupancy vehicles (SOV) are down 4.1% to 41.6%, compared to 49.5% in the Bay Area. Historically, van and carpools are the primary contributor the low SOV Kern COG and local transit providers are implementing projects and policies that offer commuters with more eco-friendly travel options.
    - Regional rail in Kern County includes the Amtrak San Joaquins which is seeking funding for capital improvements for an 8th round trip (FY 18-19).
    - Improving the consistency and reliability of public transit travel times encourages riders to take a bus over driving a personal vehicle. The Golden Empire Transit District (GET) has added three express bus corridors including the employer subsidized X-92 run, a daily commuter bus service, fueled by CNG, with an average annual ridership of 19,000 passengers. GET also operates 2 rapid bus corridors with 15 minute headways, and is in the process of upgrading them to electric Bus Rapid Transit (BRT) routes in Bakersfield through funding from multiple sources.
    - In 2015-16, the CommuteKern's TDM Program was enhanced through an online multimodal trip planner and Guaranteed Ride Home program. CommuteKern initiated the development of a marketing plan to assist large employer groups with their Rule 9410 compliance with the San Joaquin Valley Air Pollution Control District while also maintaining the program's website and social media platforms. The program has added 1,610 new members to the trip planning database and added 65 new vanpools in the past year. In addition, Rideshare Week attracted nearly 1,220 participants with more than half of them participating in ridesharing for the first time. Increasing the number of participants enrolled in carpool and vanpool allows for an immediate and long-lasting reduction of VMT and associated greenhouse gas emissions with a cost effectiveness of $56 per lb. and a reduction of up to 125,000 vehicle miles travelled that year.
    - Since 2014, the Kern region has been gradually installing High-Occupancy Vehicle (HOV) lane ramps and metering on all interchanges in Metropolitan Bakersfield to better control stop & go vehicle emissions during peak congestion on the freeways while providing a greater incentive for vanpooling and carpooling. In addition, the 2014 RTP/SCS has identified funding for two HOV lane projects. Also, Southern California is extending its HOV/ toll lanes closer to Kern County, which is anticipated to improve vehicle occupancy in Kern for those traveling to Southern California during peak periods.
- *Above and Beyond Sustainable Transportation Solutions:* Kern COG is implementing an aggressive plan to promote alternative technology vehicles in the 2018 RTP/SCS. Starting with the 2015-16 Overall Work Program, Kern COG is coordinating with local non-profit Project Clean Air and the San Joaquin Valley Electric Vehicle Partnership to find funding for 4,000 electric

vehicle charging stations in Kern County by 2025. The program will leverage existing grant sources with emerging local funding from development mitigation and a new County oil & gas drilling permit fee ordinance. We are also increasing the region's alternative fueling stations and working with the San Joaquin Valley Air Pollution Control District to address obstacles in implementing the Plug-in Electric Vehicle Readiness Plan. In 2016, the City of Shafter officials purchased five electric vans for their dial-a-ride system, making it the first fully electric municipal transit system in the state. In addition, GET is purchasing two electric buses for the BRT system, and Kern Regional Transit has partnered on a grant with Antelope Valley Transit to purchase electric buses that will serve as feeder buses between the Metrolink rail station in Lancaster and communities in East Kern.

- *Active Transportation Program (ATP)* – Kern COG and its members have been aggressive and successful with the highly competitive Active Transportation Program (ATP). That success is due in part to Kern COG requiring its member agencies to compete for statewide funds first, and then using unfunded projects from the same prioritized list to which regional share funds are applied. The City of Wasco has already successfully completed two projects from the first round of grants. Between ATP and AHSC, Kern County has already been awarded more than $50 million in state grants. These funds, combined with local private sector funding, are resulting in sustainable projects completed earlier than anticipated by the 2014 RTP/SCS. In addition, **Kern COG has the highest percentage of funds going to active transportation projects in the state, at 7 percent of available funding in the RTP.**

Co-benefits in the Target Setting Scenario

- *Benefitting Disadvantaged Communities* - There are numerous short- and long-term co-benefits associated with the ongoing projects and SCS policies in Kern County. According to CalEnviroScreen, the City of Bakersfield has the second highest number of disadvantaged census tracts in the State -- in the 95th percentile. In addition, Arvin, Buttonwillow, Lamont, Lost Hills, Delano, Greenfield, McFarland, Shafter, Wasco and Weedpatch rank among the most disadvantaged communities in California. Kern's member agencies have been very aggressive and successful in applying new programs such as ATP and AHSC for these communities.

- *Making Healthier Communities* - According to the Robert Woods Johnson Foundation, Kern County ranks last in the state for weighted key health factors, with the lowest scores in health behaviors (weighted 30 percent, ranked 57th out of 57 counties); social & economic factors (40 percent, 54th); best scores in physical environment (10 percent, 45th) and; available clinical care (20 percent, 50th).[3] Unfortunately, part of Kern's success in competitive grant programs such as ATP, has been its disadvantaged region status. The region's best score was in its physical environment, which measures air & water quality, housing and transit. This reflects our region's low housing cost and the 80 percent improvement in air quality over the last 30 years—thanks to the most stringent regulations in nation. Health behaviors and social/economic factors need to remain a primary focus of our RTP/SCS -- areas where active transportation and goods movement projects play an important role. These two areas are the highest priority in Kern's adopted RTP/SCS. Proposed changes to CalEnviroScreen raking may undermine Kern's success in bring active transportation projects to some of the most disadvantaged communities in the State.

[3] Robert Woods Johnson Foundation, 2016, http://www.countyhealthrankings.org/app/california/2016/overview

Valleywide Strategies in the Target Setting Scenario

In addition to the San Joaquin Valley's extensive efforts to comply with state climate change goals via each agency's 2014 Sustainable Communities Strategy, the San Joaquin Valley is committed to accomplishing multiple Valley-wide initiatives as well as local projects and policies to demonstrate progress toward achieving SB 375 goals. By collaborating with various regional agencies and local partners, the Valley MPOs are able to assist in developing and implementing successful sustainable programs in all eight counties.

- *UC Davis Institute of Transportation Studies – Rural Transit Alternatives Study* - One such initiative is the Valley-wide study of rural transit, which includes a partnership with the UC Davis Institute of Transportation Studies to examine if shared access services (car, bike, and ridesharing) can provide an alternative for meeting transportation needs in rural areas of the Valley. Traditional fixed route rural transit has been found to not be cost effective, which contributes to the limitation of services available to residents in rural areas. The Valley along with the UC Davis Institute of Transportation Studies is exploring whether shared access services may be a better alternative at reducing VMT/GHG, costs, and inefficiencies. The Institute is currently developing a pilot project to test innovative transit solutions in a disadvantaged community, and have this serve as a model for other areas. A primary outcome of the study will be to establish a replicable transit model that can be used throughout the Valley, thereby decreasing the amount of passenger vehicle trips that occur in rural areas and across county lines. The strategies developed through this study will be incorporated into upcoming Valley Sustainable Communities Strategies, depending on cost and funding availability.
- *San Joaquin Valley Sustainable Goods Movement Strategy* - The San Joaquin Valley Goods Movement Sustainable Implementation Plan (SJVGMSIP) is a valley-wide effort between Caltrans and the MPOs in building upon the previously completed San Joaquin Valley Interregional Goods Movement Plan. The previous plan identified first- and last- mile connectivity issues from freight hubs, truck routing and parking needs, rural priority corridors, and included a goods movement performance and modeling framework for the Valley. The SJVGMSIP aims to prioritize goods movement investments for the multimodal infrastructure of the entire San Joaquin Valley – including its highways and roadways, rail facilities, air cargo facilities, intermodal centers, and ties to inland and marine ports. A critical outcome of the Plan will be the development of prioritized investments of project improvements and strategies to increase the efficiency and reliability of the region's goods movement system, and reduce the impact of goods movement on Valley air quality.
- *Air District Initiatives* - The San Joaquin Valley Air Pollution Control District (SJVAPCD) develops and administers various grant and incentive programs for public agencies, residents, businesses, and technology advancement in the San Joaquin Valley. These successful programs include providing funds for those looking to electrify their fleet or vehicles, resources for alternative fuel training, vanpool vouchers, agricultural and goods movement vehicle replacement, and many more additional benefits.

  One of the grant and incentive programs that the San Joaquin Valley Air Pollution Control District offers is the Drive Clean! Rebate Program. The Program allows residents, businesses, non-profit organizations, and government entities to apply for rebates of up to $3,000 for the purchase or rebate of eligible new clean-air vehicles. This benefit is provided in addition to vehicle rebates provided by ARB to allow for disadvantaged communities and individuals to more easily purchase clean-air vehicles. To combat the air pollution problems in the Valley, the District also encourages businesses and transit fleets to purchase new hybrid and electric truck and buses. These

incentives, in addition to educational resources such as the Plug In Electric Vehicle Resources Center, lower the total amount of greenhouse gases emitted through travel by impacting driving behavior and fleet mixes.

For the 2018 RTP/SCS, the MPOs will continue to collaborate with the SJVAPCD to further reduce air pollution throughout the eight Valley counties. By coordinating with the Air District, the MPOs can use these incentive programs in tandem with other GHG reduction policies if additional funding becomes available.

- *Contributions from Other Sectors* - The San Joaquin Valley is one of the top agricultural regions in the United States, producing more than double the amount of agricultural products than the rest of California combined, including crops and livestock. The agricultural industry accounts for 12% of the Valley's jobs, whereas the industry only accounts for 3% and 2% of the state's and nation's jobs, respectively. According to the ARB Scoping Plan, the agriculture sector represents 8% of total California greenhouse gas (GHG) emissions due to methane emitted from livestock, enteric fermentation, and manure management. Agriculture also accounts for most N2O emissions that come from soil fertilizer. In addition, ARB's Discussion Draft of the 2030 Scoping Plan states, "California's climate objective for natural and working lands is to maintain them as a resilient carbon sink (i.e., net zero or even negative GHG emissions) to 2030 and beyond…" Implementation of this goal will require many policy and program pathways, in addition to partaking in activities related to sustainable agricultural practices and lands protection.

  As such, the San Joaquin Valley is anticipated to play a significant role in meeting the state's agricultural and lands preservation GHG reduction goals concurrent to SB 375 goals. Strategies include investment in anaerobic digesters and manure management in dairies to curb methane, as well as optimization of fertilizer application to reduce N2O emissions and protect water quality. SCS strategies that increase density, thus preserving agricultural lands, provide significant co-benefits in this area. Not only do the SCS strategies reduce transportation related GHG emissions, but they minimize the conversion of valuable agricultural land to more intensified uses enhancing the resiliency of and potential for carbon sequestration on those lands.

  Portions of the Valley continue to be major oil and gas producers, particularly Kern County. The refineries and oil production facilities are subject to strict national and state "greening" requirements, which may include GHG performance standards in the future. Currently, the Valley oil and gas business are participating in the California's cap-and-trade program, and implementing energy efficiency and sequestration projects measures in order to continue to comply with the annually declining GHG cap. The SJV counties are dedicated to supporting state GHG reduction goals across many sectors, and will continue to partner with state and local agencies to ensure the implementation of sustainable projects and programs.

D. PRELIMINARY ANALYSES AND VALLEYWIDE CHALLENGES FOR TARGET SETTING

Despite ongoing SB 375 efforts, there exist outstanding variables that negatively affect the extent to which the Valley can expand upon previously set targets. The outstanding variables outlined in this section present challenges for not only this the region, but also for other regions in the state; these variables present an obstacle for MPOs to be able to match the per capita greenhouse gas reductions achieved with the previous RTP/SCS. Specifically, these variables include:

- Impact of model improvements from the San Joaquin Valley Model Improvement Plan (VMIP), phase 2;
- Impact of updated emissions calculation tool (EMFAC2014);

- Impact of the changing economic recovery rate on VMT;
- Challenges associated with interregional travel; and
- Impact of lower automobile operating costs on VMT.

The extent to which these factors affect the Valley's target recommendations is described in this section.

Impact of Software Improvements – VMIP2

The San Joaquin Valley Model Improvement Plan (VMIP) began in 2010 and made substantial enhancements to the modeling capabilities of the Valley MPOs. Due to the timing of the original VMIP, many data sources necessary to understand and model travel behavior were not available. As such, some MPOs used older sources to supplement data for the base year, making calibration and validation difficult due to the economic downturn relative to the 2001/2003 CHTS and 2000 Census which were collected before the calibration efforts began. In the technical evaluations of the Valley's SCS documents, ARB staff identified areas of improvement, including updates to the travel demand model. The Valley has responded to this feedback through the development of the San Joaquin Valley Model Improvement Plan, Phase 2 (VMIP2).

VMIP2 utilizes the most recent Census, American Community Survey, California Household Travel Survey data, and the model structure enhancements developed as part of the VMIP. In addition to the updated data, VMIP2 implements changes to the model structure based on ARB feedback received. Key enhancements to model sensitivity and usability include:

- Land Use: simplified residential and employment categories
- Socio-economic: employee salary and household income relationship for home-work trips
- Interregional Travel: updated based on the newly released California Statewide Transportation Demand Model, and based on place and purpose, rather than having internal and interregional travel combined and distributed based on time\cost of travel
- Modified Assumptions: adjustments to employment density, intersection density, and access to jobs and houses

The combination of these updates amount to substantial changes to current planning assumptions, and have resulted in different interactions between land use location, demographics, trip purpose, built environment, and travel compared to the existing VMIP models. In some cases, the same input data as analyzed in the 2014 RTP/SCS is producing higher VMT levels when entered into VMIP2, as opposed to the original VMIP. This type of result does suggests that it will be challenging for Valley MPOs to able to match the per capita GHG reductions achieved with the previous RTP/SCS.

It should be noted that VMIP2 validation is preliminary at this time, and may be subject to changes as the model validation is finalized. As a result, model output discussed in this report is also subject to change. Valley staff has been in regular contact with ARB staff to discuss VMIP2 progress, and in recent discussions it has been established that Valley MPOs may refine their target recommendations based on the finalized model validation in early 2017.

Impact of Software Improvements – EMFAC2014

On December 14, 2015, the Environmental Protection Agency announced the availability of the latest version of the California emission factor model, EMFAC2014, for use in State Implementation Plan development in California. EMFAC2014 will be required for conformity analysis on or after December 14, 2017. However, since Valley MPOs will be required to use EMFAC2014 for their 2018 RTP/SCS, the new model will also be used to develop numeric target recommendations.

Valley MPOs have conducted preliminary tests of the impacts of EMFAC2014 on their SB 375 GHG reductions adopted as part of their 2014 RTP/SCS. The results revealed significant differences in GHG emissions in both the SB 375 2005 base year, and analysis years 2020 and 2035. The primary reason for the observed differences appears to be in the light-duty vs. heavy-duty vehicle distribution between the two models. Table 2 summarizes VMT and GHG results for base year 2005 under EMFAC2011 and EMFAC2014 for all Valley MPOs.

Table 1: EMFAC2011 vs. EMFAC2014 Comparison

County	Light Duty VMT (Miles, in thousands)			Light Duty CO2 Emissions (Tons)		
	EMFAC11	EMFAC14	% Change	EMFAC11	EMFAC14	% Change
Fresno	14,868	14,427	-3.0%	6,870	6,594	-4.0%
Kern	13,391	14,229	+6.3%	6,357	6,868	+8.0%
Kings	1,534	1,618	+5.5%	760	789	+3.8%
Madera	2,038	2,122	+4.1%	1,068	1,092	+2.2%
Merced	3,297	3,207	-2.7%	1,593	1,537	-3.5%
San Joaquin	13,087	13,493	+3.1%	6,410	6,510	+1.6%
Stanislaus	8,451	8,271	-2.1%	4,004	3,955	-1.2%
Tulare	7,209	7,157	-0.7%	3,440	3,394	-1.6%

Preliminary numbers as of 12/30/16

As shown, differences in light-duty VMT and CO2 emissions from EMFAC2011 to EMFAC2014 range from 4% less to 8% more, and they vary by county. Given the observed differences, the Valley MPOs plan to use EMFAC2014 to update the 2005 base emission levels to account for the vehicle distribution inconsistencies. In order to produce comparable GHG emission reductions that are calculated as a reduction from 2005 levels for target setting purposes, Valley MPOs have concluded that this is the only technically correct approach to arrive at a meaningful and real SB 375 target number. Although emission model changes did not produce the same level of impact on all Valley counties, all eight agencies plan to use EMFAC2014 to model SB 375 base and analysis years for target recommendation and demonstration purposes in order to employ a consistent technical quantification methodology across all Valley MPOs.

Economic Recovery

The recovery rate and economic forecasts in the Valley's 2014 Regional Transportation Plans and Sustainable Communities Strategy were developed prior to the recovery from the recession, and with the best information at the time. Leading up to the development of the RTP/SCS, the most of the Valley had been slow to recover from the 2008 Recession, and this was forecast to continue in the development of the housing and employment represented in the future scenarios. The region has experienced relatively high unemployment, slow growth in jobs and rapid growth in housing. Depending on the individual county, this has resulted in a large number of residents commuting outside of the region in order to achieve or retain employment, high household vacancy rates, and lower job salary.

The Valley expects economic recovery to occur at a faster rate than previously assumed in 2014 RTP/SCS documents. As such, the potential exists for substantial increases in employment and income levels, as well as a revised distribution of low, medium, and high paying jobs. The Valley's models can be applied to forecast of future conditions that reflect real world employment and income. In order to understand the influence of these factors on travel and greenhouse gas emissions, the Valley MPOs

have prepared an economic recovery test that supposes valley employment levels and household income levels approaching state averages by 2035.

Approach - Specifically, after comparing households by the income ranges, demographic data for each of the Valley counties were modified to reflect the statewide average percentage. Although the magnitude varies by county, the representation of low income households was reduced, and the representation of medium and high income households was increased. The distribution of salary between the high, medium, and low income jobs was similarly adjusted to represent statewide employment trends. In addition to the income of jobs being reallocated to match statewide average, the total jobs per household was also increased from approximately 0.8 (Valleywide average) to 1.28 (Statewide average). The reallocation of jobs by salary and the increase in jobs per household was implemented uniformly across all geographies.

Data was gathered from the following sources to establish household income and industry of employment in all eight counties in the region:

- U.S. Census 2010
- American Community Survey 2009, 2012, and 2014
- Economic Census Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistic (LODES) 2005, 2008, 2014

The LODES data was broken down into average salary by job sector, then household income ranges and the job salary types were compared to determine low, medium, and high income and salary. LODES data was also used to establish how many jobs were offered in each industry. This data was used to translate reported salaries by industry into income levels for both 2005 and 2014 LODES data. This breakdown was applied to 2005 and 2035 employment outputs from the base Valley models to determine how many jobs are offered in each income category.

No land use, transportation network, or population adjustments have been assumed as part of this analysis. This exercise has been prepared solely to understand how adjustments to employment and income may affect travel and emissions in the Valley.

Results - Model runs for the year 2035 were performed with shifted economic inputs to represent economic recovery to a state-average level. The model output was processed and compared with the 2014 RTP/SCS model output for the year 2035 to see the effects of the potential economic recovery on mode share, interregional travel, VMT per capita, and GHG per capita. Table 3 summarizes the impacts on GHG and VMT by county for the year 2035.

Table 2: Impact of Economic Recovery on VMT and GHG

County	Change in VMT per Capita	Change in GHG per Capita
Fresno	+6.8%	+7.4%
Kern	+0.5%	+0.7%
Kings	+13.4%	+14.1%
Madera	+0.2%	+0.2%
Merced	+3.0%	+2.8%
San Joaquin	+4.6%	+4.8%
Stanislaus	+6.7%	+6.3%
Tulare	+1.1%	+1.1%

Preliminary numbers as of 12/30/16

Although the results may vary in intensity, this economic recovery test indicates that the application of these hypothetical economic adjustments to the existing model inputs does produce higher VMT and GHG emissions results. As shown in the table, increases in VMT for year 2035 forecasts range from 1–13 percent, and increases in light-duty vehicle CO2 per capita emissions range from 1–14 percent.

Though Valley staff does not anticipate economic recovery to occur at a level such that the Valley is on par with State averages for income and employment, it is clear that the level of economic recovery realized in the Valley will have a direct impact on the extent to which VMT and GHG can be reduced. The impact of economic recovery on the Valley will be captured through the use of VMIP2, with updated 2015 baselines.

Challenges Associated with Interregional Travel

The unique characteristics of the San Joaquin Valley, including socioeconomic conditions, travel behaviors, and geography all greatly impact long-term transportation planning in the region. Forecasted 2035 daily interregional trips through the Valley region averages much higher than the respective counterpart statistics from other regions in the State. Further, the proportion of commuter trips to interregional travel is also higher in the Valley on average than other regions in the State. The calculated "In and Out" commute trips in Valley is approximately 16.1 percent of interregional travel, whereas the same commute trips only account for 3.4 percent and 9.3 percent of total interregional travel in the largest four MPOs in the State (SACOG, MTC, SCAG, SANDAG) and Northern/Coastal California regions, respectively. These "In and Out" trips represent a challenge with respect to GHG reduction, as these trips neither originate nor terminate within a given County in the Valley. As the economy recovers and employment becomes increasingly available, residents will continue to travel long distances in order to secure jobs.

Automobile Operating Costs

The Valley will utilize the methodology previously established by the "Big Four" California MPOs (Sacramento Area Council of Governments, Metropolitan Transportation Commission, Southern California Association of Governments, and San Diego Association of Governments) to revise its assumptions regarding automobile operating costs in the VMIP2 models. That methodology for calculating perceived automobile costs consists of two separate components: fuel costs and non-fuel-related costs. Calculating fuel costs requires using a consistent growth in fuel price between the SB 375 base year of 2005 and the forecast years 2020 and 2035 based on Department of Energy annual forecasts. For non-fuel-related operating costs, consistent data sources for the price of car maintenance and tires are utilized. Additionally, the Valley MPOs will use a representative fleet-wide fuel efficiency estimate in computing operating costs. Based on recent trends in fuel costs, current fuel price estimates for future years are considerably lower than those assumed as part of prior SB 375 Target Setting efforts.

Lower fuel prices have certain impacts on travel behavior, which are then reflected in the travel demand models. As single-occupancy vehicle driving is seen as an economically feasible alternative to riding the bus or carpooling, many choose to commute or travel alone in their cars due to convenience.

A decrease in automobile operating cost will directly contribute to higher levels of VMT, and will have a negative impact on the extent to which GHG per capita can be reduced. To understand the magnitude of this impact, the Valley has prepared an "Automobile Operating Cost" test to examine the difference in percentage change in CO2 emissions per capita (from 2005 to 2035), between what was reported during the 2014 RTP/SCS cycle and new estimates that factor in a change in auto operational cost methodology

and changes to base year assumptions. The results of this test are summarized in Table 4 below. It should be noted Madera and Merced counties have not been included in this summary, as these regions have had either substantial land use adjustments, or base year model adjustments after the 2014 RTP/SCS adoption that do not allow for a direct comparison of scenarios.

Table 3: Impact of Revised Automobile Operating Costs

County	Change in CO2e per Capita from 2005 to 2035	
	2014 RTP/SCS (Old Baseline, EMFAC2011)	Auto Ops Cost Test (New Baseline, EMFAC2014)
Fresno	-11.0%	-10.3%
Kern	-16.6%	-12.2%
Kings	-12.1%	-9.1%
San Joaquin	-23.7%	-17.1%
Stanislaus	-22.0%	-16.5%
Tulare	-19.6%	-14.9%

Notes: *Madera and Merced do not have exact comparisons between the two scenarios due to changes in land use modeling and base year adjustments after the 2014 RTP/SCS adoption. Please see specific MPO sections for more detail on changes that have been made to their modeling process. Preliminary numbers as of 12/30/16.

As shown, with calibrated base years and renewed auto operating cost assumptions, the change in CO2 per capita from the base year 2005 to 2035 is significantly different than the results reported on last round. With the revised automobile operating cost methodology, the degree to which Valley MPOs can reduce GHG emissions has been lessened by 1-7 percent by the year 2035. Again, it should be noted Madera and Merced counties were not included in this summary due to land use and/or modeling adjustments that do not allow for a direct comparison of scenarios; however, the negative impact of adjusted automobile operating costs would have a similar impact on all Valley MPOs. In fact, this impact will result in MPOs and local agencies needing to pursue additional reduction strategies to simply match the demonstrated GHG reductions per capita as reported previously in the 2014 RTP/SCS.

The effects of increased VMT from current assumptions are compounded with the economic recovery process that the Valley is currently undergoing. During the 2014 RTP/SCS development, assumptions on job growth and fuel prices were made in the wake of nationwide recession and emission reductions were forecasted based on the best information at the time. The Valley had been slow to recover from the recession and this was projected to continue in the development of the housing and employment represented in future scenarios. The region has experienced relatively high unemployment, slow growth in jobs, and rapid growth in housing. Depending on the individual county, this has resulted in high household vacancy rates, lower job salaries, and a large number of residents commuting outside of the region in order to achieve or retain employment. As such, when considering the effect of lower automobile operating costs, it must also be understood that an increased rate of economic recovery will compound the overall impact on VMT and GHG generation.

E. KERN TARGET RECOMMENDATION

Balancing technical justification and accomplishments

As with any forecast, travel modeling forecasts beyond 5 years are a challenge. SB 375 provides for regular updates to the targets and modeling forecast using the latest planning assumptions. These

updates provide important course correction opportunities as progress is made toward the goals. Even with model limitations, Kern's modeling passed one of the most rigorous and lengthy modeling evaluations performed by ARB. The resulting document was twice the size of the Kern COG 2014 SCS chapter to the 2014 RTP. The modeling for the target scenario uses the same methodology with the modifications requested by ARB.

In addition to the technical justification, it is important to take into account the aggressive turn in the region towards more sustainable growth and transportation projects. Kern's member agencies have are implementing over 50 GHG reduction strategies, demonstrating the region's grass roots commitment toward meeting both the goals of SB 375 and federal Clean Air Act standards. It is these accomplishments that were the real intent behind SB 375. Things are clearly no longer business as usual in Kern. Balancing modeling results in light of the real world success stories is a key element to the success of SB 375.

Kern COG staff recommends that the targets be set for 2020 and 2035 consistent with the latest modeling results provided in Table 5 below. The increase is based on Kern's aggressive, successful implementation of the SCS to meet both state climate change goals and the federal health based criteria pollutant standards. Consistent with the 2014 RTP/SCS no off model adjustments have been made.

Table 4: Proposed 2020 & 2035 Percent Per Capita GHG Reduction Target for Kern

Scenario	2020 Percent Per Capita GHG Reduction	2035 Percent Per Capita GHG Reduction
Current ARB Targets for Kern 2014 RTP/SCS	-5%	-10%
Proposed Targets for Kern 2018 RTP/SCS	-9	-13

Note: Values in this table are preliminary, subject to future model run updates.

ATTACHMENT C

50+ Sustainable Community Success Stories in the Kern Region

ATTACHMENT C

50+ Sustainable Community Success Stories in the Kern Region

Sustainable Communities Strategy (SCS) Success Stories

In order to help demonstrate the Kern region's extensive efforts to comply with state climate change goals, Kern COG identified activities that demonstrate the progress of our member agencies are making toward achieving AB 32 and SB 375 goals.

NEW STRATEGIES

1. Bakersfield High Speed Rail Station Area Plan – Specific/General Plan Update
2. Kern COG 4,000 Workplace Charging Spaces by 2025
3. Improvements to 51 Bus Stops – Metro Bakersfield/Disadvantaged Neighborhoods
4. New Taft Transit Center / Regional Transit Hub
5. Early Delivery of Wasco Disadvantage Community Active Transportation Projects
6. Bakersfield Disadvantage Communities Bike Share & Downtown Bicycle Connectivity Project
7. Kern Highway Projects Advancing Complete Streets
8. Kern Regional Active Transportation Plan Including Disadvantaged Communities
9. Kern COG IntelligentTransportation System Plan Update
10. SJV Rural Transit Shared Mobility Study for Disadvantaged Communities
11. Kern County General Plan Update – Land Use, Conservation, Open Space, Circulation, Housing, and other key elements
12. Early Deployment Pricing Policies for Parking and FastPass HOT Lanes

ENHANCED STRATEGIES

13. City of Bakersfield Redevelopment Projects – Mill Creek and Baker Street
14. Commuter Rail Feasibility Study – Amtrak Improvements
15. Rideshare Program – Commute Kern
16. Expanding Park and Ride Lots
17. Dial-A-Ride and Local Transportation Services
18. Kern County Bicycle Master Plan & Complete Streets Recommendations/City of Tehachapi Bicycle Master Plan
19. City of Bakersfield Bicycle Facilities
20. Westside Station Multi-modal Transit Center
21. San Joaquin Valley Vanpool Program (CalVans)
22. Kern County Wind Farm Areas (Largest in U.S.)
23. City of Shafter Container Yard and Intermodal Rail Facility Expansion
24. Intersection Signalization/Synchronization
25. City of Bakersfield 4 New Downtown Infill Housing Projects

ENHANCED STRATEGIES (continued)

26. Cities of McFarland and Shafter – Conversion of transit fleet to electric vehicles
27. Golden Empire Transit – Purchase of 2 Electric Buses
28. Lost Hills Wonderful Park and Communitywide Improvements
29. New Developments Innovative Green Tech

EXISTING/CONTINUING STRATEGIES

30. City of Tehachapi General Plan (Form-Based Code, Transect Zone, Mobility Element, Town Form Element)
31. Infill Incentive Zone – Lower Transportation Impact Fee Core Area
32. City of Taft General Plan – Sustainability Principles
33. City of Ridgecrest General Plan and Multi-Modal Circulation Element
34. Metro Bakersfield General Plan Sewer Policy – Hook-up required for parcels less than 6 acres
35. City of Bakersfield Required Lot Area Zoning Strategies
36. San Joaquin Valley Air District's Indirect Source Review to Mitigate Off-Site Impacts of Development
37. Transit Priority Areas in the Kern COG SCS
38. Metropolitan Bakersfield General Plan Centers Concept – Transit Priority & Strategic Employment Place Types
39. GET Short-Term Service Plan (2012–2020)
40. GET X-92 Commuter Express bus service to Tejon Industrial Complex
41. Kern511 – Traveler Information System
42. San Joaquin Valley Blueprint Integration Project
43. Caltrans Vehicle Detection System – State Route 43 Intersection Improvements and East Bakersfield Vehicle Detection Systems
44. California Highway Patrol's Safety Corridors
45. Purchase of CNG Buses (80+ bus fleet)
46. The Electric Cab Company of Delano
47. Downtown Elementary School Expansion (Bakersfield)
48. Traffic Control Devices
49. Kern Region Energy Action Plans (Kern REAP) and Kern Energy Watch Goal 3
50. Tejon Ranch Conservation and Land Use Agreement
51. Kern County Community Revitalization Program
52. Kern Transit – Route Connection with Antelope Valley Transit Authority
53. CSU Bakersfield – Public Transit Center

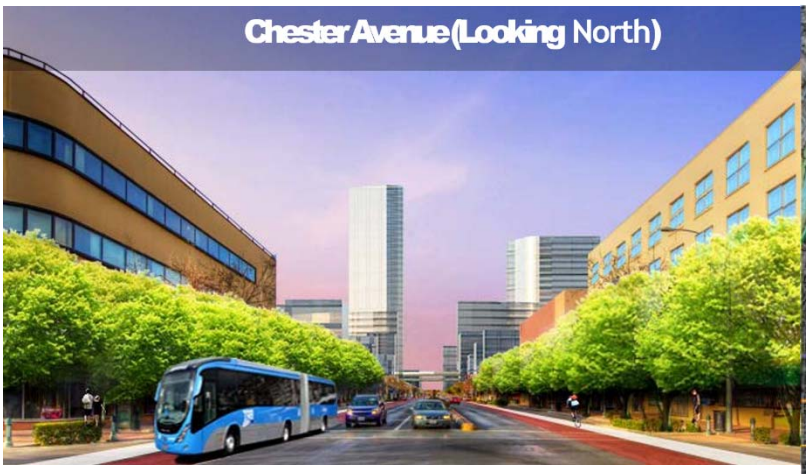
PROJECT TITLE: **Bakersfield High Speed Rail Station Area Plan – Specific/General Plan Update**
PROJECT SPONSOR: City of Bakersfield

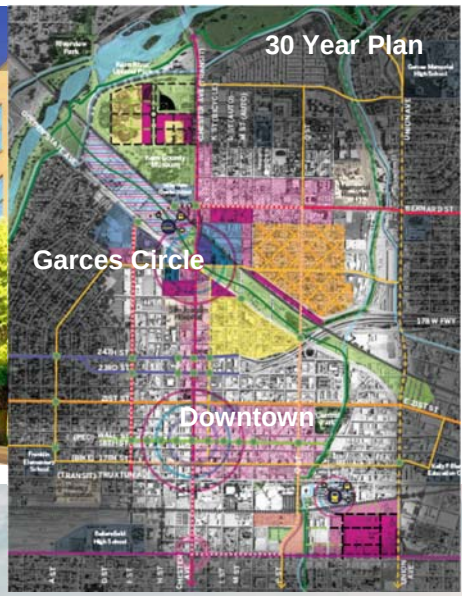
PROJECT DESCRIPTION:
The City of Bakersfield in partnership with and funding from the California High-Speed Rail Authority, are developing a High Speed Rail Station Area Plan for Downtown Bakersfield. The Plan will serve as vision document that will guide the future development of the HSR station area.

PROJECT BENEFITS:
Based on with an economic impact analysis, the vision document will: increase population and economic density in the urban core; support residential and commercial activity; develop under-utilized or vacant properties; connect existing activity and cultural centers; create an efficient, reliable, and effective multi-modal transportation system; connect existing activity and cultural centers; enhance sustainability, livability and a sense of place; and secure funding for identified implementation actions like a new property-based business improvement district.

COST BENEFIT RATIO: Not Applicable
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: 2017
STATUS: In Progress

Reference: *City of Bakersfield, 2016*





PROJECT TITLE: **4,000+ Workplace Charging Spaces by 2025**
PROJECT SPONSOR: Kern Council of Governments and member agencies

PROJECT DESCRIPTION:
Active Transportation and Demand Management is the Federal Highway Administration's (FHWA's) program to promote active management, control, and influence of travel demand, traffic demand, and travel flow of transportation facilities. Under this program Kern COG member agencies are invited to work with Kern COG staff to capitalize on the resources provided through a new work element and OWP 801.1 grant writing element to develop electric charging infrastructure projects in Kern communities. Together, Kern plans to establish a county-wide network of 2,456 Electric Vehicle Charging Stations (EVSE) (4,320 spaces) at workplaces and public charging locations to support Governor Brown's 2015 ZEV Action Plan goal of 1.5 million ZEVs on California roads by the year 2025.

PROJECT BENEFITS:
Kern COG's implementation of Active Transportation Demand Management programs will offer opportunities to reduce transportation-related air pollution emissions and greenhouse gas emissions by engaging the public and private sectors in actions that accelerate advanced clean transportation technologies enhancing efforts to influence travel demand, and travel flow of transportation facilities through our traditional Transportation Demand Management strategies.

COST BENEFIT RATIO:
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: 2016-2025
STATUS: In progress

Electric charging station in Tehachapi

Electric charging station in Bakersfield

Photo: Tehachapi News

PROJECT TITLE: **Improvements to 51 Bus Stops – Metro Bakersfield/Disadvantaged Neighborhoods**

PROJECT SPONSOR: City of Bakersfield, County of Kern, Golden Empire Transit District (GET), Kern Council of Governments and VOICED

PROJECT DESCRIPTION:
Through a partnership of the City of Bakersfield, County of Kern, Golden Empire Transit District (GET), and Kern COG, and VOICED, a coalition formed to build alliances with organizations that provide services to individuals with disabilities and their families, Bakersfield residents with disabilities have increased bus stop accessibility. Contributed funds through the partnership improved 51 bus stop locations that were identified and prioritized in Bakersfield. Additional locations are currently planned.

PROJECT BENEFITS:
Improvements to ADA ramps and sidewalks have improved access to the bus stop locations for the riders while improvements to the curb, gutter and pavement adjacent to the bus stops have improved access for the drivers.

COST BENEFIT RATIO: Not Applicable
TOTAL COST OF PROJECTS: $1,000,000
YEAR OF CONSTRUCTION: 2016
STATUS: In Progress

Press conference for bus stop accessibility

Installation of new bus stop

Photos: Golden Empire Transit

PROJECT TITLE: **Taft Transit Center – Regional Transit Hub**

PROJECT SPONSOR: City of Taft

PROJECT DESCRIPTION:
The City of Taft broke ground on the Taft Transit Center in November 2016. The location of the transit facility is along the Rails to Trails and Oilworker Monument. The design for the facility will preserve the historic theme of the Rails to Trails. The facility will not only be a transit center but will include a maintenance and office building and a community center. The facility's expected completion is in Summer of 2017.

PROJECT BENEFITS:
This project is being funded by surplus Proposition 1B Transit funds. Residents of the cities of Taft and Maricopa will be sheltered from the summer heat and winter while waiting for Taft and Kern transit service. Due to its central location, this facility may encourage the use of Taft and Kern transit to local and visiting riders.

COST BENEFIT RATIO: $49.18/lb.
TOTAL COST OF PROJECTS: $1.9 million
YEAR OF CONSTRUCTION: 2016-17
STATUS: In progress

Rendering of Taft Transit Center

Groundbreaking ceremony of Taft Transit Center

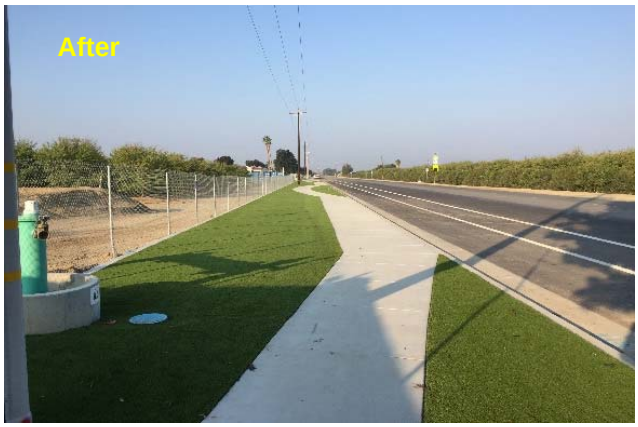
PROJECT TITLE: **Early Delivery of Wasco Active Transportation Program Projects**

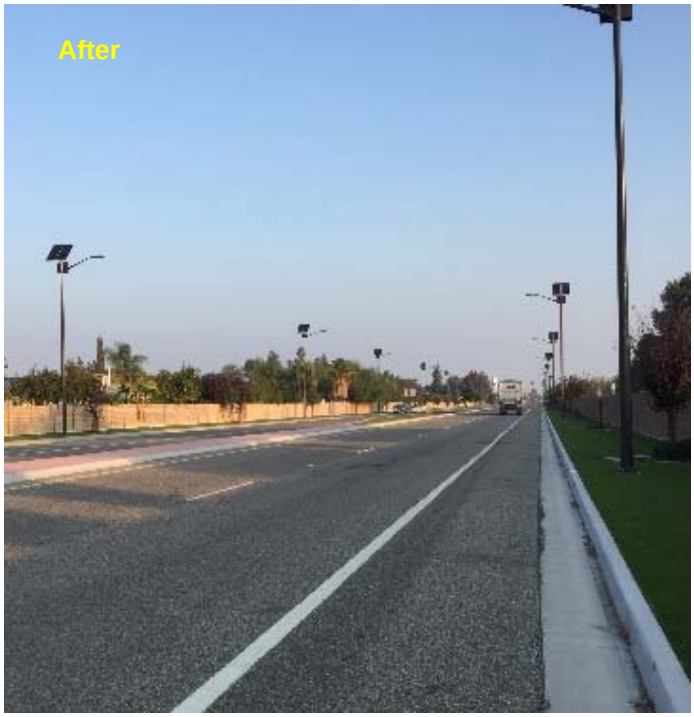
PROJECT SPONSOR: City of Wasco

PROJECT DESCRIPTION:
The City of Wasco was awarded Active Transportation Program (ATP) funding during the first cycle of ATP. The projects included bike and pedestrian improvements for John L. Pruiett Elementary School and Teresa Burke Elementary School; pedestrian improvements near Karl Clemens School and Palm Avenue Elementary School; and pedestrian safety lighting and pedestrian infrastructure along the Highway 43 corridor. These were some of the first ATP projects delivered in the State.

PROJECT BENEFITS:
There were significant benefits to the City of Wasco and its residents with the completion of these ATP projects. These included access to bike lanes, safe and walkable streets, lighting and landscaping along sidewalks, and safe routes to schools for students.

COST BENEFIT RATIO: Not Applicable
TOTAL COST OF PROJECTS: $3.6 million
YEAR OF CONSTRUCTION: 2014-2017
STATUS: Varies





PROJECT TITLE: **Bakersfield Disadvantage Communities Bike Share & Bicycle Connectivity Project**
PROJECT SPONSOR: City of Bakersfield

PROJECT DESCRIPTION:
In 2017 Kern COG awarded nearly one million dollars to the City of Bakersfield in regional share Active Transportation Program funds for a new bike share program and improvements to central Bakersfield. The program includes adding 19 miles of bike lanes; installing 80 bicycle parking and storage racks; and adding up to 25 stations with 180 dock ports for 100 smart bicycles. This pilot project may be expanded if proven successful.

PROJECT BENEFITS:
The City of Bakersfield's implementation of this project will offer opportunities to reduce transportation-related air pollution emissions and greenhouse gas emissions by providing the public with more active transportation choices. The project benefits the largest concentration for disadvantage populations in the region, for a community with the second highest number of disadvantaged census tracts in the state. This project has tremendous potential to affect the health and access to jobs and services for these disadvantaged neighborhoods. The project is also expected to attract millennial job seekers.

COST BENEFIT RATIO:
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: 2016
STATUS: In progress

Bakersfield Bike Share Program

PROJECT TITLE: **Kern Highway Projects Advancing Kern COG Complete Streets Recommendations**
PROJECT SPONSOR: Kern Council of Governments

PROJECT DESCRIPTION:
In 2012 Kern COG completed the Complete Streets Recommendations report. Highway projects in Kern are implementing these recommendations. The Thomas Roads Improvement Program has now completed the following complete streets facilities:

- More than 21 miles of new bike lanes
- More than 18 miles of new sidewalks
- More than 120 new ADA curb cuts
- Three new interchanges with ramp metering

PROJECT BENEFITS:
These projects incorporate bike and pedestrian friendly facilities as well as facilities that promote carpools, vanpools and transit use through ramp metering. Surface streets are at grade, improving ease of bike and pedestrian flow.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: 2009-2021
STATUS: In Progress

Calloway Bridge, Westside Parkway

PROJECT TITLE: **Kern Regional Active Transportation Plan** Including Disadvantaged Communities
PROJECT SPONSOR: Kern Council of Governments

PROJECT DESCRIPTION:
Kern COG began the development of an Active Transportation Plan for the Kern region in July 2016 and completion date in June 2017. The Plan will inventory existing active transportation infrastructure, identify deficiencies in the system and prioritize the installation of new facilities that will improve system safety, connectivity and user convenience.

PROJECT BENEFITS:
With financial assistance from both the metropolitan Bakersfield public transit provider, Golden Empire Transit, and the County of Kern's Regional Transit the active transportation/public transit interface will be examined to improve transit opportunities to active transportation users.

COST BENEFIT RATIO: Not Applicable
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: 2017-2037
STATUS: In Progress

Examples of obstructed sidewalk and sidewalk gap in Downtown Bakersfield

PROJECT TITLE: Kern Intelligent Transportation Systems Plan
PROJECT SPONSOR: Kern Council of Governments

PROJECT DESCRIPTION:
In 2017 Kern COG began the development of an update to the current Intelligent Transportation System (ITS) Infrastructure Plan. The plan proposes implementation of technology that improves the efficiency of the transportation system. An example of ITS infrastructure is traffic signal coordination.

PROJECT BENEFITS:
The ITS Plan provides for phasing in of new technologies that will improve the efficiency of the transportation system thereby reducing greenhouse gas and health based air pollution emissions.

COST BENEFIT RATIO: Not Applicable
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: 2017-2042
STATUS: In Progress

Examples of Intelligent Transportation Systems

PROJECT TITLE: **SJV Rural Transit Shared Mobility Study for Disadvantaged Communities Implementation Alternatives for Meeting Transit Needs in the Rural San Joaquin Valley**
PROJECT SPONSOR: Kern Council of Governments

PROJECT DESCRIPTION:
The 8-San Joaquin Valley COGs are partnering with the Institute of Transportation Studies at UC Davis and Michael Sigala to explore opportunities for leveraging new technology driven shared access services to enhance, compliment, and/or replace traditional fixed-route transit serving rural communities. The shared access services will study ridesharing, carsharing, and bikesharing.

PROJECT BENEFITS:
The partnership and project will expand low-carbon transportation options in rural areas and disadvantage communities.

COST BENEFIT RATIO: Unknown
COST OF PROJECTS: $600,000
YEAR OF CONSTRUCTION:
STATUS: In progress

PROJECT TITLE: **Kern County General Plan Update – Land Use, Conservation, Open Space, Circulation, Housing, and other key elements**

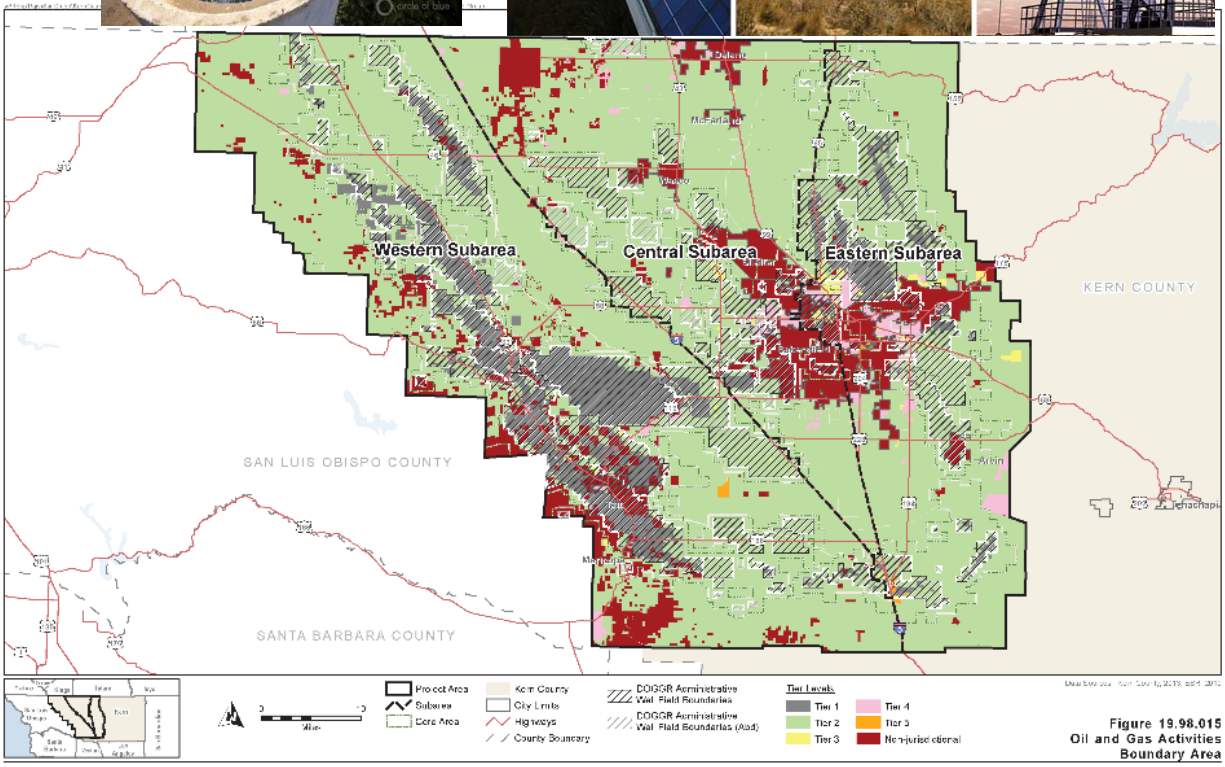
PROJECT SPONSOR: County of Kern

PROJECT DESCRIPTION:
In October 2016, the County of Kern kicked off the update to their General Plan. The General Plan update includes Land Use, Conservation, Open Space, Circulation, Housing, Water, Healthy Communities, Energy, Military Readiness, Safety and Noise Elements. The update process to the document that controls the resource land use areas of the county. The document will have to balance land uses and resources will providing a plan for disadvantaged unincorporated communities. The County already requires farmland lost to Solar requires 2-1 farmland preservation Easements.

PROJECT BENEFITS:
The plan when complete will advance the existing efforts to preserve Kern County resource areas for future generations while helping to reduce greenhouse gas production through alternative energy and ensuring water availability for the region's agricultural carbon sink.

COST BENEFIT RATIO: Not Applicable
COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: Not Applicable
STATUS: In progress

Kern County General Plan Update



PROJECT TITLE: **Early Deployment Pricing Policies for Parking and FastPass HOT Lanes**
PROJECT SPONSOR: City of Bakersfield/Caltrans

PROJECT DESCRIPTION:
Parking Pricing - In 2016 the City of Bakersfield approved an increase in the parking cost at the city owned downtown parking structure, and downtown parking is being evaluated as part of the HSR Station Area Plan.

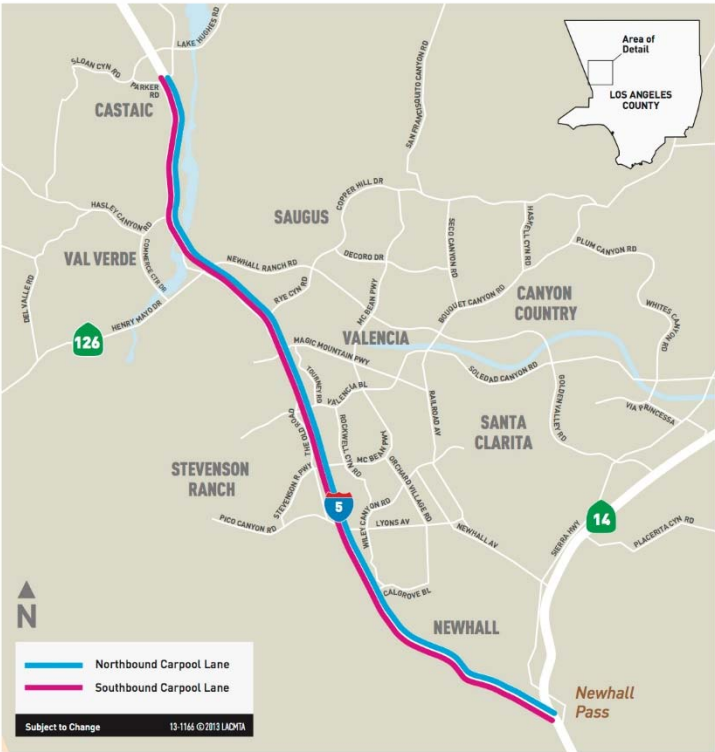
HOT Lanes Pricing - New FastPass lanes on I-5 and SR 14 are planned to be extended through Santa Clarita towards Kern County. These corridors are used by more than 10,000 Kern commuters per day and will likely benefit vehicle occupancy in Kern as well as Southern California. Interestingly, not many people commute from Kern. Over 90% of Kern workers both live and work in Kern County and most make occasional trips to Southern California.

PROJECT BENEFITS:
Parking toll lane pricing policies have proven to be an effective means to redistribute demand during peak periods, delaying the need for new infrastructure while providing a pay-as-you-go method to make improvements to the parking area or corridor. The reduced congestion benefits GHG and health based criteria pollutants.

COST BENEFIT RATIO: Not Applicable
COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION:
STATUS: In progress

Bakersfield Downtown Parking Garage

I-5 North Capacity Enhancements
Phase 2a



Metro

Caltrans

PROJECT TITLE: **City of Bakersfield Redevelopment Projects – Mill Creek and Baker Street**
PROJECT SPONSOR: City of Bakersfield

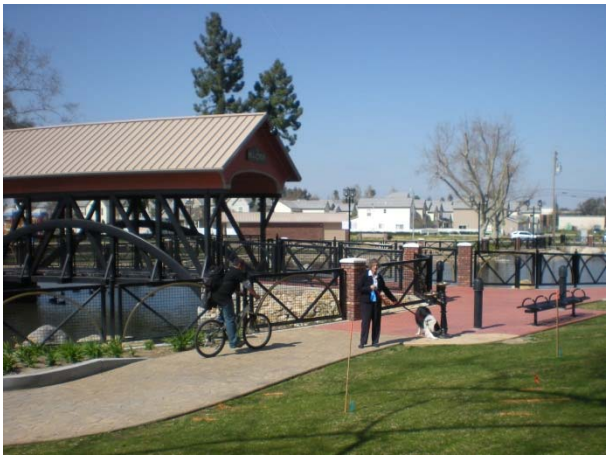
PROJECT DESCRIPTION:
The Mill Creek Linear Project was a redevelopment project in Downtown Bakersfield, and included the renovation and redesign of Central Park. The Mill Creek Project includes a 1.5 mile linear park, housing, senior housing, and commercial developments, along with landscaping and street improvements, and has recently received a State AHSC grant for senior housing.

The Baker Street Village Project was also a redevelopment project that involved the revitalization of Olde Town Kern. The Project mixes condos and lofts, along with 10,000 square feet of commercial and community space.

PROJECT BENEFITS:
These two mixed-use redevelopment projects help reduce auto dependency, roadway congestion, and improve air quality. In addition, these projects promote pedestrian and bicycle travel, and promote efficient use of land and infrastructure.

COST BENEFIT RATIO: Not Applicable
COST OF PROJECTS: $58 million
YEAR OF CONSTRUCTION: 2007-2017
STATUS: In progress

Mill Creek Linear Project and Pedestrian Corridor



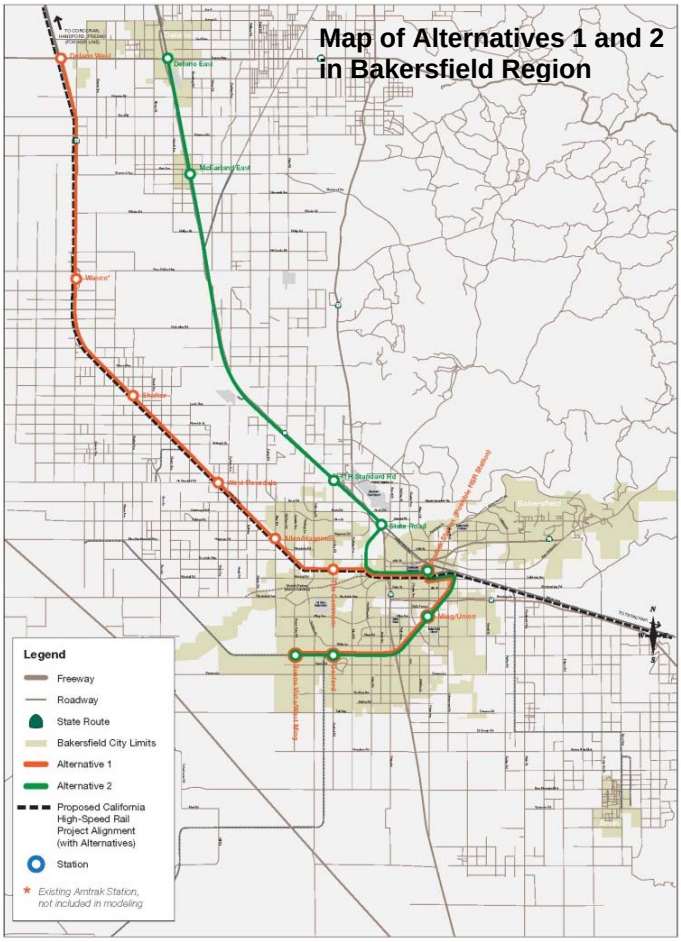
Mill Creek Senior Housing (AHSC) Project

Baker Street Village Project

PROJECT TITLE: **Commuter Rail Feasibility Study/Amtrak Improvements**
PROJECT SPONSOR: Kern Council of Governments

PROJECT DESCRIPTION:
Kern COG contracted with a consultant to develop a feasibility study for Federal Small Starts or New Starts program, and to determine alternative commuter bus and passenger rail service to replace or enhance the Amtrak San Joaquin passenger rail service between Bakersfield and Fresno once high-speed rail is implemented.

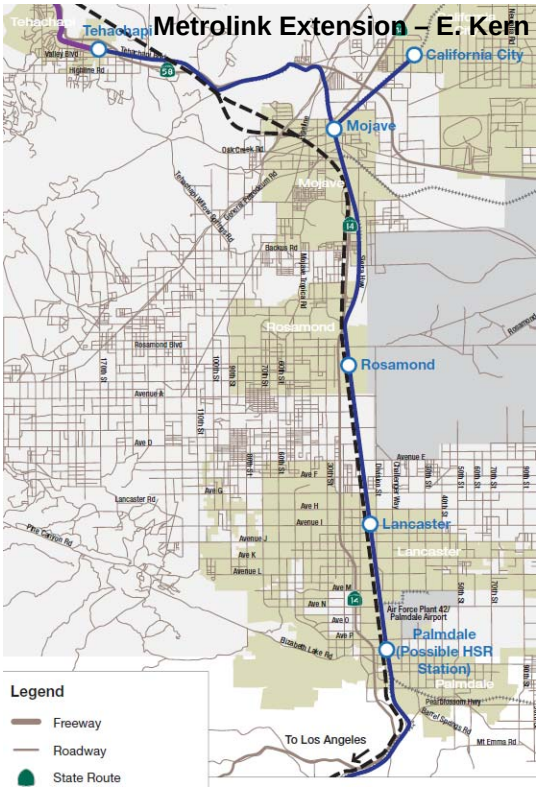
In 2016 Amtrak began operating a 7th train per day on this corridor, facilitating potential additional intercity stops on this passenger rail corridor in Kern.



high-speed rail trains begin to operate in six to eight years. If funding is available, strategies include:

- A possible commuter passenger rail service from Bakersfield to Delano with stops in northwest Bakersfield, Shafter, Wasco, and Delano.
- A possible commuter passenger rail service to rural employment sites such as Frito Lay, Grimmway, Bolthouse, etc.
- An extension of the Metrolink commuter passenger rail services from Palmdale to Rosamond.

COST BENEFIT RATIO: Unknown
COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION:
STATUS: In progress



Source: Commuter Rail Feasibility Study, Draft July 2012

PROJECT TITLE: Rideshare Program – Commute Kern
PROJECT SPONSOR: Kern Council of Governments

PROJECT DESCRIPTION:
Commute Kern provides customer service upon request from the general public, employers, colleges, vanpool operators, other agencies and the media regarding ridesharing opportunities. As an on-line transportation demand management program, Commute Kern's website-commutekern.org, serves as a resource for carpooling, vanpooling, public transit, park-and-ride facility use, telework, walking and bicycling for commutes to work and school to help improve our air quality. The program also allows for flexible scheduling, daily tracking, vanpool management, outreach to employers, resources to commuters such as concierge services, and forum for discussion and sharing resources.

PROJECT BENEFITS:
Using rideshare services reduces the number of single occupancy vehicles on the road, and ultimately helps to improve our air quality.

COST BENEFIT RATIO:
2016-2017: $58.36 / lbs.
2017-2018: $59.15 / lbs.

COST OF PROJECT:
2016-2017: $ 231,420
2017-2018: $ 243,886

YEAR OF CONSTRUCTION: Non-construction
STATUS: Ongoing

Bicycle

Carpool

Public Transit

PROJECT TITLE: **Expanding Park and Ride Lots**
PROJECT SPONSOR: Caltrans, City of Bakersfield and California City

PROJECT DESCRIPTION:
The purpose of the development of Park and Ride lots is to provide a safe and centralized location for commuters to meet and either carpool, vanpool, or use transit. There are seven existing Park and Rides within Kern County that Caltrans (Districts 6 and 9) operates. There are lots in Lake Isabella, Delano, Taft, Ridgecrest, and three in Bakersfield.

The newest Park and Ride location was created through a partnership with Tejon Ranch, GET Bus, and IKEA Industrial Plaza. A bus picks up and drops off the Industrial Plaza employees from the newest park and ride lot at South H Street and McKee Road.

An addition proposed project is the construction of College Station Park and Ride with a bus turnout at the intersection of California City Blvd. (South) and Yale Ave in California City. The primary purpose of the project is to provide a place to park and car/van pool for those working at the Borax Plant in Boron, and Edwards Air Force base.

PROJECT BENEFITS:
Provides a meeting point for commuters to leave their individual cars as they join carpools or vanpool services. This service helps eliminate the number of single occupied vehicles from the roads on a daily basis.

In addition, the proposed project is anticipated to reduce the number of vehicle trips for those who will car or van pool to work. Using the latest emission factors, it is estimated that this project would remove between 865 and 1,100 pounds of emissions annually over a twenty year life expectancy.

COST BENEFIT RATIO: $23 / lbs.
COST OF PROJECT: $375,000
YEAR OF CONSTRUCTION: 2014
STATUS: Complete

Park and Ride lot at South H Street and McKee Road

Map of Park & Ride Lots in Kern County

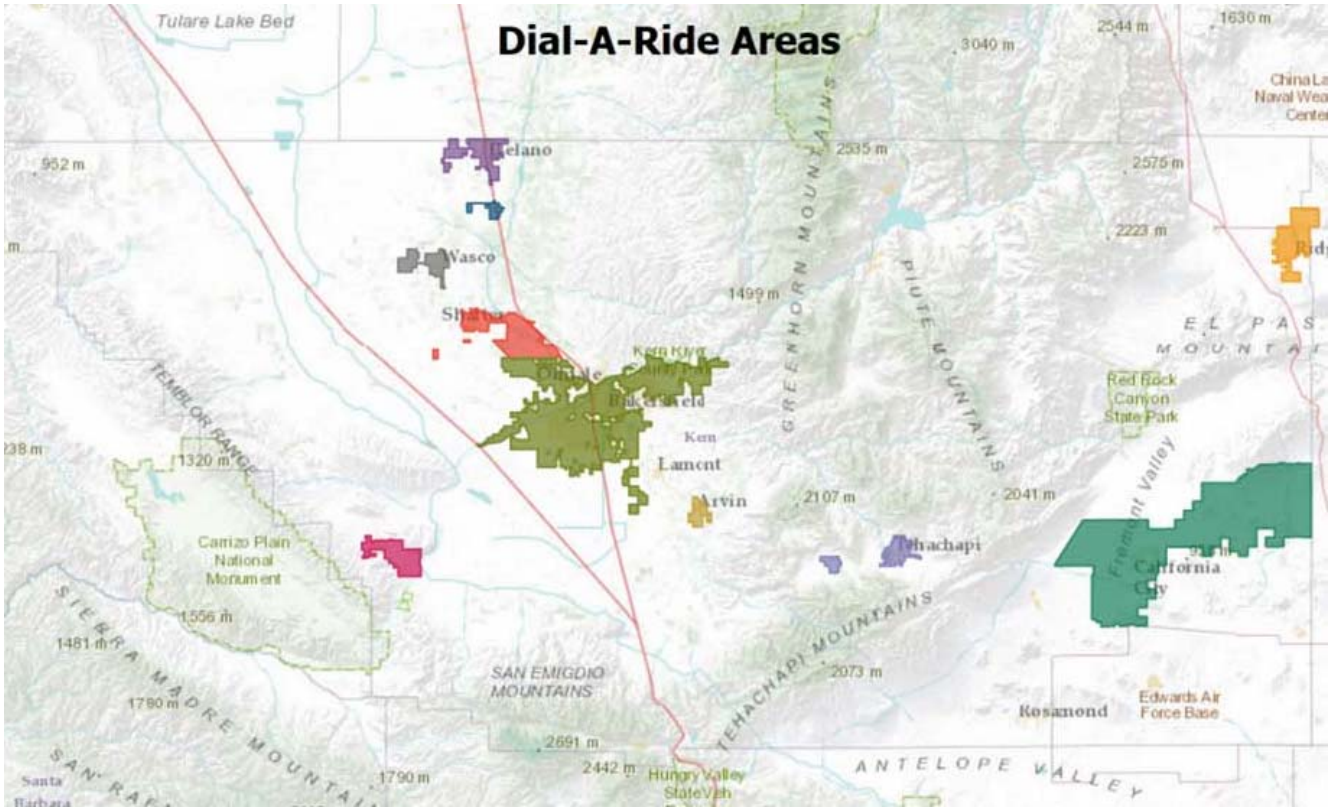
PROJECT TITLE: Dial-A-Ride and Local Transportation Services
PROJECT SPONSOR: City of Arvin, California City, City of Delano, City of McFarland, City of Ridgecrest, City of Shafter, City of Taft, City of Tehachapi, City of Wasco, City of Bakersfield (GET)

PROJECT DESCRIPTION:
The following cities provide Dial-A-Ride service to the public within their city limits: Arvin, California City, Delano, McFarland, Ridgecrest, Shafter, Taft, Tehachapi, and Wasco. The Dial-A-Ride services vary from city to city; some cities provide services to all the public while some limit services to seniors and the disabled. In addition, Bakersfield through Golden Empire Transit (GET) provides the GET-A-Lift service to eligible persons. Dial-A-Ride service within the Bakersfield urban area is also provided by the Consolidated Transportation Service Agency (CTSA).

Kern COG is part of a study with UC Davis on shared mobility for rural transit that may of solutions to enhance transit service in rural, disadvantaged communities.

PROJECT BENEFITS:
The Dial-A-Ride service is a form of ridesharing that benefits the Kern region by reducing the number of single occupancy vehicles on the road which ultimately helps improve our air quality.

COST BENEFIT RATIO: Not Applicable
COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION:
STATUS: In progress



PROJECT TITLE: **Kern County Bicycle Master Plan and Complete Streets Recommendations / City of Tehachapi Master Bike Plan**
PROJECT SPONSOR: Kern Council of Governments/ City of Tehachapi

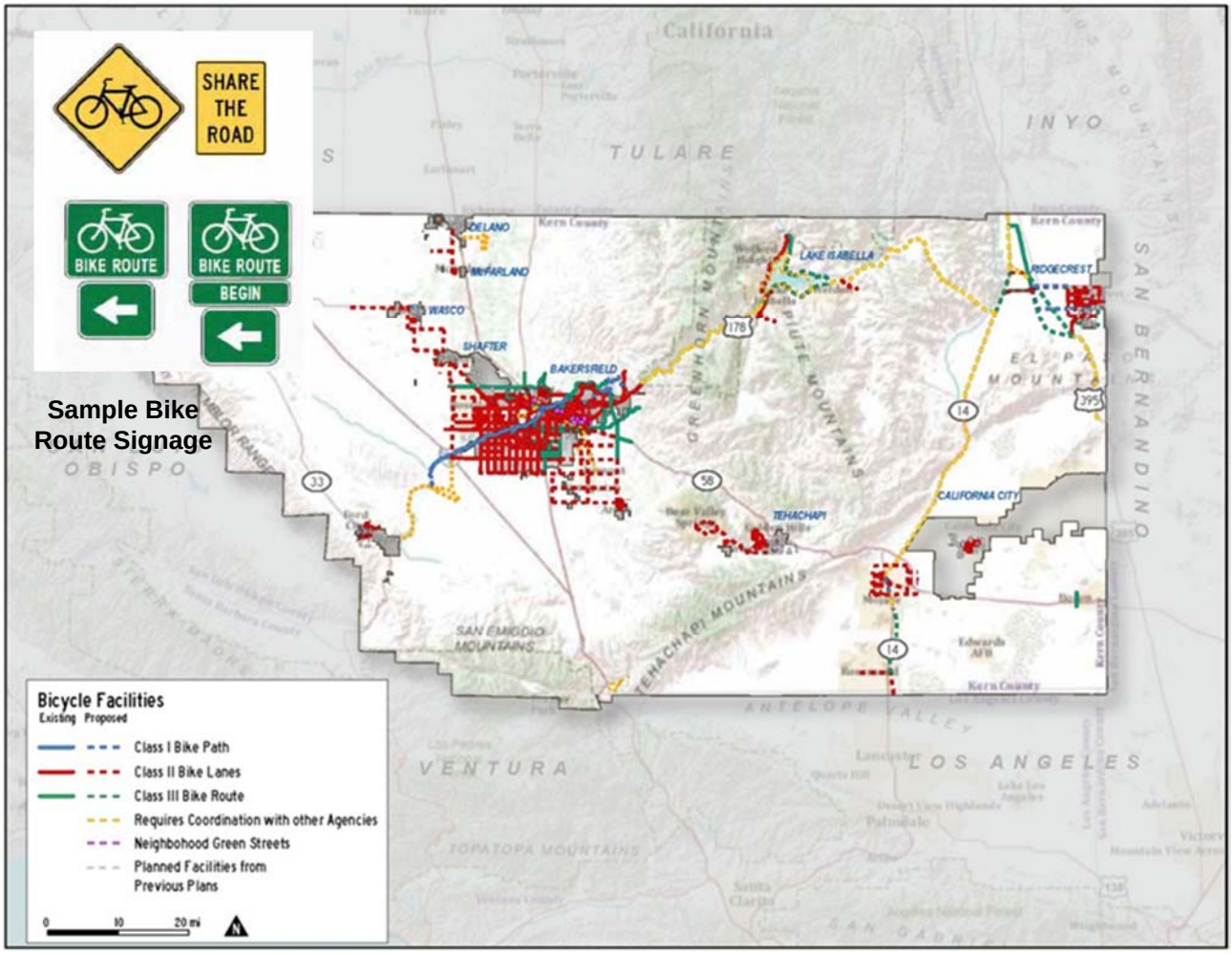
PROJECT DESCRIPTION:
The Kern County Bicycle Master Plan and Complete Streets Recommendations proposed 664 miles of new bikeways, including 30 miles of Class I bike paths, 297 miles of Class II bike lanes, 46.6 miles of Class III bike routes, and 186 miles of Class II bike routes on State Routes. In addition, the Plan also presents recommendations for complete streets.

The City of Tehachapi Master Bike Plan proposed 31.69 total miles of bikeways, including 4.66 miles of Class I Bike Paths and 25.24 miles of Class II bike lanes.

PROJECT BENEFITS:
Replacing vehicular trips with bicycle trips can reduce human-generated GHGs in the atmosphere, reduce VMT, reduce fuel consumption and lessen mobile source pollutants, such as carbon dioxide being released into the air.

COST BENEFIT RATIO: Unknown
COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION:
STATUS: Kern County Final Plan will be issued in September 2012 and the City of Tehachapi Master Bike Plan was adopted in June 2012.

Map of Proposed Bicycle Facilities in Kern County



Source: Kern County Bicycle Master Plan and Complete Streets Recommendations, June 2012.

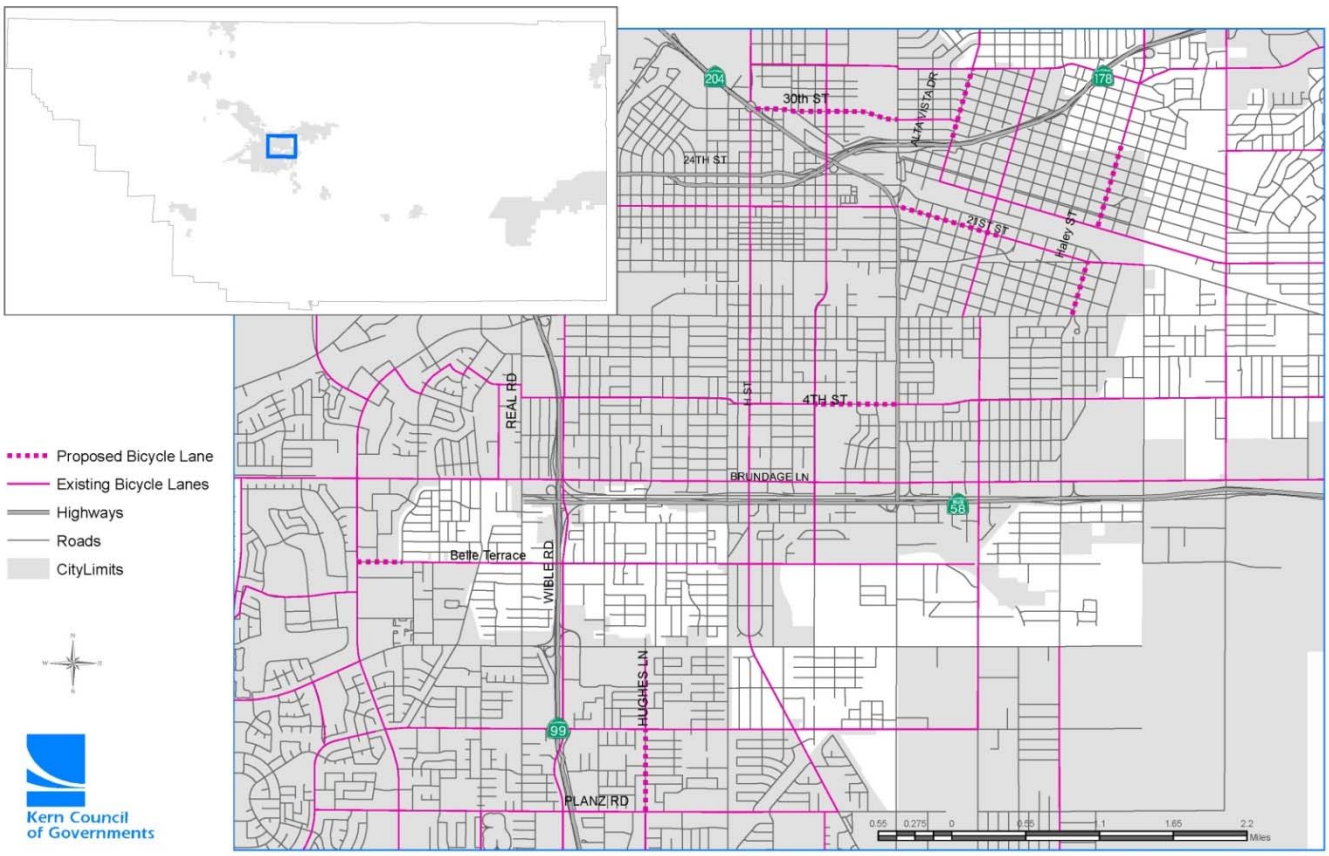
PROJECT TITLE: City of Bakersfield Bicycle Facilities
PROJECT SPONSOR: City of Bakersfield Public Works Department

PROJECT DESCRIPTION:
These projects relate to bicycle facilities at numerous locations within the City of Bakersfield. There were a total of two proposed bicycle facilities projects (total of eight proposed lanes) for the Fiscal years of 2012-2013. Both projects proposed the installation of Class 2 bicycle lanes along each corridor including pavement striping, markings and roadway signage. The map also includes the existing bicycle facilities.

PROJECT BENEFITS:
On-street bike lanes (Class 2) along major roadways help raise bicycle usage resulting in lower emissions and congestion, while resolving safety issues.

COST BENEFIT RATIO: $7 – $21/ lbs.
TOTAL COST OF PROJECTS: $35,000 - $60,000
YEAR OF CONSTRUCTION: 2013
STATUS: Constructed, Planned

Map of Bicycle Lanes



PROJECT TITLE: **Westside Station – Multi-modal Transit Center**
PROJECT SPONSOR: California City

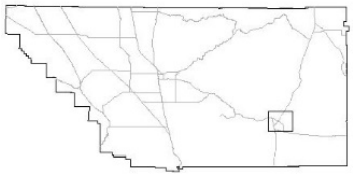
PROJECT DESCRIPTION:
The completed project provides the eastern Kern region with a multi-modal transit center on City owned property in the Wonder Acres neighborhood at the southwest corner of California City Blvd. and Wonder Ave. The Transit Center includes a parking lot, lighting, restrooms, landscaping, and Kern Regional Transit bus stops.

The purpose of this project is to provide a comfortable, accessible, and a safe place to park that encourages residents who were parking at the previously undeveloped site to commute to work or school using car pools, ride sharing or public transit.

PROJECT BENEFITS:
Improves site accessibility to local area residents desiring to use van pools, ride sharing and public transit throughout the Kern region. Encourages future users of alternative transportation options.

COST BENEFIT RATIO: All emissions: $8.34/lbs.
COST OF PROJECT: Approximately $500,000
YEAR OF CONSTRUCTION: Completed in 2013
STATUS: Constructed

Westside Station – Multi-modal Transit Center, California City



PROJECT TITLE: San Joaquin Valley Vanpool Program (CalVans)
PROJECT SPONSOR: CalVans

PROJECT DESCRIPTION:
The San Joaquin Valley vanpool program (CalVans) is a public vanpool service that serves Central California and began serving Kern County residents in 2009. CalVans provides public transit services to people in transportation uses that are difficult for traditional public transit operators to provide. CalVans currently provides transportation services to farmworkers throughout the county and has also provided services to Shafter students attending Taft Community College. In 2016, CalVans added vanpools going to Tehachapi. There are now 28 vanpools operating in Kern.

PROJECT BENEFITS:
CalVans provides a higher level of vanpooling while reducing overall miles traveled and carbon dioxide emissions from passenger vehicles.

CalVans provides 7, 8, and 15-passenger vans to its customers. Currently CalVans has over 495 vanpools in operation which in turn saves nearly 13,000 vehicle miles traveled per day. Growing demands project a market for nearly 500 vans pools which can save approximately 100,000 vehicle miles traveled per day.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS:
YEAR OF CONSTRUCTION: 2009
STATUS: In process

Local college students who use CalVans

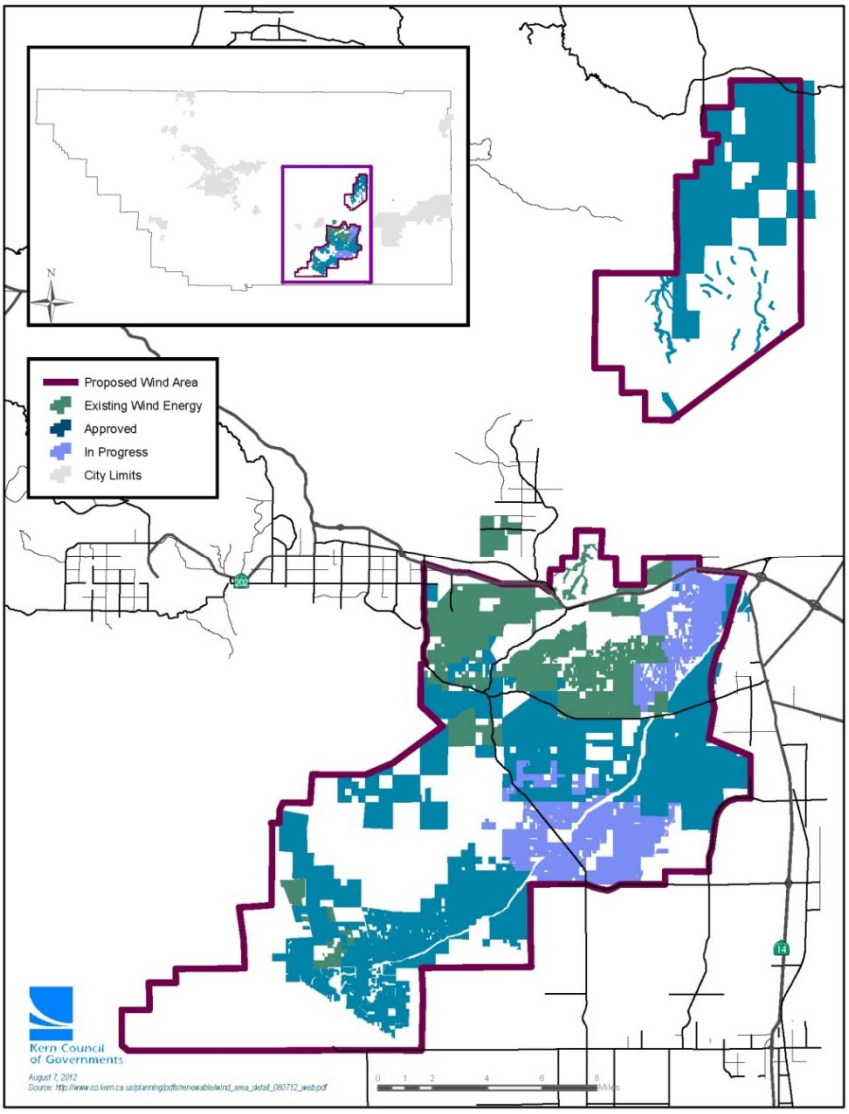
PROJECT TITLE: **Kern County Wind Farm Areas (Largest in the U.S.)**
PROJECT SPONSOR: County of Kern

PROJECT DESCRIPTION:
The County of Kern has 21,752 acres of existing wind energy areas, 57,524 acres of approved wind projects and 14,998 acres of wind projects that are in progress.

PROJECT BENEFITS:
Wind is a clean source of renewable energy that produces no air pollution. In addition, wind turbines create power without producing greenhouse gases.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION:
STATUS: In process

Map of Preliminary Wind Farm Areas (DRAFT)



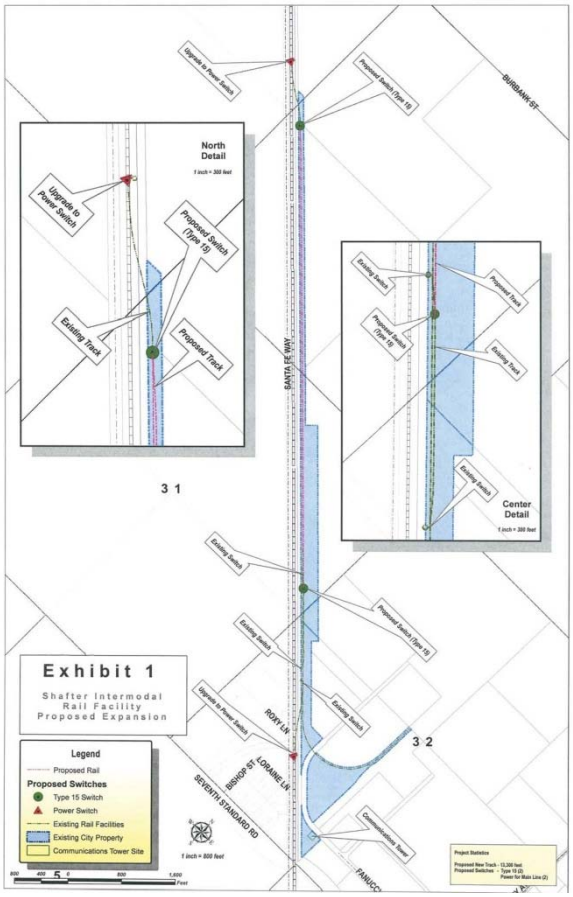
PROJECT TITLE: **City of Shafter Container Yard and Intermodal Rail Facility Expansion**
PROJECT SPONSOR: City of Shafter

PROJECT DESCRIPTION:
The City of Shafter Intermodal Rail Facility was recently expanded by adding 2 miles of tail sidings and a container storage yard. The rail facility will establish a dedicated reliable intra-state rail shuttle connecting the Port of Oakland and Los Angeles/Long Beach with the southern San Joaquin Valley. The container yard is leased by a dock operating company for Los Angeles/Long Beach and Oakland and uses the facility to help match loads between the ports and the southern San Joaquin Valley so as to eliminate emissions and truck trips.

PROJECT BENEFITS:
The rail shuttle will better utilize existing port facilities, highways, and rail infrastructures in California to reduce the relocation of empty containers, remove trucks from overcrowded highways, and improve air quality. The proposal is to create an intermodal facility which will divert the freight transported by 600 trucks per day to 2 unit trains per day to and from the Port of Oakland.

COST BENEFIT RATIO: **$**99 / lbs.
TOTAL COST OF PROJECTS: $60 million
YEAR OF CONSTRUCTION: 2013
STATUS: In process

Proposed Shafter Intermodal Rail Facility Expansion



Container Yard

PROJECT TITLE: Next Generation Intersection Signalization
PROJECT SPONSOR: City of Bakersfield Public Works, Kern County Roads Department, City of Ridgecrest, Caltrans

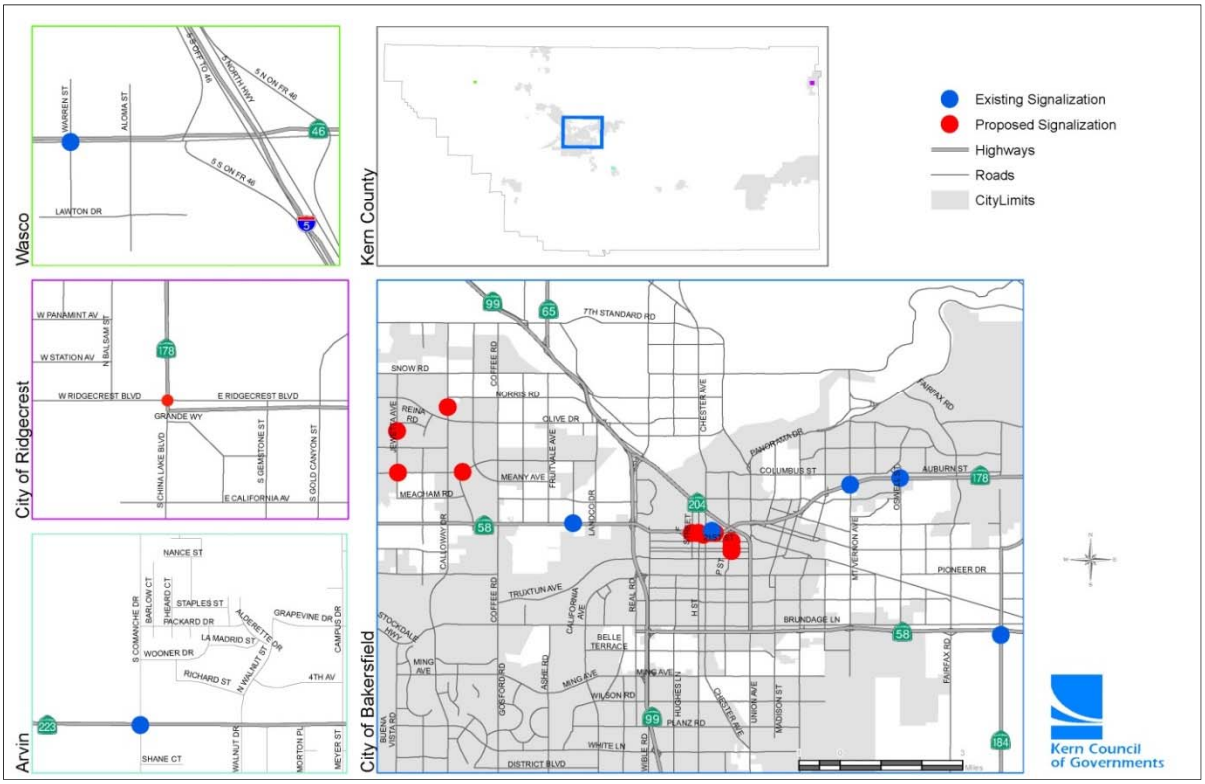
PROJECT DESCRIPTION:
Existing and proposed intersection signalization projects at numerous locations throughout the Kern region. A total of 13 intersection signalization proposed projects have been scheduled for the Fiscal years of 2012-2014.

In 2016 Kern COG commenced an update to the Intelligent Transportation System (ITS) Plan that will look at the next generation of traffic signal technology.

PROJECT BENEFITS:
Improves signal timing along the reference corridor which will reduce overall vehicle stops and starts, and limits delay in travel time. The reduction in vehicle stops and starts will improve the corridor's average speed, thereby reducing the harmful pollutants generated by vehicles traveling at low speeds and when idling.

COST BENEFIT RATIO: $ 3 – $ 60/ lbs.
TOTAL COST OF PROJECT:
$ 104,500 - $ 652,500
YEAR OF CONSTRUCTION: 2009**,** 2011, 2013-2014
STATUS: Constructed/Operating, Planned

Proposed Intersection Signalization Projects



PROJECT TITLE: City of Bakersfield 4 New Downtown Infill Housing Projects – Mill Creek South, 1612 City Lofts, 17th Place Townhouses, AHSC Senior Housing Project at Mill Creek
PROJECT SPONSOR: City of Bakersfield

PROJECT DESCRIPTION:
South Mill Creek Apartments was developed and operates with Federal housing financing. The property utilizes the Low Income Housing Tax Credit Federal housing program to make rent affordable to lower income tenants.

1612 City Lofts (The Lofts) is a mixed use development located in the thriving Downtown Bakersfield Arts and Entertainment District or popularly known as "The District." 1612 City Lofts became the first mixed-use building in downtown Bakersfield in the 21st century. The Lofts also provide a workforce housing as part of a program through the Bakersfield Economic Redevelopment Agency. Tenants income limits are adjusted annually.

17th Place Townhomes is an environmentally friendly downtown community walking distance from downtown amenities. The luxury development townhomes will include drought-sensitive landscaping and courtyard space.

AHSC Senior Housing Project at Mill Creek provides affordable one and two-bedroom apartment homes for seniors 55 years and older. The Mill Creek Village will be coming in early 2017 and includes private patios or balconies and a central courtyard.

PROJECT BENEFITS:
The infill housing projects are conveniently located to public transportation that includes the Amtrak Station and Bakersfield Downtown Transit Center. The housing projects are also within walking distance of downtown shopping and dining.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: Varied
STATUS: In Progress

1612 City Lofts located in mixed use building in Downtown Bakersfield

17th Place Apartments Downtown

Mill Creek Veterans Housing Downtown

PROJECT TITLE: Cities of McFarland and Shafter – Conversion of transit fleet to electric vehicles
PROJECT SPONSOR: City of McFarland, City of Shafter

PROJECT DESCRIPTION:
The City of Shafter introduced four electric vans for use in its Dial-A-Ride program. Each van is configured to carry up to 16 passengers or cargo at 100 miles per charge. The City of McFarland is in the process of converting their transit fleet to electric vehicles.

PROJECT BENEFITS:
The benefits of transit electric vehicles includes the reduction of the number of single occupancy vehicles on the road and ultimately helps improve our air quality, lower maintenance and repair costs, and lower fuel costs.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: 2016
STATUS: In Progress

Shafter Electric Vehicles

PROJECT TITLE: Golden Empire Transit/Kern Transit – Purchase of 4 Electric Buses
PROJECT SPONSOR: Golden Empire Transit District, Kern Transit

PROJECT DESCRIPTION:
The Golden Empire Transit District will be purchasing 2 electric buses in 2017. Clean non-polluting buses may attract more riders who may be looking to alternatives to the auto for home to work purposes. These electric buses are planned to be used for the future bus rapid transit route in Bakersfield.

Kern Transit was recently awarded a grant to purchase 2 electric busses for its east Kern run to the Metrolink station in Lancaster.

PROJECT BENEFITS:
As fleets increase, rapid routes may make commuter travel preferable. This improves preferences and accessibility to medical, shopping centers and employment centers.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: 2017
STATUS: In Progress

Electric buses being driven in Bakersfield

Kern Transit Bus at Intermodal Rail Stop

PROJECT TITLE: Lost Hills Wonderful Park and Communitywide Improvements
PROJECT SPONSOR: The Wonderful Company

PROJECT DESCRIPTION:
The Lost Hills Wonderful Park is located at the intersection of Highway 46 and Lost Hills Road. The park was part of Lynda Resnick, co-chair of The Wonderful Company, Central Valley Leadership Project. Phase I of the project involved major park improvements including resurfaced basketball court, soccer field, bleachers, and a mile-long walking path that circles the park, a splash park, and solar powered lights to illuminate the park in the evening. The community center located in the park was also completely renovated to include a fully equipped kitchen, tables and chairs for community and private events. Phase II of the project renovation included widening of streets and addition of bike lanes; installation of sidewalks, gutters, bus stop shelters and street lights; and the planting of drought-resistant landscaping.

PROJECT BENEFITS:
The Wonderful Company made major street improvements in the community. The Wonderful Company, improved 3.8 miles of streets, built 7.2 miles of sidewalk, extended 220 driveways and installed 6.9 miles of curbs and gutters. In addition, the Wonderful Company planted 730 trees, put up 16 stop signs, erected 38 LED street lights and built 1,400 feet of 60-foot-wide pedestrian walkways. Residents of Lost Hills can safely walk, ride their bike, or drive to the Park. Directly across from the Park is a bus shelter for the regional transit, Kern Transit. The Wonderful Company, the County and Caltrans are developing a pedestrian overpass on SR 43 for the community.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: 2019
STATUS: Completed

Lost Hills Wonderful Park improvements

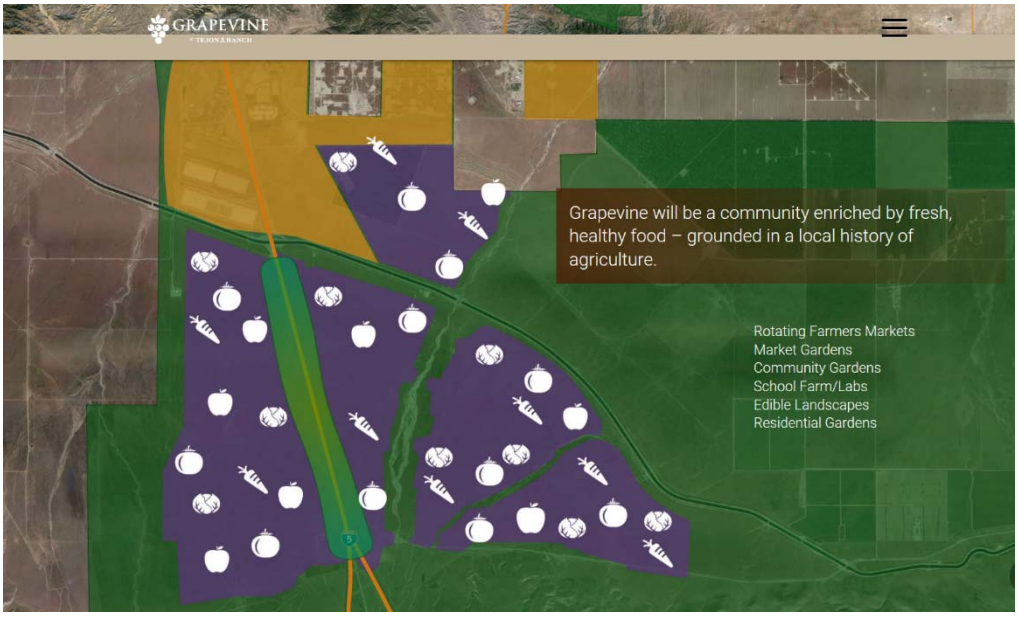
PROJECT TITLE: New Developments Innovative Green Tech
PROJECT SPONSOR: County of Kern, City of Bakersfield

PROJECT DESCRIPTION:
Newly approved developments such as Grapevine leverage new technologies to provide the lowest carbon footprint, sustainable education, and housing options closer to jobs in the region.

PROJECT BENEFITS:
Reduction in vehicle miles traveled and a reduction in the overall percapita carbon footprint.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: Unknown
STATUS: In Progress

Reference: http://www.grapevineattejonranch.com/



PROJECT TITLE: **City of Tehachapi General Plan** – Form Based Code General Plan
PROJECT SPONSOR: City of Tehachapi

PROJECT DESCRIPTION:
The City of Tehachapi adopted the 2035 General Plan Update, and the new General Plan will contribute towards the implementation of SB 375.

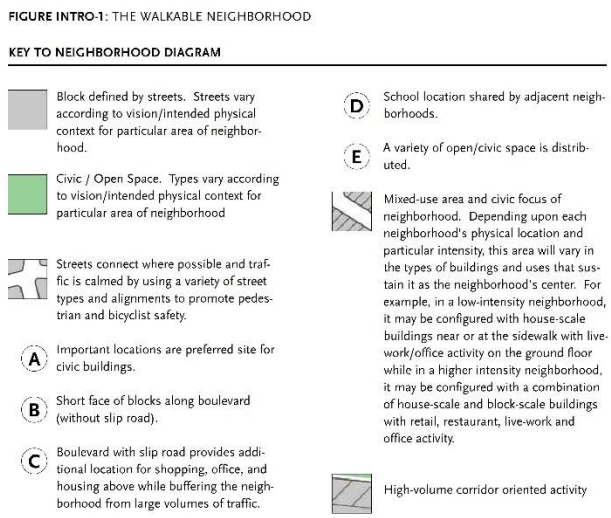
The new General Plan can be characterized as a Form Based General Plan because it emphasizes facilitating mixed use, walkable neighborhoods and developments. The "T" Zone will facilitate high density mixed use development opportunities. The Mobility Element is still linked to the Land Use Element with an emphasis on greater connectivity, walkability, and opportunities for mixed use developments. The "O" Sectors will reinforce the preservation of the Sphere of Influence area as open space, prevent urban sprawl and maintain our compact urban form. The "G" Sectors will emphasize infill development as our highest priority as the General Plan continues to build out.

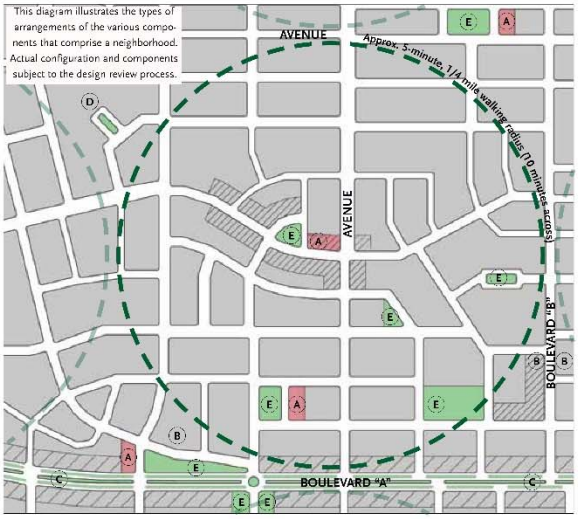
PROJECT BENEFITS:
The new General Plan will maintain a compact urban form by maintaining all areas outside of the current City limits and within the sphere of influence area as Open Space. This approach will prevent urban sprawl, protect important agricultural resources and provide a clear line of demarcation between town and countryside.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: Unknown
STATUS: In Progress

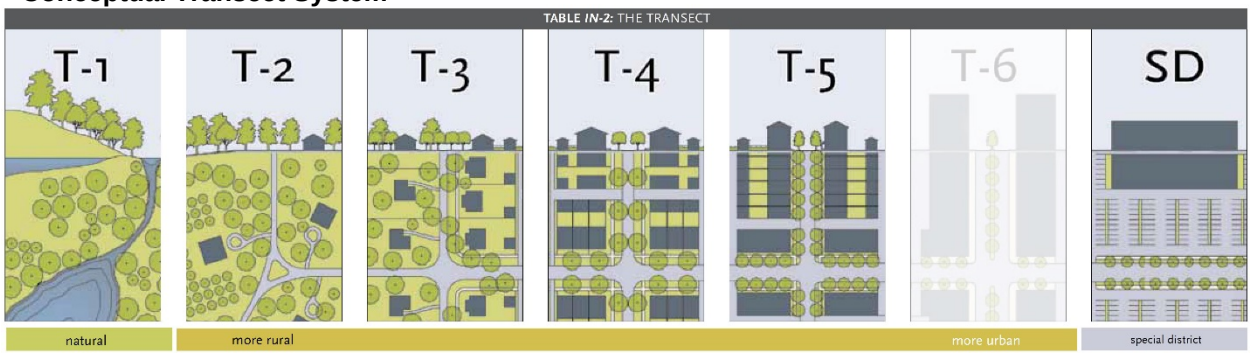
Reference: *City of Tehachapi General Plan, 2012*

The Walkable Neighborhood example





Conceptual Transect System



PROJECT TITLE: **Infill Incentive Zone – Lower Transportation Impact Fee Core Area**
PROJECT SPONSOR: City of Bakersfield / City of Tehachapi

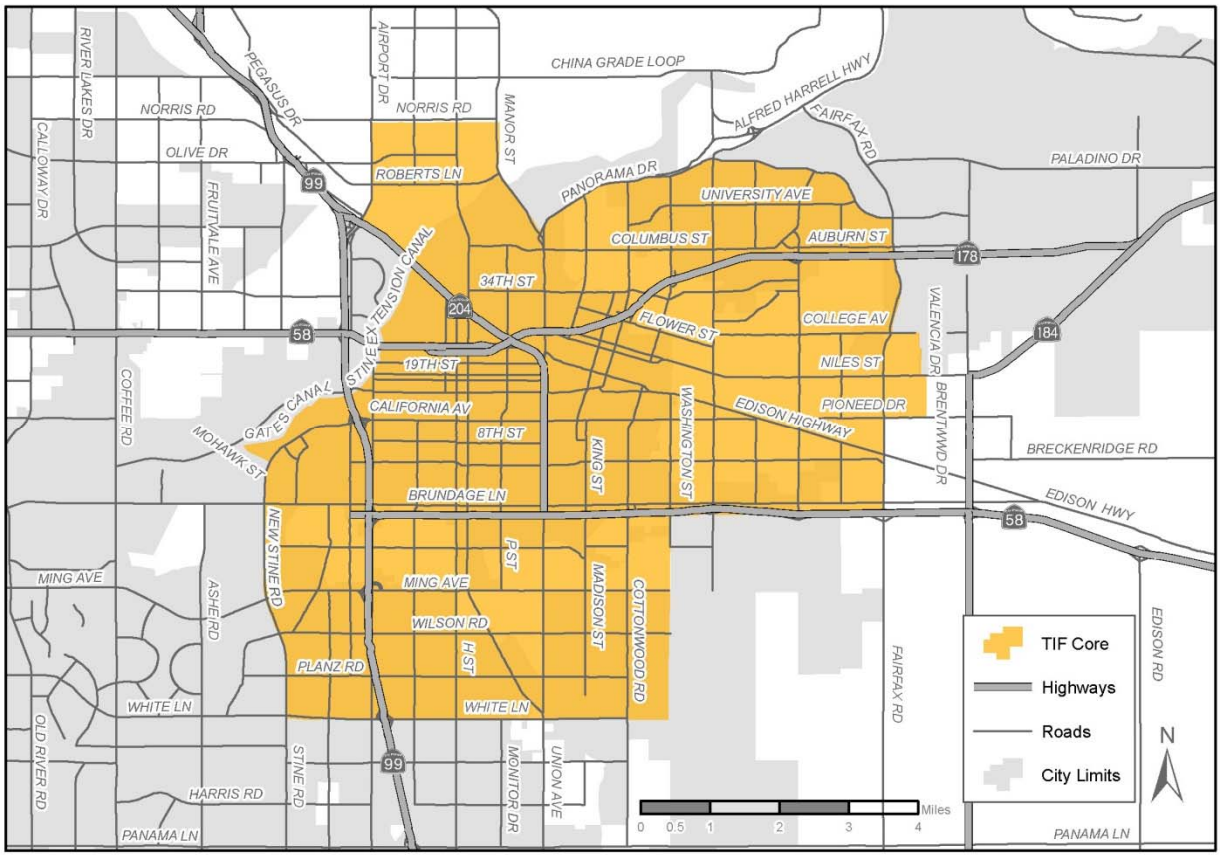
PROJECT DESCRIPTION:
The Transportation Impact Fee (TIF) Core Area is a designated area within Metro Bakersfield that has been identified through the City's Land Use policies as an area where development is encouraged. Developers who plan projects in the TIF Area will have reduced permitting fees. The TIF Core Area would allow an increase of approximately four times the number of households that are currently in this area.

The City of Tehachapi also has implemented a Tehachapi Region Core Area TIF. Tehachapi's TIF is established for the similar purposes as Bakersfield's TIF.

PROJECT BENEFITS:
Implementing incentives for development in the TIF Core Area can promote infill, mixed-use, and discourage sprawl. Future development in the TIF Core Area will also bring the public closer to quality transit service.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: n.a.
STATUS: In process

Map of TIF Core Area for Bakersfield



PROJECT TITLE: City of Taft General Plan – Sustainability Principles
PROJECT SPONSOR: City of Taft

PROJECT DESCRIPTION:
The City of Taft's General Plan incorporates sustainable principles throughout the elements of the General Plan. The City's principle involves the three aspects of sustainability: environment, economy, and equity. Throughout the General Plan, there is a leaf symbol adjacent to goals and policies based on the sustainable or "green" principles.

PROJECT BENEFITS:
The City of Taft's General Plan promotes the development of a sustainable community by ensuring its general plan policies are crafted to cut greenhouse gas emissions and move toward cleaner energy sources.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: Not Applicable
YEAR OF CONSTRUCTION: Not Applicable
STATUS: In Progress

Reference: *City of Taft General Plan, 2009*

Table of Sustainable Principles by Element

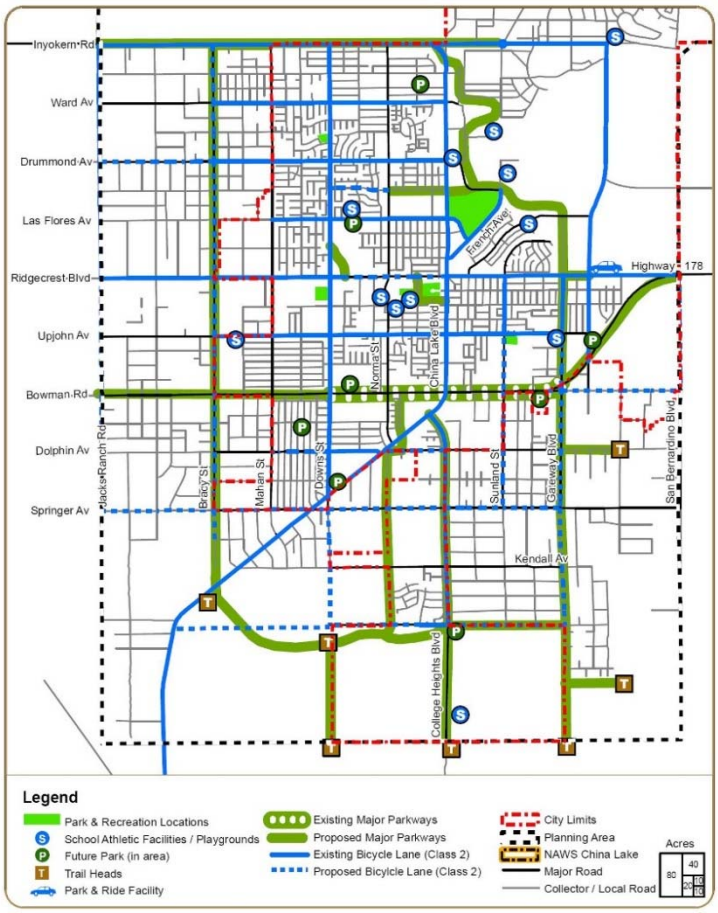
	Land Use	Circulation	Open Space & Conservation	Energy Resources	Noise	Safety	Public Facilities & Services	Economic Development
Environment								
Promote compact, walkable, mixed-use development.	•	•	•					•
Focus new development in existing developed areas in the Planning Area, while limiting growth of undeveloped lands.	•		•	•				
Promote infill development.	•		•	•			•	•
Protect open space and agricultural lands.	•		•					•
Promote the efficient use of energy and resources (water, soil, building materials, etc.).			•	•			•	
Economy								
Create strong local and regional economies.	•		•	•				•
Encourage jobs/housing balance.	•			•			•	•
Support energy and resource efficient industries.			•	•				•
Promote energy and resource efficient buildings.	•		•	•				
Promote economic opportunity for all segments of the community.	•							•
Enhance the design character of commercial and office development	•							•
Equity								
Provide adequate housing for all income levels.	•							
Provide a fair and predictable land use planning process.	•		•					•
Promote development that is equitable in terms of sharing costs and benefits among all Taft residents and businesses.		•					•	
Require fair treatment in the development, adoption, and enforcement of regulations and policies.	•	•	•	•	•	•	•	•
Promote alternative transportation options to increase access.		•	•					

PROJECT TITLE: **City of Ridgecrest General Plan and Multi-Modal Circulation Element**
PROJECT SPONSOR: City of Ridgecrest

PROJECT DESCRIPTION:
In 2009, the City of Ridgecrest adopted its most recent General Plan. The guiding principles that are included in the updated general plan are: explore land use and policy alternatives; provide guidance in the planning and evaluation of future land and resource decisions; and provide a vision and framework for the future growth of the City. In addition, the Circulation Element addresses automobile travel, public transit, aviation, and trails for bicyclists and pedestrians.

PROJECT BENEFITS:
The City of Ridgecrest's updated General Plan includes new goals, policies, and implementation measures that are sustainable approaches. A new Land Use goal in the City's General Plan is to provide an appropriate mix of land use opportunities and provide incentives for infill development. In addition, the Circulation Element includes a goal to encourage and provide alternative modes of transportation and alternatives to travel for Ridgecrest residents to decrease dependence on single-occupant vehicular travel and reduce vehicle emissions.

Non-Motorized Circulation Map



COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: Not Applicable
YEAR OF CONSTRUCTION: Not Applicable
STATUS: In Progress

Reference: *City of Ridgecrest General Plan, 2009*

PROJECT TITLE: **General Plan Sewer Policy – Hook-up required for parcels less than 6 acres**

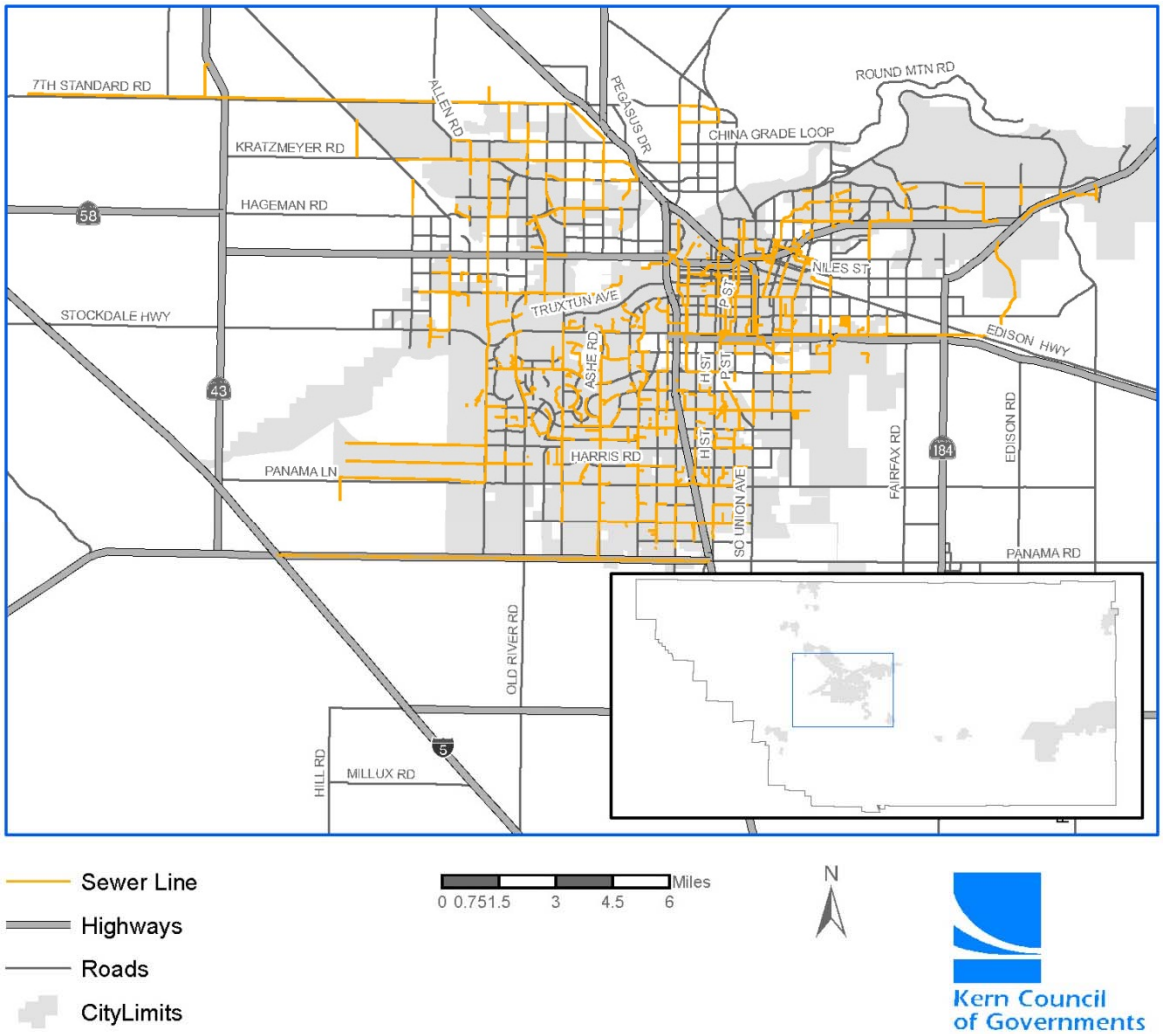
PROJECT SPONSOR: County of Kern

PROJECT DESCRIPTION:
In November 2005, the Kern County Board of Supervisors approved revisions to the Metropolitan Bakersfield General Plan including its sewer policy. The revisions required all new commercial, industrial and residential developments including residential land divisions proposing parcels smaller than six gross acres to connect to public sewer.

PROJECT BENEFITS:
The policy is intended to ensure that new growth be based on the availability of the extension of sewer infrastructure. The policy greatly curtails large lot development on the periphery of Metro Bakersfield.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION:
STATUS: In process

Map of Sewer Area in Metro Bakersfield



PROJECT TITLE: City of Bakersfield Required Lot Size Zoning Strategies
PROJECT SPONSOR: City of Bakersfield

PROJECT DESCRIPTION:
In January 2005, the City of Bakersfield amended Section 17.14.070 of the Municipal Code relating to minimum lot area zoning. The amendment reduced the minimum lot size for R-2 zone dwellings to four thousand five hundred square feet per dwelling unit.

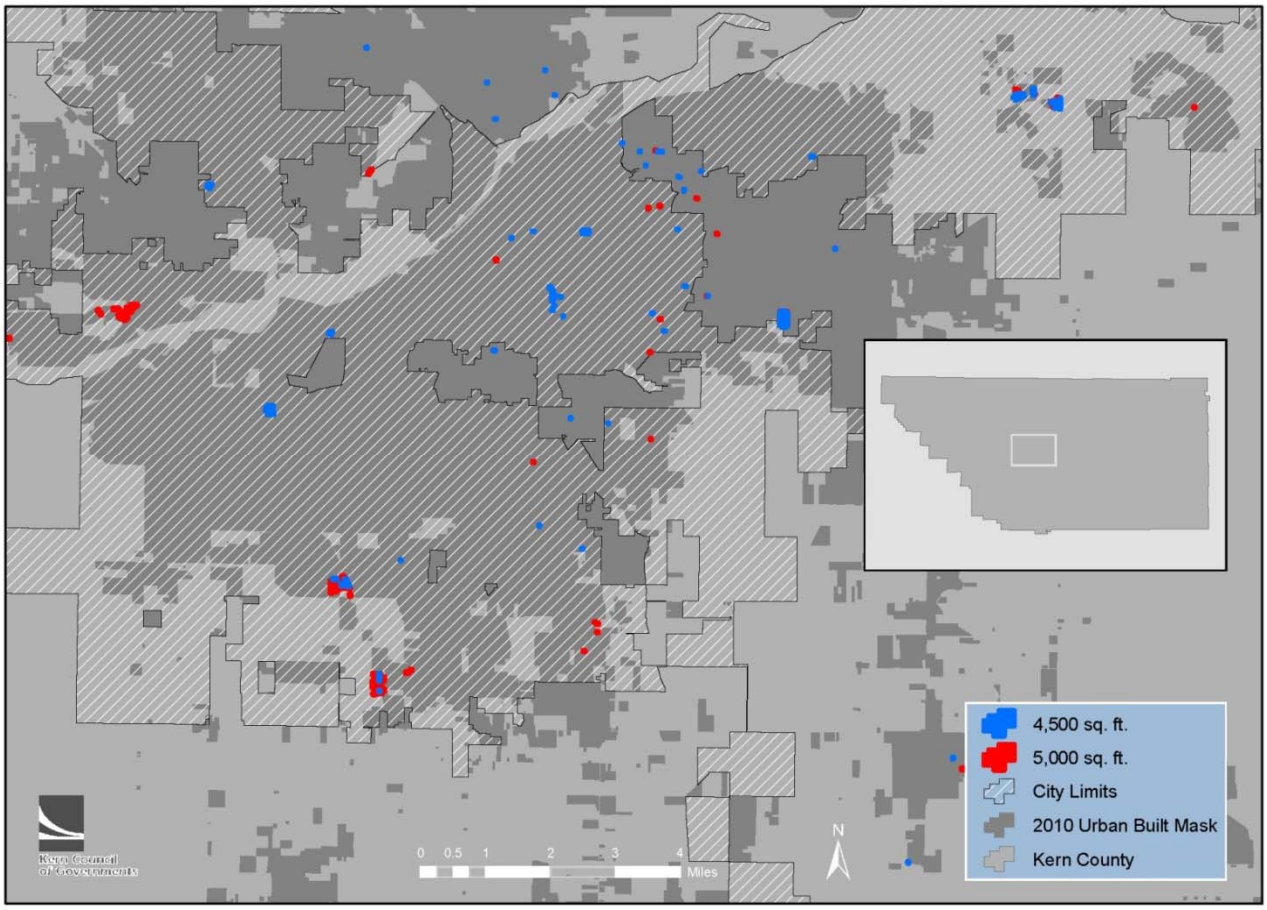
The City of Bakersfield also has a Planned Unit Development (PUD) zone, which enables developers to propose any lot size they desire, subject to discretionary approval by either the Council or Planning Commission. An example of a project that achieved higher density in a single-family residential development is University Park located in southwest Bakersfield.

The housing project includes a mixture of small, but traditional lots as well as cluster lots where six lots share a single driveway. In addition, the City has the Commercial-Center (C-C) zone which permits mixed use development by-right.

PROJECT BENEFITS:
Building on smaller lot sizes allows for compact and sustainable development. Planning and implementing compact sustainable development provides opportunities to reduce greenhouse gas emissions.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: Ordinance implemented in 1995
STATUS: In process

Map of Small Lot Areas in Metro Bakersfield



PROJECT TITLE: **San Joaquin Valley Air Pollution Control District – Indirect Source Review (ISR) to Mitigate Off-Site Air Quality Impacts of New Development**
PROJECT SPONSOR: San Joaquin Valley Air Pollution Control District (SJVAPCD)

PROJECT DESCRIPTION:
The SJVAPCD adopted Indirect Source Review (Rule 9510) to reduce the impacts of growth in emissions from all new land development in the San Joaquin Valley. Indirect air emissions are emissions indirectly caused by growth in population. ISR applies to development projects that have not yet gained discretionary approval.

PROJECT BENEFITS:
The ISR Rule looks to reduce the emission of harmful pollutants, specifically NO_x and PM_{10} associated with the construction and operation of new development projects in the San Joaquin Valley.

COST BENEFIT RATIO: Unknown
COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: Unknown
STATUS: Adopted

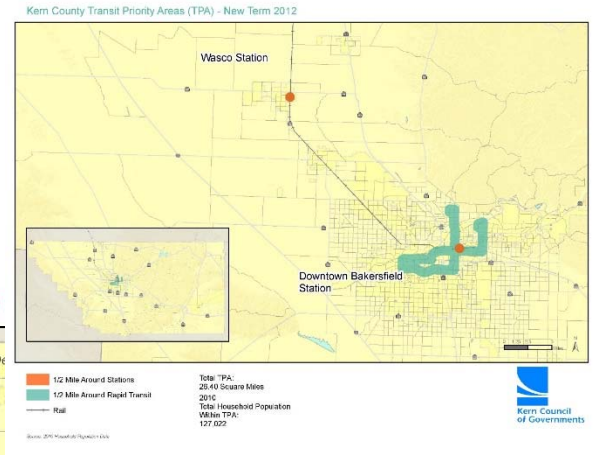
Examples of Smart Growth Development Located in Downtown Bakersfield

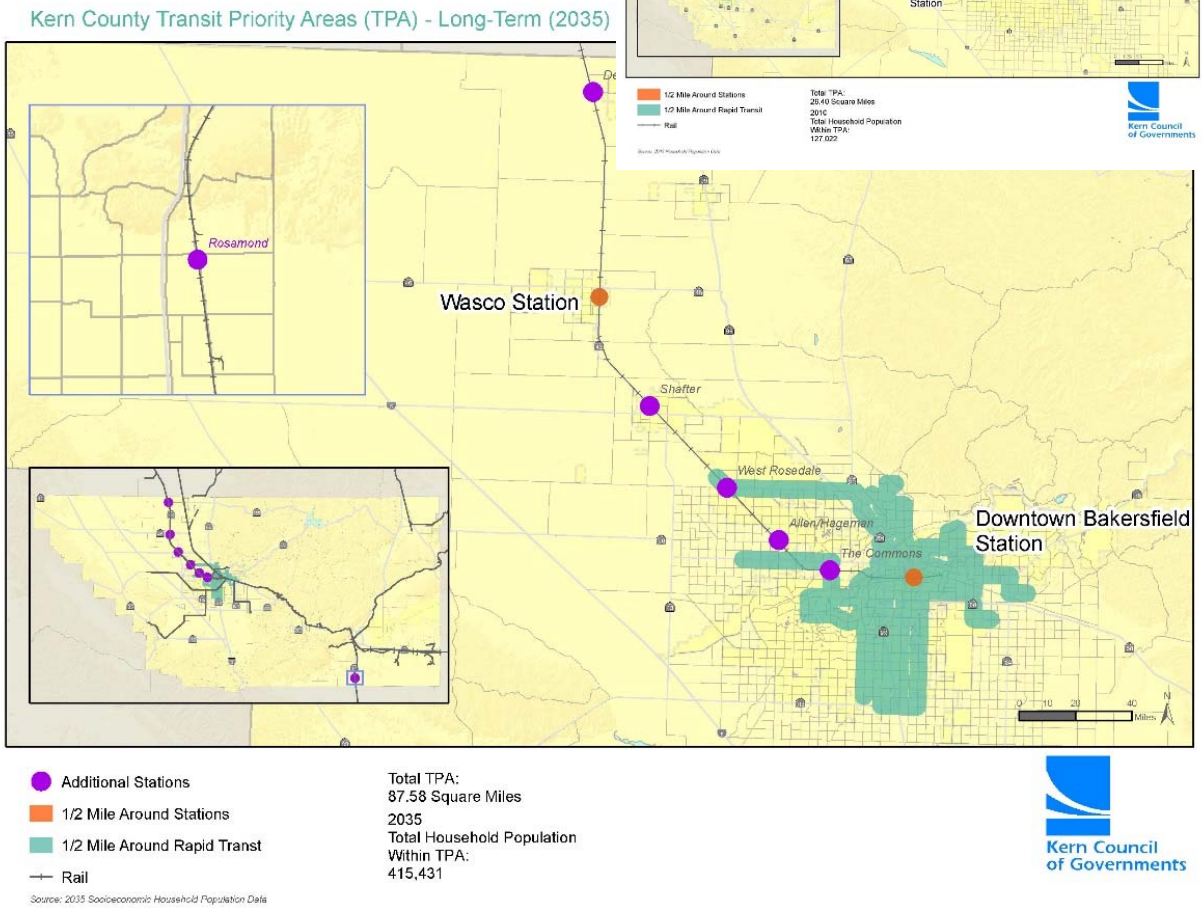
PROJECT TITLE: Transit Priority Areas (TPA)
PROJECT SPONSOR: Kern Council of Governments

PROJECT DESCRIPTION:
SB 375 addresses Transit Priority Areas (TPA) as part of the SCS. TPA are areas within ½-mile of either rail stations or bus services with 15 minute headways in the peak period. The current TPA only includes the Amtrak stations with a total - population of 5,628 within the TPA. In October 2012, the GET Short Term Transit Plan will implement their 2012 plan which will increase the TPA coverage to 26.40 square miles and include a household population of 127,022 within the TPA. With the implementation of the GET Long Range Plan by 2035, the TPA coverage will increase 87.58 square miles and include a household population of 415,431. The TPA difference from existing and 2035 is a 5,478.3% increase in the TPA coverage and a household population of 7,281.5%.

PROJECT BENEFITS:
TPA encourages sustainable development by providing accessibility to quality transit which can reduce vehicle miles traveled and reduce the region's GHG.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECT: Unknown
YEAR OF CONSTRUCTION: October 2012
STATUS: Planned





PROJECT TITLE: **Metropolitan Bakersfield General Plan Centers Concept – Transit Priority & Strategic Employment Place Types**
PROJECT SPONSOR: Kern Council of Governments

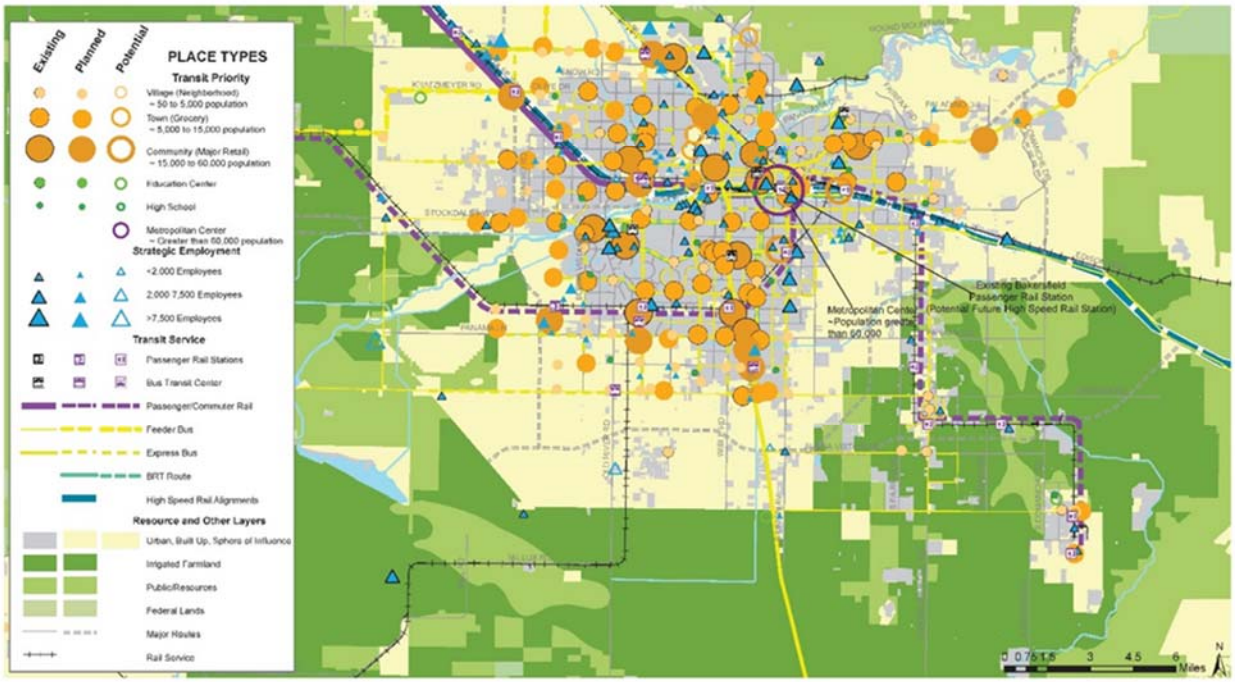
PROJECT DESCRIPTION:
Below is a map based on the Metro Bakersfield General Plan Centers Concept that was adopted in 1992. The Centers Concept was incorporated into the 2008 Kern Regional Blueprint Conceptual View maps. These map series were designed to illustrate some of the Regional Blueprint Principles designed to promote sustainable communities. The Maps are distinguished in phases; resources and other layers, existing, planned, and potential centers, along with a map that combines all the phase layers. The Maps include City spheres of influence from the County General Plan (included in the Public/Resources layer), the transportation model network, and the major transit routes.

PROJECT BENEFITS:
Transit Priority Centers and Strategic Employment Place Types are illustrated in three phases; existing, planned, and potential. The Planned and Potential centers are located along major transit services within the urban area.

COST BENEFIT RATIO: Unknown
COST OF PROJECTS: N/A
YEAR OF CONSTRUCTION: N/A
STATUS: Adopted

DISCLAIMER: These maps are for conceptual purposes only. The RTP is updated every 4 years. Local general plans and other data can be updated more frequently. For more detailed information on the latest planning assumptions, please refer to the latest locally adopted general plan for each community or other latest data source. Local general plans and other data updates will be incorporated into the next RTP update every 4 years.

Conceptual View - Bakersfield, Arvin
Transit Priority & Strategic Employment Place Types Map



PROJECT TITLE: GET - Short-Term Service Plan (2012-2020)
PROPOSED SPONSOR: Golden Empire Transit District (GET)

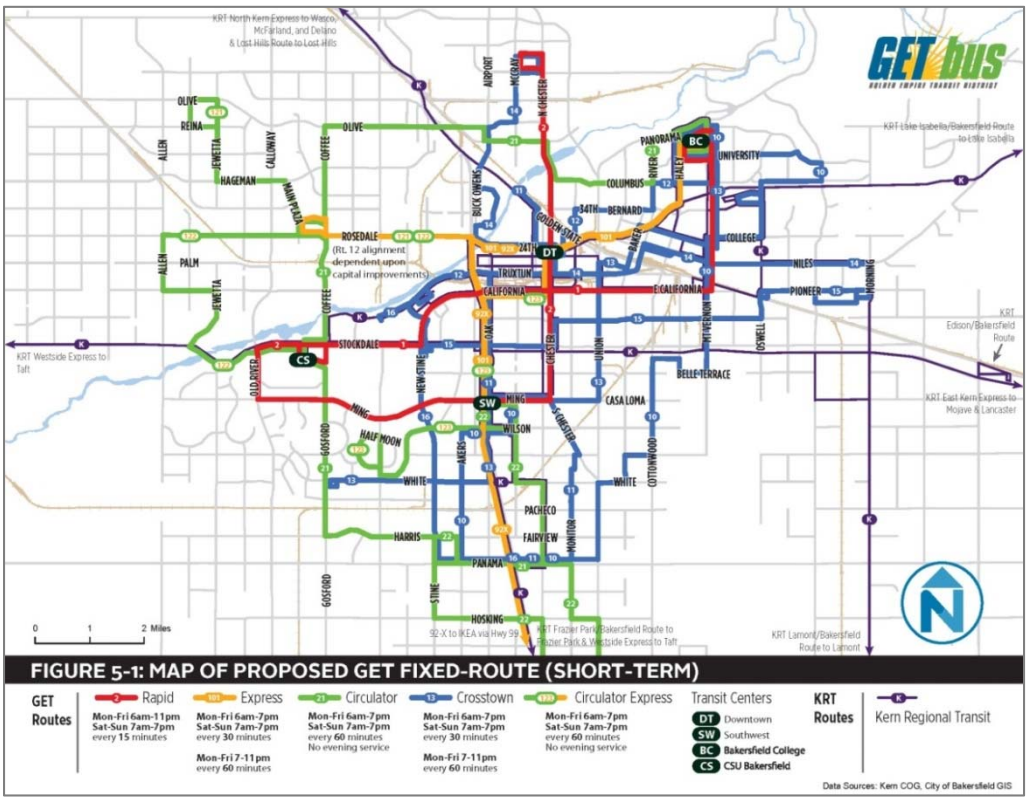
PROJECT DESCRIPTION:
In the Metropolitan Bakersfield Transit System Long-Range Plan, there is a proposed Short-Term Service Plan (2012-2020). In the Short-Term plan, GET's fixed-route bus network would be reconfigured to reflect population and employment growth since the 1980's and to improve customer service and cost-effectiveness. In addition, the area covered within .75 miles from the Short-Term transit routes is 111 square miles.

PROJECT BENEFITS:
The prominent features of the Short-Term Plan includes a new transit center at CSU Bakersfield, increased service to CSU Bakersfield and Bakersfield College, faster cross-town trips, and decreased emphasis on timed connections at transit centers. The public will have more access to quality transit which will influence more people to use public transportation.

COST BENEFIT RATIO: -
TOTAL COST OF PROJECT: -
YEAR OF CONSTRUCTION: -
STATUS: Planned

Reference: *Metropolitan Bakersfield Transit System Long-Range Plan, April 2012*

Short Term Service Plan (2012-2020)



PROJECT TITLE: **GET X-92 Commuter Express bus service to Tejon Industrial Complex**
PROJECT SPONSOR: Golden Empire Transit District (GET)

PROJECT DESCRIPTION:
Since 2008, GET has been using federal and local funds to provide a round-trip commuter express bus service that begins at 22nd Street and Eye Street, travels to a Park and Ride facility at McKee Road, and then terminates at the Tejon Industrial Complex (TIC). The purpose of this service is to provide employees of the TIC an efficient, inexpensive commuter alternative to driving to work in their own car. Service is also provided to the Tejon Outlets.

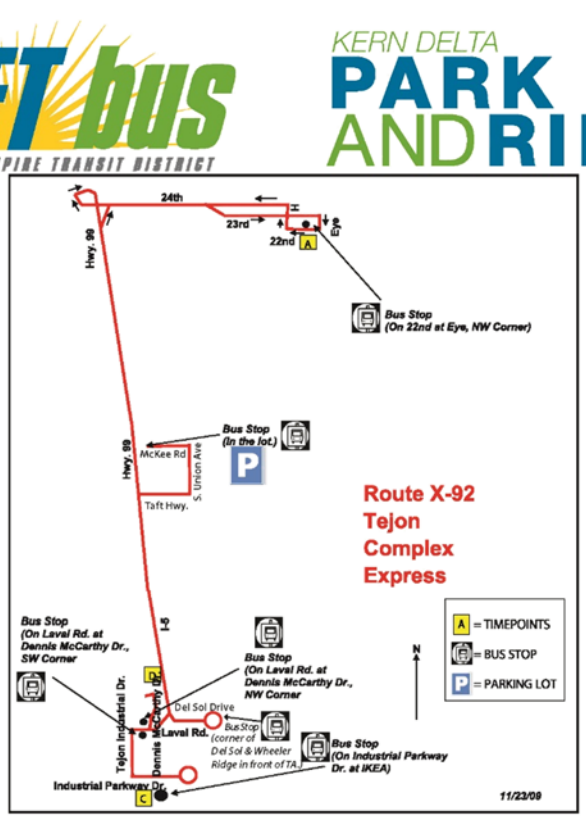
GET staff has worked closely with the employers at TIC to ensure the X-92 Route arrivals and departures match the work schedules as much as possible. GET currently offers nine round-trip schedules beginning at 3:50 a.m. and ending as late as 12:10 a.m. to accommodate as many TIC employers/employees as possible. Approximately 19,000 employees per year use the X-92. A 31-day pass for the service currently costs $55; a significant value given the fluctuation of today's fuel prices!

PROJECT BENEFITS:
The X-92 Route provides the benefits below:

- Lowers employee driving costs such as general vehicle wear and tear, oil changes, fuel costs, etc.
- Allows for TIC employers to offer fare subsidies to meet SB 375 requirements.
- Reduces the number of single occupancy vehicle trips.
- Reduces vehicle emissions throughout metro-Bakersfield and the surrounding rural area.

COST BENEFIT RATIO: 29% (FY 2015-2016)
COST OF PROJECTS: $361,767 (FY 2015-2016)
YEAR OF CONSTRUCTION:
STATUS: In progress

Map of GET's X-92 Route



PROJECT TITLE: Kern 511
PROJECT SPONSOR: Kern Council of Governments

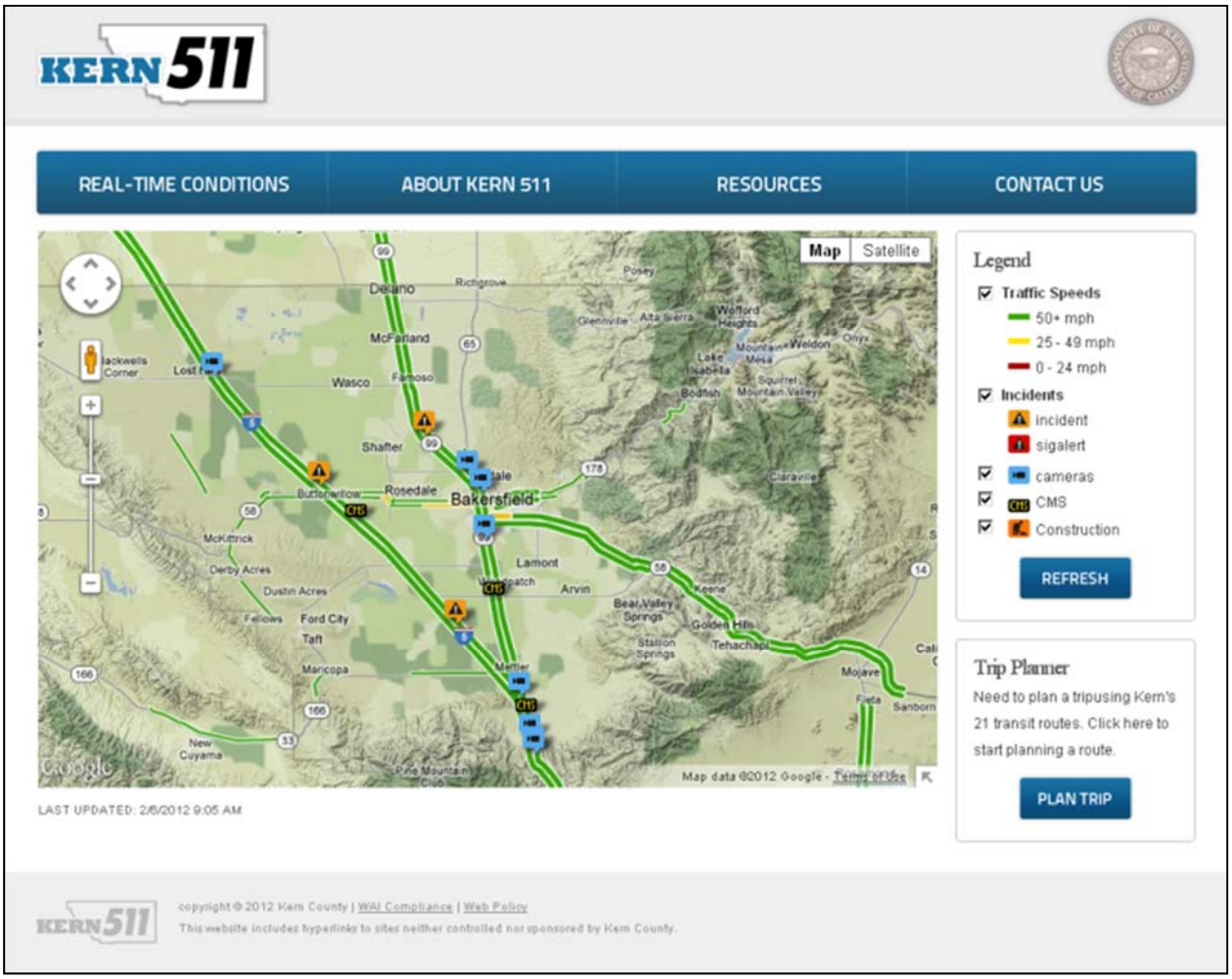
PROJECT DESCRIPTION:
Establish a 511 Traveler Information System in Kern County. The Kern 511 System will include a website and an Interactive Voice Recognition System (IVR).

The purpose of this project is to provide real-time information to the traveling public to improve traffic flow and safety on highways throughout Kern County.

PROJECT BENEFITS:
Provides traveler information including traffic speeds, traffic alerts, transit services, carpool information, and trip planning.

COST BENEFIT RATIO: Unknown
COST OF PROJECT: $773,762
YEAR ESTABLISHED: 2012
STATUS: In Process

Kern County 511 Website



PROJECT TITLE: **San Joaquin Valley Blueprint Integration Project**
PROJECT SPONSOR: San Joaquin Valley Blueprint

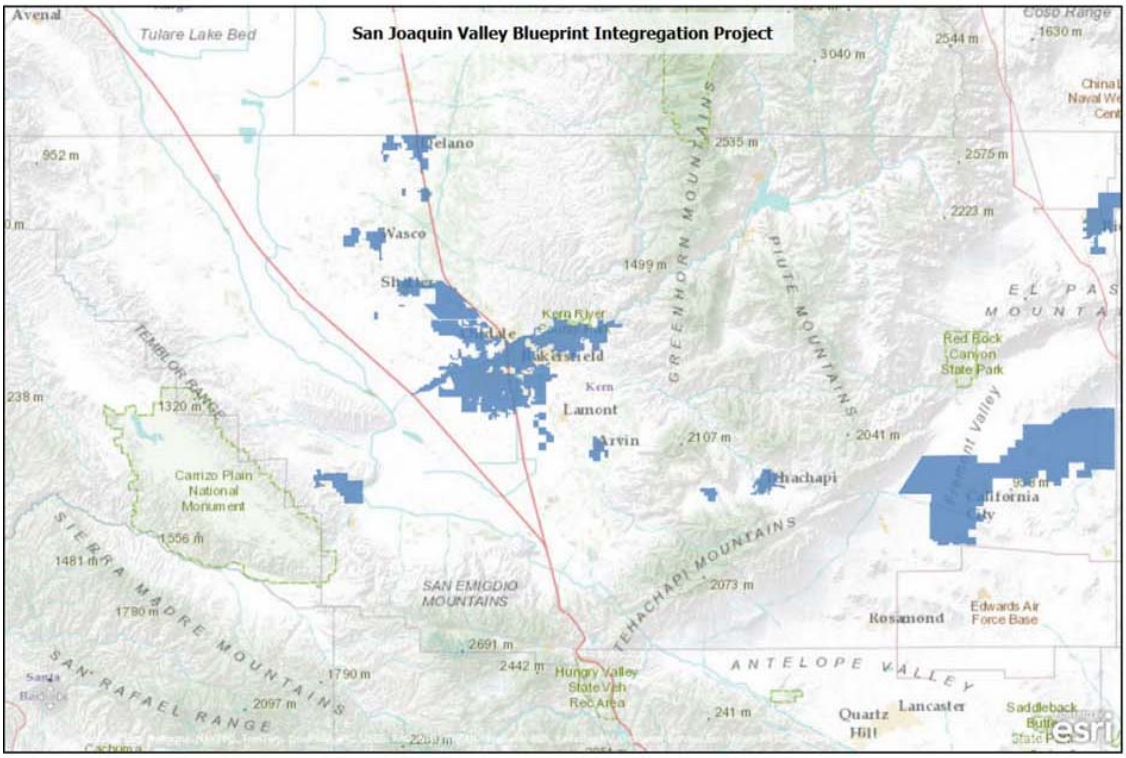
PROJECT DESCRIPTION:
The San Joaquin Valley Blueprint Integration Project is a valley-wide program to provide support to cities in the valley whose population is under 50,000. The Project integrates Blueprint Smart Growth principles into the cities' General Plan and planning policies. A team of planning consultants will serve as Circuit Planners and will provide hands-on support to local agencies to integrate the appropriate Blueprint principles into local planning programs.

Within Kern County, the following small cities are involved in the Project and will be integrating the corresponding Blueprint Integration (BPI) tool:

Ridgecrest – Sign Ordinance
Wasco – Design guidelines SR 46 Corridor
Arvin – Design guidelines
Shafter – Strategy to link transportation/land use
California City – infill strategy
McFarland – Ag mitigation program
Tehachapi – Climate Action Plan Guidance
Taft – Zoning Ordinance audit tool

PROJECT BENEFITS:
The SJV Blueprint Integration Project assists in implementing the 12 Blueprint Smart Growth Principles. The Principles include creating walkable neighborhoods, mixing land uses, and providing a variety of transportation choices.

COST BENEFIT RATIO: Unknown
COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION:
STATUS: In progress



PROJECT TITLE: **Caltrans Detection Systems - State Route 43 Intersection Improvements and East Bakersfield Vehicle Detection Systems**
PROJECT SPONSOR: Caltrans

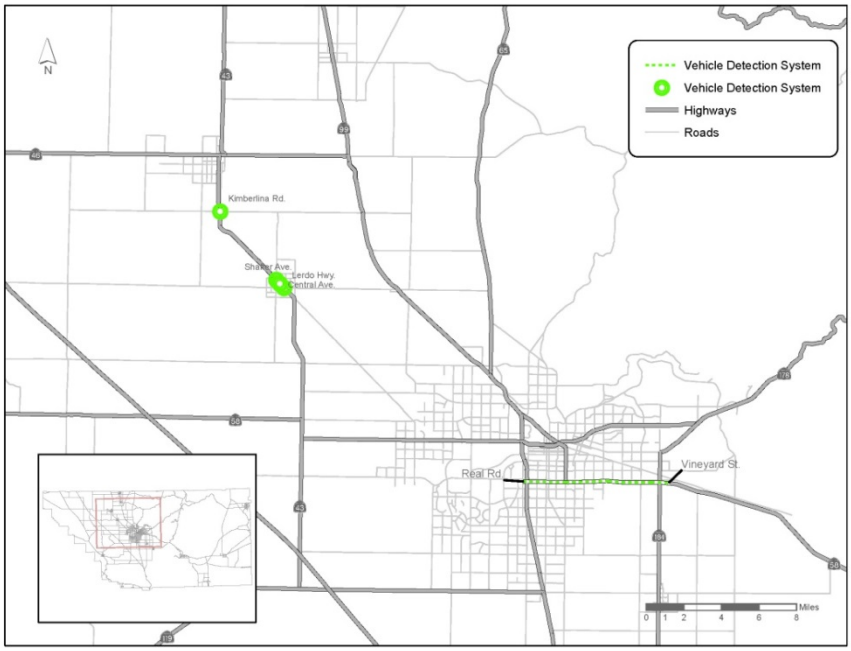
PROJECT DESCRIPTION:
The SR 43 Intersection Improvements in Shafter installed vehicle detection systems (loops, vehicle signal heads, conduit and connectors) and new signal controllers with GPS clocks to reduce traffic congestion and improve operations at the following intersections of SR 43: Lerdo Hwy, Shafter Ave, Central Ave and Kimberlina Rd.

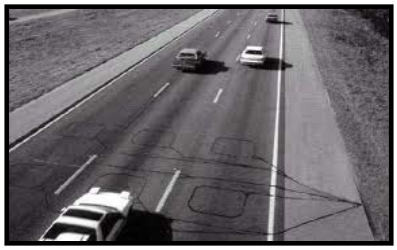
The East Bakersfield Vehicle Detection Systems proposed project will install vehicle detection systems in order to reduce traffic congestion and maximize efficiency of existing highways. The system will be on State Route 58 through the City of Bakersfield from Real Road to Vineyard Street at various locations. The system may be traditional loops installed in roadways or microwave radar detection systems.

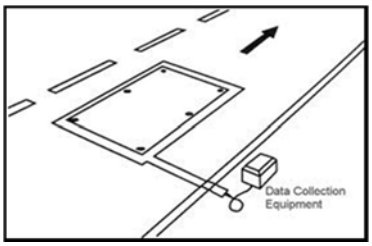
PROJECT BENEFITS:
The system will provide travelers with real time information to make decisions to choose alternate routes for more efficient travel. These efficiencies will also help to improve air quality.

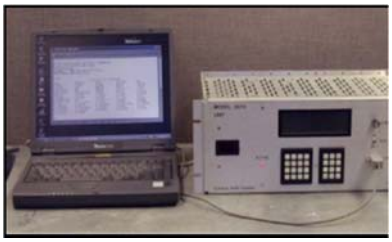
COST BENEFIT RATIO: All emissions – $7.00 - $21.00 / lbs.
COST OF PROJECTS: $1,038,000
YEAR OF CONSTRUCTION: 2010, 2012
STATUS: Operating, In Construction

Detection System









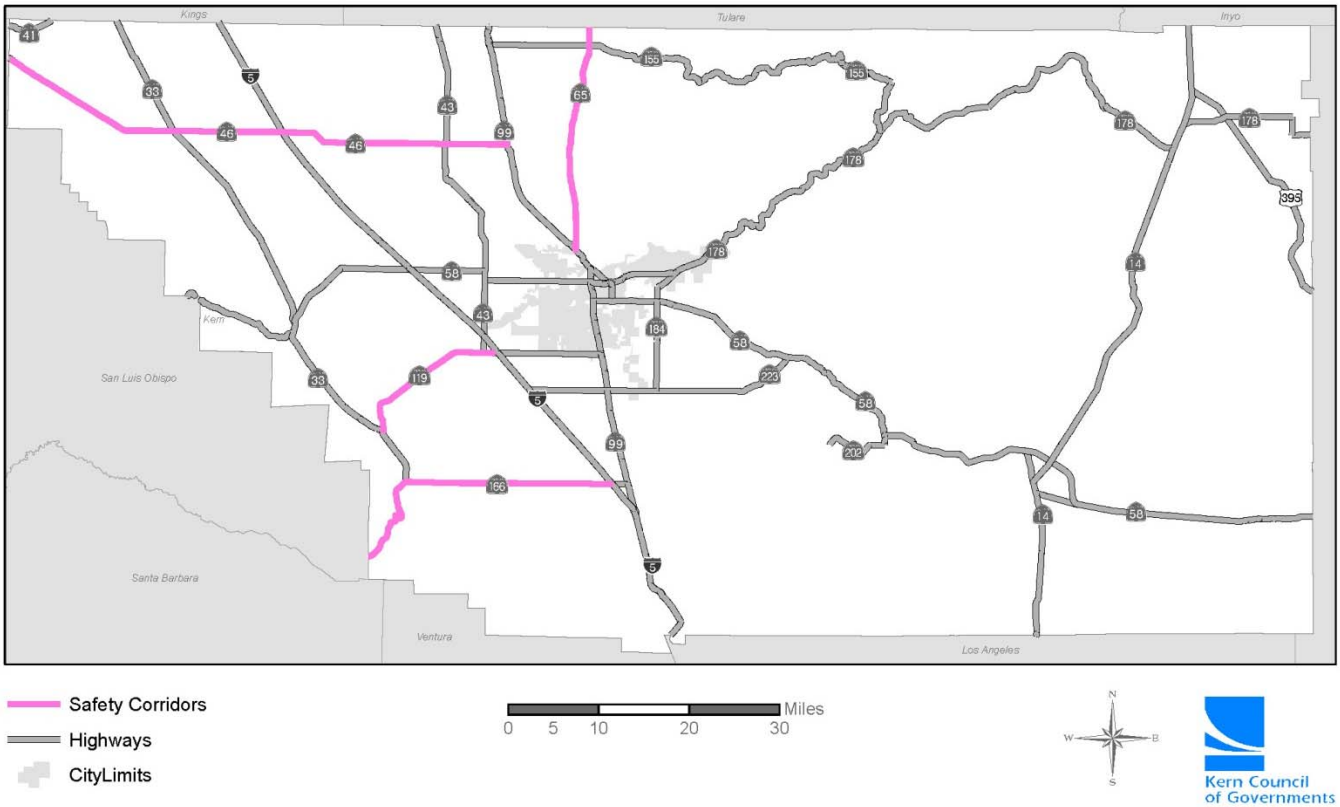
PROJECT TITLE: **California Highway Patrol's Safety Corridors**
PROJECT SPONSOR: California Highway Patrol

PROJECT DESCRIPTION:
The California Highway Patrol (CHP) has received funds from the Office of Traffic Safety (OTS) to establish task forces comprised of representatives from city, county, regional, state, and federal government agencies, and the private sector. The mission of each task force is to assess a high collision highway or pedestrian corridor, and make recommendations to improve traffic safety on the roadways of interest.

PROJECT BENEFITS:
With the increased CHP presence along these highway safety corridors, drivers will be more sensible of their driving habits. Sensible driving and observing the speed limits can impact fuel efficiency and have a fuel economy benefit of 5% to 33% (fueleconomy.gov). Fuel efficiency can reduce CO2 emissions through reducing the burning of gasoline and diesel.

COST BENEFIT RATIO: Unknown
COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: Started in 2002
STATUS: In progress

Map of Safety Corridors in Kern County



PROJECT TITLE: Purchase of CNG Buses
PROJECT SPONSOR: Golden Empire Transit District, County of Kern Roads/Kern Regional Transit

PROJECT DESCRIPTION:
Purchasing and replacing CNG buses for Golden Empire Transit (GET) and Kern Regional Transit (KRT). There are three proposed projects that relate to the acquisition of CNG buses for Fiscal Years 2012-2014.
The purpose of these projects is to invest in alternate fuel fleets which promote the reduction of automobile trips, while also reducing the emission of harmful pollutants.

PROJECT BENEFITS:
Increasing the available capacity for passengers will encourage the public not to drive their own vehicles and decrease the number of buses for services that will reduce fleet emission levels.

COST BENEFIT RATIO: $ 34+ / lbs.
COST OF PROJECTS: $400,000 - $575,000 per bus
YEAR OF CONSTRUCTION: 2013-2014
STATUS: Planned

GET CNG Bus

KRT CNG Bus

PROJECT TITLE: **The Electric Cab Company of Delano**
PROJECT SPONSOR: The Electric Cab Corporation and Private Organization

PROJECT DESCRIPTION:
The Electric Cab Company of Delano is a business organization founded in the City of Delano. The company currently provides local transportation services to the community members of Delano.

PROJECT BENEFITS:
The Electric Cab Company provides alternative transportation services to the community of Delano by using electric vehicles which reduce the emission of harmful air pollutants.

COST BENEFIT RATIO: Unknown
COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: 2012
STATUS: In progress

http://www.theelectriccab.com/

Images of Electric Cab Company's electric vehicles

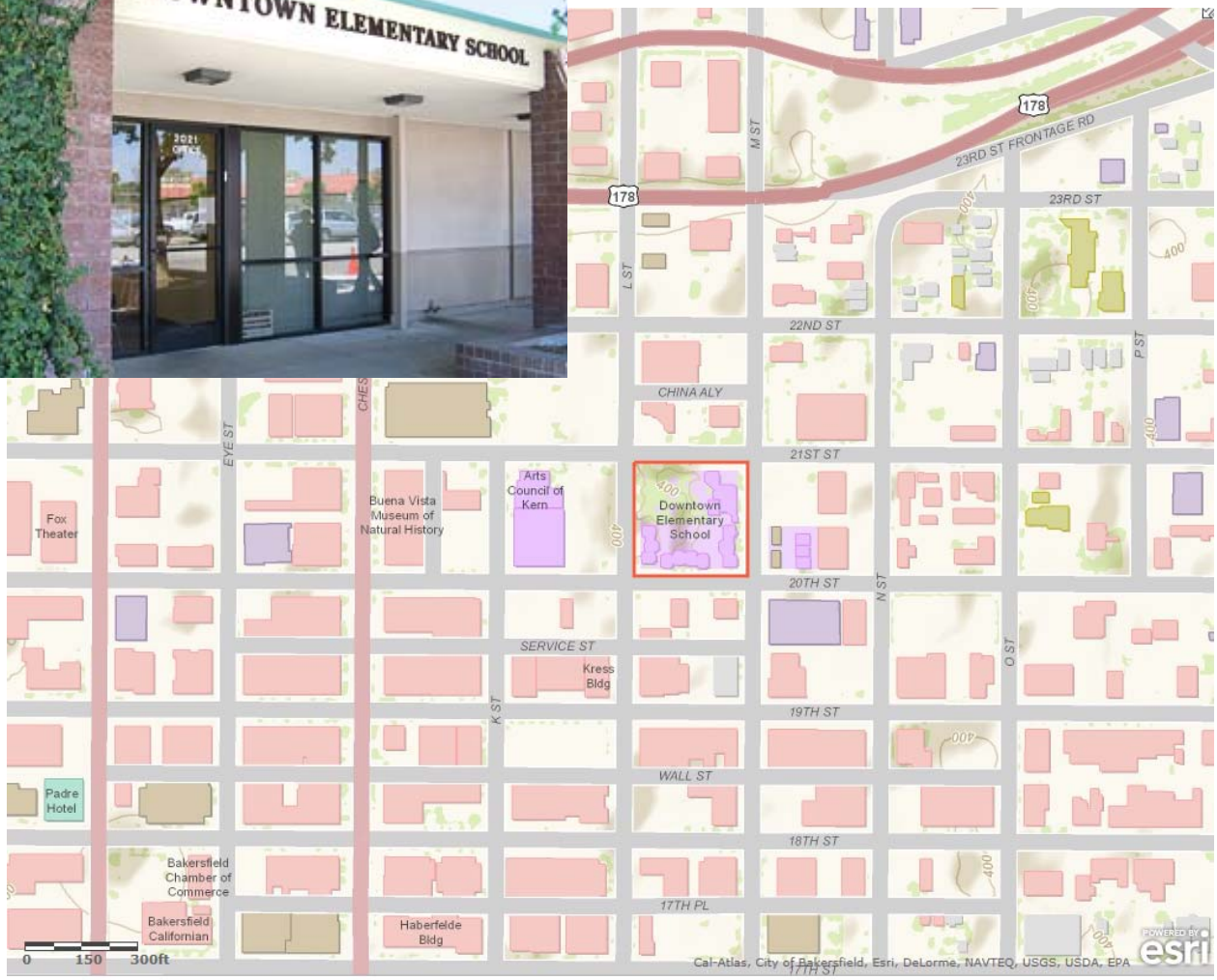
Photos from: http://www.theelectriccab.com/

PROJECT TITLE: Downtown Elementary School (City of Bakersfield)
PROJECT SPONSOR: Bakersfield City School District

PROJECT DESCRIPTION:
Downtown Elementary School is located in the City of Bakersfield's Downtown. The school serves K-8 students and provides extended day programs where the school day is extended before and after school to accommodate working parents. Downtown Elementary was recently expanded to accommodate more students.

PROJECT BENEFITS:
Downtown Elementary was designed to support families of the employees working in the downtown area.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION:
STATUS: In process



PROJECT TITLE: Traffic Control Devices
PROJECT SPONSOR: City of Bakersfield

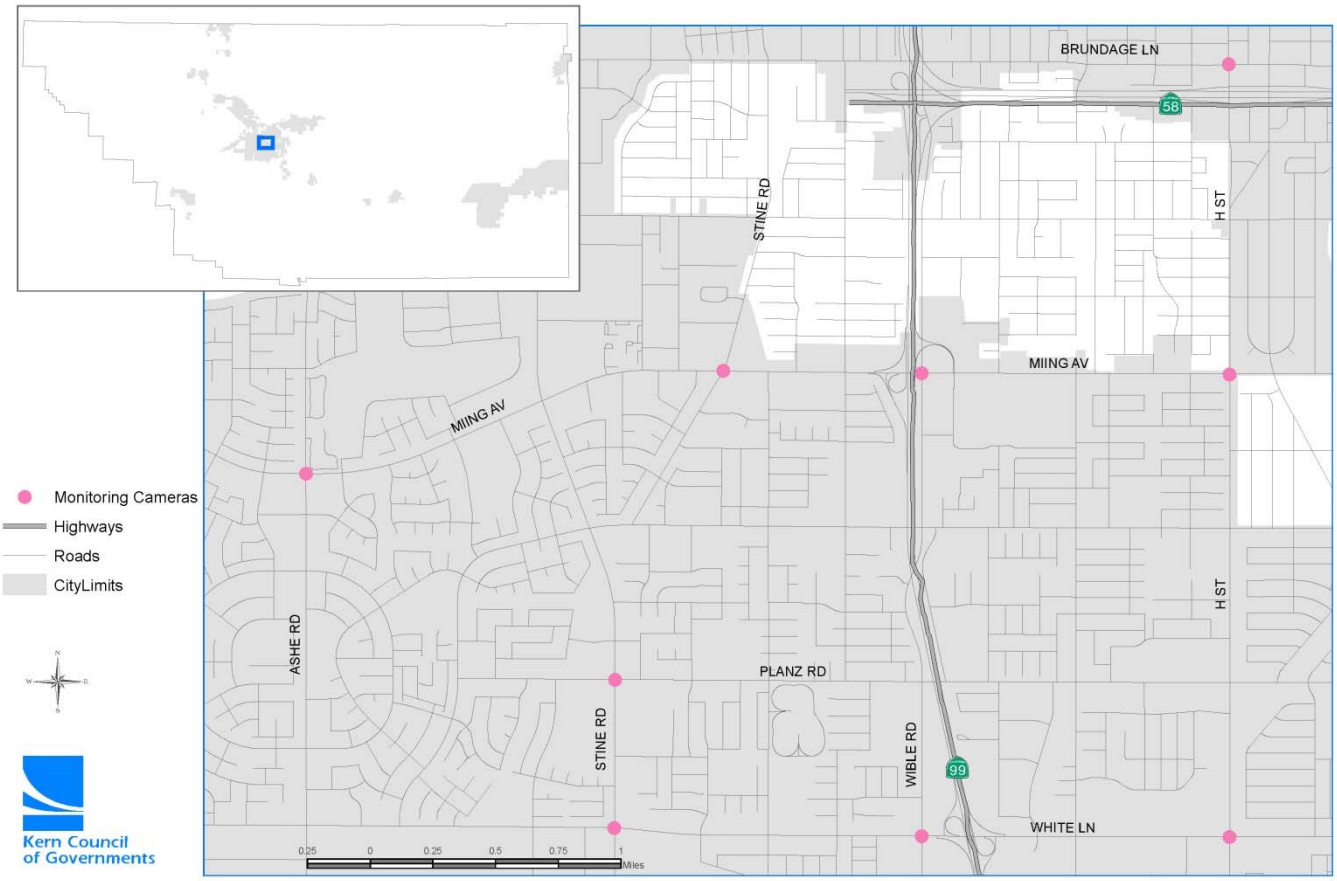
PROJECT DESCRIPTION:
Implements traffic control devices at numerous locations within the City of Bakersfield. There were a total of four proposed traffic control device projects (total of nine monitoring cameras) for the Fiscal years of 2012-2014.

The purpose of these projects is to improve traffic flow and safety through better signal timing and accident detection through main corridors. The cameras will be controlled and monitored from the City's Traffic Operation Center (TOC), and changes to signal time can be made through the City's existing signal communication system.

PROJECT BENEFITS:
Signal timing improvements as well as visually monitoring traffic flow on central corridors will reduce overall vehicle stops and starts and limit delays in travel time. This reduction in vehicle stops and starts will improve the corridor's average speed, thereby reducing the harmful pollutants generated by vehicles at low speeds and when idling.

COST BENEFIT RATIO: $15 – $30 / lbs.
TOTAL COST OF PROJECTS: $168,000 - $460,000
YEAR OF CONSTRUCTION: 2013-2014
STATUS: Planned

Proposed Traffic Control device Projects (Traffic Monitoring Cameras)



PROJECT TITLE: **Kern Region Energy Action Plans (Kern REAP) and Kern Energy Watch Goal 3**
PROJECT SPONSORS: Kern Energy Watch Partnership with Southern California Edison (SCE), Pacific Gas & Electric (PG&E), and Southern California Gas Company (SCG)

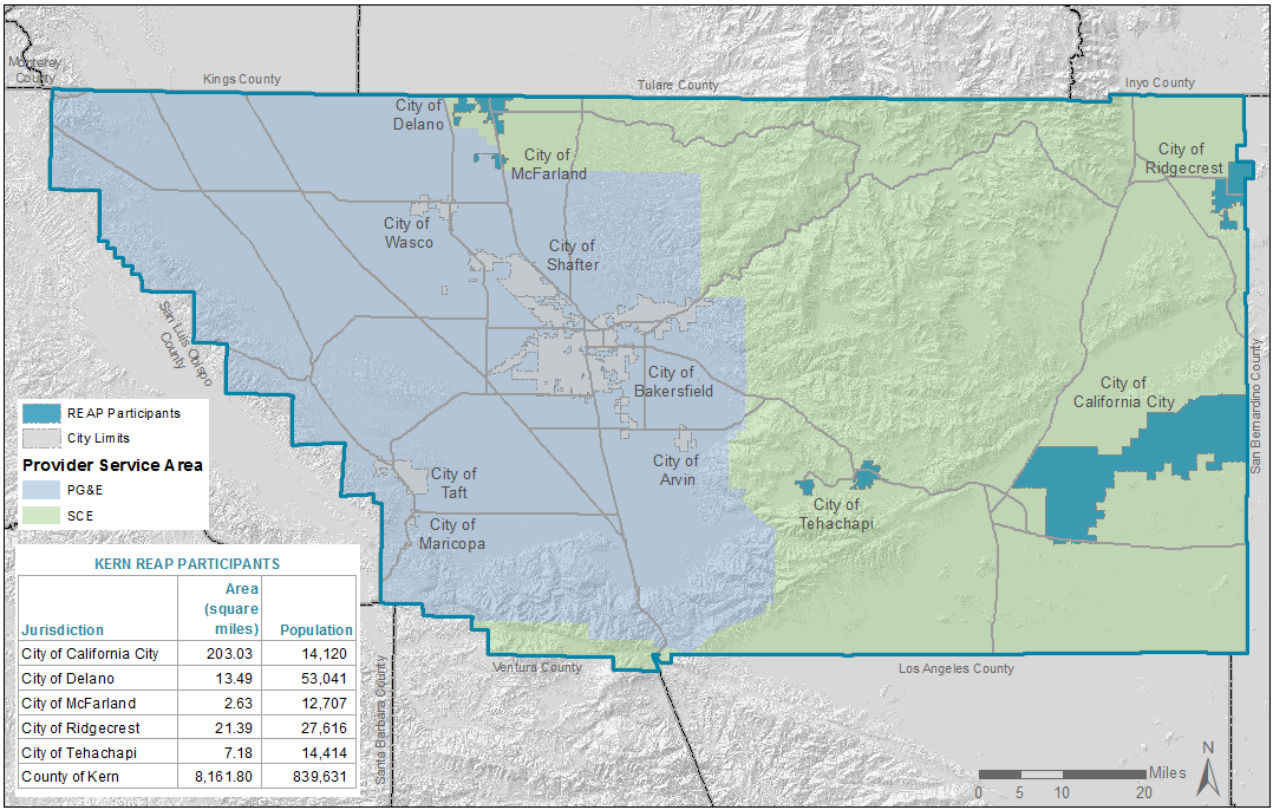
PROJECT DESCRIPTION:
Kern COG is coordinating Greenhouse Gas Inventories based on energy use and Energy Action Planning (EAP) for ten cities and the County of Kern. Energy Action Plans identify policies, goals, and strategies for the city or county to adopt and enforce or to implement to improve energy efficiency.

Through SCE's Flight #5.6 Funding Opportunity and the Kern Energy Watch Partnership, Kern COG was awarded funding for activities that support California's Long-Term Energy Efficiency Strategic Plan along with the Great Valley Center, which was awarded funding to implement PG&E's Green Communities Program. Kern COG coordinates the efforts of all of the partners and programs. As of October 2013, the County of Kern and ten cities have completed baseline inventories for the years 2005 and 2010. Five cities and the County of Kern have adopted Energy Action Plans. Work will continue to update the inventories in 2014, to identify strategies to address natural gas use, then to update the plans, and to establish plans for the remaining local government partners.

PROJECT BENEFITS:
Through the development of EAPs, the participating municipalities will be the lead in conducting energy inventories and using energy efficiency to reduce global warming emissions and energy use in both their own facilities and throughout the communities.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: N/A
YEAR OF CONSTRUCTION: N/A
STATUS: Completed

Map of Kern Region Energy Action Plans and Utility Service Areas

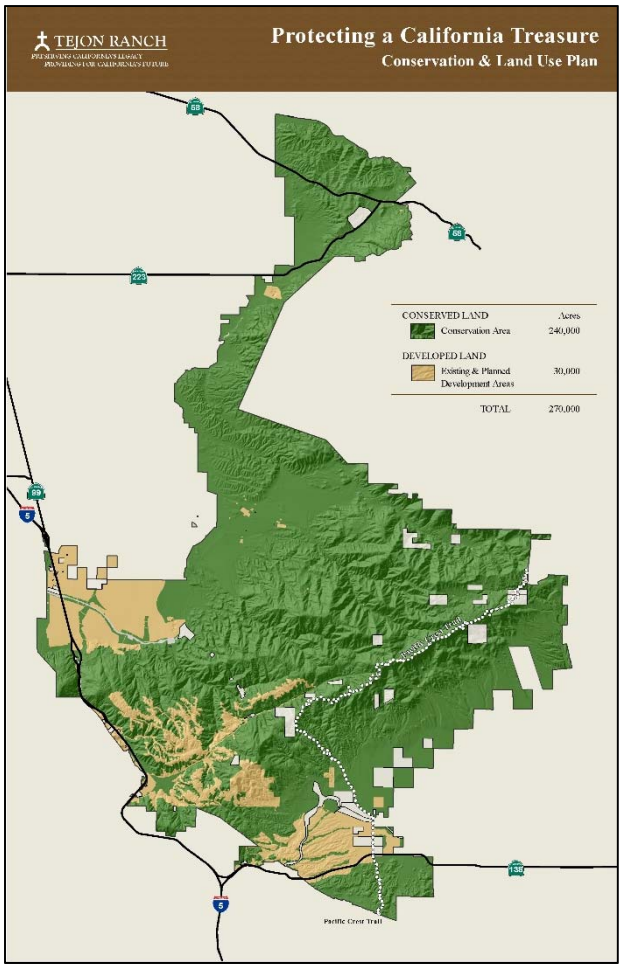


KERN REAP PARTICIPANTS

Jurisdiction	Area (square miles)	Population
City of California City	203.03	14,120
City of Delano	13.49	53,041
City of McFarland	2.63	12,707
City of Ridgecrest	21.39	27,616
City of Tehachapi	7.18	14,414
County of Kern	8,161.80	839,631

PROJECT TITLE: Tejon Ranch Conservation and Land Use Agreement
PROJECT SPONSOR: Tejon Ranch Co.

PROJECT DESCRIPTION:
On June 17, 2008, Tejon Ranch Co. and the nation's major environmental organizations, including The Sierra Club, Natural Resources Defense Council, Audubon California, the Planning and Conservation League and the Endangered Habitats League, unveiled a landmark agreement on the future of the Tejon Ranch. The agreement provides for the permanent protection of 240,000 acres of the historic Ranch — approximately 90 percent of the entire landholding. The remaining 10 percent, or 30,000 acres, of the Ranch is designated for responsible master-planned community development. The agreement and land use plan serve as a major regional sustainability success story, and the scale of the landscape makes it a state-wide and national success.



PROJECT BENEFITS: The Ranch's location between Bakersfield and Los Angeles and its adjacency to major California and national infrastructure corridors offer opportunities for regionally-beneficial development. The Conservancy has developed and is implementing a Ranch-wide management plan in collaboration with the Tejon Ranch Company.
The agreement also provides new opportunities for public access, including realignment of 37 miles of the Pacific Crest Trail to the Blue Ridge on Tejon Ranch, a potential location for a new CA state park, and a potential UC Reserve research site. In addition, the Conservancy leads public access programs that have brought approximately 5,000 visitors to the Ranch since 2008 and are serving approximately 1,000 per year through docent-led tours.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: Not Applicable
YEAR OF CONSTRUCTION: Not Applicable
STATUS: In Progress

Reference: *Tejon Ranch Co.*

Tejon Ranch – Conservation and Land Use Plan Map

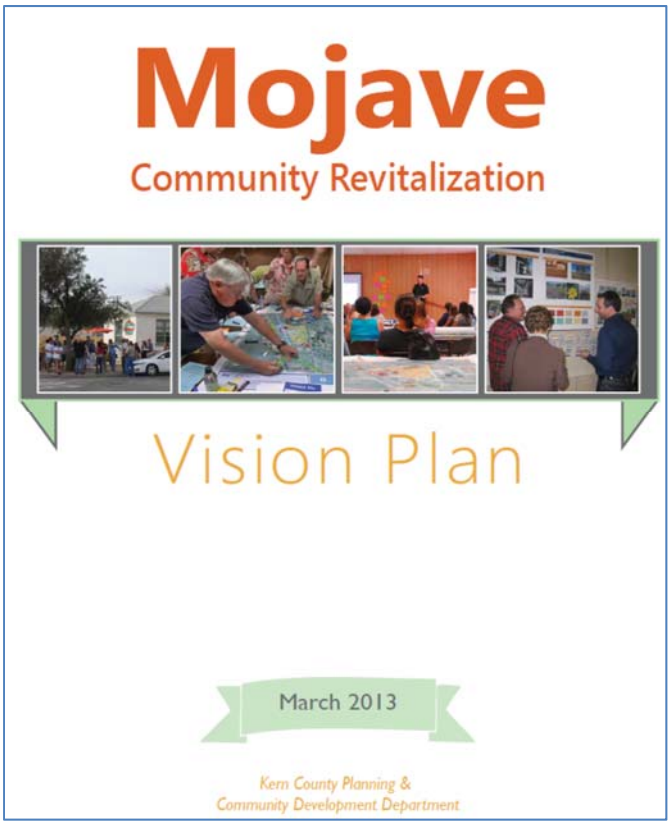
PROJECT TITLE: Kern County Community Revitalization Program
PROJECT SPONSORS: County of Kern

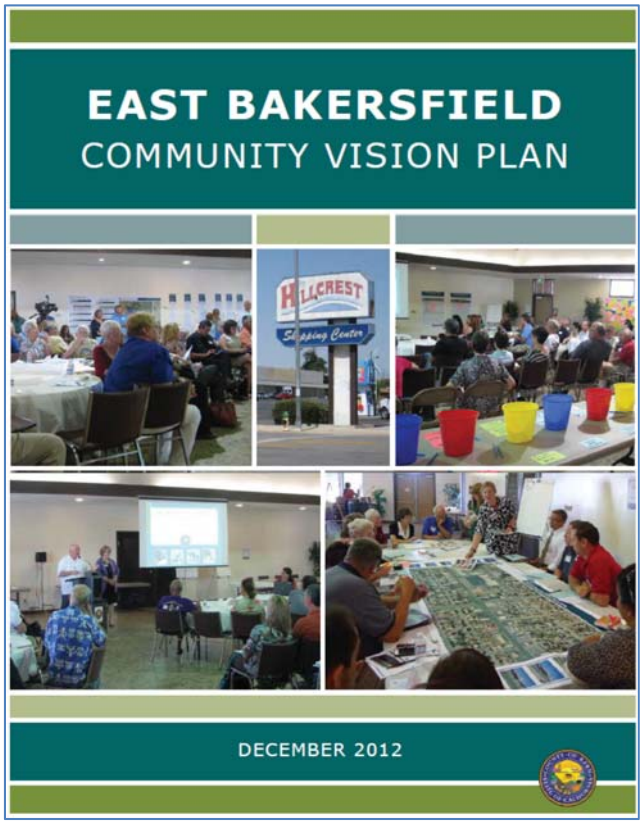
PROJECT DESCRIPTION:
With the recent loss of redevelopment agencies, the County of Kern Planning and Community Development Department established a centralized Economic Opportunity Areas and developed the RENEWBIZ grant-funding mechanism to assist communities with initiating projects that improve and enhance the quality of life within the community as well as increase the economic benefit to the County as a whole. The Kern County Community Revitalization Program provides the seed money for a focused visioning process that is tailored to each community to develop a visual road map and unique identity. Each community visioning effort is highly collaborative and requires the County's close collaboration with an outreach/visioning consultant and the local community. Many times, initial funding for the visioning efforts have come from private businesses.

PROJECT BENEFITS:
The program has attracted investment and real improvements of over $4 million in the communities of Oildale, East Bakersfield, Rosamond, Mojave, Boron, and soon, Olde Town Tehachapi. The outreach efforts established a collaboration between residents, businesses, and stakeholders with the county that continues with physical improvements and additional planning efforts to be completed into the future.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: N/A
YEAR OF CONSTRUCTION: N/A
STATUS: In Process

Two of the community vision plans developed through the Kern County Community Revitalization Programs





PROJECT TITLE: **Kern Transit** – Route Connection with Antelope Valley Transit Authority
PROJECT SPONSOR: Kern Transit

PROJECT DESCRIPTION:
Kern Transit now meets with Antelope Valley Transit Authority's Route 785 that provides commuter service to Downtown Los Angeles, San Fernando Valley, and Century City. The Kern Transit Route 100 also connects with the Metrolink in Lancaster.

PROJECT BENEFITS:
The collaboration with Kern Transit and Antelope Valley Transit Authority provides significant alternative transportation benefits for commuters and enhances air quality.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS: Unknown
YEAR OF CONSTRUCTION: 2016
STATUS: In progress

Kern Transit Route 100 Schedule (September 2016)

KernTransit 800-323-2396

100 Bakersfield-Lancaster
Monday - Sunday/Lunes - Domingo

Eastbound												
	Mon-Fri	Sat/Sun ONLY	Mon-Fri		Mon-Sun	Mon-Fri		Mon-Sun	Mon-Fri	Mon-Sun		
Bakersfield												
Bakersfield Amtrak			4:55 AM	7:30 AM	8:10 AM	9:25 AM	10:25 AM	12:40 PM	2:21 PM	5:15 PM	7:55 PM	9:00 PM
County Admin. Building - Truxtun Ave.			#	#	#	#	#	#	#	#	#	#
Kern County Superior Court - Truxtun Ave.			#	#	#	#	#	#	#	#	#	#
Greyhound - 18th St.			5:00 AM	7:35 AM	8:15 AM	9:30 AM	10:30 AM	12:45 PM	2:26 PM	5:20 PM	8:00 PM	9:05 PM
GLI Downtown Transit Center	3:25 AM	3:50 AM	5:03 AM	7:38 AM	8:18 AM	9:33 AM	10:33 AM	12:48 PM	2:29 PM	5:23 PM	8:03 PM	9:08 PM
Bakersfield College - Panorama Dr.			5:13 AM	7:50 AM	8:30 AM	9:45 AM	10:45 AM	1:01 PM	2:42 PM	5:36 PM	8:15 PM	9:20 PM
Kern Medical Center - LR			#	#	#	#	#	#	#	#	#	#
Kern Medical Center - Flower St.			5:18 AM	7:58 AM	8:38 AM	9:53 AM	10:53 AM	1:12 PM	2:53 PM	5:46 PM	8:25 PM	9:30 PM
Keene												
Keene	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY
Tehachapi												
K-Mart - Mulberry St.	4:13 AM	4:40 AM	6:08 AM	8:48 AM	9:28 AM	10:43 AM	11:43 AM	2:07 PM	3:48 PM	6:36 PM	9:10 PM	10:15 PM
Senior Manor 1 & 2 - West E St.	#	#	#	#	#	#	#	#	#	#	#	#
Cameron Canyon Rd. at Hwy. 58	REQUEST ONLY	REQUEST ONLY	REQUEST ONLY	REQUEST ONLY	REQUEST ONLY	REQUEST ONLY	REQUEST ONLY	REQUEST ONLY	REQUEST ONLY	REQUEST ONLY		
Mojave												
Carl's Jr. - Inyo St.	4:43 AM	5:10 AM	6:38 AM	9:23 AM	10:03 AM	11:18 AM	12:18 PM	2:42 PM	4:23 PM	7:06 PM		
Mojave Airport - Airport Blvd.			6:45 AM									
Rosamond												
Rite-Aid - Eagle Way	5:00 AM	5:25 AM		9:40 AM	10:20 AM		12:35 PM	2:59 PM	4:40 PM	7:23 PM		
Hummel Hall - 20th St.	5:06 AM	5:30 AM		9:46 AM	10:26 AM		12:41 PM	3:05 PM	4:46 PM	7:29 PM		
Lancaster												
Mobil - Avenue J	5:23 AM	5:50 AM		10:03 AM	10:43 AM		12:58 PM	3:22 PM	5:03 PM			
AV College - Entrance H	5:27 AM	5:55 AM										
Lancaster City Park - AVTA	5:35 AM											
Schools First - 15th St	#	#										
AV Medical Center - 15th St.	5:43 AM	6:01 AM										
Senior Center - Jackman St.	5:49 AM	6:07 AM		10:13 AM	10:53 AM		1:08 PM	3:32 PM	5:13 PM			
Metrolink - Sierra Hwy.	5:58 AM	6:16 AM		10:22 AM	11:02 AM		1:17 PM	3:41 PM	5:22 PM	7:50 PM		
Westbound												
	Mon-Fri		Mon-Fri	Sat/Sun ONLY	Mon-Fri	Mon-Sun	Mon-Fri	Mon-Sun	Mon-Fri	Mon-Sun		
Lancaster												
Lancaster City Park - AVTA									6:10 PM			
Metrolink - Sierra Hwy.			6:48 AM	7:07 AM	10:55 AM	12:10 PM	2:20 PM	4:30 PM	6:20 PM	8:40 PM		
Senior Center - Jackman St.			6:54 AM	7:13 AM	11:01 AM	12:16 PM	2:27 PM	4:37 PM	6:25 PM	8:45 PM		
Mobil - Avenue J			7:03 AM	7:22 AM	11:11 AM	12:26 PM	2:37 PM	4:48 PM	6:35 PM	8:52 PM		
Rosamond												
Hummel Hall - 20th St.	5:37 AM		7:23 AM	7:42 AM	11:30 AM	12:45 PM	2:54 PM	5:05 PM	6:52 PM	9:09 PM		
Rite-Aid - Eagle Way	5:43 AM		7:29 AM	7:48 AM	11:36 AM	12:51 PM	3:00 PM	5:11 PM	6:58 PM	9:14 PM		
Mojave												
Carl's Jr. - Inyo St.	6:00 AM	7:05 AM	7:45 AM	8:07 AM	11:55 AM	1:10 PM	3:19 PM	5:28 PM	7:15 PM	9:32 PM		
Mojave Airport - Airport Blvd.								5:35 PM				
Tehachapi												
Cameron Canyon Rd. at Hwy. 58	REQUEST ONLY	REQUEST ONLY	REQUEST ONLY	REQUEST ONLY	REQUEST ONLY	REQUEST ONLY	REQUEST ONLY	REQUEST ONLY	REQUEST ONLY	REQUEST ONLY		
K-Mart - Mulberry St.	6:30 AM	7:35 AM	8:20 AM	8:42 AM	12:30 PM	1:45 PM	3:49 PM	6:13 PM	7:47 PM	9:59 PM		
Senior Manor 1 & 2 - West L St.	#	#	#	#	#	#	#	#	#	#		
Keene												
Keene	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY	FLAGSTOP ONLY		
Bakersfield												
Kern Medical Center - LR	#	#	#	#	#	#	#	#				
Kern Medical Center - Flower St.	7:15 AM	8:23 AM	9:08 AM	9:30 AM	1:15 PM	2:30 PM	4:39 PM	6:56 PM				
Bakersfield College - Panorama Dr.	7:20AM	8:30 AM	9:15 AM	9:37 AM	1:22 PM	2:37 PM	4:47 PM	7:03 PM				
GLI Downtown Transit Center	7:31 AM	8:41 AM	9:26 AM	9:48 AM	1:33 PM	2:48 PM	4:59 PM	7:13 PM	8:40 PM	10:49 PM		
Greyhound - 18th St.	7:34 AM	8:44 AM	9:29 AM	9:51 AM	1:36 PM	2:51 PM	5:02 PM	7:16 PM	8:43 PM	10:52 PM		
Kern County Superior Court - Truxtun Ave.	#	#	#	#	#	#	#	#	#	#		
County Admin. Building - Truxtun Ave.	#	#	#	#	#	#	#	#	#	#		
Bakersfield Amtrak	7:39 AM	8:49 AM	9:34 AM	9:56 AM	1:41 PM	2:56 PM	5:07 PM	7:21 PM	8:48 PM	10:57 PM		

 # = Bus may stop at these locations, in addition to the timed stops.
Underlined times are drop off only, no boarding at this time.

PROJECT TITLE: **California State University of Bakersfield – Construction of Public Transit Center**

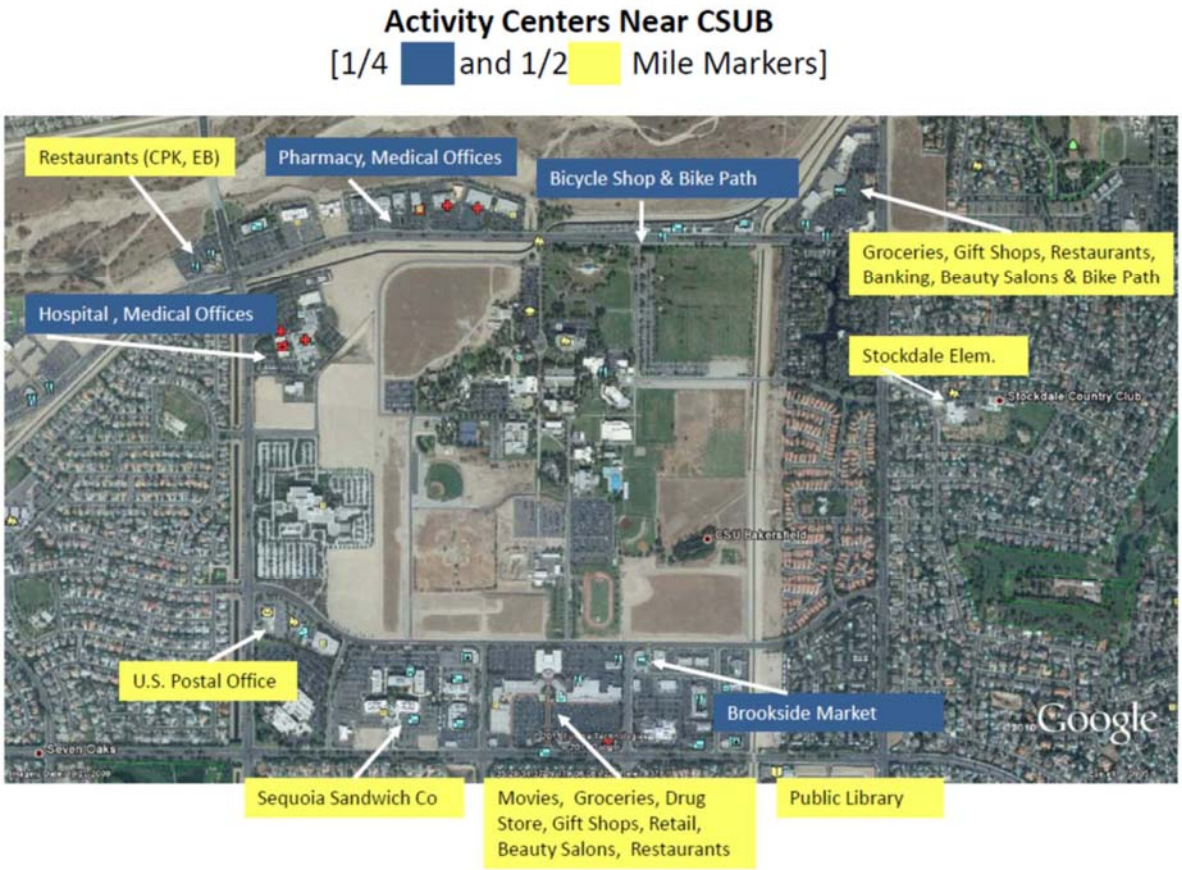
PROJECT SPONSOR: Golden Empire Transit District, California State University of Bakersfield

PROJECT DESCRIPTION: The California State University of Bakersfield (CSUB) Transit Center is a partnership between CSUB and Golden Empire Transit District (GET). In GET's Long Range Plan, a new transit center was identified in the Short-Term Service Plan (2013-2020) at CSUB campus. The transit center will facilitate access and travel to several activity centers that include large employers, retail, a hospital, medical offices, and residential neighborhoods.

PROJECT BENEFITS:
The CSUB Transit Center will improve existing transportation choices by enhancing points of modal connectivity, increasing the number of modes accommodated on existing assets and reducing congestion on existing modal assets. The location of the station is along a bicycle corridor and passengers may also connect with Kern Regional Transit.

COST BENEFIT RATIO: Unknown
TOTAL COST OF PROJECTS:
YEAR OF CONSTRUCTION: 2017, 2018, 2019
STATUS: In progress

Surrounding area of proposed CSUB Transit Center



Association of Monterey Bay Area Governments

From:	Maura Twomey
To:	Roberts, Terry@ARB
Cc:	Kalandiyur, Nesamani@ARB; King, Heather@ARB; Heather Adamson; Bhupendra Patel
Subject:	AMBAG GHG Target - 2018 MTP/SCS
Date:	Tuesday, July 12, 2016 11:29:48 AM

Terry,

As a follow-up to our discussion this spring regarding AMBAG's SB 375 target update, AMBAG proposes a 3% reduction for 2020 and a 6% reduction for 2035 as our new GHG reduction targets for our region's second Sustainable Communities Strategy (SCS) which is scheduled to be adopted in June 2018.

AMBAG is a small and slow growing region in the state. Our initial SB 375 targets were a 0% reduction by 2020 and a 5% reduction by 2035. Our first SCS, adopted in June 2014, achieved a 3% GHG reduction by 2020 and a 5.9% GHG reduction by 2035.

Over a year ago, AMBAG began a technical update to the 2035 Metropolitan Transportation Plan (MTP)/SCS. The environmental analysis (CEQA), including environmental scoping, updating our regional growth forecast, and public outreach has been underway for nearly a year. While the 2040 MTP/SCS will have a new horizon year of 2040, we are still using the existing transportation model which was developed to meet the specific requirements of SB 375, using most recent data sets (2012 California Household Travel Survey (CHTS), 2010 Census data and 2011 AMBAG Origin and Destination survey data). As you may know, such model development is not only takes huge staff time but also requires substantial financial commitment as well. AMBAG proposes to retain the same level of aggressiveness in our existing SCS, however, this will be very challenging to meet our previous GHG reduction results achieved in the 2035 MTP/SCS given that our region is currently facing a dire financial situation. Many of our jurisdictions are poor and the region as a whole is recovering slowly from the recession. There is a critical shortage of transportation funding to maintain even existing infrastructure and transit services let alone increase transportation services. For example, one of our major transit districts is suffering a $6 million structural deficit, which represents 25% of its direct cost budget and 15% of the total operating budget and is proposing to make massive cuts to transit service in Santa Cruz County effective September 2016. In addition, many projects were deprogrammed and delayed this spring due to a lack of state funding. Further transportation cuts are likely without an increase in state transportation funding, which appears unlikely in the near future.

At the June AMBAG Board meeting, our Board of Directors approved the revised goals, policy objectives and performance measures for the 2040 MTP/SCS. We delayed this action for over a year to continue to work with ARB staff on the target setting process but were unable to delay it any further as we are currently developing our project lists and begin scenario testing soon. As part of this item, the Board approved GHG reductions of 3% for 2020 and 6% reduction for 2035.

Most local jurisdictions in the AMBAG region have not received any financial support for their current SCS projects and future funding opportunities are extremely limited. In addition, our three counties are pursuing transportation sales tax measures which were included in our 2035 MTP/SCS

as future revenues. Unfortunately, one county measure failed to secure the two-thirds votes needed to pass. This requires us to make adjustments to the revenues available in the 2040 MTP/SCS. If the other two counties also fail to pass these measures, our revenue assumptions will be much lower than what were included in the 2035 MTP/SCS. Therefore, the ability of the region to develop an SCS with more aggressive targets than those achieved in the first SCS is basically nonexistent. We will continue to work with our jurisdictions but we would like to continue with our target as proposed and work for a better SCS which will not only allow us to achieve the targets but continue engage our local jurisdictions in SCS implementation and future SCS development.

AMBAG is developing the SCS Implementation Project which will provide various land use/mixed use, economic development and rural transportation toolkits and policy guidance to enable our local jurisdictions to take steps to adopt and implement the policies and strategies included in the SCS. While these strategies and recommended actions will be included in the SCS, we will not have identified resources to fund implementation to help us achieve greater GHG reductions.

Given the challenges and limitations facing our region, AMBAG proposes a 3% reduction for 2020 and a 6% reduction for 2035 as our new GHG reduction targets for our region's second SCS which is scheduled to be adopted in June 2018.

We appreciate your advice and input and look forward to a continued collaboration with ARB in the ongoing implementation of SB 375.

If you have any questions, please do not hesitate to contact me.

Sincerely,
Maura

Maura F. Twomey
Executive Director
Association of Monterey Bay Area Governments
24580 Silver Cloud Court
Monterey, CA 93940
(831) 264-5100
mtwomey@ambag.org

Butte County Association of Governments

BCAG
BUTTE COUNTY ASSOCIATION OF GOVERNMENTS

2580 Sierra Sunrise Terrace, Suite 100
Chico, California 95928-8441
(530) 879-2468 FAX (530) 879-2444
www.bcag.org

MEMORANDUM

TO: California Air Resources Board

FROM: Brian Lasagna, Regional Analyst
Butte County Association of Governments (BCAG)

DATE: September 2, 2016

SUBJECT: Documentation for BCAG's Year 2035 Passenger Vehicle Greenhouse Gas (GHG) Reduction Target Recommendation

Background

In 2008, Senate Bill 375 (SB 375) was passed as the mechanism to implement passenger vehicle GHG reductions outlined in Assembly Bill 32 (AB 32). Under SB 375, BCAG is required by the state to prepare the region's Sustainable Communities Strategy (SCS) as an additional component of the Regional Transportation Plan (RTP). The SCS demonstrates the integration of land use, housing, and transportation for the purpose of reducing GHG emissions from passenger vehicles and meeting targets established by ARB.

In 2010, ARB set GHG targets for the BCAG region from passenger vehicles as a 1% increase from 2005 emissions levels by 2020 and 2035. The targets apply to the BCAG region as a whole for passenger vehicles emissions, and not to individual cities or sub-regions.

BCAG's 2012 RTP/SCS achieved a 2% reduction in per capita GHG emissions for the years 2020 and 2035. In order to achieve these reductions, BCAG focused its 2012 efforts towards land use by bringing together the recently completed general plans and laying out a pattern of development which balanced housing and employment growth within specified growth areas while protecting habitat and open space via consistency with the Butte Regional Conservation Plan.

ARB notified BCAG that passenger vehicle GHG reduction targets would be revised in 2016/2017 and solicited recommendations regarding a possible new target for the year 2035. In July 2016, BCAG staff recommended a -7% target for the year 2035 based on work being completed for the draft 2016 RTP/SCS. This recommendation was reviewed with BCAG's various advisory committees and the BCAG Board of Director's. Information

contained in this memorandum is intended to provide additional details regarding that recommendation.

Draft 2016 RTP/SCS

In mid-August 2016, BCAG released the draft 2016 RTP/SCS. The 2016 RTP/SCS expands on the efforts of the 2012 plan by integrating BCAG's new Long-Range Transit and Non-Motorized Plan and incorporating the latest regional growth forecasts. BCAG's target recommendation for the year 2035 is based on the draft 2016 RTP/SCS, which is the most up-to-date information regarding future travel in the region.

The draft 2016 RTP/SCS includes an update of the 2012 RTP/SCS land use forecasts preferred "balanced" scenario. The forecast was updated with the latest local general plan, project specific, and school enrollment information. The latest growth forecasts for population, housing, and employment were then applied. The result of the updated land use forecast for the draft 2016 RTP/SCS is very similar to what was included for the 2012 plan, in that the overall land use pattern is unchanged. However, the amount of growth being distributed within that pattern has decreased in comparison to the 2012 plan.

In an effort to better capture the land use and transportation strategies contained in the RTP/SCS's preferred scenario, BCAG improved and made several changes to the technical factors and modeling data within the forecasting models. These improvements account for the changes in terms of modeling output, such as reduced vehicle miles of travel (VMT) in comparison to the 2012 plan. Modeling changes include updated socio-economic data, application of the revised growth forecasts to the land use and transportation networks, implementing an auto operating cost sensitivity, improving the application of occupancy adjustments, incorporating state estimates of school enrollment, as well as revising the trip generation and distribution components.

A complete copy of the draft 2016 RTP/SCS, and the associated modeling information, is available online (http://www.bcag.org/Planning/RTP--SCS/index.html).

Basic Assumptions

Included in the table below is a comparison of the basic assumptions between the 2012 and 2016 RTP/SCS. Population, housing, and employment have decreased 7%-8%, which is consistent with updated California Department of Finance (DOF) projections. A significant change can be seen with the decrease of forecasted K-12 student populations. This change is reflective of the revised forecasting which now utilizes DOF estimates. Past methods of forecasting student populations assumed growth rates equal to population.

	SB 375 Base Year	2012 RTP/SCS (Adopted)	2016 RTP/SCS (Draft)	Difference (new-old)	Percent Change
	2005	2035			
Basic Assumptions					
Population	214,582	332,459	306,598	-25,861	-7.8%
Housing	85,478	143,948	133,266	-10,682	-7.4%
Jobs (Non-Farm)	73,400	112,279	103,948	-8,331	-7.4%
K-12 Students	30,782	49,409	29,521	-19,888	-40.3%

Auto Operating Costs

With the draft 2016 RTP/SCS, BCAG chose to implement an auto operating cost sensitivity to the modeling for the purpose of improving the estimates of future travel on the transportation system. Auto operating costs include fuel price, maintenance costs, and tire replacement costs. For the BCAG model, an elasticity of -0.15 was chosen. This indicates that an increase in auto operating costs of 10 percent would result in a 0.015 percent decline in VMT. Included in the table below are the costs included in the latest model and applied to the draft 2016 RTP/SCS.

BCAG Auto Operating Costs	
Year	Cost
2014	$ 0.246
2020	$ 0.256
2040	$ 0.290

Draft Modeling Results

The modeling results for the draft 2016 RTP/SCS estimate a passenger vehicle GHG emission reductions of 7% for the year 2035 from the 2005 base year. In comparison, the 2012 RTP/SCS achieved an emissions reduction of 2% for the year 2035, when adopted. The table below contains a comparison of the basic modeling results for each plan.

	SB 375 Base Year	2012 RTP/SCS (Adopted)	2016 RTP/SCS (Draft)	Difference (new-old)	Percent Change
	2005	**2035**			
Modeling Results					
Vehicle Miles of Travel (VMT)	4,710,611	7,340,413	6,381,502	-958,911	-13.1%
VMT per Capita	21.95	22.08	20.81	-1.27	-5.7%
CO2 per Capita (lbs/day) EMFAC 2007	18.45	18.09	-	-	-
% Change from 2005	-	-1.9%	-	-	-
CO2 per Capita (lbs/day) EMFAC 2014	17.39	17.21	16.25	-0.96	-5.6%
% Change from 2005	-	-1.0%	-6.6%	-	-

Note: Information presented contains adjustments to VMT and CO2 as include in *BCAG Modification of ARB EMFAC Methodology to Calculate CO2 Adjustment to EMFAC Output for SB 375 Target Demonstrations Draft (4/1/2016)*.

As noted earlier, the modeling improvements combined with the reduced amount of forecasted growth in the region can be attributed to the greater reductions in VMT and greenhouse gas (GHG) emissions associated with the draft 2016 RTP/SCS.

As the 2016 RTP/SCS is still in a draft format, a complete analysis of each modeling factor has not yet been completed. It's anticipated this work will be accomplished in the following months in preparation of ARB's evaluation of the modeling work.

Please feel free to contact me with any questions of comments regarding the information provided in the memorandum. I may be contacted by phone at 530-809-4616 or by email at blasagna@bcag.org.

Sincerely

Brian Lasagna
Regional Analyst

BCAG
BUTTE COUNTY ASSOCIATION OF GOVERNMENTS

BCAG BOARD OF DIRECTORS

Item #6
Information

July 28, 2016

CALIFORNIA AIR RESOURCES BOARD PASSENGER VEHICLE GREENHOUSE GAS REDUCTION TARGET – BCAG YEAR 2035 RECOMMENDATION

PREPARED BY: Brian Lasagna, Regional Analyst

ISSUE: Senate Bill (SB) 375 requires BCAG's Regional Transportation Plan (RTP) and Sustainable Communities Strategy (SCS) to meet passenger vehicle greenhouse (GHG) reduction targets set by the California Air Resources Board (ARB). ARB is required to update the GHG targets no later than every 8 years. ARB first set targets for the region in 2010 and intends to update these targets in 2016.

DISCUSSION: In 2008, SB 375 was passed as the mechanism to implement passenger vehicle GHG reductions outlined in Assembly Bill 32 (AB 32). Under SB 375, BCAG is required by the state to prepare the region's SCS as an additional component of the RTP. The SCS demonstrates the integration of land use, housing, and transportation for the purpose of reducing GHG emissions from passenger vehicles and meeting reduction targets established by ARB.

In 2010, ARB set GHG reduction targets for the BCAG region from passenger vehicles as a 1% increase from 2005 emissions levels by 2020 and 2035. The targets apply to the BCAG region as a whole for passenger vehicles emissions, and not to individual cities or sub-regions.

ARB has formally notified all Metropolitan Planning Organizations (MPOs), such as BCAG, that passenger vehicle GHG reduction targets will be revised in 2016 and has solicited recommendations regarding a possible new target for the year 2035. Based on work being completed for the 2016 RTP/SCS, BCAG staff recommends a -7% target for the year 2035. A -7% target recommendation would meet ARB's mandate to establish an ambitious but achievable target given the state's goal of reducing statewide GHG emissions to 40% below 1990 levels by the year 2030 (Executive Order B-30-15) and BCAG's previous target of +1%.

BCAG staff has reviewed the proposed target with the Transportation Advisory Committee and Planning Director's Group. Once submitted, the recommendation will be reviewed and evaluated by ARB staff and included in a draft proposal to the ARB. It is anticipated that ARB will take action on the new targets by the end of 2016. Once new targets are approved by ARB, they would apply to BCAG's 2020 RTP/SCS.

BCAG staff will notify ARB of the recommended target prior to August 1, 2016 and continue to keep the Board informed regarding the development of the updated passenger vehicle GHG reduction target.

STAFF RECOMMENDATION: This item is presented for information.

Key staff: Iván García, Programming Manager
Brian Lasagna, Regional Analyst

Table 3: CO_2 Per Capita Results – Preliminary Scenario 3 w/ Jobs-Housing Variation + 30% Reduction in Auto Operating Costs vs. Updated TOD/Infill Scenario Preliminary Results

Scenario	Units	2005	2010	2020	2035	2040
Preliminary Scenario 3 w/ Jobs-Housing Variation + 30% Reduction in Auto Operating Costs (EMFAC2014)						
VMT Total	Vehicle Miles	9,732,296	9,365,328	9,669,525	10,660,166	10,832,218
VMT/Capita	Vehicle Miles/Person	23.31	22.09	22.24	21.47	21.29
CO_2 per Capita (EMFAC2014)	Pounds per day	18.77	17.85	16.73	15.98	--
% Change from 2005		--	--	-10.9%	-14.9%	--
Updated TOD/Infill Scenario Preliminary Results (as shared on June 27, 2016) (EMFAC2014)						
VMT Total	Vehicle Miles	9,732,296	9,365,328	9,431,525	10,336,166	10,594,756
VMT/Capita	Vehicle Miles/Person	23.31	22.09	21.69	20.82	20.82
CO_2 per Capita (EMFAC2014)	Pounds per day	18.77	17.85	16.28	15.44	--
% Change from 2005		--	--	-13.3%	-17.7%	--
Difference – Updated TOD/Infill Scenario Preliminary Results vs. Preliminary Scenario 3 w/ Jobs-Housing Variation + 30% Reduction in Auto Operating Costs						
VMT Total	Vehicle Miles	--	--	-238,000	-324,000	-237,462
VMT/Capita	Vehicle Miles/Person	--	--	-0.55	-0.65	-0.47
CO_2 per Capita (EMFAC2014)	Pounds per day	--	--	-0.45	-0.54	--
% Change from 2005		--	--	-2.40%	-2.80%	--

San Luis Obispo Council of Governments

SLOCOG
SAN LUIS OBISPO COUNCIL OF GOVERNMENTS

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November 2, 2016

Teresa Roberts
Manager, Sustainable Communities Policy and Planning Section
California Air Resources Board Air Quality Planning and Science Division
9500 Telstar Avenue
El Monte, CA 91731

Dear Ms. Roberts,

SLOCOG staff thanks you and your staff for the opportunity to review and revisit our regional GHG reduction targets. We understand that your Board is required to update the targets at least every eight years. As you know, the targets established for the San Luis Obispo Council of Governments' (SLOCOG) region were an 8% decrease for both 2020 and 2035 relative to the 2005 levels. Our 2014 RTP/SCS was able to achieve a 9.4% per capita decrease from 2005 to 2020 and a 10.9% per capita reduction from 2005 levels to 2035. These achievements were based largely upon the anticipated level of funding (Federal, State, Local, and Extraordinary) reasonably anticipated in our twenty year plan.

At this time in SLOCOG's RTP update cycle, new growth and financial forecasts are unavailable to develop new scenarios and targets based upon technical modeling tools and efforts. Over the next two and a half years, we will be developing our 2019 RTP. New growth forecasts are anticipated in February 2017; updated modeling information, methodology, and EMFAC2014 integration expected by June 2017; and updated financial projections are anticipated by December 2017. Ideally, new target recommendations would be grounded in these key foundational elements, using updated models.

The attached staff report, approved by the SLOCOG Board, more fully describes our challenge ahead and identifies the four primary issues that will hinder SLOCOG's ability to achieve our original GHG reduction targets. **In short, the SLOCOG Board recommends the original 8% reduction targets be maintained.**

Thank you to you and your staff for your helpful, coordinated, and cooperative efforts to see the regions of the state succeed in these endeavors. We look forward to working with your agency in the future.

Sincerely,

James Worthley, Planning Division Chief
1114 Marsh St., San Luis Obispo, CA 93401
805.788.2002 (w) | 805.503.8009 (cell)
SLOCOG

SAN LUIS OBISPO COUNCIL OF GOVERNMENTS

STAFF REPORT

MEETING DATE:	**October 12, 2016**	**ITEM: B-4**
SUBJECT:	**2019 Regional Transportation Plan: Background, Requirements, and Target Recommendations**	

SUMMARY
SLOCOG is required to prepare and adopt a Regional Transportation Plan (RTP) directed at achieving a coordinated and balanced regional transportation system. In addition, the RTP must be action-oriented, fiscally-constrained, and pragmatic, considering both short-term (1-10 years) and long-term (11-20 years) periods, and be internally consistent.

The California Air Resources Board (CARB) is charged with assigning and periodically updating regional targets for the reduction of per-capita greenhouse gas (GHG) emissions associated with automobiles and light trucks. The 2014 RTP (adopted April 2015) achieved and exceeded the CARB targets. CARB is soliciting recommendations from each MPO regarding a possible new target for the year 2035 and intends to formally adopt new targets by the end of 2016. The new target would be in effect for SLOCOG's 2019 RTP. Ideally, new target recommendations would include key foundational information (growth and financial forecasts), an approved methodology, and using updated models. At this time in SLOCOG's RTP update cycle, new growth and financial forecasts are unavailable to develop new scenarios and targets justified through technical modeling tools and efforts.

Staff recommends that our region's 2020 target should be consistent with the original 8% reduction established for the region and met in our 2014 RTP/SCS. Meeting the 2020 target will be a challenge given the nature that 2020 scenario planning is based almost entirely on existing conditions rather than on differing land use scenarios and/or transportation investment packages. Staff recommends the 2035 target to also be consistent with the original 8% reduction due to recent transportation funding declines.

RECOMMENDATION
Staff: Review and Comment; Support Year 2020 and 2035 Greenhouse Gas Emission Reduction Target of -8%; and Direct Staff to Submit Reduction Target Recommendation to the California Air Resources Board (CARB) for Consideration.
TTAC: Support Staff Recommendation and desire to express to CARB their strong concerns of achieving this target given the four identified issues.
CTAC: Support Staff Recommendation and concurred with TTAC concerns.

DISCUSSION
As a Metropolitan Planning Organization (MPO), SLOCOG is required to prepare and adopt a Regional Transportation Plan (RTP). This long-range plan is directed at achieving a coordinated and balanced regional transportation system including, but not limited to, public transit, highway, rail, maritime and harbors, bicycle, pedestrian, goods movement and aviation. In addition, the RTP must be action-oriented, fiscally-constrained, and pragmatic, considering both short-term (1-10 years) and long-term (11-20 years) periods.

Through careful planning and coordination of land use with transportation, the RTP can help our local economy thrive and give everyone a chance to live in a healthy, vibrant community. The objective is to accommodate growth while still maintaining our quality of life. We can create choice to allow more trips to occur outside of a solo vehicle, benefitting the environment and the individual. Additionally, the state requires regional agencies like SLOCOG to achieve greenhouse gas (GHG) reductions from cars and light trucks through the coordination of land use and transportation planning.

The California Air Resources Board (CARB) is charged with assigning and periodically updating regional targets for the reduction of per-capita GHG emissions associated with automobiles and light trucks.

SLOCOG's initial GHG reduction target (on a per-capita basis relative to 2005 levels) was -8% for 2020 and for 2035. Although not all the variables and technical methodology were firmly established in 2009, SLOCOG had completed many early, foundational steps (including growth forecasts and initial modeling) toward ultimately adopting the 2010 RTP/pSCS (preliminary SCS). This early work served to inform CARB's original (2010) targets for 2020 and 2035 for SLOCOG.

CARB is now soliciting recommendations from each MPO regarding a new target for the year 2035 and intends to formally adopt new targets by the end of 2016. The new target would be in effect for the SLOCOG 2019 RTP. According to CARB staff, updated targets for the next SCS cycle "should be consistent with the reductions that were achieved by [MPOs'] first SCSs."

Development of the SLOCOG 2014 RTP/SCS was a collaborative, multi-year effort, requiring profuse staff hours, modeling tool refinements, testing of multiple scenarios, and culminated in adoption in April 2015. For 2035, the 2014 RTP/SCS resulted in a -10.9% per capita reduction relative to 2005, exceeding the -8% target.

The MPO must prepare an Alternative Planning Strategy (APS) if the SCS is unable to reduce GHG emissions to achieve the reduction targets established by the ARB. The APS shall be a separate document from the RTP, but it may be adopted concurrently with the RTP.

RTP: Required Components and Issues

The RTP must be an internally consistent document and include the: Policy Element, Sustainable Communities Strategy (SCS), Action Element, and a Financial Element.

Policy Element

A policy element describes the transportation issues in the region, identifies and quantifies regional needs, and describes the desired short-range and long-range transportation goals, and pragmatic objective and policy statements. It should also explain how the financial commitments are consistent with and support the land use pattern and personal mobility objectives of the RTP.

Issue 1: Goal and policy changes (from the adopted 2014 RTP/SCS) should be reflective of public, stakeholder, and Board input.

Sustainable Communities Strategy (SCS)

The Sustainable Communities Strategy (SCS) is now a required element of the RTP as a result of SB 375 (2008). The SCS must identify areas within the region sufficient to house all the population of the region, including all economic segments of the population, over the course of the planning period of the RTP, taking into account net migration into the region, population growth, household formation, and employment growth. An SCS identifies a "forecasted development pattern" for the region, which is informed by the inventory of existing land use throughout the region, along with the identification of sites where future development can be located, while still reducing VMT and GHG emissions. The law establishes an approach to ensure that cities, counties, and the public are involved in the development of regional plans to achieve targets set by CARB for reducing GHG emissions. An SCS must also be consistent with the general plans of the region's jurisdictions.

Issue 2: The 2050 Regional Growth Forecast is underway. Modeling: methodology (approach and variables) must be submitted to, and approved by CARB (pending); and tool updates.

Regional Growth Forecast New population, housing, and employment forecasts are critical, foundational factors, to the SCS development. In preparation of the next RTP, SLOCOG has contracted with a consultant to prepare the new Regional Growth Forecast; adoption expected in February 2017. Since the 2011 forecast, new housing has met annual projections; averaging 564 new units per year (2011-2014). In order to continue to meet the past projections, new housing units must reach pre-recession levels of 1,300 new units per year. Any reduction in forecasted new growth impairs SLOCOG's ability to replicate the previously achieved per-capita reduction. The following pose additional challenges in achieving GHG reductions:

- The extremely high cost of housing in the central and coastal sub-regions will continue to 'drive' the more affordable segments of our housing market further from the job centers – resulting in increased VMT;
- Funding, to provide transportation investments that lead to a modal shift, has deteriorated;
- Resource constraints, such as worsening drought conditions have some agencies metering building permits and even suspending new permit activity to reassess water supply reliability;
- Williamson Act funding was cut – a key program to limit sprawl;
- Redevelopment agencies were dissolved – they provided a revenue source for infill development.

Modeling methodology and tool updates Adopted in April 2015, the development of SLOCOG's 2014 RTP/SCS was a multi-year effort, requiring numerous staff hours, modeling tool refinements, developing and testing multiple scenarios grounded with an adopted growth forecast and available funding projections. Staff will submit to CARB its modeling methodology, tool integration, and assumptions for approval in Spring 2017. CARB staff have previously identified the SLOCOG Base model year (2010) as adequate for the next RTP/SCS. For the 2014 RTP/SCS, staff developed, and CARB accepted, the approach to estimate 2005 emission levels for target reduction scenario comparison purposes.

The GHG results from the 2019 RTP will be based upon new scenario modeling using integration between SLOCOG's Regional Land Use Model (RLUM) and Regional Traffic Model (RTM) and CARB's Air Quality model and any off-model tools. The RLUM, developed using CommunityViz software, underwent a major overhaul in preparation of the 2014 RTP/SCS. After minor updates, the RLUM is prepared to develop land use scenarios utilizing parameters such as: draft goals, public input, infrastructure limitations, and the adopted 2050 Regional Growth Forecast. Land use exports are used as inputs to the RTM. After minor updates/considerations including information from the new California Statewide Travel Demand Model, the RTM will be ready to develop VMT outputs resulting from the new growth projections, financially-constrained transportation investments, draft goals, and public input. RTM exports are then used in CARB's new Air Quality model: EMFAC 2014 (the 2014 RTP used the prior version, EMFAC2011-SG). Staff still must review, test, integrate with RTM outputs, and update its modeling methodologies prior to submittal for CARB review

The 2014 RTP/SCS included: Land use and transportation strategies to address regional GHG emissions, transportation planning and investment strategies incorporating the "D" Factors (built environment characteristics including: Design, Density, Diversity, Destination, and Distance to Transit), transportation demand management, target development areas (TDAs), and RTP policies that support sustainable growth and land use principles. To date, staff has not assessed off-model assumptions/tools or quantified their reduction on regional GHG. These could include the effects of: Electric vehicle penetration and electric charging stations, impacts of transportation network companies (i.e., Uber and Lyft), autonomous vehicles, or parking pricing strategies.

Any significant investment in improving or expanding the existing modeling tools is not cost-effective at this time. SLOCOG, with its partners AMBAG and SBCAG, received a state grant to build a new, state-of-the-practice, five-county, Activity Based Model (ABM). The ABM will be completed after the 2019 RTP is adopted.

Action Element

The Action Element of the RTP must describe the programs and actions proposed to be completed within the twenty-plus year time frame of the RTP. All transportation modes are addressed: highways, local streets and roads, public transit, rail, maritime, bicycle, pedestrian and aviation facilities and services. It consists of short and long-term activities that address regional transportation issues and needs and assigns implementation responsibilities.

Issue 3: The collapse of available State Transportation Improvement Program (STIP) funding used to support major operational improvements, interchanges and intersection improvements (in 2016, the CTC deleted $7 million previously allocated to SLOCOG and programmed zero (0) new funding for the five-year cycle (ending 2020/21). This funding is critical not only for current congestion relief but to also address the transportation needs of future development.

Financial Element
The Financial Element is fundamental to the development and implementation of each RTP. This element distinguishes the federal, state, regional, and local revenues expected by the region over the next 20 years. Both federal regulations and state statutes require that the RTP be *financially constrained* -- meaning the plan is based on realistic projections of revenue. Transportation funding is often required to provide necessary infrastructure to allow for growth within our target development areas. Any significant reduction of funding will impact the ability for SLOCOG to provide funds for new infrastructure – thereby reducing VMT to achieve lower emissions. The most pressing issue we face is that our ability to achieve our goals is now in jeopardy due to the changed state and federal funding landscape since the adoption of our 2014 RTP/SCS.

Issue 4: Results should be grounded in fiscal constraint taking into account recent (and pending) financial changes. Since the 2014 RTP/SCS, funding projections must be reassessed due to: Federal funds through the FAST Act, State revenues and changes to State fund distributions and priorities, local measures and impacts, and presumed extraordinary funds.

Federal Funds
The FAST Act: On December 4, 2015, Fixing America's Surface Transportation (FAST) Act was signed into law. A $305 billion, five-year (2016 through 2020) program, it is the first federal law in over a decade to provide long-term funding certainty for surface transportation infrastructure planning and investment for highway, highway and vehicle safety, public transit, motor carrier safety, hazardous materials safety, rail, and research, technology, and statistics programs. After projecting revenues expected from the current 18.4 cents-per-gallon gas tax (last adjusted in 1993), Congress had to backfill $75 billion (25%) primarily using Federal Reserve fund transfers.

State Funds
- Gas tax fund reductions (declining cents/gallon and consumption) and future changes to transportation funding;
- State formula funds for highway/roadway improvements (STIP), funding reduced and delayed by years (in May 2016);
- Cap-and-trade funds are competitive and not formula-based making revenue assumptions unstable;
- State has shifted away from fair-share formula funds to competitive/grant funds with a focus of funding toward "Disadvantaged Communities" and to areas with high matching funds;
- Primary focus of recent State transportation legislation is on "Fix-It-First" (road and highway maintenance) exclusive of congestion relief;
- No legislation passed to address funding issues.

Local Funds
- Atascadero General Fund Sales Tax increase (approved by voters Nov. 2014, following 2014 RTP/SCS assumptions); all other six cities were included.
- Measure J – Self-Help Local Transportation Investment Plan (voters to consider in Nov. 2016; requires 2/3rd voter approval);
- Future pending reduction of local general funds attributable to closure of PG&E's Diablo Canyon Nuclear Power Plan (estimated for 2025).

Extraordinary Funds
The 2014 RTP/SCS assumed $528 million of extraordinary funds (State or Federal), primarily for SR 46E widening and long-term U.S. 101 improvements. This amounted to 24% of the total $2.2 billion dollars projected to be available for transportation expenditures between 2015 and 2035. The likelihood of such funding is dismal with Congress disallowing earmarked projects and minimal funding projected on the State-competitive Interregional Transportation Improvement Program (ITIP) that funded widening sections of SR 46E.

Target Recommendations:
Staff shall strive to achieve and exceed these targets as it did in the adopted 2014 RTP/SCS. With projected funding of $2.2 billion to 2035, the 2014 RTP/SCS modeled a -10.9% GHG reduction. Newly restored State funding is needed to approach that reduction level in 2035. Staff believes it is imperative

that CARB parallel our efforts to secure adequate financial resources for RTP project development either supported through the Cap-and-trade program or other means.

1. Recommend the 2020 target to be maintained at the original reduction target (-8% per-capita basis relative to 2005 levels) established for the region by CARB. Meeting the 2020 target will be a challenge given the nature that 2020 scenario planning is based almost entirely on existing conditions rather than on differing land use scenarios and/or transportation investment packages.
2. Recommend the 2035 target be maintained at the original 8% per capita reduction established for the region by CARB. Meeting the 2035 target will be challenging given the recent transportation funding declines. The timing of the request to identify a higher, achievable, GHG reduction target is ill-timed as it is in advance of scenario testing using integrated modeling tools grounded with foundational information including an adopted 2050 Regional Growth Forecast.

Environmental Impact Report

A program Environmental Impact Report is required to analyze the environmental impacts of implementing their RTP. The purpose of the program EIR is to enable the MPO to examine the overall effects of the RTP (i.e., broad policy alternatives, program-wide mitigation, growth-inducing impacts and cumulative impacts can be considered at a time when the agency has greater flexibility to avoid unnecessary adverse environmental effects). Additionally, environmental documents subsequently prepared for the individual projects contained in the RTP can be "tiered-off" of the program EIR, thus saving time and reducing duplicative analysis. The 2010 RTP/pSCS EIR consultant cost was $101,000. The 2014 RTP/SCS EIR Addendum consultant cost was $10,700.

BACKGROUND

Past and recent legislation is summarized below.

SB 32 (2016): Require greenhouse gas emissions to be 40% below 1990 levels by 2030, a more aggressive set of mandates than those established by California's landmark climate change law, AB 32, enacted in 2006.	Lawmakers gave their final stamp of approval to both measures in September. Gov. Jerry Brown signed the legislation, a significant victory for supporters after it appeared unlikely that the issue would gain traction in the final month of the legislative session. More steps may be pursued next year to safeguard cap-and-trade from a lawsuit that claims the program is an unconstitutional tax.
AB 197 (2016): Require new oversight of the state's ARB, and require future rules to be designed with an eye toward the impact on low-income communities.	
Executive Order B-32-15 (July 2015): Issued by Gov. Brown to prioritize California's transition to a more efficient and less polluting freight transportation system. This transition of California's freight transportation system is essential to supporting the State's economic competitiveness in the coming decades while reducing greenhouse gas emissions and air quality impacts.	Directed State agencies to develop an integrated action plan by July 2016 that established clear targets to improve freight efficiency, transition to zero-emission technologies, and increase the competitiveness of California's freight system. It is suggested that regional transportation planning agencies consult the California Sustainable Freight Action Plan when developing the freight-related strategies in their respective RTPs.
SB 743 (2013): Requires an update in the metric of transportation impact used in CEQA from Level of Service and vehicle delay to one that promotes the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses. Per ARB Vision Model results, reductions in VMT growth are needed to achieve sufficient greenhouse gas emissions reduction for climate stabilization, as reflected in executive orders on 2030 and 2050 greenhouse gas targets.	The regulatory language (CEQA Guidelines changes) to implement the law are pending (as of Fall 2016), though VMT has been identified by the Governor's Office as the preferred metric to determine significant impacts. A future update of the RTP Guidelines will capture any "shoulds" or "shalls" resulting from the formal rulemaking process.
SB 375 (2008): SB 375 brings the RTP and the Regional Housing Needs Allocation (RHNA) process together to create a link between housing and transportation that will help reduce VMT and reduce the generation of GHG emissions per-capita.	Expanded the overall scope of the RTP requiring the inclusion of a SCS that includes a forecasted development pattern for the region, which, when integrated with the transportation network, and other transportation measures and policies, will reduce the GHG emissions from automobiles and light trucks to achieve, if feasible, the GHG emission reduction target approved for the region by CARB.
AB 32 (2006): California originally passed first-of-its-kind legislation on climate change and gave broad authority to ARB to develop programs to achieve reduction goals.	

Santa Barbara County Association of Governments

Report on Range of Projected Emission Reductions – 09/07/2016

During the June 27, 2016 teleconference meeting with California Air Resources Board (ARB) staff, SBCAG staff presented preliminary results from the updated Fast Forward 2040 Regional Transportation Plan-Sustainable Communities Strategy (RTP-SCS) land use and transportation scenarios developed to inform SBCAG's RTP-SCS update process. These scenarios were crafted based on close consultation with Joint Technical Advisory Committee (JTAC) and SBCAG member agency planning and public works departments, as well as transit operators, and represent updated land use and transportation scenarios evaluated in the adopted 2013 RTP-SCS.

For purposes of the June discussion, the preliminary modeling results presented to ARB staff focused on two future year scenarios:

- Scenario 1 (Future Baseline): Based on existing, adopted General Plan land uses. it assumes that current sub-regional growth trends will continue, consistent with the 2012 Regional Growth Forecast.
- Scenario 3 (TOD/Infill with Enhanced Transit Strategy): The preferred scenario in the adopted 2040 RTP-SCS. which selectively increases residential and commercial land use capacity within existing transit corridors, reflecting local planning discussions about possible future land use and General Plan and Community Plan updates, and also addresses jobs/housing balance issues by emphasizing job growth in the North County and housing growth in the South County.

EMFAC2014 results indicated that Scenario 3 would perform similarly to the adopted 2013 RTP-SCS Preferred Scenario, but would achieve even greater projected per capita GHG reductions versus the year 2005 baseline: -13.3% in 2020 and -17.7% in 2035 for the preliminary TOD/Infill with Enhanced Transit Strategy scenario versus -10.5% in 2020 & -14.9% in 2035 for the adopted Preferred Scenario (see Table 1). Stated differently, the preliminary TOD/Infill with Enhanced Transit Strategy scenario decreased per capita CO_2 emissions by an additional 2.8% for 2020 and 3.0% by 2035 compared to the adopted 2013 RTP-SCS preferred scenario. Reasons for the improved performance versus the 2013 RTP-SCS include lower interregional trip VMT as a result of SCS adoption and implementation in neighboring SLOCOG and SCAG regions, changes to the underlying transit routes and frequencies, changes to the constrained transportation project lists, minor changes to land use assumptions and growth allocation, recoding in the regional travel demand model of segments of U.S. 101 between unincorporated Santa Maria and the Gaviota Coast from a Principal Arterial to a Freeway, and EMFAC 2014.

In discussing ARB's intention to update the greenhouse gas reduction targets with SBCAG based on preliminary modeling results, ARB staff indicated openness to considering a range of projected emissions reductions to account for different parameters. SBCAG staff has explored two different parameters within the travel demand model that inform projected reductions. These two parameters include:

1. Revisiting the jobs/housing balance assumptions in the preliminary TOD/Infill with Enhanced Transit Strategy scenario in light of actual growth trends informed by SBCAG's report on Development Trends & RTP-SCS Implementation Progress.[1] This scenario variation continues to concentrate growth within transit corridors, but places fewer jobs in the Lompoc and Santa Maria Valleys and less housing on the South Coast market area. This review of development trends indicates that since the 2013 RTP-SCS adoption, a larger proportion of both residential and non-residential development has continued to occur in the North County than on the South Coast. However, compared to past trends, the rate of future residential development in the South Coast has increased, providing more opportunities for local workers. Although the preferred scenario continues to assume aggressive correction of jobs-housing imbalance consistent with underlying allowable land uses, the actual allocation of future growth is dependent on variables such land values and similar econometric factors that are beyond SBCAG's control. While their interplay with auto operating costs is complex, housing affordability and land values will continue to play an important role in the location decisions of households and firms. Further, these factors may inhibit realization of the adopted RTP-SCS preferred scenario growth allocation, as so far borne out by the Development Trends & RTP-SCS Implementation Progress Report. The modeling results of this scenario variation are shown in Table 2.

2. Additionally, reducing automobile operating costs by 30% for target year 2035 (13.951¢/mile vs 19.93¢/mile) to reflect the significant increases in fuel efficiency assumed in ARB's Mobile Source Strategy.[2] This reduction is based on discussions with SCAG modeling staff and is shown in Table 3.

Allocating fewer jobs to the Lompoc/Santa Maria Valleys and less housing on the South Coast market area results in per capita GHG emission reductions of -10.9% in 2020 and -15.9% in 2035 versus -13.3% in 2020 & -17.7% in 2035 for the preliminary TOD/Infill with Enhanced Transit Strategy scenario. Stated differently, the jobs/housing scenario variation increases per capita CO_2 emissions by 2.4% for 2020 and 1.8% by 2035 compared to the preliminary TOD/Infill with Enhanced Transit Strategy scenario.

Building on the jobs/housing allocation scenario variation, the additional 30% reduction in auto operating costs for target year 2035 results in per capita GHG emission reductions of -14.9% versus -17.7% in 2035 for the preliminary TOD/Infill with Enhanced Transit Strategy scenario. Stated differently, the jobs/housing scenario variation increases per capita CO_2 emissions by 2.8% for 2035 compared to the preliminary TOD/Infill with Enhanced Transit Strategy scenario.

Based on the results from the above testing, SBCAG staff believes that the range of projected per capita CO_2 emissions reductions versus the year 2005 baseline should be between -10.9% to -13.3% for target year 2020 and between -14.9% to -17.7% for target year 2035. SBCAG staff believes that this stated range is defensible when taking into account the uncertain nature of future modeling tools, demographics, and market forces, among other factors.

[1] http://meetings.sbcag.org/Meetings/SBCAG/2016/06%20June/Item%207%20RTP%20SCS%20Implementation%20Progress.pdf
[2] https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf

Table 1: VMT and CO2 Per Capita Results – Updated TOD/Infill Scenario Preliminary Results vs. Adopted Scenario 3

Scenario	Units	2005	2010	2020	2035	2040
Adopted TOD/Infill Preferred Scenario (EMFAC2011 & EMFAC2014)						
VMT Total	Vehicle Miles	9,406,707	9,052,017	9,444,018	10,302,621	10,513,881
VMT/Capita	Vehicle Miles/Person	22.53	21.35	21.72	20.75	20.66
CO_2 per Capita (EMFAC2011)	Pounds per day	18.40	17.23	16.46	15.57	--
% Change from 2005		--	--	-10.5%	-15.4%	--
CO_2 per Capita (EMFAC2014)	Pounds per day	18.35	17.32	16.42	15.65	--
% Change from 2005		--	--	-10.5%	-14.7%	--
Updated TOD/Infill Scenario Preliminary Results (as shared on June 27, 2016) (EMFAC2014)						
VMT Total	Vehicle Miles	9,732,296	9,365,328	9,431,525	10,336,166	10,594,756
VMT/Capita	Vehicle Miles/Person	23.31	22.09	21.69	20.82	20.82
CO_2 per Capita (EMFAC2014)	Pounds per day	18.77	17.85	16.28	15.44	--
% Change from 2005		--	--	-13.3%	-17.7%	--
Difference – Updated TOD/Infill Scenario Preliminary Results vs. Adopted TOD/Infill						
VMT Total	Vehicle Miles	325,589	313,311	-12,493	33,545	80,875
VMT/Capita	Vehicle Miles/Person	0.78	0.74	-0.03	0.07	0.16
CO_2 per Capita (EMFAC2014)	Pounds per day	0.42	0.53	-0.14	-0.21	--
% Change from 2005		--	--	-2.80%	-3.00%	--

Table 2: CO_2 Per Capita Results – Preliminary Scenario 3 w/ Jobs-Housing Variation vs. Updated TOD/Infill Scenario Preliminary Results

Scenario	Units	2005	2010	2020	2035	2040
Preliminary Scenario 3 w/ Jobs-Housing Variation (EMFAC2014)						
VMT Total	Vehicle Miles	9,732,296	9,365,328	9,669,525	10,546,957	10,726,970
VMT/Capita	Vehicle Miles/Person	23.31	22.09	22.24	21.24	21.08
CO_2 per Capita (EMFAC2014)	Pounds per day	18.77	17.85	16.73	15.79	--
% Change from 2005		--	--	-10.9%	-15.9%	--
Updated TOD/Infill Scenario Preliminary Results (as shared on June 27, 2016) (EMFAC2014)						
VMT Total	Vehicle Miles	9,732,296	9,365,328	9,431,525	10,336,166	10,594,756
VMT/Capita	Vehicle Miles/Person	23.31	22.09	21.69	20.82	20.82
CO_2 per Capita (EMFAC2014)	Pounds per day	18.77	17.85	16.28	15.44	--
% Change from 2005		--	--	-13.3%	-17.7%	--
Difference – Updated TOD/Infill Scenario Preliminary Results vs. Preliminary Scenario 3 w/ Jobs-Housing Variation						
VMT Total	Vehicle Miles	0	0	-238,000	-210,791	-132,214
VMT/Capita	Vehicle Miles/Person	0	0	-0.55	-0.42	-0.26
CO_2 per Capita (EMFAC2014)	Pounds per day	0	0	-0.45	-0.35	--
% Change from 2005		--	--	-2.40%	-1.80%	--

Shasta Regional Transportation Agency

STAFF REPORT

MEETING DATE:	**June 28, 2016**
SUBJECT:	**Recommend Year 2035 Greenhouse Gas Emission Reduction Target for consideration by the California Air Resources Board**
AGENDA ITEM:	**9**
STAFF CONTACT:	**Daniel Wayne, Senior Transportation Planner**

SUMMARY:

The California Air Resources Board (CARB) is charged with assigning and periodically updating regional targets for the reduction of per-capita greenhouse gas (GHG) emissions associated with automobiles and light trucks. In response, metropolitan planning organizations (MPOs) are required to develop a Sustainable Communities Strategy (SCS) demonstrating how the region intends to meet CARB's targets. CARB has solicited recommendations from each MPO regarding a possible new target for the year 2035. Staff recommends a -6% target based on reasonably anticipated revenues. Further reductions could be achieved with increased state and federal funding support, potentially enabling the region to meet a target of up to -12%.

STAFF RECOMMENDATION:

It is recommended that the board of directors propose a per-capita greenhouse gas emission reduction target of -6% for the year 2035.

DISCUSSION:

The 2015 Regional Transportation Plan (RTP) included the region's first SCS, as required by the Sustainable Communities and Climate Protection Act of 2008 (commonly known as Senate Bill 375). An SCS demonstrates how the region intends to meet CARB-assigned targets for per-capita greenhouse gas emissions associated with automobiles and light trucks for the year 2020 and 2035, based on a 2005 baseline year. Periodically, CARB may update regional targets in consultation with the respective MPO.

In July 2010, the SRTA Board of Directors recommended a 0% change in per-capita GHG emissions for both target years, which CARB subsequently accepted. Policies and programs in the 2015 RTP enabled the region to exceed this goal, netting a forecast -4.9% for 2020 and weakening to -0.5% for 2035 due to a return to post-recessionary economic activity and more dispersed growth in the outlying years.

In preparation for the 2018 RTP update, CARB has asked SRTA to provide a new recommendation for the 2035 target. Staff recommends that the board of directors propose a target of -6% for 2035, which is midway between the region's current target (0%) and the maximum feasible target (-12%) premised on the attached scenario of strategies and assumptions. The target range and cost to implement the described strategies are estimated based on information developed for recent grant applications. Additional technical analysis will need to be performed as part of the 2018 RTP.

It should be noted that the attached scenario is a forecast and not a commitment on the part of SRTA or partner agencies to implement. The actual strategies, and the degree to which they are implemented, will vary based on real-world conditions and updates of RTP policies every four years. In addition, many of the strategies included in the scenario will result in GHG reductions that fall outside of the passenger vehicle and light truck emissions specifically called-out within Senate Bill 375. CARB is willing to consider such reductions, especially when the cost/benefit ratio is favorable and an adequate range of conventional strategies have been employed.

A -6% target recommendation would help SRTA and local agencies' build a stronger case for future grants. For example, both SRTA and local agencies would be able to point to the regional GHG target to justify and add weight to requests for active transportation infrastructure grants, public transportation operating and capital grants, infill and redevelopment grants, and so forth. A -6% target recommendation would also be viewed more favorably than the region's current 0% target given the state's ambitious goal of reducing statewide GHG emissions to 40% below 1990 levels by the year 2030 (Executive Order B-30-15). The threat of not meeting the proposed target is limited, since the region's target will be routinely revisited and updated.

In addition to the -6% target recommendation, the board of directors may consider providing information stating that the region could achieve per-capita GHG emission reductions as great as -12% if a substantial increase state and federal funding is made available through existing and new programs. The intent of the secondary information is to remind the state of their obligation to back up aspirational goals with the programs and resources required to achieve them.

ALTERNATIVES:

The board of directors may choose to: 1) take no action and leave the decision to CARB; 2) propose different targets for CARB consideration; or 3) refer the matter back to staff for additional information. To ensure the board of directors' recommendation is considered, a target recommendation should to be provided to CARB no later than July 29, 2016.

OTHER AGENCY INVOLVEMENT:

The Technical Advisory Committee (TAC) supports the staff recommendation.

FINANCING:

There is no direct fiscal impact associated with the target recommendation. The recommended -6% target is based on approximately $120 million in state and federal funding support through the year 2035, obtained primarily through continued local and regional grant-getting efforts.

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Daniel S. Little, AICP, Executive Director

Attachment: Summary Analysis of Potential Greenhouse Gas Emission Reductions (2018-2035)

SUMMARY ANALYSIS OF POTENTIAL GREENHOUSE GAS EMISSION REDUCTIONS (2018-2035)

GHG Emission Reduction Strategies	Forecast factors and additional strategies needed to achieve per-capita GHG reductions	Estimated Moderate/Maximum	
		GHG Reductions	Cost to Implement
Land Use	• An additional 5% of future growth in unincorporated areas will occur within the urban sphere of influence in response to market influences such as the rising cost of transportation. • SRTA will obtain additional grant funds to continue the agency's Infill & Redevelopment Incentive Pilot Program. • SRTA will continue to support local agencies and developers in successfully competing for capital grants through the Affordable Housing & Sustainable Communities Program. • Targeted active transportation and public transportation investments will encourage growth in Strategic Growth Areas.	-0.2% (mod) -0.5% (max)	$30M (-6%) $60M (-12%)
Alternative Fuel Vehicles	• Plug-in electric vehicles (PEVs) market share will increase to 2%, led in part by policies and program that support fleet conversion. • Local agencies will obtain PEV charging station grants. • Local agencies will adopt policies and programs encouraging the installation of charging stations for certain types of development.	-2% (mod) -3.3% (max)	$10M (-6%) $20M (-12%)
Technology-Enabled Travel Demand Management & Transportation System Management	• Recent and emerging mobility-enhancing technologies will be commonplace in the Shasta Region by 2035, resulting in increased system efficiency. Examples include 'Waze' real time traffic info sharing; ride-sharing applications such as 'Uber' and 'Lyft'; vehicle-to-vehicle communication; and autonomous vehicles. • Advances in virtual communication will supplant trips and increase remote working. • Local agencies will employ transportation system management strategies to increase network efficiency, including signal control management and vehicle-to-infrastructure communication.	-0.7% (mod) -1.5% (max)	$10M (-6%) $20M (-12%)
Active Transportation	• SRTA and local agencies will jointly plan and implement a network of active transportation expressways with connections to the roadway network and trip destinations. • SRTA's active transportation programs will continue to successfully leverage Active Transportation Program (ATP) and other grants with Transportation Development Act and State Transportation Improvement Program funds.	-0.7% (mod) -1.5% (max)	$20M (-6%) $30M (-12%)
Local Public Transportation	• RABA and Community Transportation Service Agency (CTSA) buses will transition to alternative fuels as older vehicles are retired. • Public transportation mode share will increase to 3% as a result of targeted on-demand public transportation service, access to real-time fixed-route transit information, increased service area, extended service hours, and Sunday service. • With SRTA's support, public transportation providers will receive grant funds for alternative fuel vehicles and fueling infrastructure.	-1% (mod) -2% (max)	$20M (-6%) $40M (-12%)
Intercity Public Transportation	• SRTA will obtain capital and operating grant funds to implement intercity express bus service to/from Sacramento and Bay Area.	-0.9% (mod) -1.6% (max)	$20M (-6%) $30M (-12%)
Sustainable Freight Movement	• SRTA will lead a coordinated freight efficiency program to include a possible consolidated freight hub; industry clustering; alternative fuel infrastructure; greater utilization of freight rail; and the relocation of Union Pacific Railroad switching to eliminate the physical and operational constraints in Downtown Redding.	-0.5% (mod) -1.6% (max)	$10M (-6%) $20M (-12%)
	Estimated Total	**-6% (mod) -12% (max)**	**$120M (mod) $220M (max)**

Tahoe Regional Planning Agency

MEMORANDUM

DATE: December 19, 2016
TO: Amy Volz, Air Pollution Specialist
Terry Roberts, Manager, Sustainable Communities Policy & Planning
FROM: Nick Haven, Long Range and Transportation Planning Manager
RE: 2017 Regional Transportation Plan / Sustainable Communities Strategy Modeling, Background, and Greenhouse Gas Emission Reduction Target Update Information

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The purpose of this memorandum is to present TRPA/TMPO's 2017 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) greenhouse gas (GHG) target analysis, explain the main differences between 2012's and 2016's analysis, and provide background for updating future GHG reduction targets.

BACKGROUND:
Pursuant to the California Air Resources Board (CARB) recommended approach contained in the "Description of Methodology for ARB Staff Review of Greenhouse Gas Reductions from Sustainable Communities[1]" TRPA/TMPO fulfilled CARB's requirements of utilizing a technical methodology for evaluating the reductions in GHG emissions attributable to an SCS and to determine whether the SCS, if implemented, would meet the targets for passenger vehicles set by CARB. On May 16, 2016, TRPA/TMPO submitted for CARB review, the draft methodology for calculating GHG emissions per-capita for the Lake Tahoe Region (attached). On June 16, 2016 CARB responded to the methodology (attached) indicating that they would request supporting information from TRPA/TMPO as it becomes available. This memorandum serves as the supporting information requested consistent with the recommended CARB approach.

MODEL DOCUMENTATION:
As part of the TRPA 2012 Regional Plan Update and the 2012 TMPO RTP/SCS, staff started the process of compiling the appropriate documentation to update the TransCAD Tour Based Model. Since that time, additional updates to the model and associated documentation have been completed and is attached for reference herein titled; Methodology for estimating Vehicle Miles Traveled and Greenhouse Gas Reductions in the 2016 Regional Transportation Plan Update, TRPA-TMPO, Nov. 2016. Consistent with CARB's recommendation, TRPA/TMPO underwent an independent peer review of both the static and dynamic model validation performance (attached). As

[1] CARB, July 2011

indicated, the model was determined to meet all static and dynamic validation tests consistent with the Caltrans Regional Transportation Plan Guidelines.

DOCUMENTATION OF OFF-MODEL TOOLS OR METHODS USED:
The TRPA/TMPO maintains a Trip Reduction Impact Analysis (TRIA) spreadsheet tool to evaluate the trip and vehicle miles travelled (VMT) reduction impacts of various transportation policies and programs that are considered under the RTP/SCS effort. The purpose of the TRIA is to provide planning-level, order of magnitude comparative analysis of the impacts such as the construction of new bike trails and sidewalks, transit improvements, traveler information systems and other programs have on the reduction of auto trips, VMT and GHG emissions.

2016 RTP/SCS TARGET ANALYSIS RESULTS:
A key element of the Tahoe Region RTP/SCS is to demonstrate that the transportation and land-use changes proposed in the plan will allow the Region to reach its major environmental thresholds in conjunction with the goals of Senate Bill 375. Based on its authority under SB 375, the California Air Resources Board requires the Tahoe Region to create a plan to reduce GHG emissions from cars and light trucks by 7 percent per-capita by 2020, and 5 percent per-capita by 2035, as compared to 2005 levels. To determine if the Tahoe Region will meet these GHG reduction targets, TRPA/TMPO analyzed the impacts that planned land-use patterns identified in the TRPA Regional Plan and planned transportation strategies will have on Lake Tahoe's baseline vehicle trips and resulting GHG emissions.

The results of the analysis are shown in the following table which identifies that drivers within the California portions of the Lake Tahoe Basin generated approximately 445 tons of GHG emissions per day in 2005. The table also shows that investments in sustainable transportation systems and the land-use patterns are sufficient to reduce GHG emissions on the California side of the basin by the targeted amount. Despite a gradual increase in total vehicle miles traveled as a result of modest resident population growth and continued increased visitation, per-capita GHG emissions would be reduced from 2005 values by 8.8 percent by 2020 and by 5 percent by 2035[2]. It is important to note that the GHG reductions are greater in 2020 than in 2035 because the Tahoe Region is expected to reach build-out prior to the 2030 timeframe, at which time the resident population is projected to remain static while visitor VMT will continue to increase as the population in the surrounding regions continue to grow.

[2] The greenhouse gas reductions per capita are greater in 2020 than in 2035 because the Tahoe Region is expected to reach build-out around 2030. At that time, the population will remain the same but visitor vehicle miles traveled will continue to increase slightly as the population in the surrounding regions continues to grow.

Table 1: 2017 RTP/SCS Greenhouse Gas Emission Results

	2005	2020	2035
Population Forecasts	41,377	43,341	45,166
Air Resources Board Targets			
% Reduction in CO_2 per capita from 2005 values (ARB Targets)		7.0%	5.0%
Sustainable Communities Strategy Forecast			
Total Daily VMT	1,041,890	1,038,998	1,149,601
Total Daily CO_2 equivalents (tons) from Daily VMT	445	430	469
Total Daily CO_2 equivalents reduced by additional use of electric vehicles		428	461
CO_2 per capita (lbs.)	21.5	19.8	20.4
% Reduction in CO_2 per capita from 2005 values – Linking Tahoe forecast		8.8%	5.0%

Comparison of 2012 and 2016 GHG Analysis:
As part of the 2012 TRPA/TMPO RTP/SCS submittal, staff forecasted that per-capita GHG reduction values would be 12.1 percent in 2020 and 7.2 percent by 2035 below the 2005 base year. As shown above, our most recent forecast for 2020 indicates an 8.8 per-capita reduction and 5 percent per-captia reduction for 2035 below the 2005 base year. A significant factor between the two forecasts is due to the update to our TransCAD socio-economic database. Early in 2013, TRPA/TMPO started to compile updated Census and Employment data to better reflect our spatial and demographic changes. The resulting update coupled with better coordination of the forecasted growth from adjacent counties at our external stations increased our VMT forecast for 2020 by 113,848. This updated data and the use of the EMFAC2014 model resulted in a more up-to-date 2016 projected per-capita reductions. Though the anticipated percentage reductions are lower than predicted in 2012, this does not reflect a change in policy direction or project prioritization. TRPA/TMPO is committed to planning, funding, and encouraging implementation of a sustainable transportation system that improves the environment through coordinated land-use and transportation strategies that reduce reliance on the automobile, enhance multi-modal options, encourage the use of zero emission vehicles, and reduce congestion through dynamic traffic flow control.

Background on Updating GHG Targets:
TRPA estimates that prior to the 2035 time frame, the percent of VMT associated with visitors to the region will increase beyond 51 percent of all VMT in the Region. While these visitor miles must be included in the per-capita GHG emissions calculation, the accounting of the population associated with that VMT is not. Equally important to note, is the increasing number of vacation rentals that are occurring around the Region that

were previously occupied by year-round residents and the recent amount of approved growth located just outside the basin that increases visitor VMT but does not increase the overall resident population. Future target recommendations from TRPA will be based on the current 2017 RTP analysis described above. As CARB works with MPOs to develop the next round of GHG targets, we would welcome a discussion of possibility adjusting the role that visitor travel has on tourist areas like the Tahoe Region and the calculation of future GHG targets. TRPA anticipates providing updated target recommendations to CARB in the spring of 2017.

Next Steps:
TRPA/TMPO plans to release the draft 2017 Regional Transportation Plan and associated environmental document in February of 2017. The agency will use the release of this plan to begin the public and agency stakeholder outreach process of vetting the current GHG reduction target analysis to determine future reduction targets. This work should be conducted in tandem with CARB on working to identify strategies to better reflect the unique travel patterns and population considerations of the Lake Tahoe Region.

We look forward to continuing our work with CARB, the public, and agency stakeholders on establishing future GHG reduction targets. Please contact me or my staff with additional questions at 775-589-5256 or nhaven@trpa.org.

Appendix C. MPO RTP Update Schedule

Status of Regional Transportation Plans (RTPs) – May 2017

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

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

Appendix D. 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 6. The passenger vehicle GHG emissions attributable to these MPO groups are almost exactly proportional to their populations, as shown in Figure 44.

Figure 3: MPO and non-MPO Boundaries

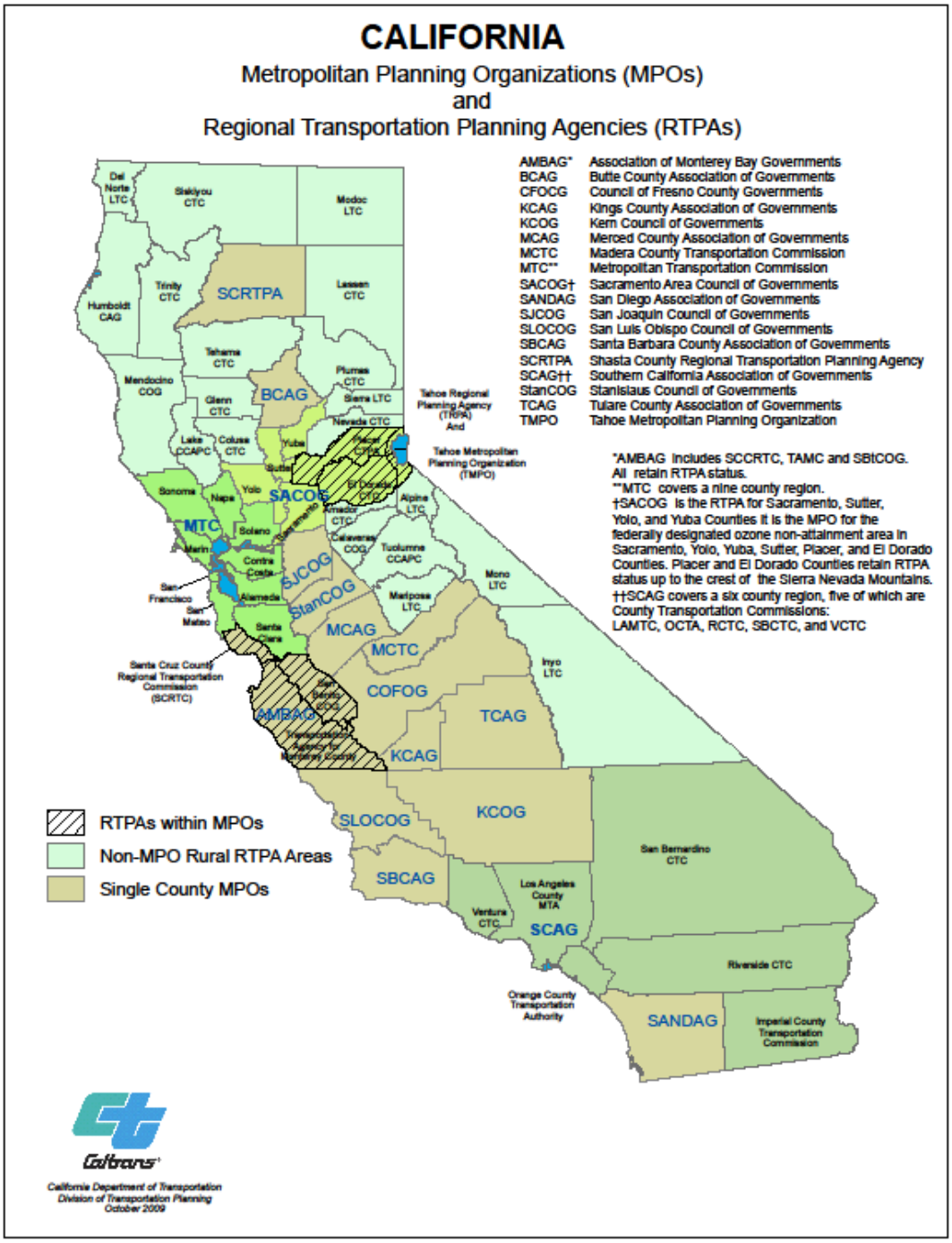
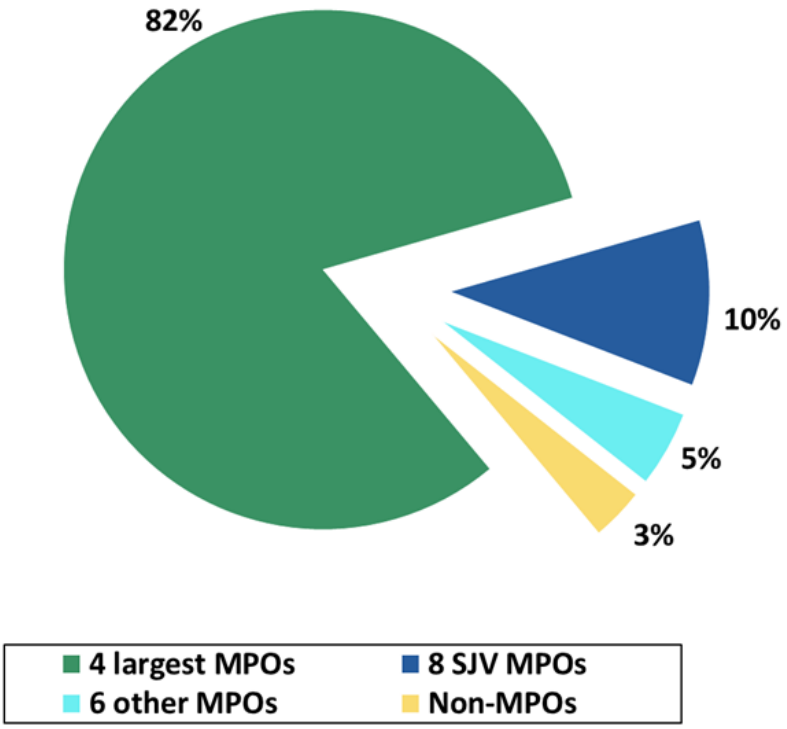


Table 6: 2015 Population by MPO Group

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



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

development, safety, security, and now GHG emission reductions, as a result of SB 375.[12]

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

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

technologies to improve system-wide traffic flow; rates of parking prices based on demand; and allowing reduced on-site parking requirements for new development.

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

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

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

C. Current SB 375 Targets and Existing SCSs

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

To date, all 18 MPOs have adopted their first SCSs pursuant to SB 375, 16 of which indicate that they meet or exceed their 2010 CARB-adopted GHG emission reduction targets. SCAG, SANDAG, SACOG, Butte CAG, and Tahoe MPO have also adopted

their second SCSs. CARB staff has completed over 20 evaluations to verify that MPO-adopted SCSs would meet their per capita GHG emission reduction targets, if the SCSs were implemented. Several MPOs are now in the process of preparing their second and third SCSs, and are focused on implementing their first SCSs. Table 7 below summarizes the existing targets and the performance of the adopted SCSs prepared, to date, by the MPOs.

Table 7: Summary of SB 375 Targets Set in 2010 and Prior SCS Performance

MPO	CARB Established Target[1]		First SCS Performance[2]		1st RTP/SCS Adoption	Second SCS Performance		2nd RTP/SCS Adoption
	2020	2035	2020	2035		2020	2035	
SANDAG	-7%	-13%	-14%	-13%	Oct. 2011	-15%	-21%	Oct. 2015
SCAG	-8%	-13%	-9%	-16%	Apr. 2012	-8%	-18%	Apr. 2016
SACOG	-7%	-16%	-10%	-16%	Apr. 2012	-8%	-16%	Feb. 2016
MTC/ABAG	-7%	-15%	-10%	-16%	July 2013	TBD	TBD	2017
Butte CAG	1%	1%	-2%	-2%	Dec. 2012	-6%	-7%	Dec. 2016
Tahoe MPO	-7%	-5%	-12%	-7%	Dec. 2012	TBD	TBD	April. 2017
Santa Barbara CAG	0%	0%	-10%	-15%	Aug. 2013	TBD	TBD	2017
AMBAG	0%	-5%	-3.5%	-5.9%	June 2014	TBD	TBD	2018
San Luis Obispo COG	-8%	-8%	-9.4%	-10.9%	Apr. 2015	TBD	TBD	2019
Shasta RTA	0%	0%	-4.7%	-0.5%	June 2015	TBD	TBD	2018
San Joaquin COG	-5%	-10%	-24.4%	-23.7%	June 2014	TBD	TBD	2018
Stanislaus COG	-5%	-10%	-26.0%	-22.0%	June 2014	TBD	TBD	2018
Kern COG	-5%	-10%	-14.1%	-16.6%	June 2014	TBD	TBD	2018
Fresno COG	-5%	-10%	-8.5%	-10.5%	June 2014	TBD	TBD	2018
Tulare CAG	-5%	-10%	-17.1%	-19.4%	June 2014	TBD	TBD	2018
Madera CTC	-5%	-10%	13.7%	9.1%	July 2014 - Amendment TBD	TBD	TBD	2018
Kings CAG	-5%	-10%	-5.1%	-12.1%	July 2014	TBD	TBD	2018
Merced CAG	-5%	-10%	-9.6%	-5.9%	Sept. 2014	TBD	TBD	2018
	-5%	-10%	-10.1%	-12.7%	Amended May 2016	-	-	2018

Notes:
[1] GHG emission reduction target measured in percent below (or above) 2005 per capita GHG emissions.
[2] The term “performance” refers to the MPO’s estimate of per capita GHG emission reductions that would be achieved if the SCS were implemented.

D. Opportunities and Barriers for Stronger SB 375 Targets

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

This suggests that the MPOs are limited in their ability to achieve substantially greater GHG emission reductions where it extends beyond their authority. However, the transportation projects identified in SCSs influence the distribution of population and employment growth in a region, and associated land use changes.[13] Therefore, it is important for more sustainable transportation planning and land use decisions to be initiated now so they begin to take effect within the planning time horizons.

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

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

1. Resources for Implementation

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

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

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

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

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

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

Work is still underway to identify and develop additional State-level funding assistance and tools, but progress has been made. New funding through passage of Senate Bill 1 (SB 1), as well as through the Greenhouse Gas Reduction Fund, and Volkswagen

Settlement has been identified to provide new incentives for implementation. For example, SB 1 is anticipated to generate over $3.5 billion annually, with approximately $750m for transit, $100m for active transportation, $25m for local planning grants, and $250m for congested corridors program improvements. The program is funded through new per gallon excise taxes on gasoline and diesel and a new vehicle registration surcharge (both tied to inflation). Additional State-level funding considerations that have been suggested include increasing certainty around State competitive grant funding to regions for SCS implementation, as well as implementation of a user fee policy, which could help yield further GHG emission reductions by providing additional revenue and incentives to invest in sustainable communities projects. These policies and programs will take the collective authorities of local and State agencies to implement and direct revenues in a way that incentivizes further emission reductions. The proposed 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.[14] Autonomous vehicles may also present opportunities for increased vehicle efficiency associated with improved traffic flow conditions and manufacturing from lighter materials. Models for deploying autonomous vehicles as shared vehicles rather than under the traditional individual ownership model may present opportunities for reduced travel demand, but more research is needed. Autonomous vehicles will not be widely available for several more years, and their true impact on VMT may not be known for several years after that time. However, the probability is high that autonomous vehicles will be present in the 2035 vehicle fleet. MPOs are working hard to collect data and are beginning to study the impacts of emerging technologies and system changes, but they need more evidence to draw conclusions.

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[14] 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.

The body of knowledge through research is growing on the effects of shared-use mobility services[15] 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),[16] there is an opportunity for MPOs to achieve greater GHG reductions than can presently be modeled. There is some uncertainty on the permanence or persistence of shared-mobility options, but the rapid increase in popularity of these new mobility options is compelling.

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

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

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[15] 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.
[16] Shaheen, et. al. 2015. Mobility and the Sharing Economy: Impacts Synopsis. Shared---Use Mobility Definitions and Impacts, Special Edition. Transportation Sustainability Research Center.

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

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

residential preferences that they exhibit in the present as they age and despite changes in the overall economy.

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

4. Cost of Driving

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

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

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

5. Modeling Capabilities

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

Some of the key limitations of MPOs' travel demand models with respect to SB 375 are that the models do not fully capture induced growth or induced or latent demand from new roadway capacity. In particular, the models do not contain feedback processes that influence trip generation and long-term population and employment distribution associated with changes to the transportation network. There are measurable effects that adding roadway capacity increases vehicle travel in both the short-term and long-term[17]. 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.

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[17] 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 enable or thwart uptake of policies that can contribute to significant GHG emissions. Many cities and counties are already setting GHG reduction targets, developing climate action plans, and making progress toward reducing emissions. In California, 60 percent of cities and over 70 percent of counties have completed a GHG inventory, and 42 percent of local governments have completed a climate, energy, or sustainability plan that directly address GHG emissions. In some cases, these include SB 375 consistent strategies that should be incorporated into their region's SCS.

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:[18]

- 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.).

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

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[18] 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 has been a concern for a number of stakeholders. Some SCS strategies, like infill and transit oriented development, have brought up concerns around displacement of existing residents. More recently, discussions on new pricing mechanisms, such as a road toll or user fee, have raised concerns on the potential to disproportionally impact disadvantage communities. CARB is committed to making the achievement of environmental justice[19] an integral part of its activities, including the SB 375 program.

[19] 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.

To help begin to address concerns around infill and transit oriented development on disadvantaged communities, CARB and Caltrans have sponsored research projects to help study the impacts. One of the studies examined the relationship between fixed-rail transit neighborhoods and displacement in Los Angeles and the San Francisco Bay Area. The researchers modeled patterns of neighborhood change in relation to transit-oriented development (TOD), and found that TOD is 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 cause an increase in auto usage and VMT. The results support the consideration of displacement in the development of SCSs, and the research also explored the possibility of considering displacement in travel demand models used by the Southern California and Bay Area MPOs and via off-model tools. Finally, researchers examined the effectiveness of anti-displacement strategies, and the results may be useful for MPOs, local jurisdictions, and communities.

In addition, CARB staff recognizes that in the context of SB 375, performance measures are essential to assessing and comparing alternative transportation and land use scenarios that not only meets a region's GHG reduction target, but also provides substantive co-benefits while supporting social equity. To help gain a better understanding of whether the intended benefits of SB 375 are beginning to accrue and are benefiting communities equitably CARB staff will be turning our attention to developing, tracking, and reporting on a consistent set of indicators as discussed in the next section.

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. 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 turn our attention to tracking 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

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CARB is currently in the process of updating the environmental justice policies and actions based on input received through the Scoping Plan Update.

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. 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. Indicators that measure land use mix and density, accessibility, social equity, and public health benefits are under consideration.

The initial phase of the research project whereby the research team will provide recommendations on indicators will be completed by summer of 2018.

Appendix E. Draft Environmental Analysis

Draft Environmental Analysis

Prepared for the Proposed Update to the SB 375 GHG Emissions Reduction Targets

California Air Resources Board
1001 I Street
Sacramento, California, 95814

Date of Release: June 13, 2017

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ATTACHMENT 1: ENVIRONMENTAL AND REGULATORY SETTING

ATTACHMENT 2: IMPACT SUMMARY TABLE

ACRONYMS AND ABBREVIATIONS

APA	Administrative Procedures Act
APS	alternative planning strategy
AV	autonomous vehicle
BEVs	battery electric vehicles
BRT	bus rapid transit
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
dBA	A-weighted decibels
EA	Environmental Analysis
EIRs	environmental impact reports
EV	electric vehicle
FED	Functional Equivalent Document
FSORs	Final Statement of Reasons
FTA	Federal Transit Authority
GHG	greenhouse gas
HOV	high-occupancy vehicle
ISOR	Initial Statement of Reasons
L_{eq}	noise equivalent level
L_{max}	maximum sound level
MPO	Metropolitan Planning Organization
MTPs	metropolitan transportation plans
NEV	Neighborhood Electric Vehicles
NO_X	nitrogen oxides
PHEVs	plug-in hybrid electric vehicles
PM_{10}	respirable particulate matter
$PM_{2.5}$	fine particulate matter
PPV	peak particle velocity
PRC	Public Resources Code
ROG	reactive organic gases
RTAC	Regional Targets Advisory Committee

RTP/SCSs	Regional Transportation Plans and Sustainable Communities Strategies
SB	Senate Bill
SCS	sustainable communities strategy
SMARA	Surface Mining and Reclamation Act
TAC	toxic air contaminant
TDM	Transportation Demand Management
TMAs	transportation management associations
TPA	Transit Priority Area
TSM	Transit Systems Management
v2i	Vehicle-to-Infrastructure
v2v	vehicle-to-vehicle
VdB	vibration decibels
VMT	vehicle miles traveled
VOC	volatile organic compound
ZEV	zero emission vehicle
ZNE	Zero Net Energy

1.0 INTRODUCTION AND BACKGROUND

A. Introduction

This Draft Environmental Analysis (Draft EA) is Appendix E to the California Air Resources Board (CARB or Board) Staff Report for the Proposed Update to the SB 375 GHG Emissions Reduction Targets (Target Update). The Target Update will be presented to the Board for consideration for approval in the fall of 2017. The Project Description section of this Draft EA presents a summary of the proposed Target Update, as required by the California Environmental Quality Act (CEQA). A more detailed description of the Target Update is in the Staff Report for the Proposed Update to the SB 375 GHG Emissions Reduction Target, date of release June 13, 2017, which is hereby incorporated by reference.

As discussed in more detail under section C. of this chapter, a prior EA was certified when the current SB 375 emissions reduction targets were approved by the Board in 2010. This Draft EA provides a programmatic level analysis of the potential for continued or expanded strategies and potential new strategies that could be implemented in response to the Target Update. This Draft EA is intended to disclose potential adverse impacts and identify potential mitigation measures specific to the Target Update. The Target Update is intended to create environmental benefits related to greenhouse gas (GHG) emissions and air quality conditions. However, in some cases, as described in Chapter 4 of this Draft EA, potentially significant effects to environmental resources may occur because of implementation of reasonably foreseeable compliance responses associated with the Target Update. As described in each resource area, many of these potentially significant impacts can be feasibly avoided or mitigated to less-than-significant levels because of project-specific environmental review processes that would be undertaken by others (e.g., regional or local agencies), and compliance with local and state laws and regulations. The Draft EA takes the conservative approach in its post-mitigation significance conclusions (i.e., tending to overstate the risk that feasible mitigation may not be sufficient or may not be implemented by other parties) and discloses, as a result, that potentially significant environmental impacts may be unavoidable.

B. Background

Federal transportation law requires metropolitan planning organizations (MPO) to be designated for all urban regions with a population greater than 50,000 (Title 23 U.S. Code). Each MPO is a transportation policy-making body made up of representatives from local government and transportation agencies with authority and responsibility in metropolitan planning areas. Because MPOs typically neither own nor operate the transportation systems they serve, most MPOs are not involved in implementing the transportation project priorities they establish. Rather, MPOs serve an overall coordination and consensus-building role in planning and programming funds for projects and operations. The MPO must involve local transportation providers in the planning process by including transit agencies, State and local highway departments, airport authorities, maritime operators, rail-freight operators, Amtrak, port operators,

private providers of public transportation, and others within the MPO region. In accordance with federal requirements, MPOs must cooperate with these entities to create regional transportation plans (RTPs), which are also sometimes referred to as metropolitan transportation plans (MTPs).

The RTP identifies how the region intends to invest in the transportation system. As noted in Title 23 U.S. Code § 450.322 subd. (b), federal law requires the RTP to "include both long-range and short-range program strategies/actions that lead to the development of an integrated intermodal transportation system that facilitates the efficient movement of people and goods."

The RTP is prepared through active engagement with the public and stakeholders using an approach that considers how roadways, transit, nonmotorized transportation, and intermodal connections can improve the operational performance of the multimodal transportation system. Accordingly, the RTP must cover performance measures and targets and include a report evaluating whether the condition and performance of the transportation system is meeting those targets. RTPs are updated every five years in air quality attainment areas, every four years in nonattainment or maintenance areas, or more frequently in areas as State and local officials deem necessary.

The Sustainable Communities and Climate Protection Act of 2008 (Sustainable Communities Act, SB 375, Chapter 728, Statutes of 2008) supports the State's climate action goals to reduce GHG emissions through coordinated transportation and land use planning with the goal of more sustainable communities.

Under SB 375, CARB establishes regional targets for GHG emissions reductions from passenger vehicle use and must update these targets at least every eight years. Each of the California MPOs must prepare a "sustainable communities strategy" (SCS) as an integral part of its RTP update process. SB 375 also integrates the regional housing needs assessment (RHNA) into SCSs. The SCS contains land use, housing, and transportation strategies that, if implemented, would result in the region meeting its GHG emission reduction targets. Once adopted by the MPO, the RTP/SCS guides the transportation policies and investments for the region. CARB reviews the adopted SCS to confirm and accept the MPO's determination that the SCS, if implemented, would meet the regional GHG targets set by CARB. If the combination of measures in the SCS would not meet the regional targets, the MPO must prepare a separate "alternative planning strategy" (APS) to meet the targets. The APS is not a part of the RTP. Under SB 375, the local jurisdictions within an MPO are not required to follow the SCS land use or transportation strategies, but certain incentives, including CEQA streamlining, are included in SB 375 to encourage compliance.

In 2010, following input on draft targets and environmental review, CARB initially approved targets for the regional MPOs for the years 2020 and 2035. Table 2-1, below in Chapter 2, Project Description, identifies the initial regional targets for 2020 and 2035 for each of the 18 MPOs.

C. Prior Environmental Analysis

On August 9, 2010, CARB released a Draft Functional Equivalent Document (2010 FED) for the initial regional GHG emissions reduction targets developed pursuant to SB 375 (State Clearinghouse No. 2010081021). (See the discussion below concerning FEDs and CEQA.)

The 2010 FED analyzed the reasonably foreseeable indirect environmental effects that could result from implementing the initial regional emission reduction targets. The 2010 FED also included an analysis of a range of five alternatives to the initial regional targets, including a "no project" alternative, a plan with substantially increased targets, a plan with substantially decreased targets, a plan relying on an absolute emissions metric, and a plan relying on a vehicle miles traveled (VMT) metric. Following the public review and comment period, the regional targets were initially approved by the Board in 2010.

This Draft EA serves as a comprehensive, programmatic environmental analysis by assessing the potential for adverse and beneficial environmental impacts associated with reasonably foreseeable compliance responses to the Target Update.

D. Environmental Review Process

i. Requirements under the California Air Resources Board Certified Regulatory Program

CARB is the lead agency for the Target Update, and has prepared this Draft EA pursuant to its CEQA certified regulatory program. Public Resources Code (PRC) § 21080.5 allows public agencies with regulatory programs to prepare a functionally equivalent substitute document in lieu of an environmental impact report or negative declaration once the program has been certified by the Secretary for Resources Agency as meeting the requirements of CEQA. CARB's regulatory program was certified by the Secretary of the Resources Agency in 1978 (see Cal. Code Regs. tit.14, § 15251 subd.(d)). As required by CARB's certified regulatory program, and the policy and substantive requirements of CEQA, CARB has prepared this Draft EA to assess the potential for significant adverse and beneficial environmental impacts associated with the proposed action and to provide a succinct analysis of those impacts (see Cal. Code Regs. tit.17, § 60005(a) and (b)). The resource areas from the CEQA Guidelines Environmental Checklist (Appendix G) were used as a framework for assessing potentially significant impacts.

CARB has determined that approval of the Target Update is a "project" as defined by CEQA. At Title 14, § 15378(a) of the California Code of Regulations, the CEQA Guidelines define a "project" as "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and that is … an activity directly undertaken by any public agency." Although the policy aspects of the Target Update do not directly change the physical environment, physical changes to the

environment could result from reasonably foreseeable compliance responses taken by other parties.

ii. Scope of Analysis and Assumptions

The degree of specificity required in a CEQA document corresponds to the degree of specificity inherent in the underlying activity it evaluates. An environmental analysis for broad programs will necessarily be less detailed than that for a specific project (CEQA Guidelines § 15146). For example, the assessment of a construction project would naturally be more detailed than one concerning the adoption of a local general plan because the construction effects can be predicted with a greater degree of accuracy (CEQA Guidelines § 15146 (a)).

The scope of analysis in this Draft EA is intended to help focus public review and comments on the Target Update, and ultimately to inform the Board of the environmental benefits and adverse impacts before Board action on the proposal. This analysis focuses on reasonably foreseeable potentially significant adverse and beneficial impacts on the physical environment resulting from reasonably foreseeable compliance responses to the Target Update.

The analysis of potentially significant adverse environmental impacts from the Target Update is based on the following assumptions:

1. This analysis addresses the potentially significant adverse environmental impacts resulting from implementing the foreseeable compliance responses within the Target Update compared to existing conditions, which includes the physical effects of the implementation of RTP/SCSs following the release of CARB's initial target reductions for 2020 and 2035.

2. The analysis of environmental impacts and determinations of significance are based on reasonably foreseeable compliance responses to the Target Update.

3. The analysis in this Draft EA addresses environmental impacts within California to the extent they are reasonably foreseeable and do not require speculation.

4. The level of detail of impact analysis is necessarily and appropriately general because the Target Update is programmatic. Furthermore, decisions by entities regarding the specific location and design of new development, facilities, or infrastructure that may be undertaken in response to the Target Update are speculative, if not impossible, to predict with precision at this stage. Specific subsequent actions included in future RTP/SCSs because of the Target Update would undergo any required project-level environmental review and compliance processes at the time they are proposed.

5. This Draft EA generally does not analyze site-specific impacts when the locations of future actions are speculative. However, the Draft EA does examine regional (e.g., air basin) and local issues to the degree feasible, where appropriate. As a result, the impact conclusions in the resource-oriented sections of Chapter 4, Impact Analysis and Mitigation Measures, cover broad types of impacts, considering the potential effects of the full range of reasonably foreseeable actions undertaken in response to the Target Update.

iii. Organization of the Draft Environmental Analysis

The Draft EA is organized into the following chapters to assist the reader in obtaining information about the Target Update and specific environmental issues.

- Chapter 1, Introduction and Background – provides a project overview, background information, and other introductory material.
- Chapter 2, Project Description – summarizes the Target Update, implementation assumptions, and reasonably foreseeable compliance responses taken in response to the Target Update.
- Chapter 3, Environmental and Regulatory Setting, in combination with Attachment A – contains the environmental setting and regulatory framework relevant to the environmental analysis of the Target Update.
- Chapter 4, Impact Analysis and Mitigation – identifies the potential environmental impacts associated with the Target Update and mitigation measures for each resource impact area.
- Chapter 5, Cumulative and Growth-Inducing Impacts – identifies the cumulative effects associated with the Target Update against a backdrop of past, present, and reasonably foreseeable future projects.
- Chapter 6, Mandatory Findings of Significance – discusses whether the Target Update would have the potential to degrade the quality of the environment, cause substantial adverse impacts on human beings, and cause cumulatively considerable environmental impacts.
- Chapter 7, Alternatives Analysis – discusses a reasonable range of potentially feasible alternatives that could reduce or eliminate adverse environmental impacts associated with the Target Update.
- Chapter 8, References – identifies sources of information used in this Draft EA.

iv. Public Review Process for the Environmental Analysis

During an update to the Board on March 23, 2017 and at a series of public workshops held in March 2017, CARB staff described plans to prepare a Draft EA for the Target Update and invited public feedback on the scope of the analysis. CARB also prepared and circulated a Notice of Preparation on March 1, 2017. CARB received several comments on the Notice of Preparation, which were taken into consideration when preparing this Draft EA.

In accordance with CARB's certified regulatory program, and consistent with CARB's commitment to public review and input on its proposed actions, this Draft EA is subject to a public review process through the posting of the staff report for the Target Update along with this Draft EA for a public review period that begins on June 13, 2017 and ends on July 28, 2017.

After the public review period, CARB will prepare written responses to comments raising significant environmental issues related to the Target Update and on the analysis in the Draft EA and revise the Draft EA, as necessary. The Final EA and the written responses to environmental comments will be considered by the Board at a public hearing in late 2017. If the Target Update is approved, a Notice of Decision will be posted on CARB's website and filed with the Secretary for Natural Resources (Cal. Code Regs. tit. 17, § 60007, subd. (b).) The Notice of Decision will also be filed with the State Clearinghouse.

2.0 PROJECT DESCRIPTION

A. Introduction and Background

SB 375 designates the California Air Resources Board (CARB) as the lead agency in establishing region-specific greenhouse gas (GHG) emissions reduction targets (targets) for each metropolitan planning organization (MPO). In 2010, CARB approved the initial per capita targets for each of the State's 18 MPOs for the years 2020 and 2035 relative to 2005 per capita emissions. Since then, MPOs have developed and approved Regional Transportation Plans and Sustainable Communities Strategies (RTP/SCSs) that include strategies to achieve the targets. SB 375 also requires that CARB review the GHG quantification methodology that each MPO used to determine if implementation of the plans would achieve the targets for the respective region. Based on information to date contained in CARB's technical evaluations of each MPO's SCS, the plans adopted by 16 of the State's 18 MPOs would meet their 2020 and 2035 targets. The two MPOs that did not meet their targets are currently revising their RTP/SCSs to demonstrate how the targets could be met in those regions. In accordance with the provisions of SB 375, every four or five years these MPOs must update their existing RTP/SCS or develop an alternative planning strategy (APS) to ensure that the region is on track to meet the targets.

SB 375 mandates that CARB update the targets every eight years. The revised targets adopted under the Target Update would become effective in 2018, eight years after the initial targets were adopted in 2010. SB 375 gives MPOs the option to recommend targets appropriate for their regions to CARB based on region-specific technical information. During the 2010 target-setting process, CARB staff worked collaboratively with MPOs and other stakeholders through a process in which MPOs recommended targets to CARB based on feasible RTP/SCSs scenarios and other considerations. CARB and the MPOs undertook a similar approach for the current Target Update, whereby many MPOs submitted target recommendations to CARB.

The proposed regional GHG targets that will be considered by the Board under the current Target Update, along with the existing targets adopted in 2010, are compared and summarized below in Table 2-1.

Table 2-1 Existing and Proposed SB 375 GHG Emission Reduction Targets

	Existing GHG Targets[1] (adopted in 2010)		**Proposed GHG Targets[1] (effective as of 2018)**	
MPO	**2020**	**2035**	**2020**	**2035**
MTC/ABAG	-7%	-15%	-10%	-19%
SACOG	-7%	-16%	-7%	-19%
SANDAG	-7%	-13%	-15%	-21%
SCAG	-8%	-13%	-8%	-21%
Fresno COG	-5%	-10%	-6%	-13%
Kern COG	-5%	-10%	-9%	-15%

Table 2-1 Existing and Proposed SB 375 GHG Emission Reduction Targets

	Existing GHG Targets[1] (adopted in 2010)		Proposed GHG Targets[1] (effective as of 2018)	
MPO	**2020**	**2035**	**2020**	**2035**
Kings CAG	-5%	-10%	-5%	-13%
Madera CTC	-5%	-10%	-10%	-16%
Merced CAG	-5%	-10%	-10%	-14%
San Joaquin COG	-5%	-10%	-12%	-16%
Stanislaus COG	-5%	-10%	-12%	-16%
Tulare COG	-5%	-10%	-13%	-16%
AMBAG	0%	-5%	-3%	-6%
Butte CAG	1%	1%	-6%	-7%
San Luis Obispo COG	-8%	-8%	-8%	-11%
Santa Barbara CAG	0%	0%	-13%	-17%
Shasta RTA	0%	0%	-4%	-4%
Tahoe MPO	-7%	-5%	-8%	-5%

Notes: AMBAG = Association of Monterey Bay Area Governments; CAG = County Association of Governments; COG = Council of Governments; CTC = County Transportation Commission; GHG = greenhouse gas; MTC/ABAG = Metropolitan Transportation Commission/Association of Bay Area Governments; MPO = Metropolitan Planning Organization; SACOG = Sacramento Area Council of Governments; SANDAG = San Diego Association of Governments; SCAG = Southern California Association of Governments; RTA = Regional Transportation Agency.
[1]Targets are expressed as percent change in per capita GHG emissions relative to 2005 levels for each region.

B. Project Objectives

The project objectives for the Target Update are defined by relevant portions of SB 375 that apply to CARB, Board direction provided when targets were initially adopted in 2010, along with the proposed 2017 Climate Change Scoping Plan Update (CARB 2017a), which are summarized below.

1. Update the regional GHG emission reduction targets at least every eight years and take into account:

   a) GHG emissions reductions that will be achieved by improved vehicle emission standards, changes in fuel composition, and other measures CARB has approved that will reduce GHG emissions in the affected regions, and prospective measures CARB plans to adopt to reduce GHG emissions from other sources as that term is defined in subd. (i) of § 38505 of the Health and Safety Code and consistent with the regulations promulgated pursuant to the California Global Warming Solutions Act of 2006 (Division 12.5 (commencing with § 38500) of the Health and Safety Code).

b) Updated technical data, forecasts, and other information provided by the Department of Transportation, MPOs, local governments, affected air districts, and public and private stakeholders.

c) Advancement of technical tools and methods, such as consistent standards for data and modeling assumptions, model improvements, and measures of achievement of emission reductions.

2. Update regional GHG emissions reduction targets to continue to achieve a balance between goals that motivate further positive planning and action toward more sustainable communities that foster co-benefits such as improved public health outcomes, more mobility choices, more housing choices, and resource and land conservation; but are not out of reach for regions and local governments.

3. Update regional GHG emissions reduction targets to further the objectives set forth in SB 32 and Executive Order B-30-15, specifically that would, if implemented, result in greater GHG emission reductions from the transportation sector compared to reductions that would be achieved under currently adopted SCSs. Targets would contribute to achieving the overall statewide GHG emissions reduction target of 40 percent below 1990 levels by 2030, as well as support achievement of our statewide public health and air quality objectives. (CARB 2017a)

C. Existing RTP/SCS Strategies

Following the passage of SB 375, CARB worked closely with MPOs and the SB 375 Regional Targets Advisory Committee (RTAC) to develop GHG reduction targets and methods to measure how each region can meet the targets. After CARB adopted the initial GHG reduction targets in 2010, MPOs developed the first round of RTP/SCSs that included an array of land use, housing, and transportation strategies that would reduce GHG emissions from the automobile and light-duty truck sector.

The development of the first RTP/SCSs included the use of a planning method known as regional blueprint planning, which entails engaging public input on sets of regional growth scenarios containing a range of land use, transportation, and other outcomes. Regional blueprint planning assists MPOs in balancing transportation and land use planning, housing needs, and resource protection to achieve more sustainable regional growth patterns and improve the quality of life for residents. Examples of growth scenarios include:

- Business as Usual: Assumes a land use forecast based on existing general plans and a continuation of current growth trends.
- Low-Density/Low-Transit Investment: Allocates a small budget for future transit projects and sets a low average unit density for future development.

- Moderate-Density/Moderate-Transit Investment: Allocates a moderate budget for future transit projects and sets a moderate average unit density for future development.
- High-Density/High-Transit Investment: Allocates a large budget for future transit projects and sets a high average unit density for future development.

Depending on the MPO, preferred RTP/SCS scenarios often were based on input from public stakeholders and member local jurisdictions. The preferred scenario may ultimately take the form of a hybrid scenario, with attributes drawn from the different scenarios proposed during public workshops. Variations in geographic size, population, existing land use allocation, transportation priorities, available funding resources, and other factors produce an assortment of strategies that can result in GHG emissions reductions. The strategies discussed below were categorized as either addressing land use patterns or transportation infrastructure and facilities; however, when these strategies are implemented together, they have a synergistic effect on reducing GHG emissions. These types of strategies are summarized further below.

1. Land Use Strategies

RTP/SCSs adopted by MPOs to achieve the existing regional GHG targets contain land use policies that are recognized to reduce vehicle miles traveled (VMT) and associated GHG emissions. To arrive at these policies, MPOs first coordinate with their member local jurisdictions to develop a regional growth and land use forecast. MPOs work with the local jurisdictions to identify areas where it makes sense to plan for increased density as it relates to the transportation system. The land use forecast includes location-appropriate strategies that are known to reduce VMT by shortening trip length, and facilitating non-auto travel compared to historical development patterns. Focusing growth within existing urban centers or along transit corridors improves the efficiency of the transportation system, which reduces VMT and associated GHG emissions. Common land use strategies included in RTP/SCSs include increased multi-family and small-lot housing, increased average densities, mixed land use, and infill development; focusing development of Transit Priority Projects (TPPs) (as defined; Chapter 4.2 of CEQA) within Transit Priority Areas (TPAs); new parking requirements or standards, such as shared parking or reductions in parking requirements; and preservation of open space.

Focusing development in existing or planned urban areas requires a combination of land use strategies that optimize use of space. For example, local jurisdictions may work in coordination with MPOs to establish a higher average density for residential use within and adjacent to urban areas. This results in investments in multi-family, attached, and/or small-lot housing development. Further, land use plans (e.g., general plans) are more frequently discouraging single-use zoning and incorporating mixed-use zoning into future development.

Additionally, infill development and redevelopment are strategies in RTP/SCSs to maximize urban density where transportation efficiencies can be achieved. Infill development refers to the redevelopment of existing parcels or use of undeveloped lots

within urban and suburban areas. Vacant lots or underutilized sites such as surface parking lots are infill opportunities that can make more efficient use of limited urban space, which helps to increase proximity of housing to jobs and other services within urban centers. Further, focusing on infill encourages more compact development within the margins of existing urban centers and reduces encroachment into rural agriculture and open spaces.

Focusing development within TPAs has also been included as a strategy in completed RTP/SCSs. TPAs are designated based on their location within a quarter to a half mile of existing or planned transit stations (and other criteria) and many RTP/SCSs focus on developing residential and mixed-use development—TPPs, as defined-- in those areas. Use of TPPs increases proximity and accessibility to transit, thereby enhancing the walkability of a community and reducing the need for automobile use.

A supplemental land use strategy that yields indirect reductions of passenger vehicle GHG emissions is the adoption of policies designed to preserve the integrity of open space, agriculture, and environmentally-sensitive habitats. These policies discourage development in such areas and, when applied in coordination with other land use strategies at the regional level described above, can further encourage more compact, future development to existing urbanized areas near transit. Thus, conservation of open space functions as a complementary strategy to other land use strategies to help prevent suburban sprawl and reduce VMT.

2. Transportation Strategies

RTP/SCSs adopted by MPOs to achieve the existing regional GHG targets also include transportation-related strategies designed to reduce VMT and GHG emissions. These include the development of complete streets, increasing transit efficiency and frequency, expansion and improvement of transit systems, development of low-emission fueling and charging infrastructure, and use of Transportation Demand Management (TDM) and Transit Systems Management (TSM) strategies.

Complete streets are defined as streets that support the safety and efficiency of all forms of transportation. A complete street provides pedestrian walkways, and bicycle, transit, and vehicle lanes. These streets are designed to ensure safe access for all users and, thus, encourage the use of low-emission forms of transportation. Incorporation of complete streets in land use planning increases the attractiveness of walking and bicycling, and stimulates a transition away from automobile use.

MPOs have dedicated a substantial portion of RTP investments to improving and expanding transit systems and strengthening transit corridors. Transit services include local and express buses; bus rapid transit (BRT); trolleys, trams, or other streetcars; aboveground passenger rail services, such as light rail and commuter rail; or underground subway systems. New transit lines, extensions, connections, and stations are planned to increase the availability of transit services.

Fixed-route rail transit systems (e.g., light rail transit) and BRT comprise two transit options that improve service rates and transit efficiency and are included in several adopted RTP/SCSs. Fixed-route rail transit systems operate aboveground on a discrete track or prioritized vehicle lane. Similarly, BRT includes features that separate bus movement from passenger vehicles. Typical features of BRT systems consist of dedicated lanes, busway alignment, off-board fare collection, platform-level boarding, and intersection treatment. The separate infrastructure of fixed-route rails and BRT increases transit efficiency through reducing traffic-related causes of delay. Additionally, BRT supports RTP/SCS goals to increase transit frequency by shortening transit-related headways, or the minimum distances or waiting times between vehicles.

Natural gas, zero-emissions vehicle (ZEV), and plug-in hybrid-electric vehicle (PHEV) buses are currently being incorporated into transit fleets. Investments in ZEV- and PHEV-bus fueling and charging infrastructure to support transit needs are also underway.

Another measure included in RTP/SCSs is the investment and expansion of regional ZEV and PHEV fueling and charging infrastructure for cars and light-duty trucks beyond existing and future State programs and investments. This strategy is intended to stimulate fleet turnover by improving the convenience of ZEV and PHEV usage. Also, to advance the rate of fleet turnover, MPOs can also engage in ZEV and PHEV rebate programs. To incent the purchase of a low-emission vehicle, MPOs and local jurisdictions can buy back high-emission vehicles from automobile owners. This rebate is then used as a contribution to the future purchase of a low-emission vehicle.

TDM strategies incent behaviors that lower the demand for single-occupancy vehicle (SOV) use. For instance, MPOs have included incentive programs in their RTP/SCSs to minimize need for SOVs. Ridesharing opportunities have become more widespread as local jurisdictions invest in high-occupancy vehicle (HOV) programs (e.g., carpool, vanpool). Demand for SOV use can be further reduced through corporate rebate programs or the formation of transportation management associations (TMAs) wherein companies exceeding a certain number of employees or groups of companies or employers provide incentives to carpool, use public transit, and/or provide company shuttles to satisfy the commute needs of their employees. MPOs can also partner with privatized ride sharing companies (e.g., Zipcar, Car2Go) to provide affordable and accessible ride sharing services to their residents.

Other TDM measures to lower SOV use entail providing managed lanes, shortcuts that bypass congested roadways, and reduced costs for HOVs. Enforcing dedicated lanes and shortcuts for HOVs generate traffic-related time and cost-effective advantages that can alter existing behaviors.

Additional TDM measures included in RTP/SCSs target bicycle use. Government funded or privatized bicycle sharing programs offer users fast and efficient bicycle rentals for hourly and/or day-long periods. MPOs and local governments can also promote bicycle education programs and events to encourage bicycle use.

Further, vehicle-related GHG reductions can be achieved through reduced on-site parking requirements for new development. This results in an overall reduction in parking availability and potential vehicle trip reductions and changes in travel mode, because parking becomes more expensive and difficult to locate. Reducing and more actively managing on-site parking can incent more frequent transit use, ridesharing, walking, and the use of bicycles. Also, as vehicle-related parking becomes less available, bicycle parking may become more common and accessible.

RTP/SCSs have also included TSM strategies to reduce vehicle-related GHG emissions associated with traffic and congestion. Through TSM, vehicle movement can become more streamlined and efficient. For example, incorporating roundabouts into community planning in lieu of traditional stop signs can lower GHG emissions associated with braking and accelerating. Ramp metering on freeway and highway on-ramps is another strategy designed to improve traffic flow. Metering manages the rate of vehicle movement during peak traffic hours and contributes to smoother traffic flow.

Technological improvements, such as traffic signal optimization and incident management, can also contribute to freer flowing traffic patterns. Traffic signal optimization involves improving the operations, maintenance, timing, and location of traffic signals to promote smoother traffic flows. The use of incident management could entail support for programs that identify and clear traffic-related accidents.

The physical separation of trucks and railroads from passenger vehicle-dominated roadways is another TSM strategy to improve traffic rates. Through this strategy, truck-only lanes would be managed to compartmentalize varying traffic speeds and improve flow. Similarly, interaction between railroad lines and roadways would minimize interactions between rail and passenger vehicles and would result in fewer stops and optimize traffic flow.

Passenger vehicle-related GHG emissions can also be reduced through simple roadway maintenance. Roadways deteriorate over time due to everyday vehicle use, roadway cleaning, snow removal, and general weathering. Periodic resurfacing of roadways can improve the efficiency of a vehicle through reducing friction.

The land use and transportation strategies discussed above represent the range of actions included in existing RTP/SCSs adopted by MPOs since the initial regional GHG reduction targets were adopted by CARB in 2010. Thus, these strategies represent the compliance responses of MPOs and local jurisdictions to the existing regional GHG reduction targets and serve as the baseline for the impact analysis presented in this Draft EA.

D. Reasonably Foreseeable Compliance Responses to the Target Update.

This Draft EA evaluates the reasonably foreseeable compliance responses expected to be taken by MPOs or local agencies because of new targets set under the Target Update. Compliance responses include those reasonably foreseeable actions that

would occur if new or expanded strategies in future updates to RTP/SCSs are implemented by MPOs or local jurisdictions in response to the Target Update.

The anticipated compliance responses discussed in this section focus on those activities with the potential to result in either a direct or indirect physical change in the environment (e.g., construction activities, infrastructure and equipment installations, operation of vehicles and transit systems, and other activities). Some potential compliance responses are activities that would not result in direct or indirect environmental effects (e.g., deployment of software designed to help members of the public easily compare their travel mode choices), or where direct or indirect effects are unknown and too speculative to define (e.g., autonomous vehicles). Such activities are noted in the discussion.

It is expected that implementation of the Target Update would result in a continuation and expansion of existing strategies included in already adopted RTP/SCSs that achieve the existing GHG targets, as well as new strategies not previously included or quantified in adopted RTP/SCSs. The existing strategies were summarized above in Section B of this chapter. Below, the continuation and expansion of existing GHG reduction strategies and the new strategies that are most foreseeable, based on current information, are discussed, along with the strategies' reasonably foreseeable compliance responses. Table 2-2 summarizes the potential for continuation or expansion of existing GHG reduction strategies and Table 2-3 summarizes potential new GHG reduction strategies, with each table followed by a summary of the reasonably foreseeable compliance responses associated with those strategies.

Table 2-2 Summary of Potential Continuation or Expansion of Existing GHG Reduction Strategies in Future RTP/SCS Updates

Strategy	Description	Compliance Responses	Implementing Parties
Land Use			
Infill Development	Accommodating growth within existing urban areas through redevelopment of existing parcels or development of vacant lots	• Continuation and/or increased rate of infill development and redevelopment where feasible • Updates to local land use plans and zoning ordinances	Local agencies with land-use authority Private sector
Increased Multi-Family and/or Small-Lot Housing	Prioritizing and planning for more multi-family or attached housing instead of single-family housing	• Continuation and/or increased emphasis on multi-family and small-lot housing for future housing developments • Updates to local land use plans and zoning ordinances	Local agencies with land-use authority Private sector

Table 2-2 Summary of Potential Continuation or Expansion of Existing GHG Reduction Strategies in Future RTP/SCS Updates

Strategy	Description	Compliance Responses	Implementing Parties
Increased Density	Increasing the regional average density by implementing other land use strategies, or through up-zoning	• Continuation and/or increased frequency of mixed use development • Updates to local land use plans and zoning ordinances	Local agencies with land-use authority Private sector
Transit Priority Projects	Identification of TPAs to encourage new residential or mixed-use development (i.e., TPPs) within one half-mile of existing and future transit stations.	• Continuation and/or increased development in TPAs • Updates to local land use plans and zoning ordinances	MPOs Local agencies with land-use authority Private sector
Farmland/Open Space Preservation	Supporting existing farmland preservation and open space policies in local GPs or providing incentives to preserve farmland and open space from future development	• Continuation and/or increased preservation of open space and agricultural land • Updates to local land use plans and zoning ordinances	Local agencies with land-use authority Private sector
Transportation			
Bike and Pedestrian Infrastructure/Complete Streets	Improving or expanding bike and pedestrian facilities including bike lanes, multi-use trails, and sidewalks through signage, striping, safety improvements, and dedicating new right-of-way for these purposes	• Continued, modified, or new investments in bike and pedestrian infrastructure and/or complete streets • Increased MPO-funded incentive programs • Updates to local land use plans and zoning ordinances	MPOs Local agencies with land-use authority Local public works or transit agencies Private sector School districts Park districts
Increased Transit Operations and Efficiency	Expanding transit services into areas that are underserved; reducing transit headways; implementing transit	• Continuation and/or increased development of transit operations and efficiency • Expansion of roads	MPOs Local agencies with land-use authority

Table 2-2 Summary of Potential Continuation or Expansion of Existing GHG Reduction Strategies in Future RTP/SCS Updates

Strategy	Description	Compliance Responses	Implementing Parties
	services with dedicated right of way	• Construction of new transit corridors • Incorporation of ZEV and PHEV buses and supporting infrastructure • Increase in electric battery production and associated industries	Local public works or transit agencies School districts Private sector
Transportation Demand Management			
Carpool/Vanpool	Organized ridesharing through workplaces or through MPO-provided programs, and supporting infrastructure	• Increase funding for carpool/vanpool programs • Construction of park-and-ride lots	MPOs Local public works or transit agencies Transportation Management Associations Employers
Corporate Shuttles	Employer-provided shuttles or private buses	• Increase funding for corporate shuttle or private bus programs	MPOs Local public works or transit agencies Transportation Management Associations Private sector employers
Carshare	MPO partnerships with privatized car access programs	• Expansion of privatized car-sharing services	MPOs Transportation Management Associations Local agencies with land use authority Private sector

Table 2-2 Summary of Potential Continuation or Expansion of Existing GHG Reduction Strategies in Future RTP/SCS Updates

Strategy	Description	Compliance Responses	Implementing Parties
High-Occupancy Vehicle (HOV) Lanes	Dedicating highway lanes to vehicles with two or more passengers	• Increase in miles of managed highway and freeway HOV lanes	MPOs Caltrans Local public works or transit agencies
HOV Priority	Providing incentives for vehicles with two or more passengers such as reduced bridge tolls and shortcuts	• Increase shortcut opportunities for HOVs • Increase reductions in toll pricing for HOVs	MPOs Caltrans Local public works or transit agencies
Parking Supply Management	Allowing reduced on-site parking requirements for new development	• Construction of development with limited parking opportunity	Local agencies with land-use authority Private sector
Employer-Based Trip Reduction Programs	Financial incentives or technical support for employer-sponsored programs, such as transit subsidy, telecommuting, or parking cash-out	• Continuation and/or increase funding of programs to reduce commuter-related VMT	MPOs Local transit agencies Transportation Management Associations Employers
Bicycle/Pedestrian Incentive and Education Programs	Investments in education or promotion of alternative modes of transportation	• Continuation and/or increase in funding for education programs • Continuation and/or increased promotion of community-wide active transportation events	MPOs Local public works or transit agencies Transportation Management Associations Private or Nonprofit sectors
Bikeshare Systems	Programs that allow for short-term bicycle renting and borrowing	• Continuation and/or increase in availability and funding for bikeshare	MPOs Local public works or transit agencies

Table 2-2 Summary of Potential Continuation or Expansion of Existing GHG Reduction Strategies in Future RTP/SCS Updates

Strategy	Description	Compliance Responses	Implementing Parties
		systems near transit centers	Private sector
Transportation Systems Management			
Traffic Signal Optimization	Improving the operations, maintenance, timing, and location of traffic signals to promote smoother traffic flow	• Continuation and/or increased improvements to traffic-related infrastructure	Local public works agencies
Transit Signal Priority	Giving transit vehicles signal priority to increased passenger throughput and speed	• Continuation and/or increased priority for transit	Local public works or transit agencies
Ramp Metering	Controlling the rate at which vehicles enter a freeway to improve traffic flow	• Continuation and/or increased number of metered onramps	Caltrans Local public works agencies
Incident Management	Programs to quickly detect and clear traffic incidents	• Continuation and/or increased level of use of incident management programs	Caltrans Local public works agencies
Roundabouts	Replacing existing traffic signals or stop signs with roundabouts to improve traffic flow	• Continuation and/or increased construction of roundabouts where applicable	Local public works agencies
Speed Limit Reduction and Enforcement	Lowering and/or enforcing speed limits or implementing variable speed limits to optimize traffic flow	• Continuation and/or increased enforcement of speed limits	Caltrans CA Highway Patrol Local public works agencies Local law enforcement agencies
Resurfacing Roads	Resurfacing rough roads to reduce friction-related GHG emissions	• Continuation and/or increased roadway maintenance	MPOs Caltrans Local public works agencies

Table 2-2 Summary of Potential Continuation or Expansion of Existing GHG Reduction Strategies in Future RTP/SCS Updates

Strategy	Description	Compliance Responses	Implementing Parties
Truck Auxiliary Lanes	Separating trucks from general traffic to improve traffic flow	• Increase separation of trucks through designating or constructing truck-only lanes	MPOs Caltrans Local public works agencies
Railroad Grade Separations	Separating trains from general traffic to improve traffic flow and eliminate vehicle idling	• Increase separation of trains and vehicles through transportation planning	Local public works agencies Railroads
Intelligent Transportation Systems	Applying communications-based information and wireless technologies, such as variable messaging, incident management, system monitoring, etc., to improve system-wide traffic flow	• Incorporate more communications-based technologies into transportation systems	MPOs Caltrans Local public works agencies
Integrated Corridor Management	Integrating transportation networks through signal coordination/optimization, speed control, ramp metering, etc., to improve traffic flow at the corridor level	• Increase integration of transportation systems to improve system efficiency	MPOs Caltrans Local public works agencies
Rebate Programs			
Clean Vehicle Rebates	Promoting clean vehicle adoption by offering rebates for the purchase or lease of new, eligible zero-emission vehicles, including electric, plug-in hybrid electric and fuel cell vehicles.	• Construction of EV charging or hydrogen refueling infrastructure • Increase in electric battery or hydrogen fuel cell production and associated industries	CARB MPOs Air Districts
Pricing Strategies			
HOV Toll Lanes	Allowing single occupancy vehicles to pay a toll for access to HOV lanes	• Modifications to existing roadway infrastructure to include toll booths and cameras	MPOs Caltrans

Table 2-2 Summary of Potential Continuation or Expansion of Existing GHG Reduction Strategies in Future RTP/SCS Updates

Strategy	Description	Compliance Responses	Implementing Parties
			Local public works agencies
Congestion Pricing	Charging a toll to drive within certain districts of an urban area during peak hours to limit congestion	• Modifications to existing roadway infrastructure to include toll booths and cameras	State Transportation Agencies Local Transportation Authority
Variable Parking Pricing	A parking metering system where the price of parking fluctuates based on demand	• Continuation and/or increased rates of parking prices based on demand	Local agencies with land use authority
Vehicle Technology			
ZEV/PHEV Charging Infrastructure	Investments in, and availability of, public and workplace charging stations promotes electric vehicles ownership	• Construction of regional ZEV/PHEV infrastructure • Increase in electric battery production and associated industries	MPOs Local public works agencies Local agencies with land-use authority Private sector Utilities

1. Potential Continuation or Expansion of Existing GHG Reduction Strategies

a. Land Use

Many of the land use strategies that could be implemented under the Target Update are already included in existing RTP/SCSs, although not all land use strategies are uniformly applicable or would be applicable to the same degree across all MPOs, given the variability of regional and local conditions. Further reductions in passenger vehicle-related GHG emissions could be achieved if land use strategies are strengthened or increased. Each MPO, in consultation with local agencies within each MPO region, would determine the appropriate mix and timing of implementation for any expanded or new strategies included in future RTP/SCS updates.

MPOs do not have land use authority; therefore, implementation of land use strategies under the Target Update would typically require local action through the form of updates or amendments to general plans, community plans, specific plans, zoning; or, through

the review and approval of specific land use development projects. However, MPOs can still play a role in implementing land use strategies in adopted RTP/SCSs by providing technical assistance to local jurisdictions to take actions that help implement regional land use strategies.

i. Infill Development

Infill development would continue and could increase under the Target Update. Reasonably foreseeable compliance responses could include modified strategies for infill development that increase the rate of new development on vacant lots in developed areas, as well as increase the rate of redevelopment of underutilized properties in developed areas. This could result in updates to existing local land use plans and zoning ordinances, as well as the approval, construction and operation of additional new infill development projects. Examples of potential infill development projects include residential, commercial, and industrial buildings. Infill projects could also occur as mixed-use and within TPAs. Some infill projects could result in demolition of existing structures prior to the construction and operation of new development. Increased infill development could also require modifications to or expansion of existing infrastructure, including streets, water, sewer, drainage, energy (i.e., electricity generation and distribution and natural gas distribution), telecommunications, parks, schools, and other facilities in existing developed areas to accommodate infill development.

ii. Increased Multi-family and Small-Lot Housing

Reasonably foreseeable compliance responses to the Target Update could include regional strategies to further increase emphasis on more compact, land-efficient residential development, prioritizing and planning for more multi-family or attached housing, instead of single-family housing. This could result in updates to existing local land use plans and zoning ordinances to increase permitted densities, as well as the approval, construction and operation of additional new multi-family and small-lot housing development projects.

Increased multi-family or small-lot housing could also require modifications to or expansion of existing infrastructure, to accommodate multi-family and small-lot development that could occur at higher densities than previously planned. This could include streets, water, sewer, drainage, energy (i.e., electricity generation and distribution and natural gas distribution), telecommunications, parks, schools, and other facilities in existing developed areas.

iii. Increase Mix of Land Uses

Reasonably foreseeable compliance responses to the Target Update could include expanding existing strategies to increase the integration of residential, commercial, industrial and other land use types within proximity to each other. Mixed urban uses can reduce the number of vehicle trips where walking or bicycling is feasible, or where one vehicle trip can serve multiple purposes. This could result in updates to existing local land use plans and zoning ordinances to allow greater mixing of uses in various types of

land use designations (e.g., neighborhoods, commercial districts, industrial areas, downtowns, TPAs). Implementing such updates to plans and ordinances could result in the approval, construction and operation of mixed-use development projects, along with single-use infill development projects that introduce new land uses in geographic areas that were originally developed under traditional single-use zoning could also occur (e.g., introducing neighborhood-serving retail uses in a traditional single-family neighborhood, or adding housing in existing commercial corridors). Mixed-use projects could also include greater vertical or horizontal mixing of uses within existing buildings or allowing a greater mix of uses in existing campus-like settings.

iv. Transit Priority Areas (TPAs)

Reasonably foreseeable compliance responses to the Target Update could include expansion of existing strategies to continue or increase designations of TPAs in areas within one quarter to one half mile from existing or planned transit stations. This could result in updates to existing local land use plans and zoning ordinances to adjust permitted land uses, densities and other regulations to enable the development of TPPs within TPAs.

Construction and operation of new infill, mixed-use, or higher-density TPPs in TPAs in response to these local actions would be reasonably foreseeable. Where TOD would occur in existing developed areas as infill projects, modifications to or expansion of existing infrastructure could occur to accommodate additional development, including streets, water, sewer, drainage, energy (i.e., electricity generation and distribution and natural gas distribution), telecommunications, parks, schools, and other facilities.

v. Preservation of Farmland and Open Space

Reasonably foreseeable compliance responses to the Target Update could include enhanced strategies to increase the preservation of existing farmland and open space. These strategies would be complementary to other land use strategies described above and, thus, could contribute to increasing more compact land use patterns that reduce VMT. Specific actions could include the creation and implementation of regional or local programs dedicated to agricultural and open space preservation through the purchase of conservation easements, the creation and operation of open space and habitat reserves, and other regulatory and voluntary tools to ensure that such lands are conserved in perpetuity and not available for urban development (e.g., transfer of development rights). In some cases, updates to existing local land use plans and zoning ordinances could occur consistent with regional programs or measures to protect farmland and open space, such as zoning to create buffers that separate existing agricultural uses and open space from encroaching development.

b. Transportation

Many of the transportation strategies that could be implemented by MPOs or local agencies in response to the Target Update are already included in existing RTP/SCSs. These existing strategies could be continued and expanded in future RTP/SCS updates. Not all transportation strategies are uniformly applicable or would be applicable to the

same degree across all MPOs or local jurisdictions, given the variability of regional and local conditions. Each MPO, in consultation with local agencies within each MPO region, would determine the appropriate mix and timing of implementation for any expanded or new strategies that would be included in future RTP/SCS updates.

i. Bike and Pedestrian Infrastructure/Complete Streets

Reasonably foreseeable compliance responses to the Target Update could include new or modified strategies to increase bike and pedestrian infrastructure and the development of complete streets. This could result in expansion of regional programs sponsored by MPOs or others to fund local implementation of bicycle, pedestrian and complete streets projects. Local agencies could also update general plans and other transportation plans to be consistent with strategies in updated RTP/SCSs. Local governments could also increase construction and operation of bicycle, pedestrian and complete streets projects, including bicycle and pedestrian lanes, walkways, and greenbelts; pedestrian, bicycle, and transit preferred crosswalks, passing lanes (e.g., reversible lane), and traffic signal priority; and development of bicycle parking facilities or structures. Incorporation of complete streets could also require the expansion or alteration of existing roadway systems to include tracks for light rail and streetcars.

ii. Increased Transit Operations and Efficiency

Reasonably foreseeable compliance responses to the Target Update could include new or modified strategies to expand transit operations and improve transit operation efficiency. Implementation actions by transit agencies or other local entities could include modifications to transportation and transit plans, as well as the construction and operation of new transit routes and stations. This could result in the demolition and removal of existing structures to provide space for new infrastructure. Expansion or modification of existing roadways could also occur to incorporate BRT and commuter rail lanes. Incorporation of ZEV and PHEV buses could require the construction of charging and hydrogen fueling infrastructure. Further, the use of ZEV and PHEV could produce additional demand such that ZEV and PHEV manufacturing and associated facilities would need to increase production such that new or modified facilities would need to be constructed. Demand for lithium ion batteries could increase, which could result in increased rates of battery production. Used lithium ion batteries could also be re-used in stationary applications and later refurbished, which could require new facilities, or modifications to existing facilities to accommodate battery recycling.

iii. Transportation Demand Management

Reasonably foreseeable compliance responses associated with TDM strategies in updated RTP/SCSs could include expansions of roadways to include managed lanes for HOVs and construction of ride sharing infrastructure (e.g., park-and-ride lots). Managed lanes for HOVs would provide incentive to automobile users to engage in ride sharing programs as HOV-only lanes would allow users to circumvent traffic during peak hours, and reduce users' travel time.

iv. Transportation Systems Management

Reasonably foreseeable compliance responses to the Target Update could include enhanced TSM strategies that would result in physical alterations to roadways, including installation of ramp metering at freeway interchanges, installation of traffic calming infrastructure (e.g., roundabouts), and expansion of existing roadways to include truck auxiliary lanes. Ramp metering, roundabouts, and managed truck-only lanes can minimize traffic-related GHG emissions associated with braking and acceleration.

v. Rebate Programs

Reasonably foreseeable compliance response to the Target Update could include the continuation, expansion, or establishment of clean vehicle rebate programs. MPOs and other local jurisdictions may complement existing statewide rebate programs by incentivizing owners of high-emission vehicles to purchase low-emission vehicles through buying back high-emission vehicles. The profit from the transaction can then be allocated as a rebate for the purchase of a low-emission vehicle (e.g., ZEV, PHEV).

vi. Pricing Strategies

Reasonably foreseeable compliance responses associated to the Target Update could include increased use of pricing strategies that could result in modifications to existing roadways, including new infrastructure to support increased use of roadway or congestion pricing programs and high-speed tolling. Tolls could be applied to SOV use of HOV lanes, which could require the installation of toll-related infrastructure (e.g., cameras, toll booths). To reduce congestion in urban areas, local transportation authorities could charge a toll to drive in certain areas during peak hours. Varying parking prices can manage demand and control supply.

vii. ZEV and PHEV Charging Infrastructure

Reasonably foreseeable compliance responses to the Target Update could include regional strategies to fund or provide incentives to install electric vehicle (EV) charging and hydrogen fueling infrastructure to support increased adoption of ZEV and PHEV vehicles. Implementing actions under this strategy could include updates to local zoning or building codes to establish standards and specification for the installation of charging and fueling infrastructure. This could lead to the construction and operation of individual ZEV fueling and PHEV electric charging infrastructure projects. Similar to Increased Transit Operations and Efficiency, increased use of ZEVs and PHEVs would increase demand on manufacturers and associated industries such that new or modified facilities would need to be constructed. Demand for lithium ion batteries would increase, which could result in increased rates of battery production. Used lithium ion batteries could also be re-used in stationary applications and later refurbished, which could require new facilities, or modifications to existing facilities to accommodate battery recycling.

2. Potential New GHG Reduction Strategies

Table 2-3 Summary of Potential New GHG Reduction Strategies in Future RTP/SCS Updates

Strategy	Description	Compliance Responses	Implementing Parties
Autonomous Vehicle (AV) Fleets	Incorporating public or shared AVs into the passenger vehicle fleet when available	• Modifications to existing infrastructure that supports AV use including sensors and transponders	MPOs Caltrans Local transit agencies Local public works agencies Private sector
Vehicle-to-Vehicle (v2v) Technology	Incorporating v2v technology to enable vehicles to communicate with each other to optimize traffic flow	• Encourage users and manufacturers to adopt v2v technology when available	Private sector
Vehicle-to-Infrastructure (v2i) Technology	Incorporating v2i technology to enable vehicles to communicate with infrastructure to optimize traffic flow	• Encourage users and manufactures to adopt v2i technology when available	Caltrans Local public works and transit agencies Private sector
Neighborhood Electric Vehicles (NEV) and Infrastructure	Providing NEVs for short-distance, local trips	• Construction of NEV infrastructure • Increase in electric battery production and associated industries	Local public works and transit agencies Private sector
Rideshare/Ride Matching	Increasing vehicle occupancy through use of transportation network companies, leveraging services to provide better access to and from fixed-route transit corridors, and for residents living more than a quarter mile from a transit stop, reducing the first mile/last mile limitation of public transit.	• Public and private partnerships to incorporate vehicle/ride sharing in more locations	MPOs Local public works agencies Private sector
Transportation Aggregators	Using applications that provide real-time	• Encourage public use and	MPOs

Table 2-3 Summary of Potential New GHG Reduction Strategies in Future RTP/SCS Updates

Strategy	Description	Compliance Responses	Implementing Parties
	information about travel times and costs associated with various forms of transportation	private/public development of applications to deliver a comprehensive outlook of travel options	Private sector
Last-Mile Delivery	Incorporating efficient vehicles into the delivery fleet as a response to a projected increase in the popularity of on-line shopping	• Construction of urban distribution centers and parcel pick-up locations • Increase in electric battery production and associated industries	CARB MPOs Local public works agencies Local agencies with land-use authority Private Sector

a. Autonomous Vehicle Fleet

Reasonably foreseeable compliance responses to the Target Update could include new strategies in future updates to RTP/SCSs related to the incorporation of autonomous vehicles (AV) into the existing fleet. AVs are driverless vehicles with the capacity to navigate and communicate efficiently with the environment and other vehicles with limited or no human input. The advanced software used in the development of AVs increases the safety of drivers and improves efficiency by reducing traffic impacts related to human error (e.g., reaction time, rubbernecking, aggressive driving). The use of AVs could contribute to meeting passenger vehicle-related GHG reductions by improving operational efficiency and contributing to overall improvements in traffic flow compared to current conditions. Further, the following distance currently needed between human-driven vehicles to avoid collisions could theoretically be reduced with deployment of an AV fleet, effectively increasing the capacity of existing roadways. In addition, collisions and incidents contribute substantially to congestion of the roadway network, especially during peak travel periods. An AV fleet could theoretically reduce the occurrence of collisions and incidents, which could also have the effect of increasing capacity of the existing roadway network. It should be noted that increasing roadway capacity may result in increased travel demand for passenger vehicles (CARB 2014a). Thus, additional research and observation will be needed to make a definitive conclusion about the impact of AVs on roadway capacity.

RTP/SCSs prepared pursuant to the Target Update could include strategies to integrate AVs and the associated technology into the passenger vehicle fleet in a way that integrates AVs with other strategies to increase connectivity to transit and other non-auto travel modes; and, as a complement to other measures intended to increase vehicle occupancy such as carpooling, ridesharing, or ride-matching. However, as the automobile and transportation networking services industries are still in the preliminary stages of testing various applications of the use of AV technology, there is a degree of uncertainty as to how such strategies would be implemented. As noted above, research indicates that the use of AVs could lead to increased demand for roadway capacity. AVs could also increase the passenger vehicle fleet size, expand travel opportunities to low-income areas, and lower passenger vehicle travel costs. As a result, regional VMT and associated GHG emissions could increase because of the use of AVs (CARB 2014a). Therefore, MPOs would need to develop AV-related strategies that complement other GHG-reducing measures which lower automobile-generated VMT and associated emissions. Given that research will still need to be conducted to conclude what modifications to existing infrastructure will be needed to adequately incorporate AVs into everyday use, this EA cannot definitively provide a comprehensive inventory of all AV-associated compliance responses. Available research indicates that sensors could be applied to existing roadway systems to enhance AV communication with the surrounding environment. AV-related transponders could be installed along roadways to transmit data regarding traffic density, flow, volume, and speed, as well as static road hazards such as curves and narrow bridges.

b. Vehicle-to-Vehicle Technology

Reasonably foreseeable compliance responses to the Target Update include the incorporation of vehicle-to-vehicle (v2v) technology into the passenger vehicle fleet. This technology enables cars, trucks, buses, and other vehicles to wirelessly communicate with each other. Through the use of v2v, safety, mobility, and environmental information could be continuously communicated through the vehicle fleet and could contribute to improved roadway system operation and traffic flow. It would be expected the v2v would be assimilated into future passenger vehicle models or v2v devices could be purchased for use.

c. Vehicle-to-Infrastructure Technology

Reasonably foreseeable compliance responses to the Target Update could include the incorporation of vehicle-to-infrastructure (v2i) technology into the passenger vehicle fleet. This technology allows vehicles to wirelessly communicate with traffic signals, roadway censors, work zones, toll booths, school zones, and other types of infrastructure. This technology could be used to supplement existing TSM strategies designed to optimize roadway system operation and improve traffic flow. The technology could be combined with personal navigation systems to re-route traffic. It would be expected that v2i would be assimilated into future passenger vehicle models or v2i devices could be purchased for use.

d. Neighborhood Electric Vehicles and Infrastructure

Reasonably foreseeable compliance responses to the Target Update could include the implementation of NEVs and associated infrastructure in location-appropriate contexts. NEVs are a subset of electric vehicles with use permitted only on roadways of limited speeds depending on the local ordinances. Construction of NEV charging stations and dedicated right-of-way could occur as a result of the adoption of this strategy.

e. Rideshare/Ride Matching

Reasonably foreseeable compliance responses to the Target Update could include public and private partnerships to increase the frequency and availability of ridesharing options. Existing private transportation network companies, such as Uber and Lyft and traditional taxis, already provide on-demand ridesharing opportunities in select locations (e.g., San Francisco, Los Angeles, Sacramento). Local transportation authorities could coordinate with these private entities to expand these services to more locations throughout the State, especially in communities with limited access to transit stops due to locational barriers (i.e., first mile/last mile). Modifications to existing infrastructure and roadways could occur to improve passenger loading and drop off in some locations to accommodate increased demand for these services while avoiding conflicts with other roadway users. These could include alterations to curbs, increased designated loading zones, marked pullouts separated from bike lanes, and increased space between sidewalks and vehicle lanes. Similar to the deployment of AVs, expanded rideshare and ride matching programs could improve car access and lower the cost of travel, and, as a result, increase regional VMT. Investments in ridesharing and ride matching programs would need to be developed in conjunction with other measures that target reductions in single-occupant passenger vehicle trips and VMT.

f. Transportation Aggregators

Reasonably foreseeable compliance responses to the Target Update could include the use of transportation aggregators. This technology consists of web- and mobile-based applications that provide real time information regarding availability and travel times of varying modes of transportation (e.g., carsharing, taxis, carpooling, bicycling, walking). Transportation aggregators also factor in costs associated with each transportation option. Examples of transportation aggregators, such as the mobile phone application, RideScout, are currently in use and provide users with a comprehensive awareness of the most time- and cost-efficient travel options within their vicinity.

g. Last-Mile Delivery

Reasonably foreseeable compliance responses to the Target Update could include development of regional strategies that increase the GHG efficiency of “last-mile delivery” options related to increases in on-line shopping, in lieu of vehicle trips to retail stores or longer distance deliveries by trucks. These could include increasing the deployment of near-zero or zero-emission delivery vehicles, development and construction of urban distribution centers and parcel pick-up locations within existing communities, and other actions to expand alternative delivery options to more efficiently deliver goods. Near-zero or zero-emission vehicles could include a variety of bicycles, passenger vehicles, and low-emission heavy-duty trucks. Incentive programs could also initiate the incorporation

of low-emission vehicles (e.g., ZEVs, PHEVs) into the delivery fleet. Notably, reductions in passenger vehicle GHG emissions from the use of “last-mile delivery” would be contingent upon the use of near-zero or zero-emission vehicles as local and regional VMT could increase from deployment of such measures.

Increased use of ZEVs and PHEVs could increase demand on manufacturers and associated industries such that new or modified facilities would need to be constructed. Demand for lithium ion batteries would increase, which could result in increased rates of battery production. Used lithium ion batteries could also be re-used in stationary applications and later refurbished, which could require new facilities, or modifications to existing facilities to accommodate battery recycling.

E. Conclusion

The Target Update would result in a wide range of reasonably foreseeable compliance responses that could be implemented by MPOs and local agencies. CARB cannot predict with any certainty which combination of strategies will be included by MPOs in future RTP/SCS updates, or which strategies will be implemented by local agencies, in response to the Target Update. It would be expected that following implementation of the Target Update, existing measures could continue or be expanded, coupled with potential new measures, in future RTP/SCS updates. Thus, the range of reasonably foreseeable compliance responses described above are broad and include a wide range of physical actions that could occur. These physical actions would not necessarily occur in each region, nor would they occur uniformly in the same region or in the same manner when comparing one region to another. Specific actions that could be taken by individual MPOs or local agencies within an MPO region would dictate the specific compliance responses and associated physical actions in the future. These actions would be subject to future environmental review by each MPO or local agency responsible for approving future actions described.

A programmatic level of analysis of potential environmental impacts that could occur because of reasonably foreseeable compliance responses to the Target Update is included in Chapter 4 of this Draft EA.

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3.0 ENVIRONMENTAL AND REGULATORY SETTING

The California Environmental Quality Act (CEQA) Guidelines require an environmental impact report to include an environmental setting section, which discusses the current environmental conditions near the project. This environmental setting constitutes the baseline physical conditions by which an impact is determined to be significant. (Cal. Code Regs. tit. 14 § 15125.) As discussed above in Chapter 1, the California Air Resources Board (CARB or Board) has a certified regulatory program and prepares an environmental analysis (EA) in lieu of an environmental impact report (EIR). This Draft EA is a functional equivalent to an EIR under CEQA. Therefore, in an effort to comply with the policy objectives of CEQA, an environmental setting, as well as a regulatory setting with relevant environmental laws and regulations, has been included as Attachment 1 to this document.

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4.0 IMPACT ANALYSIS AND MITIGATION MEASURES

A. Approach to the Environmental Impacts and Mitigation Measures

This chapter contains an analysis of potential environmental impacts resulting from implementation of the proposed SB 375 Target Update (Target Update). The California Environmental Quality Act (CEQA) requires the baseline for determining the significance of environmental impacts to normally be the existing conditions at the time the environmental review is initiated (see Cal. Code Regs. tit.14, § 15125(a)). Therefore, significance determinations reflected in this Environmental Analysis (EA) are based on a comparison of the potential environmental consequences of the Target Update with the regulatory setting and physical conditions in 2017 (see Chapter 3 and Attachment 1).

For determining whether the Target Update has a potential effect on the environment, the California Air Resources Board (CARB or Board) evaluated the potential physical changes to the environment resulting from the reasonably foreseeable compliance response described in further detail in Chapter 2 of this Draft EA. It would be expected that following implementation of the Target Update, existing measures in regional transportation plans and sustainable community strategies (RTP/SCSs) could continue or be expanded, coupled with new greenhouse gas (GHG)-reducing measures, in future RTP/SCS updates. As such, the physical effects associated with both the incorporation of new measures and continuation or expansion of existing measures are disclosed in this Draft EA.

1. Significant Adverse Environmental Impacts and Mitigation Measures

The analysis of adverse effects on the environment, and significance determinations for those effects, reflect the programmatic nature of the analysis of the anticipated reasonably foreseeable compliance actions taken by various entities in response to the Target Update. The Draft EA addresses broadly defined types of impacts or actions that may be taken by others in the future in response to the targets set by CARB as part of the Target Update.

This Draft EA takes a conservative approach and considers some adverse environmental impacts as potentially significant because of the inherent uncertainties about the specific nature or range of activities that could be carried out by various entities in response to the Target Update. The relationship between reasonably foreseeable physical actions carried out in response to the Target Update, as well as environmentally sensitive resources or conditions that may be affected, are also taken into consideration. This conservative approach may overstate environmental impacts in light of these uncertainties and is intended to satisfy the good-faith, full-disclosure intention of CEQA.

If and when reasonably foreseeable compliance responses to the Target Update are proposed to be carried out by metropolitan planning organizations (MPOs) and/or local jurisdictions, such proposals would be subject to more detailed environmental review by

these jurisdictions, who will have approval authority over subsequent actions. For example, MPOs prepare EIRs for RTP/SCSs. Some impacts identified in this Draft EA could be avoided or reduced to a less-than-significant level by specific and enforceable mitigation measures required through later environmental review. Nonetheless, at this stage, this Draft EA takes a conservative approach in its post-mitigation significance conclusions, to avoid any risk of understating the impact, considering the current uncertainty and lack of CARB control as to which specific strategies MPOs will select and implement, and whether feasible mitigation would be sufficient or would be implemented by other parties. This approach fulfills CARB's disclosure responsibility under CEQA by noting that potentially significant environmental impacts may be unavoidable.

Where applicable, consistent with CARB's certified regulatory program requirements (Cal. Code Regs. tit.17, § 60005 (b)), this EA also acknowledges potential beneficial effects on the environment in each resource area that may result from implementation of the Target Update. Any beneficial impacts associated with the Target Update will be included in the impact assessment for each resource area described in this chapter.

B. Resource Area Impacts and Mitigation Measures

Below is a programmatic analysis of potential impacts resulting from reasonably foreseeable compliance responses to the Target Update. The reasonably foreseeable compliance responses are analyzed in a programmatic manner for several reasons:

> (1) any individual action or activity could be carried out by various entities because of the same program (i.e., the Target Update);
>
> (2) the reasonably foreseeable compliance response would result in generally similar environmental effects that can be mitigated in similar ways (Cal. Code Regs. tit.14, § 15168 (a)(4)); and
>
> (3) while the types of foreseeable compliance responses can be reasonably predicted, the specific location, design, and setting of the potential actions cannot feasibly be known at this time. If a later activity would have environmental effects that are not examined within this EA, the public agency with authority over the later activity would be required to conduct additional environmental review as required by CEQA or other applicable statutes.

The impact analysis is organized according to the environmental resource topics presented in the Environmental Checklist in Appendix G to the CEQA Guidelines.

When an impact is determined to be potentially significant, mitigation measures are described. In some cases, several mitigation measures are provided to reduce the impact severity or avoid potentially significant environmental impacts. These mitigation measures correspond to subheadings provided in the impact analysis text.

C. Resource Area Impacts and Mitigation Measures

1. Aesthetics

Impact 1-1: Short-Term Construction-Related Effects on Aesthetics Resources

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in Transportation Priorities Areas (TPAs); and, expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of Transportation Systems Management (TSM) and Transportation Demand Management (TDM) strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed to implement pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian- and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and neighborhood electric vehicle (NEV) programs. Increased use of low-emission vehicles (e.g., battery electric vehicles [BEVs], plug-in hybrid electric vehicles [PHEVs], zero emission vehicles [ZEVs]) could produce an elevated rate of battery disposal such that new or modified facilities would be required to accommodate recycling of lithium-ion batteries. Roadway infrastructure modifications could be needed to support autonomous vehicles (AVs) and expansion of intelligent transportation systems (e.g., vehicle-to-vehicle (v2v) and vehicle-to-infrastructure [v2i] software).

Short-term construction-related activities associated with the reasonably foreseeable compliance responses would involve typical off-road construction equipment (e.g., backhoes, graders, dozers) and on-road heavy duty vehicles for transport of materials to and from construction sites. Earth moving, paving, or other activities could create temporary mounds or piles of dirt or require staging areas where materials or equipment would be temporarily stored. Depending on the hours when construction is conducted, sources of glare or lighting could be present. Although there is uncertainty regarding the locations of these activities, scenic vistas or views from a State scenic highway could be degraded by the presence of heavy duty equipment, glare, lighting, or disturbed earth.

Development and redevelopment in infill areas as well as TOD could entail the demolition of existing structures. For small- to medium-sized structures, demolition would require the use of cranes, excavators, and bulldozers. For larger structures, demolition could also involve the use of wrecking balls. Demolition-related activities could contribute to the degradation of a scenic area.

Therefore, short-term construction-related impacts on aesthetic resources associated with reasonably foreseeable compliance responses to the Target Update would be potentially significant.

Potential scenic, glare, and lighting impacts could be reduced to a less-than-significant level by mitigation measures prescribed by local or State land use or permitting agencies with approval authority over specific development projects.

Mitigation Measure 1-1

The Regulatory Setting in Attachment 1 includes applicable laws and regulations that provide protection of aesthetic resources. CARB does not have the authority to require implementation of mitigation related to new development and new or modified facilities or infrastructure that would be approved by other State agencies or local jurisdictions. The ability to require such measures is within the purview of jurisdictions with land use approval and/or permitting authority. Project-specific impacts and mitigation would be identified during the project review process and carried out by agencies with approval authority. Recognized practices routinely required to avoid and/or minimize impacts to aesthetic resources include:

- Proponents of new development and new facilities and structures constructed because of reasonably foreseeable compliance responses would submit applications to State or local land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must follow all applicable environmental regulations as part of approval of a project for development.
- Based on the results of the environmental review, proponents would implement all feasible mitigation to reduce or substantially lessen the potentially significant scenic or aesthetic impacts of the project.
- To the extent feasible, the sites selected for use as construction staging and laydown areas would be areas that are already disturbed and/or are in locations of low visual sensitivity. Where feasible, construction staging and laydown areas for equipment, personal vehicles, and material storage would be sited to take advantage of natural screening opportunities provided by existing structures, topography, and/or vegetation. Temporary visual screens would be used where helpful, if existing landscape features did not screen views of the areas.
- All construction and maintenance areas would be kept clean and tidy, including the re-vegetation of disturbed soil and storage of construction materials and equipment would be screened from view and/or are generally not visible to the public, where feasible.
- Siting projects and their associated elements next to important scenic landscape features or in a setting for observation from State scenic highways, national historic sites, national trails, and cultural resources would be avoided to the greatest extent feasible.

- The project proponent would contact the lead agency to discuss the documentation required in a lighting mitigation plan, submit to the lead agency a plan describing the measures that demonstrate compliance with lighting requirements, and notify the lead agency that the lighting has been completed and is ready for inspection.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant scenic and nighttime lighting impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that short-term construction-related scenic and nighttime lighting impacts resulting from reasonably foreseeable compliance responses to the Target Update would be **potentially significant and unavoidable**.

Impact 1-2: Long-Term Operational-Related Effects on Aesthetics Resources

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian-and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Increased use of low-emission vehicles (e.g., BEVs, PHEVs, ZEVs) could produce an elevated rate of battery disposal such that new or modified facilities would be required to accommodate recycling of lithium-ion batteries. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

Infill, high-density residential, TOD, and mixed-use development could introduce new structures into urban areas. Compact, high-density development within urban centers would likely introduce structures exceeding two stories consistent with applicable zoning

designations. Mixed-use and higher-density infill residential development could alter or conflict with the existing visual character of some areas because of increases in building heights, the introduction of commercial or other new land uses in mixed-use buildings or in adjacent mixed-use settings, as well as new buildings containing a greater number of units. Infill, high-density residential, TOD, and mixed-use developments could also result in new sources of glare and night-time lighting in populated areas.

Updates and amendments to planning documents (e.g., general plans) could designate existing rural agricultural and open space as sites for conservation and preservation. This strategy would focus development inward into urban environments while simultaneously preserving the visual rural character of conservation sites. Reducing the level of allowable development within these areas would inhibit the introduction of man-made structures and buildings such that impacts to visual resources (e.g., trees, rock outcroppings) would be minimized.

Infrastructure associated with TSM, TDM, and pricing strategies could be developed following the release of the Target Update. These could include new meters on highway and freeway on ramps, roundabouts, park-and-ride lots, and traffic cameras. Installation of meters and cameras would result in a minimal alteration of the existing environment and would not be expected to alter the visual character of an area. Introduction of roundabouts would produce a localized change in the aesthetics of intersections; however, this change would not be considered adverse. Construction and operation of new park-and-ride lots could result in the degradation of visual resources if vegetation or other resources are paved over to support these lots. However, park-and-ride lots developed from existing parking structures would not include a physical environmental change such that aesthetic resources could be negatively affected.

The incorporation of complete streets into roadway function and design could result in modifications to the typical character of roadways. Complete streets provide dedicated lanes for transit, pedestrian, and/or bicycle use in addition to vehicle-designated lanes. Transit and bicycle facilities could include bicycle lanes, tracks associated with train-related transit (e.g., light rail, trolley cars), and bicycle racks. While the introduction of such facilities would change the existing aesthetics of such roadways, modifications would not be substantial such that visual quality would be diminished. Further, pedestrian-related facilities, such as greenbelts, would have the potential to enhance the existing visual quality of a roadway. Establishment of a greenbelt could entail the planting and maintenance of aesthetically pleasing trees and vegetation, which would produce an increase in the aesthetic value of those areas.

The establishment of new transportation corridors and associated infrastructure (e.g., bus stops, stations) could introduce mobile and stationary artificial elements to a rural area. Improved transportation networks could increase the frequency of bus, automobile, and train movement through a region. The presence of these mobile elements could deter from the visual quality of a scenic view, and could be a source of substantial night-time lighting.

Electric charging and hydrogen fueling infrastructure constructed and operated because of programs and investments into zero and near-zero emission vehicles and transit could occur within locations of existing gas-related infrastructure or in areas of consistent zoning; however, there is inherent uncertainty as to the exact locations of future zero and near-zero emission vehicle-related infrastructure. Therefore, construction and operation of these facilities could conceivably introduce or increase the presence of artificial elements (e.g., vehicle chargers) in areas of scenic importance, such as visibility from a State scenic highway. The visual effects of such development would depend on several variables, including the type and size of facilities, distance and angle of view, visual prominence, and placement in the landscape. In addition, operation may introduce sources of glare and nighttime lighting for safety and security purposes.

Modifications to existing roadways to support autonomous vehicles and intelligent transportation systems may require the installation of sensors on pavement, which would communicate with the software found in on-road autonomous vehicles; however, given that this technology is still being developed and would require further research and investment, specific demand on infrastructure and it's potential to affect visual resources is uncertain at this time. It would be expected that implementation of sensors would not produce a physical change such that the existing aesthetic character of existing roadways would be substantially affected. Further, incorporation of v2v and v2i software would not require physical modifications to the environment such that visual resources would be affected.

New or modifications to existing recycling facilities could be required to accommodate lithium-ion battery recycling-related activities. Incorporation of zero and near-zero emission vehicles (e.g., BEVs, ZEVs) into the fleet would produce an increase in the rate of battery turnover. Modifications to existing recycling centers could occur within the confines of such facilities and, therefore, would not result in additions of external equipment that would degrade visual quality; however, development of new facilities, although expected to occur in areas appropriately zoned, could increase or increase the presence of visible human-made elements (e.g., heavy-duty trucks, new structures) in areas of scenic importance. There is uncertainty surrounding the specific locations of new recycling facilities; therefore, adverse effects to scenic vistas or views from a State scenic highway could occur. Further, sources of daytime glare and nighttime lighting associated with these facilities could be introduced.

Thus, long-term operational impacts to aesthetic resources associated with the Target Update would be potentially significant.

Potential scenic, glare, and lighting impacts could be reduced to a less-than-significant level by mitigation measures prescribed by local or State land use or permitting agencies with approval authority over specific development projects.

Mitigation Measure 1-2: Implement Mitigation Measure 1-1

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the

programmatic level of analysis associated with this Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant scenic and nighttime lighting impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that long-term operational scenic and nighttime lighting impacts resulting from reasonably foreseeable compliance responses to with the Target Update would be **potentially significant and unavoidable**.

2. Agricultural and Forest Resources

Impact 2-1: Short-Term Construction-Related and Long-Term Operational-Related Effects to Agricultural and Forest Resources

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and, expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian-and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

Measures implemented following the approval of the Target Update would have short-term and long-term effects to agriculture and forest resources. Regional transportation plan (RTP) and sustainable communities strategy (SCS) documents (RTP/SCSs) prepared in accordance with the Target Update could identify areas eligible for land use and transportation projects. While preservation of rural agriculture and open space could be employed in future RTP/SCS updates and local agency responses to such updates, projects could still be located on existing farmland or forest land under some scenarios. Where there would be new facilities (e.g., transit corridors) constructed outside of urbanized areas, undisturbed and vacant land could be used for transportation purposes. Additionally, new development approved by local agencies associated with land use measures in future RTP/SCS updates could also be located on agricultural or forest lands. These lands could have been historically or currently

farmed for agriculture, been under a Williamson Act contract, or be considered forest or timber lands.

Modifications to roadway infrastructure associated with TSM, TDM, and pricing strategies would include installation of meters, roundabouts, toll booths, and park-and-ride lots. Meters and roundabouts would occur within existing roadway systems and would not result in the rezoning or loss of agriculture or forest resources. Toll booth improvements and park-and-ride lots, however, would have the potential to encroach on agricultural and open space areas.

Planning documents could be amended or updated to adopt programs to limit outward urban development into rural agricultural or forest areas; however, given the programmatic nature of this Draft EA, it cannot be assumed that such programs would be incorporated as a measure in future RTP/SCSs. Although anticipated developed associated with RTP/SCSs would be expected to be focused in urban areas, consumption of agricultural and forest lands could occur to support future growth and development.

Therefore, short-term construction-related and long-term operational impacts associated with implementation of the Target Update on agriculture and forest resources could be potentially significant.

This impact could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 2-1

The Regulatory Setting in Attachment 1 includes applicable laws and regulations that provide protection of agricultural and forest resources. CARB does not have the authority to require implementation of mitigation related to new development and new or modified facilities or infrastructure that could be approved by local jurisdictions. The ability to require such measures is within the purview of jurisdictions with land use approval and/or permitting authority. Project-specific impacts and mitigation would be identified during the project review process and carried out by agencies with approval authority. Recognized practices routinely required to avoid and/or minimize impacts to agriculture and forest resources include:

- Proponents of new development and new facilities and structures constructed because of reasonably foreseeable compliance responses would submit applications to local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must comply with applicable regulations and would approve the project for development.
- Based on the results of project level environmental review, project proponents would implement all feasible mitigation identified in the

environmental document to reduce or substantially lessen the environmental impacts of the project.

- Any mitigation specifically required for a new or modified facility would be determined by the local lead agency and future environmental documents by local and State lead agencies should include analysis of the following:
    - Avoidance of lands designated as Important Farmlands as defined by the Farmland Mapping and Monitoring Program.
    - Analysis of the feasibility of using farmland that is not designated as Important Farmland prior to deciding on the conversion of Important Farmland.
    - The feasibility, proximity, and value of the proposed project sites should be balanced before a decision is made to locate a facility on land designated as Important Farmland.
    - Any action resulting in the conversion of Important Farmlands should consider mitigation for the loss of such farmland. Any such mitigation should be completed prior to the issuance of a grading or building permit by providing the permitting agency with written evidence of completion of the mitigation. Mitigation may include but is not limited to:
        - Permanent preservation of off-site Important Farmland (State defined Prime Farmland, Farmland of Statewide Importance, and Unique Farmland) of equal or better agricultural quality, at a ratio of at least 1:1.
        - Preservation may include the purchase of agricultural conservation easement(s); purchase of credits from an established agricultural farmland mitigation bank; contribution of agricultural land or equivalent funding to an organization that provides for the preservation of farmland towards the ultimate purchase of an agricultural conservation easement.
        - Participation in any agricultural land mitigation program, including local government maintained that provides equal or more effective mitigation than the measures listed.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts related to the conversion of agriculture and forest resources.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that short-term construction-related and long-term operational impacts to agriculture and forest resources resulting from development associated with reasonably foreseeable

compliance responses to the Target Update would be **potentially significant and unavoidable**.

3. Air Quality

Impact 3-1: Short-Term Construction-Related Effects on Air Quality

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and, expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian- and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Increased use of low-emission vehicles (e.g., BEVs, PHEVs, ZEVs) could produce an elevated rate of battery disposal such that new or modified facilities would be required to accommodate recycling of lithium-ion batteries. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v and v2i software).

Proposed development of new land uses, infrastructure, and facilities would be required to secure local or State land use approvals before their implementation. Part of the development review and approval process for projects located in California requires environmental review consistent with California environmental laws (e.g., CEQA) and other applicable local requirements (e.g., local air quality management district rules and regulations). The environmental review process would include an assessment of whether implementation of such projects could result in short-term construction-related air quality impacts.

At this time, the specific location, type, magnitude, and number of construction activities is not known and would be dependent upon a variety of factors that are not subject to authority under CARB and not within its purview. Nonetheless, the analysis presented herein provides a good-faith disclosure of the general types of construction emission impacts that could occur with implementation of these reasonably foreseeable compliance responses. Further, subsequent environmental review would be conducted at such time that an individual project is proposed and land use or construction approvals are sought.

Generally, criteria air pollutants and toxic air contaminants (TACs) could be generated from a variety of activities and emission sources during the construction phase for any specific project. These emissions would be temporary and occur intermittently depending on the intensity of construction on a given day. Site grading and excavation activities would generate fugitive particulate matter (PM) dust emissions, which is the primary pollutant of concern during construction. Fugitive PM dust emissions (e.g., respirable particulate matter [PM_{10}] and fine particulate matter [$PM_{2.5}$]) vary as a function of several parameters, such as soil silt content and moisture, wind speed, acreage of disturbance area, and the intensity of activity performed with construction equipment. Exhaust emissions from off-road construction equipment, material delivery trips, and construction worker-commute trips could also contribute to short-term increases in PM emissions, but to a lesser extent. Exhaust emissions from construction-related mobile sources also include reactive organic gases (ROG) and nitrogen oxides (NO_X). These emission types and associated levels fluctuate greatly depending on the type, number, and duration of usage for the varying equipment.

The site preparation phase typically generates the most substantial emission levels because of the on-site equipment and ground-disturbing activities associated with grading, compacting, and excavation. Site preparation equipment and activities typically include backhoes, bulldozers, loaders, and excavation equipment (e.g., graders and scrapers). Although detailed construction information is not available at this time, based on the types of activities that could be conducted, it would be expected that the primary sources of construction-related emissions include soil disturbance- and equipment-related activities (e.g., use of backhoes, bulldozers, excavators, and other related equipment).

Based on typical emission rates and other parameters for above-mentioned equipment and activities, construction activities could result in substantial emissions of daily NO_X and PM, which may exceed general mass emissions limits of a local or regional air quality management district depending on the location of generation. In addition, increased construction activity in urban areas, because of denser land use strategies, would bring construction-related emissions closer to a greater number of sensitive receptors and general population. Thus, implementation of new regulations and/or incentives could generate levels of emissions that conflict with applicable air quality plans, exceed or contribute substantially to an existing or projected exceedance of State or national ambient air quality standards, or expose sensitive receptors to substantial pollutant concentrations.

As a result, short-term construction-related air quality impacts associated with the Target Update would be **potentially significant**.

Mitigation Measure 3-1

The Regulatory Setting in Attachment 1 includes applicable laws and regulations that provide protection of air quality. CARB does not have the authority to require implementation of mitigation related to new development and new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is generally within the purview of jurisdictions with local or State land use approval and/or

permitting authority with direct authority over the project. New development and new or modified facilities in California would likely qualify as a “project” under CEQA because they would generally need a discretionary public agency approval and could affect the physical environment. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices routinely required to avoid and/or minimize impacts to air quality include the following:

- Proponents of new development and new or modified facilities constructed because of reasonably foreseeable compliance responses would submit applications to local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local jurisdiction with land use authority would determine that the environmental review process complied with CEQA and other applicable regulations, prior to project approval.
- Based on the results of the environmental review, proponents would implement all feasible mitigation identified in the environmental document to reduce the construction-related air quality impacts of the project.
- Project proponents would apply for, secure, and comply with all appropriate air quality permits for project construction from the local agencies with air quality jurisdiction and from other applicable agencies, if appropriate, prior to construction mobilization.
- Project proponents would comply with federal Clean Air Act and the California Clean Air Act regulations (e.g., New Source Review and Best Available Control Technology criteria, if applicable).
- Project proponents would comply with local plans, policies, ordinances, rules, and regulations regarding air quality-related emissions and associated exposure (e.g., construction-related fugitive PM dust regulations, indirect source review, and payment into offsite mitigation funds).
- For projects located in PM nonattainment areas, prepare and comply with a dust abatement plan that addresses emissions of fugitive dust during construction and operation of the project.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. With mitigation, construction emissions could still exceed local air district threshold levels of significance depending on the magnitude of construction activities.

Consequently, while project-level impacts could be reduced to a less-than-significant level by mitigation measures required by land use and/or permitting agencies as a conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that short-term construction-related air quality impacts resulting from the development of new land uses, infrastructure, and facilities associated with reasonably foreseeable compliance responses to the Target Update would be **potentially significant and unavoidable**.

Impact 3-2: Long-Term Operational-Related Effects on Air Quality

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian- and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Increased use of low-emission vehicles (e.g., BEVs, PHEVs, ZEVs) could produce an elevated rate of battery disposal such that new or modified facilities would be required to accommodate recycling of lithium-ion batteries. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v and v2i software).

Denser land use strategies would lead to overall statewide and regional reductions in per capita passenger vehicle miles traveled (VMT) by concentrating development in urban areas, thereby reducing the distances between vehicular trip origins and destinations. A reduction in passenger VMT would consequently reduce overall fuel use and criteria and toxic air pollutants from passenger vehicles. Although mobile source emissions are expected to decrease overall, concentrating land use development in urban areas could result in increases in vehicle activity (i.e., other than passenger vehicles) on a localized level in certain areas, and thereby increase the concentration of air pollutants in areas with higher population densities and a greater number of sensitive receptors. These increases could exceed local thresholds for TACs and other pollutants. As discussed in Attachment 1, various federal and state laws, policies, and regulations exist to reduce mobile source emissions of TACs and ozone precursors, and it is expected that as legislative and regulatory actions become more stringent, combined with statewide passenger vehicle VMT reductions, long-term exposure, even localized exposures, would be reduced over time.

Infill residential development constructed as a component of an RTP/SCS could also result in increased exposure of sensitive receptors to concentrations of harmful air pollutants because previously undeveloped areas near freeways and congested intersections could be re-zoned for residential use. To achieve VMT-generated greenhouse gas (GHG) emissions reductions, there is likely to be more development in infill areas, which could result in placing new sensitive land uses (e.g., residences) within 500 feet of a freeway or an urban road with traffic volumes exceeding 100,000 vehicles per day, a practice discouraged by CARB and the California Air Pollution Control Officers Association (CAPCOA) due to related health risks (CAPCOA 2009). As such, future residential development may be more frequently located near TAC- and $PM_{2.5}$-producing transportation hubs leading to greater occurrences of asthma, acute and chronic respiratory and cardiovascular disease, stroke, cancer, and pre-term births and other gestational diseases.

Regional and local mobile source emissions of air pollutants and TACs generated by on-road medium-duty and heavy-duty trucks, other off-road mobile source equipment, and existing or future stationary sources would not be directly reduced because of implementation of the Target Update. While near-term future development, constructed consistent with an updated RTP/SCS, could be exposed to emissions associated with these existing TAC sources, various federal and State laws, policies, and regulations exist to reduce both these mobile and stationary source emissions of air pollutants and TACs, and are expected to reduce both long-term and localized exposure over time and result in long-term air quality benefits.

Furthermore, the California Supreme Court in *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369, clarified that lead agencies are not required by CEQA to analyze the effects of existing environmental conditions on a project's future users or residents unless the project will exacerbate the existing environmental hazards or conditions. Therefore, in cases where parcels are zoned and developed for residential use nearby existing mobile and stationary sources of air pollutants (e.g., freeways, gas stations), these levels of emissions would constitute the existing environmental conditions and not a CEQA impact. On the other hand, because MPOs could encourage land use strategies, such as transit priority areas and infill development, future residential development could increase localized mobile source emissions, as well as increase proximity to existing sources of mobile and stationary sources of volatile organic compounds (VOCs) and $PM_{2.5}$. Implementation of both land use and transportation strategies could also lead to an increased concentration of related mobile source emissions (e.g., commuter trips) on existing roadways in infill areas or transit priority areas, rather than in other portions of a region, and thereby possibly exacerbate an existing environmental hazard to a level beyond an applicable significance threshold, which could constitute a CEQA air quality impact.

At this time, the specific location, type, magnitude of future development constructed consistent with a future RTP/SCS to meet the Updated Targets is not known and would be dependent upon a variety of factors that are not subject to CARB's authority and not within its purview. Because the implementation details of these compliance responses as part of future RTP/SCSs depend on regional decisions, the potential localized air

quality impacts are too speculative to determine. However, in light of these uncertainties, and to satisfy the intention of CEQA's good-faith disclosure of the general types of emission impacts that could occur, CARB acknowledges that some implementation choices could yield potentially significant impacts on air quality in terms of near-term localized exposure to criteria pollutants and TACs as discussed above.

Non-infrastructure transportation strategies, such as most TSM, TDM, pricing, and vehicle technology strategies, would contribute to per capita VMT reductions, increase vehicle efficiency, and increase alternative fuel mode share in the long-term, thereby reducing long-term fuel use and associated air pollutant emissions.

In sum, MPOs are expected to meet the new GHG targets through actions that would reduce per capita passenger vehicle and light-duty truck VMT, encourage the use of ZEVs, and decrease reliance on single-occupancy vehicles. These reductions would reduce GHG emissions and yield ROG, NO_X, and PM reduction co-benefits overall. However, as infill development near freeways and urban roadways could become more common as a result of implementation of a region's RTP/SCS, localized impacts related to exposure of sensitive receptors to mobile source TAC emissions could be exacerbated. Further, increased urbanization under an RTP/SCS could locate future sensitive land uses to existing or planned stationary sources. Although more stringent SB 375 targets would reduce criteria air emissions on a regional basis, sensitive receptors, located near transportation centers (i.e., freeways and urban roadways with traffic volumes of 100,000 vehicles per day) and stationary sources, could experience increased exposure to TACs. Based on the above, it is expected that overall the Target Update will result in long-term operational air quality ***benefits***. However, some development could lead to near-term localized exposure to criteria pollutants and TACs, as discussed above, and because there is not enough information at this time about ultimate design and implementation of future infill and other land use development as a component of an RTP/SCS developed pursuant to the Target Update, this Draft EA conservatively finds for purposes of this programmatic analysis that near-term localized operational impacts to air quality could be ***potentially significant***.

Mitigation Measure 3-2

The Regulatory Setting in Attachment 1 includes applicable laws and regulations that provide protection of air quality. CARB does not have the authority to require implementation of mitigation related to new development and new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is generally within the purview of jurisdictions with local or State land use approval and/or permitting authority with direct authority over the project. New development and new or modified facilities in California would likely qualify as a "project" under CEQA because they would generally need a discretionary public agency approval and could affect the physical environment. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority.

Recognized practices routinely required to avoid and/or minimize impacts to air quality include the following:

- Proponents of new development and new or modified facilities constructed because of reasonably foreseeable compliance responses would submit applications to local land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local jurisdiction with land use authority would determine that the environmental review process complied with CEQA and other applicable regulations, prior to project approval.
- Based on the results of the environmental review, proponents would implement all feasible mitigation identified in the environmental document to reduce the operational-related air quality impacts of the project.
- Project proponents would apply for, secure, and comply with all appropriate air quality permits for project construction from the local agencies with air quality jurisdiction and from other applicable agencies, if appropriate, prior to operation.
- Project proponents would comply with federal Clean Air Act and the California Clean Air Act regulations (e.g., New Source Review and Best Available Control Technology criteria, if applicable).
- Project proponents would comply with local plans, policies, ordinances, rules, and regulations regarding air quality-related emissions and associated exposure.
- For projects located within the vicinity of a freeway or urban roadways with traffic volumes of 100,000 vehicles per day, project proponents would conduct a health risk assessment to evaluate potential levels of TACs. In cases where TACs exceed the applicable standard as established by a local air quality management district, on-site exposure reduction measures would be implemented.
- For projects located within the vicinity of a freeway or urban roadways with traffic volumes of 100,000 vehicles per day, project proponents would consult CARB's Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways Technical Advisory and incorporate appropriate mitigation measures to help decrease exposure to TACs and other harmful air pollutants (CARB 2017b).
- For projects located in PM nonattainment areas, prepare and comply with a dust abatement plan that addresses emissions of fugitive dust during operation of the project.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. With mitigation, operational emissions, though not likely, could still exceed local air district threshold levels of significance depending on the project and location of sensitive receptors.

Consequently, while project-level impacts could be reduced to a less-than-significant level by mitigation measures required by land use and/or permitting agencies as a conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that long-term operational-related air quality impacts resulting from the development of new land uses, infrastructure, and facilities associated with reasonably foreseeable compliance responses to the Target Update would be **potentially significant and unavoidable**.

Impact 3-3: Short-Term Construction-Related and Long-Term Operational-Related Effects on Odors

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian- and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Increased use of low-emission vehicles (e.g., BEVs, PHEVs, ZEVs) could produce an elevated rate of battery disposal such that new or modified facilities would be required to accommodate recycling of lithium-ion batteries. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v and v2i software).

Although it is reasonably foreseeable that construction activities could occur, the exact location of such construction activities is uncertain. Typically, land use development projects associated with increased density would be in urbanized areas with appropriate zoning to accommodate these specific activities. Construction activities could generate odors associated with the operation of diesel equipment; however, such activities would be short-term in nature and would not be expected to adversely affect long-term air quality.

Reasonably foreseeable compliance responses would be not expected to generate the need for new wastewater treatment plants, landfills, chemical manufacturing, or other similar facilities that would be considered substantial sources of odor. New facilities or modified facilities would primarily include transportation improvements designed to reduce VMT, such as expanded bus or rail service, park-and-ride lots, pedestrian

bicycle amenities, or other infrastructure that would not be considered substantial sources of odor.

Denser infill or mixed-use development associated with the reasonably foreseeable compliance responses could result in the physical location of new residents (i.e., sensitive receptors) in closer proximity to wastewater treatment plants, landfills, or other odor sources common to urban infill and mixed-use developments (e.g., waste transfer stations, industrial uses, auto body shops); however, neither the precise locations of such development projects and existing sources of odor nor the precise distances between potential new sensitive receptors and existing odor sources are known.

In the context of land use planning and specific land use development projects, one of the most important factors influencing the potential for an odor impact to occur is the distance between the odor source and receptors, also referred to as a buffer zone or setback. Many local agencies employ such buffer zones or setbacks in general plans and zoning policies as key mechanisms to avoid or minimize odor impacts. The greater the distance between an odor source and receptor, the less concentrated the odor emission would be when it reaches the receptor. Thus, when considering whether to approve a specific project, local land use agencies typically consider proximity to existing odor sources when updating a land use plan or considering whether to approve a specific development project, as a matter of ensuring consistency with adopted plans and zoning.

The California Supreme Court decision in the case of *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal. 4th 369 clarified that lead agencies are not required by CEQA to analyze the effects of existing environmental conditions on a project's future users or residents unless the project will exacerbate the existing environmental hazards or conditions. The Target Update and associated reasonably foreseeable compliance responses could exacerbate existing environmental conditions related to existing odor sources by reducing distances between sensitive receptors and existing odor sources. Additionally, increased infill residential or mixed-use development could result in increases in the volume of solid waste deposited at existing landfills or the volume of wastewater at existing treatment plants, which could result in the increased presence of odors from existing odor sources.

Thus, increased infill, residential, and mixed-use development in various locations due to continued or expanded land use strategies in future RTP/SCS updates could potentially expose sensitive receptors to adverse concentrations of odors from existing wastewater treatment plants, short-term construction odors, or landfills. Long-term operation-related effects associated with the Target Update could be potentially significant.

This impact associated with the Target Update could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 3-3

The Regulatory Setting in Attachment 1 includes applicable laws and regulations that govern odor emissions. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is within the purview of jurisdictions with local or state land use approval and/or permitting authority. New or modified facilities in California would likely qualify as a “project” under CEQA, because they would generally need a discretionary public agency approval and could affect the physical environment. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices routinely required to avoid and/or minimize impacts to odors include the following:

- Projects constructed as a result of reasonably foreseeable compliance responses would coordinate with local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirement (e.g., CEQA). The local jurisdiction with land use authority would determine that the environmental review process complied with CEQA and other applicable regulations, prior to project approval.

- Based on the results of the environmental review, proponents would implement all feasible mitigation identified in the environmental document to reduce or sustainably lessen the operational odor impacts of the project.

- Project proponents would comply with local plans, policies, ordinances, rules, and regulations for reducing exposure to existing sources of odor or odiferous processes, including the incorporation of setbacks and buffer areas between odor sources and sensitive land uses.

Because the authority to determine project-level impacts and require project-level mitigation lies with the land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. With mitigation, operational emissions of odors could still exceed the threshold of significance for local land use plans, policies, rules, ordinances, and regulations. Consequently, while impacts would be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this EA takes the conservative approach in its post-mitigation significance conclusions and discloses, for CEQA compliance purposes, that short-term construction-related and long-term operational-related odor impacts associated with reasonably foreseeable compliance responses to the Target Update would be **potentially significant and unavoidable**.

4. Biological Resources

Impact 4-1: Short-Term Construction-Related Effects on Biological Resources

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian-and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

Although it is reasonably foreseeable that construction activities could occur for these types of activities, there is uncertainty as to the exact location of any new development, facilities, and structures, or modifications made to existing development, facilities, and structures. Any construction undertaken could require disturbance of undeveloped areas, such as clearing of vegetation; earth movement and grading; trenching for utility lines; erection of new buildings and infrastructure; and paving of parking lots, delivery areas, and roadways.

The biological resources that could be affected by the construction of new infill, high-density residential, and mixed-use development; concentrated development in TPAs; zero and near-zero emission related infrastructure; new recycling facilities; and transit corridors and stations would depend on the specific location of any necessary construction and its environmental setting, which is anticipated to mostly occur within existing disturbed urban areas. However, there is uncertainly with respect to the exact locations of these new projects, and it would be expected that build out under future RTP/SCSs would result in the development of open space habitat. Adverse impacts could include modifications to existing habitat including removal, degradation, and fragmentation of riparian systems, wetlands, or other sensitive natural wildlife habitat and plant communities; interference with wildlife movement or wildlife nursery sites; loss of special-status species; and/or conflicts with the provisions of adopted habitat conservation plans, natural community conservation plans, or other conservation plans or policies to protect natural resources.

Short-term construction-related impacts to biological resources associated with the Target Update would be potentially significant.

This impact on biological resources associated with the Target Update could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 4-1

The Regulatory Setting in Attachment 1 includes applicable laws and regulations that provide protection of biological resources. CARB does not have the authority to require implementation of mitigation related to new development and new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New development and new or modified facilities in California would qualify as a “project” under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are routinely required to avoid and/or minimize impacts to biological resources include:

- Proponents of new development, facilities, and structures constructed as a result of reasonably foreseeable compliance response would submit applications to local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA).
- The local or State land use agency or governing body must comply with applicable regulations and would approve the project for development.
    - Based on the results of project level environmental review, project proponents would implement all feasible mitigation identified in the environmental document to reduce or substantially lessen the environmental impacts of the project actions required to mitigate potentially significant biological impacts may include the following; however, any mitigation specifically required for a new or modified facility or structure would be determined by the local lead agency.
        - Retain a qualified biologist to prepare a biological inventory of site resources prior to ground disturbance or construction. If protected species or their habitats are present, comply with applicable federal and State endangered species acts and regulations. Construction and operational planning will require that important fish or wildlife movement corridors or nursery sites are not impeded by project activities.
        - Retain a qualified biologist to prepare a wetland survey of onsite resources. This survey shall be used to establish setbacks and prohibit disturbance of riparian habitats, streams, intermittent and ephemeral drainages, and other wetlands. Wetland delineation is

required by section 404 of the Clean Water Act and is administered by the U.S. Army Corps of Engineers.

- Prohibit construction activities during the rainy season with requirements for seasonal weatherization and implementation of erosion prevention practices.
- Prohibit construction activities near raptor nests during nesting season or establish protective buffers and provide monitoring, as needed, to address project activities that could cause an active nest to fail.
- Prepare site design and development plans that avoid or minimize disturbance of habitat and wildlife resources, and prevent stormwater discharge that could contribute to sedimentation and degradation of local waterways. Depending on disturbance size and location, a National Pollution Discharge Elimination System construction permit may be required from the State Water Resources Control Board.
- Prepare spill prevention and emergency response plans, and hazardous waste disposal plans as appropriate to protect against the inadvertent release of potentially toxic materials.
- Plant replacement trees and establish permanent protection suitable habitat at ratios considered acceptable to comply with “no net loss” requirements.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that short-term construction-related impacts to biological resources associated with reasonably foreseeable compliance response to the Target Update would be **potentially significant and unavoidable.**

Impact 4-2: Long-Term Operational-Related Effects to Biological Resources

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering,

traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian-and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

Development under future RTP/SCSs could include the construction of new transportation corridors and development that could form barriers to animal migration and foraging routes. The construction and operation of these compliance responses could result in habitat fragmentation throughout MPO-specific regions and species loss through wildlife to roadway interactions. Infill, mixed-use, and high-density residential development could displace wildlife existing on habitat fragments (e.g., parks, hillsides) within urban areas. The intensity and severity of these effects would depend on the size and quality of the habitat impacted as well as the magnitude of each individual project and its ability to lessen its effects. Further, operation of new transportation corridors could result in an increased rate of litter, trampling, light pollution, and roadway noise in previously inaccessible and undisturbed natural areas.

Future RTP/SCSs may include updates and amendments to planning documents (e.g., general plans) that could designate existing open space as sites for conservation and preservation. This strategy would focus development inward into urban environments while simultaneously preserving the existing biological settings of these conservation sites. Reducing the level of allowable development within these areas would serve to minimize operational-related impacts such as impeding wildlife corridors, vehicle collisions, and habitat fragmentation. However, such conservation areas may provide recreational opportunities (e.g., trails) which could cause behavioral changes, increased stress, and reduced reproductive success to certain species (Larson et al. 2016).

Long-term operational-related impacts to biological resources associated with the Target Update would be potentially significant.

Impacts to biological resources could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of the CARB and not within its purview.

Mitigation Measure 4-2: Implement Mitigation Measure 4-1

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with this Draft EA does not attempt to address project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that long-term operational impacts to biological resources associated with reasonably foreseeable compliance responses to the Target Update would be **potentially significant and unavoidable.**

5. Cultural Resources

Impact 5-1: Short-Term Construction-Related and Long-Term Operational-Related Effects to Cultural Resources

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian-and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

Construction activities could require disturbance of undeveloped area, such as clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and roadways. Demolition of existing structures may also occur before the construction of new buildings and structures. The cultural resources that could potentially be affected by ground disturbance activities include, but are not limited to, prehistoric and historical archaeological sites; tribal cultural resources; paleontological resources; historic buildings, structures, or archaeological sites associated with agriculture and mining; and heritage landscapes. Properties important to Native American communities and other ethnic groups, including tangible properties possessing intangible traditional cultural values, also may exist. Historic buildings and structures may also be adversely affected by demolition-related activities. Such resources may occur individually, in groupings of modest size, or in districts. Because culturally sensitive resources can also be located in developed settings; historic, archeological, and paleontological resources, and places important to Native American communities, could also be adversely affected by construction of new facilities and structures.

New development and new facilities and structures constructed as reasonably foreseeable compliance responses may be located in a region where significant prehistoric or historic-era cultural resources may have been recorded and there remains a potential that undocumented cultural resources could be unearthed or otherwise discovered during ground-disturbing and construction activities. Prehistoric materials might include flaked stone tools, tool-making debris, stone milling tools, shell or bone items, and fire affected rock or soil darkened by cultural activities; examples of significant discoveries would include villages and cemeteries. Historic material might include metal, glass, or ceramic artifacts; examples of significant discoveries might include former privies or refuse pits (i.e., middens).

Due to the possible presence of undocumented cultural resources and paleontological resources, short-term construction-related and long-term operational impacts on cultural resources associated with the Target Update would be potentially significant.

This impact could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of the CARB and not within its purview.

Mitigation Measure 5-1

The Regulatory Setting in Attachment 1 includes applicable laws and regulations that provide protection of cultural resources. CARB does not have the authority to require implementation of mitigation related to new development and new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New development and new or modified facilities in California would qualify as a “project” under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are routinely required to avoid and/or minimize impacts to cultural resources include:

- Proponents of new development and new or modified facilities or infrastructure constructed because of reasonably foreseeable compliance responses would submit applications to State or local land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must follow all applicable environmental regulations as part of approval of a project for development.
- Based on the results of the environmental review, proponents would implement all feasible mitigation to reduce or substantially lessen the potentially significant scenic or aesthetic impacts of the project. Actions required to mitigate potentially significant cultural impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.

- Retain the services of cultural resources specialists with training and background that conforms to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61.
- Seek guidance from the State and federal lead agencies, as appropriate, for coordination of Nation-to-Nation consultations with the Native American Tribes.
- Provide notice to Native American Tribes of project details to identify potential tribal cultural resources. In the case that a tribal cultural resource is identified, prepare mitigation measures that:

  - avoid and preserve the resources in place,
  - treat the resource with culturally appropriate dignity,
  - employ permanent conservation easements, and
  - protect the resource.

- Consult with lead agencies early in the planning process to identify the potential presence of cultural properties. The agencies will provide the project developers with specific instruction on policies for compliance with the various laws and regulations governing cultural resources management, including coordination with regulatory agencies and Native American Tribes.
- Define the area of potential effect for each project, which is the area within which project construction and operation may directly or indirectly cause alterations in the character or use of historic properties. The area of potential effect should include a reasonable construction buffer zone and laydown areas, access roads, and borrow areas, as well as a reasonable assessment of areas subject to effects from visual, auditory, or atmospheric impacts, or impacts from increased access.
- Retain the services of a paleontological resources specialist with training and background that conforms with the minimum qualifications for a vertebrate paleontologist as described in Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontologic Resources: Standard Procedures (Society of Vertebrate Paleontology 2010).
- Conduct initial scoping assessments to determine whether proposed construction activities would disturb formations that may contain important paleontological resources. Whenever possible potential impacts to paleontological resources should be avoided by moving the site of construction or removing or reducing the need for surface disturbance. The scoping assessment should be conducted by the qualified paleontological resources specialist in accordance with applicable agency requirements.
- The project proponent's qualified paleontological resources specialist would determine whether paleontological resources would likely be disturbed in a project area on the basis of the sedimentary context of

the area and a records search for past paleontological finds in the area. The assessment may suggest areas of high known potential for containing resources. If the assessment is inconclusive a surface survey is recommended to determine the fossiliferous potential and extent of the pertinent sedimentary units within the project site. If the site contains areas of high potential for significant paleontological resources and avoidance is not possible, prepare a paleontological resources management and mitigation plan that addresses the following steps:

- a preliminary survey (if not conducted earlier) and surface salvage prior to construction;
- physical and administrative protective measures and protocols such as halting work, to be implemented in the event of fossil discoveries;
- monitoring and salvage during excavation;
- specimen preparation;
- identification, cataloging, curation and storage; and
- a final report of the findings and their significance.

Because the authority to determine project-level impacts and require project-level mitigation lies with the land use approval and/or permitting agency for individual projects, and that the programmatic analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that short-term construction-related and long-term operational-related cultural resources impacts associated with reasonably foreseeable compliance responses the Target Update could be **potentially significant and unavoidable**.

6. Energy Demand

Impact 6-1: Short-Term Construction-related Effects on Energy Demand

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or

expansions to existing roadways could occur to support redevelopment of streets and pedestrian- and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Increased use of low-emission vehicles (e.g., BEVs, PHEVs, ZEVs) could produce an elevated rate of battery disposal such that new or modified facilities would be required to accommodate recycling of lithium-ion batteries. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v and v2i software).

Construction of new infrastructure, transportation facilities, and alternative fueling stations would require the use of motor vehicle fuels, natural gas, and electricity. Typical earth-moving equipment would be necessary for construction of infrastructure, including: graders, scrapers, backhoes, jackhammers, front-end loaders, generators, water trucks, and dump trucks. While various forms of energy would be required for construction of new or modified facilities, specific project details are not currently known; however, the use of energy for construction would be temporary and limited in magnitude and would not be expected to result in energy demand beyond existing available supplies. Additionally, existing statewide measures to reduce electricity and natural gas consumption in stationary facilities and equipment, reduce motor vehicle emissions through improved fuel efficiency, and other measures designed to decrease emissions and improve energy reliability could contribute to reductions in construction-related energy demands over the long term.

Thus, short-term construction-related impacts on energy demand associated with the Target Update would be **less than significant**.

Impact 6-2: Long-Term Operational-Related Effects on Energy Demand

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian- and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Increased use of low-emission vehicles (e.g., BEVs, PHEVs, ZEVs)

could produce an elevated rate of battery disposal such that new or modified facilities would be required to accommodate recycling of lithium-ion batteries. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v and v2i software).

Over the long term, implementation of the reasonably foreseeably compliance responses under the Target Update would result in a statewide reduction in fossil fuel use from decreases in per capita VMT as a result of reduced trips, reduced trip lengths, and increased use of alternate modes such as transit, biking, walking, or ridesharing. These reductions in fossil fuel consumption would complement other statewide measures intended to improve vehicle fuel efficiency and shift from petroleum-based fuels toward renewable electricity, hydrogen fuel cells, and other alternative fuels in passenger vehicles.

Increases in the capacity of the electrical grid could be required as a result of increased production and use of electric vehicles under complementary regulations such as the Advance Clean Cars Program, which are focused on increasing the rate of adoption of electric vehicles and hydrogen fuel cell vehicles. At the same time, all electrical generation in the State will be required to meet a Renewable Portfolio Standard of 50 percent by 2030, combined with a doubling in energy efficiency in existing buildings by 2030, under the Clean Energy and Pollution Reduction Act of 2015 (i.e., SB 350). Additionally, a large portion of the liquid fuels for combustion engine vehicles would also need to be sourced from renewable feedstock under the Low Carbon Fuels Standard, and the supply of hydrogen for fuel cells would need to increase over time as a result of increasing hydrogen fuel cell vehicle adoption under Advance Clean Cars Program. Thus, fuel-switching activities designed to increase the use of renewable or alternative fuels in order to reduce GHG emissions would help to reduce fossil fuel usage, but would potentially increase demand for these alternate fuel sources.

The reasonably foreseeable compliance responses to the Target Update would not result in a direct change in the requirements of the electricity sector or vehicle fuels sector related to potential increases in energy demand. Any potential changes or shifts in demand are already expected pursuant to the above-referenced laws or regulations that are being implemented by CARB or others.

Potential land use changes or increased infill development under the Target Update could increase electricity and natural gas demands within urban areas, but could also result in reduced energy demands on a per capita basis as multi-story buildings with higher floor-to-area ratios and shared walls between units tend to have higher building energy efficiencies than lower-density, single-family residential or single-use commercial buildings. Additionally, California's increasingly-stringent energy efficiency standards for new construction in Title 24, Part 6 of the California Building Code would help to minimize increases in energy demand over the long term, as well as expand the feasibility of using on-site renewables. For instance, the 2016 Title 24 Standards require that new residential and non-residential buildings constructed after January 1, 2017 be "solar ready," or designed to accommodate use of on-site solar technology (California Energy Commission 2017a, 2017b). Further, as noted in the State's Energy

Efficiency Strategic Plan and Residential Zero Net Energy (ZNE) Action Plan, ZNE standards would be phased in for all new residential construction starting in the year 2020 and for all new non-residential construction starting in 2030, thereby further reducing energy demands (California Public Utilities Commission 2011, 2015).

According to Appendix F of the CEQA Guidelines (Cal. Code Regs. tit. 14, § 15000 et seq.), the wise and efficient use of energy includes:

1. Decreasing overall per capita energy consumption;
2. Decreasing reliance on fossil fuel such as coal, natural gas, and oil; and
3. Increasing reliance on renewable energy sources.

Implementation of the Target Update would contribute to decreased energy consumption per capita, increased demand for alternative fuel supplies, and decrease the use of fossil fuels through increased use of electric and other alternative fuel vehicles. Thus, the Target Update would support wise and efficient uses of energy, and would result in a **less-than-significant** long-term operational impact on energy demand.

7. Geology Seismicity, and Soils

Impact 7-1: Short-Term Construction-Related Effects to Geology, Seismicity, and Soils

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian-and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

Although it is reasonably foreseeable that construction and operation of new mixed-use, high-density residential, and infill development; development with TPAs; transit corridors and stations; and low-emission vehicle-related infrastructure could occur, there is uncertainty as to the exact location of any new development. Construction activities could require disturbance of undeveloped areas, such as clearing of vegetation, earth

movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and roadways. These activities would have the potential to adversely affect soil and geologic resources in construction areas.

New development could be located in a variety of geologic, soil, and slope conditions with varying amounts of vegetation that would be susceptible to soil compaction, soil erosion, and loss of topsoil during construction. The level of susceptibility varies by location. However, the specific design details, siting locations, and soil compaction and erosion hazards for particular developments are not known at this time and would be analyzed on a site-specific basis at the project level.

Short-term construction-related impacts to geology and soils associated with the Target Update would be potentially significant.

The impacts to soil and geologic resources could be reduced to a less-than-significant level by mitigation that can and should be implemented by federal, State, and local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 7-1

The Regulatory Setting in Attachment 1 includes applicable laws and regulations that provide protection of geology and soils. CARB does not have the authority to require implementation of mitigation related to new development or new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New development and new or modified facilities in California would qualify as a “project” under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are routinely required to avoid and/or minimize impacts to geology and soils include:

- Proponents of new development, facilities, and structures constructed because of reasonably foreseeable compliance responses would submit applications to local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must comply with applicable regulations and would approve the project for development.
- Based on the results of project level environmental review, project proponents would implement all feasible mitigation identified in the environmental document to reduce or substantially lessen the environmental impacts of the project. The definition of actions required to mitigate potentially significant geology and soil impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.

- Prior to the issuance of any development permits, proponents of new or modified facilities or infrastructure would prepare a geotechnical investigation/study, which would include an evaluation of the depth to the water table, liquefaction potential, physical properties of subsurface soils including shrink-swell potential (expansion), soil resistivity, slope stability, mineral resources, and the presence of hazardous materials.
- Proponents of new or modified facilities or infrastructure would provide a complete site grading plan, and drainage, erosion, and sediment control plan with applications to applicable lead agencies. Proponents would avoid locating facilities on steep slopes, in alluvial fans and other areas prone to landslides or flash floods, or with gullies or washes, as much as possible.
- Disturbed areas outside of the permanent construction footprint would be stabilized or restored using techniques such as soil loosening, topsoil replacement, revegetation, and surface protection (i.e., mulching).

Because the authority to determine project-level impacts and require project-level mitigation lies with the land use approval and/or permitting agency for individual projects, and that the programmatic analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that short-term construction-related impacts to soil and geologic resources associated with reasonably foreseeable compliance responses to the Target Update would be **potentially significant and unavoidable**.

Impact 7-2: Long-Term Operational-Related Effects to Geology, Seismicity, and Soils

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian-and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support

low-emission transit, automobiles, and light-duty trucks could be directly incentivized through funding for infrastructure, and indirectly through vehicle rebate, last-mile delivery, and NEV programs. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

New infill, mixed-use, high-density residential; development within TPAs; transit corridors and stations; and low-emission vehicle-related infrastructure could be located within or across Alquist-Priolo Fault Zones. These zones are identified as areas located directly over faults that are susceptible to surface rupture. Operation of new facilities and structures constructed as potential compliance responses to the Target Update could expose additional people to areas of strong seismic shaking, liquefaction, and landslide. Further, in coastal areas, seismically induced tsunami and seiche waves could damage high-density development and transportation infrastructure associated with the Target Update.

Road cutting associated with the development of new transportation corridors could occur following implementation of the Target Update. This could expose soils to long-term erosion over the life of a roadway or rail, creating potential landslide and falling rock hazards. Further, engineered roadways could be undercut over time by uncontrolled stormwater drainage. Road cutting on steep grades or roads requiring substantial amount of cut and fill would pose the greatest potential for landslides and erosion impacts. Poorly executed construction methods or lack of maintenance could increase the likelihood of erosion-related effects to occur.

Long-term operation-related impacts to geology and soils associated with the Target Update would be potentially significant.

The impacts to soil and geologic resources could be reduced to a less-than-significant level by mitigation that can and should be implemented by federal, State, and local lead agencies, but is beyond the authority of the CARB and not within its purview.

Mitigation Measure 7-2: Implement Mitigation Measure 7-1

Because the authority to determine project-level impacts and require project-level mitigation lies with the land use approval and/or permitting agency for individual projects, and that the programmatic analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that long-term operational-related impacts to soil and geologic resources associated with reasonably foreseeable compliance responses to the Target Update would be **potentially significant and unavoidable**.

8. Greenhouse Gases

Impact 8-1: Short-Term Construction-Related Effects on Greenhouse Gases

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian- and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Increased use of low-emission vehicles (e.g., BEVs, PHEVs, ZEVs) could produce an elevated rate of battery disposal such that new or modified facilities would be required to accommodate recycling of lithium-ion batteries. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v and v2i software).

Although it is reasonably foreseeable that construction activities associated with land use or transportation measures could occur, there is uncertainty as to the exact size, scale, type, or location of any construction projects for such facilities or structures. Examples of typical earth-moving equipment that may be necessary for various types of construction activities include: graders, scrapers, backhoes, jackhammers, front-end loaders, generators, water trucks, and dump trucks. Specific, project-related construction activities would result in increased generation of GHG emissions associated with the use of heavy-duty off-road equipment, materials transport, and worker commutes for the duration of the construction phase. Depending on the size, scale, or type of construction, large-scale projects constructed as a result of the Target Update (e.g., development project) could conceivably generate GHG emissions exceeding applicable thresholds of significance as established by local Air Pollution Control Districts (APCDs) or Air Quality Management Districts (AQMDs).

However, it should be noted that implementation of the Target Update would not create additional population or job growth beyond what is projected by local governments and State agencies. In developing RTP/SCSs, MPOs collaborate with local and state agencies to assess regional growth patterns as they are projected at that time. Regional-specific land use and transportation strategies account for these projections and aim to accommodate growth while also reducing passenger vehicle GHG emissions. As such, implementation of RTP/SCSs developed pursuant to the Target

Update would not generate additional growth beyond baseline projections. Therefore, the construction of facilities, developments, or structures would be similar to those constructed without the implementation of the Target Update. Local agencies, such as air pollution control districts, are generally charged with determining acceptable thresholds of GHG emissions, measured in metric tons of carbon dioxide equivalent per year. Quantification of short-term construction-related GHG emissions is generally based on a combination of methods, including the use of exhaust emission rates from emissions models, such as OFFROAD 2007 and EMFAC 2014 (CARB 2010, 2014b). These models require consideration of assumptions, including construction timelines and energy demands (e.g., fuel and electricity). However, most local agencies (e.g., APCDs) do not recommend or require the quantification of short-term construction generated GHGs for typical construction projects because these only occur for a finite period of time (e.g., during periods of construction) that is typically much shorter than the operational phase. Thus, local agencies generally recommend that GHG analyses focus on operational phase emissions, as discussed in the next impact section, unless the project is of a unique nature requiring atypical (e.g., large scale, long-term) activity levels (e.g., construction of a new dam or levee) for which quantification and consideration (e.g., amortization of construction emissions over the lifetime of the project) may be recommended.

Construction activities associated with accommodating growth under the Target Update would not be greater than statewide growth projections. Although construction emissions could exceed applicable local thresholds for construction-generated GHGs, these emissions would be similar to emissions occurring without the Target Update. Therefore, short-term construction-related impacts to GHG associated with implementation of the Target Update are **less than significant**.

Impact 8-2: Long-Term Operational-Related Effects on Greenhouse Gases

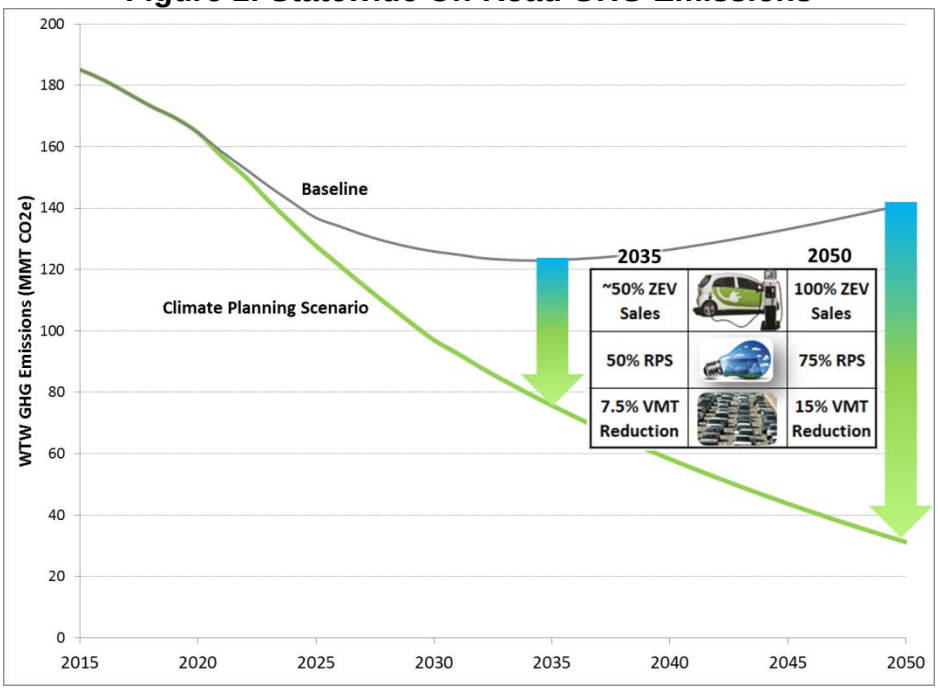
Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian- and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Increased use of low-emission vehicles (e.g., BEVs, PHEVs, ZEVs) could produce an elevated rate of battery disposal such that new or modified facilities

would be required to accommodate recycling of lithium-ion batteries. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v and v2i software).

The purpose of SB 375 and the Target Update is to achieve long-term operational GHG emissions reduction from passenger vehicles. Land use strategies to encourage increased infill development and compact, mixed-use and higher-density development would lead to statewide and regional reductions in per capita VMT by concentrating development in urban areas, reducing the distances between trip origins and destinations, and reducing trip lengths due to increased proximity between land uses. These per capita reductions in VMT would consequently reduce fuel use and GHG emissions from passenger vehicles.

As stated in the project objectives in Chapter 2, more stringent SB 375 targets are identified in the 2017 Climate Change Scoping Plan as one of the measures in the transportation sector to achieve the statewide 2030 emissions reduction target of 40 percent below 1990 levels by 2030. Figure 1 in the Staff Report prepared for the Target Update, and included here, illustrates the GHG emissions reductions envisioned in the Scoping Plan for the transportation sector.

Figure 1: Statewide On-Road GHG Emissions



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

The 2017 Climate Change Scoping Plan recommends this reduction be achieved through substantially greater increases in sales of zero-emission vehicles (ZEVs) compared to current requirements, greater increases in fuel efficiency standards for gasoline vehicles compared to current requirements, and a reduction in statewide VMT

compared to currently adopted SCSs. The blue segment in Figure 1 represents the GHG emissions reduction contribution from VMT. While currently adopted SB 375 plans achieve, on average, a 17 percent reduction in statewide per capita GHG emissions relative to 2005 by 2035, CARB staff's proposed targets would achieve a 20 percent reduction. Overall, the Target Update would result in an additional reduction of GHG emissions of over 10 million metric tons of carbon dioxide (CO2) per year in 2035 compared to the current targets.

As noted in the Energy Demand analysis above, land use strategies would also result in reduced energy demands on a per capita basis as multi-story buildings with higher floor-to-area ratios and shared walls between units tend to have higher building energy efficiencies than lower-density, single-family residential or single-use commercial buildings. Additionally, California's increasingly stringent energy efficiency standards for new construction in Title 24, Part 6 of the California Building Code would help to minimize increases in energy demand over the long term, as well as expand the feasibility of using on-site renewables and working towards achieving ZNE, thereby reducing energy-related GHG emissions in new development.

Transportation strategies would increase vehicle occupancy rates, reduce automotive mode share, and smooth overall vehicle traffic operations, resulting in reduced GHG emissions through per capita VMT reduction and improved vehicle fuel efficiency. Most transportation infrastructure strategies, such as new transit routes and stations and roadway reconfigurations, would require regular long-term maintenance. This would involve regular fuel use in various maintenance vehicles and equipment. These maintenance activities would regularly result in GHG emissions; however, any potential increases in maintenance-related GHG emissions would be minimal compared to operational per capita VMT reductions and associated fuel and GHG reductions resulting from implementation of land use and transportation strategies.

Non-infrastructure transportation strategies, such as most TSM, TDM, pricing, and vehicle technology strategies would also reduce VMT per capita and increase vehicle efficiency, thereby reducing long-term fossil fuel use and associated GHG emissions.

Thus, the Target Update would result in compliance responses that reduce per capita VMT, improve vehicle efficiency, and deploy cleaner vehicles into the fleet mix, and their implementation is anticipated to result in overall long-term reductions in per capita GHG emissions in California. Because the state population is expected to continue to grow over the coming decades, per capita reductions will be integral to meeting the state's mid-term 2030 target established in SB 32. Further, as illustrated in Figure 1, implementation of the Target Update is an integral part of the proposed 2017 Scoping Plan Update strategy for the transportation sector, leading to an overall reduction in GHG emissions compared to the existing targets, resulting in long-term **beneficial** impacts in reducing GHG emissions.

9. Hazards and Hazardous Materials

Impact 9-1: Short-Term Construction-Related and Long-Term Operational-Related Effects on Hazards and Hazardous Materials

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian-and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly incentivized through funding for infrastructure, and indirectly through vehicle rebate, last-mile delivery, and NEV programs. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

Construction activities associated with the Target Update may require the transport, use, and disposal of hazardous materials. Construction activities generally use heavy-duty equipment requiring periodic refueling and lubricating fluids. Large pieces of construction equipment (e.g., backhoes, graders) are typically fueled and maintained at the construction site as they are not designed for use on public roadways. Thus, such maintenance uses a service vehicle that mobilizes to the location of the construction equipment. It is during the transfer of fuel that the potential for an accidental release is most likely. Although precautions would be taken to ensure that any spilled fuel is properly contained and disposed, and such spills are typically minor and localized to the immediate area of the fueling (or maintenance), the potential still remains for a substantial release of hazardous materials into the environment. Consequently, construction activities could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Maintenance of transportation facilities (e.g., light rail) could also entail the use of hazardous materials such as fuels, solvents, paints, and other architectural coatings. It would be expected that implementation of tolls or fees for dedicated truck lane facilities could induce transfer of goods movement to the freight sector, including movement of hazardous materials. Increased transport and handling of hazardous materials via freight could increase the risk of accidental release near neighborhoods and communities adjacent to freight facilities.

Further, there is uncertainty surrounding the exact locations of new high-density development, transit networks, and low-emission vehicle-related infrastructure; therefore, it would be expected that construction and maintenance activities associated with reasonably foreseeable compliance responses to the Target Update could occur near a school, hospital, or nursing center resulting in the possible release of hazardous materials within a quarter mile of a sensitive receptor.

Increased use of EVs and PHEVs because of incentive programs and more available infrastructure could conceivably increase demand for hybrid battery recycling which would require modifications to existing facilities or construction of new facilities. It would be expected that these facilities would be required to comply with US EPA and State regulations governing disposal and recycling of waste including car batteries. However, it is possible that battery disposal may not be properly executed, and nickel-metal hydride and lithium-ion batteries from EVs and PHEVs could be directed to a landfill wherein toxins could leach into the environment.

The short-term construction-related and long-term operational-related impact associated with the Target Update on hazards and hazardous materials would be potentially significant.

The impacts could be reduced to a less-than-significant level by mitigation that can and should be implemented by federal, State, and local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 9-1

The Regulatory Setting in Attachment 1 includes applicable laws and regulations that apply to accident-related hazards and risk of upset. CARB does not have the authority to require implementation of mitigation related to new development and new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New development and new or modified facilities in California would qualify as a “project” under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are routinely required to avoid upset and accident-related impacts include:

- Proponents of new development and new or modified facilities or infrastructure constructed because of reasonably foreseeable compliance responses would submit applications to State or local land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must follow all applicable environmental regulations as part of approval of a project for development.

- Based on the results of the environmental review, proponents would implement all feasible mitigation to reduce or substantially lessen the potentially hazardous impacts of the project.
- Actions required to mitigate potentially significant upset and accident-related hazard impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.

    - Handling of potentially hazardous materials/wastes should be performed under the direction of a licensed professional with the necessary experience and knowledge to oversee the proper identification, characterization, handling and disposal or recycling of the materials generated because of a project. As wastes are generated, they would be placed, at the direction of the licensed professional, in designated areas that offer secure, secondary containment and/or protection from stormwater runoff. Other forms of containment may include placing waste on plastic sheeting (and/or covering with same) or in steel bins or other suitable containers pending profiling and disposal or recycling.
    - The temporary storage and handling of potentially hazardous materials/wastes should be in areas away from sensitive receptors such as schools or residential areas. These areas should be secured with chain-link fencing or similar barrier with controlled access to restrict casual contact from non-project personnel. All project personnel that may come into contact with potentially hazardous materials/wastes will have the appropriate health and safety training commensurate with the anticipated level of exposure.

Because the authority to determine project-level impacts and require project-level mitigation lies with the land use approval and/or permitting agency for individual projects, and that the programmatic analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that short-term construction-related and long-term operational-related hazards and hazardous materials impacts associated with reasonably foreseeable compliance responses to the Target Update would be **potentially significant and unavoidable**.

10. Hydrology and Water Quality

Impact 10-1: Short-Term Construction-Related Effects to Hydrology and Water Quality

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian-and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly incentivized through funding for infrastructure, and indirectly through vehicle rebate, last-mile delivery, and NEV programs. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

Construction activities could require disturbance of undeveloped areas, such as clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and roadways. Specific construction projects would be required to comply with applicable erosion, water quality standards, and waste discharge requirements (e.g., National Pollution Discharge Elimination System, stormwater pollution prevention plan [SWPPP]). With respect to depleting groundwater supplies, impairing quality, and runoff issues, construction of new facilities would not be anticipated to result in substantial demands due to the nature of associated activities. However, depending on the location of construction activities, there could be adverse effects on drainage patterns and exposure of people or structures to areas susceptible to flood, seiche, tsunami, or mudflow.

Short-term construction-related impacts to hydrologic resources associated with the Target Update would be potentially significant.

Impacts to hydrologic resources could be reduced to a less-than-significant level by mitigation that can and should be implemented by federal, State, and local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 10-1

The Regulatory Setting in Attachment 1 includes applicable laws and regulations regarding hydrology and water quality. CARB does not have the authority to require

implementation of mitigation related to new development and new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New development and new or modified facilities in California would qualify as a “project” under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are routinely required to avoid and/or mitigate hydrology and water quality-related impacts include the following:

- Proponents of new development and new or modified facilities constructed because of reasonably foreseeable compliance responses would submit applications to local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must comply with applicable regulations and would approve the project for development.
- Based on the results of project level environmental review, project proponents would implement all feasible mitigation identified in the environmental document to reduce or substantially lessen the environmental impacts of the project. The definition of actions required to mitigate potentially significant hydrology and water quality impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.

    - Under the oversight of the local lead agency, prior to issuance of any construction permits, the proponents for proposed projects would prepare a stormwater drainage and flood control analysis and management plan. The plans would be prepared by a qualified professional and would summarize existing conditions and the effects of project improvements, and would include all appropriate calculations, a watershed map, changes in downstream flows and flood elevations, proposed on- and off-site improvements, features to protection downstream uses, and property and drainage easements to accommodate downstream flows from the site. Project drainage features would be designed to protect existing downstream flow conditions that would result in new or increased severity of offsite flooding.
    - Establish drainage performance criteria for off-site drainage, in consultation with county engineering staff, such that project-related drainage is consistent with applicable facility designs, discharge rates, erosion protection, and routing to drainage channels, which could be accomplished by, but is not limited to: (a) minimizing directly connected impervious areas; (b) maximizing permeability of the site; and, (c) stormwater quality controls such as infiltration, detention/retention, and/or biofilters; and basins, swales, and pipes in the system design.

- The project proponent would design and construct new facilities to provide appropriate flood protection such that operations are not adversely affected by flooding and inundation. These designs would be approved by the local or State land use agency. The project proponent would also consult with the appropriate flood control authority on the design of offsite stream crossings such that the minimum elevations are above the predicted surface-water elevation at the agency's designated design peak flows. Drainage and flood prevention features shall be inspected and maintained on a routine schedule specified in the facility plans, and as specified by the county authority.
- As part of subsequent project-level planning and environmental review, the project proponent shall submit applications to the local groundwater management authority and prepare a detailed hydrogeological analysis of the potential project-related effects on groundwater resources prior to issuance of any permits. The proponent shall mitigate for identified adverse changes to groundwater by incorporating technically achievable and feasible modifications into the project to avoid offsite groundwater level reductions, use alternative technologies or changes to water supply operations, or otherwise compensate or offset the groundwater reductions.

Because the authority to determine project-level impacts and require project-level mitigation lies with the land use approval and/or permitting agency for individual projects, and that the programmatic analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that short-term construction-related impacts to hydrology and water quality associated with reasonably foreseeable compliance responses to the Target Update would be **potentially significant and unavoidable**.

Impact 10-2: Long-Term Operational-Related Effects to Hydrology and Water Quality

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as

modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian-and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly incentivized through funding for infrastructure, and indirectly through vehicle rebate, last-mile delivery, and NEV programs. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

High-density residential, mixed-use, infill development and concentrated development within TPAs would introduce a greater concentration of impervious surface areas, which would result in an increase in urban runoff. It would be expected that development would occur within existing urban centers; however, it is possible that development under future RTP/SCSs could occur in previously rural areas. Implementation of transportation-related projects such as expanded roadways (e.g., new express and auxiliary lands) and transit systems could also introduce impervious surfaces to urban and rural environments which could alter existing drainage patterns.

The introduction of new impervious surfaces related to development could lead to the transport of greater quantities of contaminants to receiving waters associated with precipitation events, landscape irrigation, highway runoff, and illicit dumping. It would be expected that urban-focused development would lead to an increase in stormwater pollutant loads of suspended sediments, hydrocarbons, metals, and oil and grease to unimpaired or impaired waters. These flows could affect the quality of groundwater through infiltration. Further, the increase in impermeable surfaces associated with high-density development could decrease the amount of precipitation that filters into the ground; therefore, impeding groundwater recharge.

Development of land use and transportation projects could alter the existing drainage pattern of a region or substantially increase the rate or amount of surface runoff such that flooding could occur or water drainage systems capacity would be exceeded. The probability of effect would depend on rainfall intensity, ground surface permeability, watershed size and shape, and the physical barriers of a region. Paved surfaces associated with implementation of the Target Update could accelerate the velocity of runoff, concentrating peak flows in downstream areas faster as compared to natural conditions.

Further, although there is uncertainty surrounding the exact location of development and transportation projects, it would be expected that future project sites could be located within 100-year flood hazard areas and also, in the Central Valley, within 200-year flood hazard areas. New development, facilities, and structures associated with the Target Update established within an existing floodplain could impede flood water, altering the flood risks both upstream and downstream. Implementation of the Target Update and its associated compliance responses could contribute to flood-related hazards.

Long-term operational-related impacts to hydrologic resources associated with the Target Update would be potentially significant.

Impacts to hydrologic resources could be reduced to a less-than-significant level by mitigation that can and should be implemented by federal, State, and local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 10-2: Implement Mitigation Measure 10-1

Because the authority to determine project-level impacts and require project-level mitigation lies with the land use approval and/or permitting agency for individual projects, and that the programmatic analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that long-term operational-related impacts to hydrology and water quality associated with reasonably foreseeable compliance responses to the Target Update would be **potentially significant and unavoidable**.

11. Land Use and Planning

Impact 11-1: Short-Term Construction-Related and Long-Term Operational-Effects on Land Use and Planning

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian- and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Increased use of low-emission vehicles (e.g., BEVs, PHEVs, ZEVs) could produce an elevated rate of battery disposal such that new or modified facilities would be required to accommodate recycling of lithium-ion batteries. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v and v2i software).

MPOs are required to update their RTP/SCS approximately every four years in consultation with local governments within each MPO region. Local governments maintain land use authority and are responsible for implementing and updating local general plans, community plans, conservation plans, zoning ordinances, and other applicable plans that address land use. While MPOs will continue to update their RTP/SCSs to reflect the Target Update, they do not have the authority to carry out or approve local land use plans or development projects that are under the jurisdiction of local agencies, nor do they have the authority to require changes or updates to local land use plans. Local governments may amend or update local plans in response to RTP/SCS updates, and thus changes in land use or the approval of amendments or updates to existing general plans or other land use plans in response future to RTP/SCS updates are reasonably foreseeable. However, the precise nature and timing of any future plan updates or proposed land use changes is uncertain. MPOs typically consult with local agencies during development of RTP/SCS updates, including consideration of permitted or planned land uses and associated standards in existing local land use plans, along with potential changes that could occur in the future, to avoid conflicts with existing local plans. Thus, reasonably foreseeable compliance responses would not be expected to conflict with a land use or conservation plan.

Localized implementation of specific land use and transportation projects or programs included in future RTP/SCSs under the Target Update could result in variety of localized adverse effects, such as the conversion or modification of natural and working lands, adverse effects on sensitive species or habitat, long-term erosion effects, adverse effects on local or regional water resources, long-term water quality deterioration associated with erosion and run-off, and, other effects. New roadways or transit projects could also have the potential to divide or displace an existing community, depending on the nature or configurations of future alignments. The specific environmental effects associated with land use changes are considered in their respective sections of this Draft EA. Potential indirect environmental effects associated with land use change on agriculture and forestry, biology, geology and soils, and hydrology and their related mitigation measures are discussed in further detail throughout this Draft EA under Impact 2-1, “Short-Term Construction-Related and Long-Term Operational-Related Effects to Agricultural and Forest Resources”; Impact 7-1, “Short-Term Construction-Related Effects to Geology, Seismicity, and Soils”; Impact 7-2, “Long-Term Operational-Related Effects to Geology, Seismicity, and Soils”; Impact 10-1, “Short-Term Construction-Related Effects to Hydrology and Water Quality”; and Impact 10-2, “Short-Term Operational-Related Effects to Hydrology and Water Quality.” Potential indirect effects related to the displacement of housing and people from land use projects are discussed under Impact 14-2, “Long-Term Operational-Related Effects to Population and Housing.”

12. Mineral Resources

Impact 12-1: Short-Term Construction-Related and Long-Term Operational-Related Effects to Mineral Resources

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed as a result of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian-and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly incentivized through funding for infrastructure, and indirectly through vehicle rebate, last-mile delivery, and NEV programs. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

Construction of new infill, high-density residential, and mixed-use development; development within TPAs; and new transportation, EV charging, and hydrogen fueling infrastructure could conceivably result in the loss of available land containing known mineral resources, or loss of an available locally important mineral resource recovery site. Although it is reasonably foreseeable that construction activities could occur following implementation of the Target Update, the location and extent of construction activities related to new development cannot be determined at this time. However, new development, facilities, and infrastructure would likely occur within areas of consistent zoning where original permitting and analyses considered these issues. Local agencies designate land with known mineral resources through the general plan and typically include policies on the use, management and protection of these resources in the conservation element, consistent with the requirements of the Surface Mining and Reclamation Act (SMARA) and §s 2762-2763 of the Public Resources Code.

Further, pursuant to SB 375, RTP/SCSs focus growth within or near existing urban centers to reduce transportation-related emissions. As such infill, high-density residential, and mixed-use development would be concentrated within appropriate zoning as identified in applicable general plans. Therefore, construction and operation of new development and transportation-related infrastructure would not affect the availability of a known mineral resource or recovery site.

Thus, short-term construction-related and long-term operational-related impacts to mineral resources associated with reasonably foreseeable compliance responses to the Target Update would be **less than significant**.

13. Noise

Impact 13-1: Short-Term Construction-Related Effects on Noise

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed as a result of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian- and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Increased use of low-emission vehicles (e.g., BEVs, PHEVs, ZEVs) could produce an elevated rate of battery disposal such that new or modified facilities would be required to accommodate recycling of lithium-ion batteries. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v and v2i software).

Noise levels that could result from the construction of new transportation infrastructure would fluctuate depending on the type, number, magnitude, and duration of usage for the varying equipment. The effects of construction noise largely depend on the type of construction activities occurring on any given day, noise levels generated by those activities, distances to noise sensitive receptors, and the existing ambient noise environment in the receptor’s vicinity. Construction generally occurs in several discrete stages, each phase requiring a specific complement of equipment with varying equipment type, quantity, and intensity. These variations in the operational characteristics of the equipment change the effect they have on the noise environment of the project site and in the surrounding community for the duration of the construction process.

To assess noise levels associated with the various equipment types and operations, construction equipment can be considered to operate in two modes, mobile and stationary. Mobile equipment sources move around a construction site performing tasks in a recurring manner (e.g., loaders, graders, dozers). Stationary equipment operates in a given location for an extended period of time to perform continuous or periodic operations. Operational characteristics of heavy construction equipment are

additionally typified by short periods of full-power operation followed by extended periods of operation at lower power, idling, or powered-off conditions.

Additionally, when construction-related noise levels are being evaluated, activities that occur during the more noise-sensitive evening and nighttime hours are of increased concern. Because exterior ambient noise levels typically decrease during the late evening and nighttime hours as traffic volumes and commercial activities decrease, construction activities performed during these more noise-sensitive periods of the day can result in increased annoyance and potential sleep disruption for occupants of nearby residential uses.

The site preparation phase typically generates the most substantial noise levels because of the on-site equipment associated with grading, compacting, and excavation, which uses the noisiest types of construction equipment. Site preparation equipment and activities include backhoes, bulldozers, loaders, and excavation equipment (e.g., graders and scrapers). Construction of large structural elements and mechanical systems could require the use of a crane for placement and assembly tasks, which may also generate noise levels. Although a detailed construction equipment list is not currently available, based on this project type it is expected that the primary sources of noise would include backhoes, bulldozers, and excavators. Noise emission levels from typical types of construction equipment can range from approximately 74 to 94 A-weighted decibels (dBA) at 50 feet.

Based on this information and accounting for typical usage factors of individual pieces of equipment and activity types, on-site construction could result in hourly average noise levels of 87 dBA noise equivalent level (L_{eq}) at 50 feet and maximum noise levels of 90 dBA maximum sound level (L_{max}) at 50 feet from the simultaneous operation of heavy-duty equipment and blasting activities, if deemed necessary. Based on these and general attenuation rates, exterior noise levels at noise-sensitive receptors located within thousands of feet from project sites could exceed typical standards (e.g., 50/60 dBA L_{eq}/L_{max} during the daytime hours and 40/50 dBA L_{eq}/L_{max} during the nighttime hours).

Additionally, construction activities may result in varying degrees of temporary groundborne noise and vibration, depending on the specific construction equipment used and activities involved. Groundborne noise and vibration levels caused by various types of construction equipment and activities (e.g., bulldozers, blasting) range from 58 – 109 vibration decibels (VdB) and from 0.003 – 0.089 inches per second (in/sec) peak particle velocity (PPV) at 25 feet. Similar to the above discussion, although a detailed construction equipment list is not currently available, based on this project type it is expected that the primary sources of groundborne vibration and noise would include bulldozers and trucks. According to the Federal Transit Authority (FTA), levels associated with the use of a large bulldozer and trucks are 0.089 and 0.076 in/sec PPV (87 and 86 VdB) at 25 feet, respectively. With respect to the prevention of structural damage, construction-related activities would not exceed recommended levels (e.g., 0.2 in/sec PPV). However, based on FTA's recommended procedure for applying a propagation adjustment to these reference levels, bulldozing and truck activities could

exceed recommended levels with respect to the prevention of human disturbance (e.g., 80 VdB) within 275 feet.

Thus, implementation of reasonably foreseeable compliance responses could result in the generation of short-term construction noise in excess of applicable standards or that result in a substantial increase in ambient levels at nearby sensitive receptors, and exposure to excessive vibration levels.

Short-term construction-related impacts on noise associated with the Target Update would be potentially significant.

This impact could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 13-1

The Regulatory Setting in Attachment 1 includes, but is not limited to, applicable laws and regulations that pertain to noise. CARB does not have the authority to require implementation of mitigation related to new development and new or modified facilities that could be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New development and new or modified facilities in California would qualify as a “project” under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are routinely required to avoid and/or minimize noise include:

- Proponents of new development or new or modified facilities constructed under the reasonably foreseeable compliance responses would submit applications to local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must comply with applicable regulations and would approve the project for development.
- Based on the results of project level environmental review, project proponents would implement all feasible mitigation identified in the environmental document to reduce or substantially lessen the environmental impacts of the project. The definition of actions required to mitigate potentially significant noise impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.

    - Ensure noise-generating construction activities (including truck deliveries, pile driving, and blasting) are limited to the least noise-sensitive times of day (e.g., weekdays during the daytime hours) for projects near sensitive receptors.

- Consider use of noise barriers, such as berms, to limit ambient noise at property lines, especially where sensitive receptors may be present.
- Ensure all project equipment has sound-control devices no less effective than those provided on the original equipment.
- All construction equipment used would be adequately muffled and maintained.
- Consider use of battery-powered forklifts and other facility vehicles.
- Ensure all stationary construction equipment (i.e., compressors and generators) is located as far as practicable from nearby sensitive receptors or shielded.
- Properly maintain mufflers, brakes and all loose items on construction and operation related vehicles to minimize noise and address operational safety issues. Keep truck operations to the quietest operating speeds. Advise about downshifting and vehicle operations in sensitive communities to keep truck noise to a minimum.
- Use noise controls on standard construction equipment; shield impact tools.
- Consider use of flashing lights instead of audible back-up alarms on mobile equipment.
- Install mufflers on air coolers and exhaust stacks of all diesel and gas-driven engines.
- Equip all emergency pressure relief valves and steam blow-down lines with silencers to limit noise levels.
- Contain facilities within buildings or other types of effective noise enclosures.
- Employ engineering controls, including sound-insulated equipment and control rooms, to reduce the average noise level in normal work areas.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and that the programmatic analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that the potentially significant short-term construction-related impacts regarding noise resulting from the construction of new facilities associated with reasonably foreseeable compliance response to the Target Update could be **potentially significant and unavoidable**.

Impact 13-2: Long-Term Operational-Related Effects on Noise

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and

facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed as a result of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian- and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Increased use of low-emission vehicles (e.g., BEVs, PHEVs, ZEVs) could produce an elevated rate of battery disposal such that new or modified facilities would be required to accommodate recycling of lithium-ion batteries. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v and v2i software).

New sources of noise associated with implementation of these compliance responses could include new transportation infrastructure or increased operation of passenger rail, buses, and transit stations. The compliance responses could also result in an increased number of vehicles on freeways, highways or local roadways due to increased high-density, mixed-use, or infill development in existing urbanized areas, thus result in potential increases in noise generated by these sources. Conversely, additional development in existing urbanized areas could expose new residents to existing and new noise sources. While the Target Update and associated compliance responses are designed to reduce VMT (including vehicle usage), localized trips and associated vehicle usage could still increase and result in increased noise levels. Depending on the proximity of specific transportation projects to existing or new noise-sensitive receptors, and depending on the proximity of new noise-sensitive receptors to existing or new sources or noise, compliance responses under the Target Update could result in a substantial increase in ambient noise levels that could exceed applicable noise standards.

Thus, long-term operational noise impacts associated with the Target Update would be potentially significant.

These impacts on noise could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB.

Mitigation Measure 13-2.

The Regulatory Setting in Attachment A includes, but is not limited to, applicable laws and regulations that pertain to noise. CARB does not have the authority to require implementation of mitigation related to new or modified facilities that could be approved by local jurisdictions. The ability to require such measures is under the purview of

jurisdictions with local or State land use approval and/or permitting authority. New or modified facilities in California would qualify as a “project” under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are routinely required to avoid and/or minimize noise include:

- Prior to receiving building permits, project proponents would demonstrate that noise levels would meet applicable noise standards at the nearest existing or planned sensitive receptors to a project site. Methods of reducing ambient noise levels include, but are not limited to, the following:
    - External mechanical and powered equipment would be used and maintained according to manufacturer’s specifications.
    - Noise reducing features would be applied to external mechanical equipment to ensure compliance with community noise standards.
    - Public notice of activities would be provided to nearby noise-sensitive receptors of potential noise-generating activities.
    - All motorized equipment would be shut down when not in use. Idling of equipment or trucks shall be limited to five minutes.
    - Loading docks constructed as a result of implementation of the Target Update would be located and designed so that noise emissions do not exceed stationary noise standards at any existing or planned sensitive receptor.
    - For projects located near freeways or high volume roadways, sound walls would be constructed to attenuate noise levels at nearby existing or planned sensitive receptors.
    - Noise sensitive structures would be designed to attenuate long-term exterior noise to an interior noise level of 45dBA CNEL

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and that the programmatic analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that long-term operational-related noise impacts associated with reasonably foreseeable compliance responses to the Target Update could be **potentially significant and unavoidable**.

14. Population and Housing

Impact 14-1: Short-Term Construction-Related Effects to Population and Housing

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed as a result of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian-and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly incentivized through funding for infrastructure, and indirectly through vehicle rebate, last-mile delivery, and NEV programs. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

Although it is reasonably foreseeable that construction activities associated with high-density development, transportation projects, and low-emission vehicle-related infrastructure could occur, there is uncertainty as to the exact location or character of any new facilities. Construction activities would be anticipated to require relatively small crews, and demand for these crews would be temporary (e.g., 6 – 12 months per project). Therefore, it would be anticipated that the need for a substantial amount of construction worker migration would not occur and that a sufficient construction employment base would likely be available.

Further, construction associated with the Target Update would occur over the course of an RTP/SCS projected horizon. This would result in a steady amount of construction-related work such that communities would have adequate housing to support these activities. New housing would not be required to meet construction-related demands.

As a result, short-term construction-related associated with implementation of the Target Update on population and housing would be **less than significant**.

Impact 14-2: Long-Term Operational-Related Effects to Population and Housing

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include

programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed because of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian- and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly incentivized through funding for infrastructure, and indirectly through vehicle rebate, last-mile delivery, and NEV programs. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

Potential compliance responses to the Target Update could include a percentage increase of high-density residential, infill, multi-use development, and TPA projects. Through future RTP/SCSs pursuant to SB 375, MPOs would recommend that these land uses be applied to their respective regions to adequately accommodate projected population growth forecasts as well as maximize space. Following the adoption of RTP/SCSs, local land use agencies may decide to apply the principles of their respective plans when making land use decisions.

Transportation projects such as expanded transit networks, transit stations, roadway improvements, or other large-scale infrastructure could result in the removal of residential or other types of buildings to make way for new or expanded facilities. In other cases, certain transportation improvements could permanently alter the characteristics and qualities of a neighborhood such that existing populations may be motivated or relocate or, conversely, such neighborhoods may become more attractive housing locations.

Deployment of RTP/SCS-related land use development within the proximity of transit corridors (e.g., within TPAs) has the potential to result in the displacement of existing lower-income households from urban neighborhoods with existing access to transit, jobs, and other amenities if the housing market is under-producing new homes that are affordable to persons at lower income levels. A study published in 2017 examined the relationship between fixed-rail transit neighborhoods and displacement of low-income housing in the San Francisco and Los Angeles metropolitan areas. The study demonstrated that increased infill development is often coupled with rising land costs. As such, housing prices inflate and neighborhood composition changes (i.e., gentrification) resulting in the displacement of low-income residents and housing (Chapple et al. 2017).

While displacement itself is not a direct environmental impact, a project that would displace a substantial number of people and/or require the construction of new housing elsewhere could result in indirect adverse effects on the environment. In cases where displacement occurs from the implementation of an RTP/SCS and results in lower-

income households searching for housing in other communities, either within or outside of a given region, it is reasonable to assume that such displacement could warrant the construction of new housing in those locations. E ffects related to new housing construction could include short-term increases in criteria pollutants (see Impact 3-1); loss of farmland or forestland (see Impact 2-1); adverse effects on special-status species such as the loss of habitat or individuals (see Impact 4-1); worsened traffic during construction (see Impact 17-1); increased demand on water, wastewater, and other utilities requiring expansion of infrastructure (see Impact 18-2); and increased demand on public services requiring the construction of facilities such as schools, police stations, and fire stations (see Impact 15-2).

Long-term operational-related impacts to displacement of people and housing associated with the Target Update would be potentially significant.

Impacts to population and housing could be reduced to a less-than-significant level by mitigation that can and should be implemented by federal, State, and local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 14-1

The Regulatory Setting in Attachment 1 includes applicable laws and regulations regarding population and housing. CARB does not have the authority to require implementation of mitigation related to new development and new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New development and new or modified facilities in California would qualify as a “project” under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are required to avoid and/or mitigate population and housing impacts include the following:

- Proponents of new development and new facilities constructed as a result of reasonably foreseeable compliance responses would submit applications to local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must comply with applicable regulations and would approve the project for development.
- Based on the results of project level environmental review, project proponents would implement all feasible mitigation identified in the environmental document to reduce or substantially lessen the environmental impacts of the project. Local jurisdictions may adopt actions required to mitigate potentially significant displacement impacts, and may include the following; however, any mitigation specifically

required for a new or modified facility would be determined by the local lead agency.

- Increasing the production of housing at all income levels, especially for low- and moderate-income households in transit priority areas.
- Adopting reasonable tenant protections such as just-cause eviction requirements and rent stabilization, where appropriate, to counter sudden market shifts that threaten neighborhood stability.
- Balancing revenue-generation from development fees and use of underutilized public lands with fulfilling community priorities such as affordable housing.
- Limiting speculation in the housing market that impacts neighborhood stability by moderating up-zoning and other land use policy changes over time.

- Project proponents may adopt actions required to mitigate potentially significant displacement impacts, and may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.

  - Selecting alignments within existing public rights-of-ways where feasible.
  - Design sections above- or below-grade to avoid property acquisition that causes displacement of businesses or housing where feasible.
  - Select alignments within properties that result in the least amount of displacement.

Because the authority to determine project-level impacts and require project-level mitigation lies with the land use approval and/or permitting agency for individual projects, and that the programmatic analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that long-term operational impacts related to the displacement of people and housing associated with reasonably foreseeable compliance responses to the Target Update would be **potentially significant and unavoidable**.

15. Public Services

Impact 15-1: Short-Term Construction-Related Effects to Public Services

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local

planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed as a result of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian-and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly incentivized through funding for infrastructure, and indirectly through vehicle rebate, last-mile delivery, and NEV programs. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

Although it is reasonably foreseeable that construction activities associated with high-density development, transportation projects, and low-emission vehicle-related infrastructure could occur, there is uncertainty as to the exact location or character of any new facilities. Construction activities would be anticipated to require relatively small crews, and demand for these crews would be temporary (e.g., 6 – 12 months per project). Therefore, it would be anticipated that the need for a substantial amount of construction worker migration would not occur and that a sufficient construction employment base would likely be available. Thus, demand on public services would not be substantially increased and new or physically altered government facilities would not be anticipated as a result of construction-related activities.

Further, construction associated with the Target Update would occur over the course of an RTP/SCS projected horizon. This would result in a steady amount of construction-related work such that communities would have adequate population to support these activities as well as public services. Additional public service resources would not be required to meet construction-related demands.

As a result, short-term construction-related impacts associated with the Target Update on public services would be **less than significant**.

Impact 15-2: Long-Term Operational-Related Effects to Public Services

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed as

a result of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian-and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly incentivized through funding for infrastructure, and indirectly through vehicle rebate, last-mile delivery, and NEV programs. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

Pursuant to SB 375, RTP/SCSs contain land use and transportation strategies to accommodate projected increases in population within an MPO's jurisdiction. To reduce automobile-generated sources of GHGs, growth is often focused within or near existing urban centers and uses mixed-use, high-density residential, and infill development to keep growth localized. Population growth would increase demand for schools; fire, police, and emergency services; and other general government services (e.g., libraries). Depending on growth and housing patterns, these public services could exceed their capacity.

However, population growth associated with the Target Update is not a direct result of implementation; rather, the components of the Target Update and future RTP/SCSs are prepared to accommodate anticipated increases in population within the jurisdictions of MPOs. Therefore, implementation of the Target Update would not directly contribute to population growth and its related effects on public services. Further, most jurisdictions require developers to pay fees to accommodate increased demand for public services. Nonetheless, it is possible that implementation of the Target Update could result in increases in demand for public services that exceed existing service capabilities.

Transportation-related projects associated with the Target Update could result in expanded roadway capacity which could result in increased vehicle use and the potential for increased levels of traffic and/or accidents, which may impeded police, fire, and emergency access; however, consistent with the goals of SB 375, overall vehicle miles traveled would be reduced at the MPO regional level through incorporation of TDM, TSM, complete streets, improved transit systems, and other strategies designe3d to reduce automobile travel. Further, transportation facility improvements could also result in less demand for services per vehicle mile because of better traffic flow or improve road surfaces. Transportation projects that increase capacity in heavily congested areas would reduce levels of congestion and the effects of bottlenecking, which could improve response times for police, fire, and emergency services. Such measures would be implemented at the local level, and measures that could increase roadway capacity (e.g., deployment of AVs) could lower level of service and response times for public services.

Long-term operational-related impacts to public resources associated with the Target Update would be potentially significant.

Impacts to public services could be reduced to a less-than-significant level by mitigation that can and should be implemented by federal, State, and local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 15-1

The Regulatory Setting in Attachment 1 includes applicable laws and regulations regarding public services. CARB does not have the authority to require implementation of mitigation related to new development and new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New development and new or modified facilities in California would qualify as a “project” under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are routinely required to avoid and/or mitigate public services-related impacts include the following:

- Proponents of new development and facilities constructed as a result of reasonably foreseeable compliance responses to the Target Update would submit applications to local or State land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must comply with applicable regulations and would approve the project for development.
- Based on the results of project level environmental review, project proponents would implement all feasible mitigation identified in the environmental document to reduce or substantially lessen the environmental impacts of the project. The definition of actions required to mitigate potentially significant impacts top public services may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.

    - Under the oversight of the local lead agency, prior to issuance of any construction permits, the proponents for proposed projects shall ensure that adequate public services, and related infrastructure and utilities, will be available to meet or satisfy levels identified in the applicable local general plan or service master plan prior to approval of new development project through compliance with existing local policies related to minimum levels of service for police protection, fire protection, emergency services, and schools.
    - Comply with requirements to provide additional services to meet service levels, or pay fees towards the project’s fair share portions of the required services pursuant to adopted free programs and State law.

Because the authority to determine project-level impacts and require project-level mitigation lies with the land use approval and/or permitting agency for individual projects, and that the programmatic analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that long-term operational-related impacts to public services associated with reasonably foreseeable compliance responses to the Target Update would be **potentially significant and unavoidable**.

16. Recreation

Impact 16-1: Short-Term Construction-Related and Long-Term Operational-Related Effects to Recreation

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed as a result of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian-and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly incentivized through funding for infrastructure, and indirectly through vehicle rebate, last-mile delivery, and NEV programs. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

Although it is reasonably foreseeable that construction activities associated with new development, transportation projects, and low-emission vehicle-related infrastructure could occur, there is uncertainty as to the exact location or character of any new facilities. Construction activities would be anticipated to require relatively small crews, and demand for these crews would be temporary (e.g., 6 – 12 months per project). Therefore, it would be anticipated that the need for a substantial amount of construction worker migration would not occur and that a sufficient construction employment base would likely be available. Thus, demand on recreational would not be substantially increased and new or physically altered recreational facilities would not be anticipated as a result of construction-related activities.

Further, construction associated with the Target Update would occur over the course of an RTP/SCS's projected horizon. This would result in a steady amount of construction-related work such that communities would be have adequate population to support these activities as well as recreational resources. Additional recreational facilities would not be required to meet construction-related demands.

Anticipated regional growth under future RTP/SCSs could increase demand on recreational facilities as development occurs to accommodate new populations; however, consistent with the State of California General Plan Guidelines, jurisdictions must consider preservation and expansion of recreational areas (e.g., open spaces, greenbelts, public parks) in the Open Space and Conservation elements of general plans (Office of Planning and Research 2003). Moreover, the Quimby Act requires parkland dedication associated with new development on a per population basis and ensures adequate new park facilities would be provided to match increased population in. As such, effects to recreational resources associated with new development, transportation projects, and low-emissions vehicle-related infrastructure would be addressed by local jurisdictions during development review. Implementation of policies related to Open Space and Conservation would not be within the purview of CARB and would, therefore, be the responsibility of local jurisdictions.

Furthermore, RTP/SCSs that include complete streets and enhanced bicycling and pedestrian infrastructure measures may increase a region's capacity to service growing populations with recreational resources.

As such, short-term construction-related and long-term operational-related effects to recreational resources associated with the Target Update would be **less than significant**.

17. Transportation and Traffic

Impact 17-1: Short-Term Construction-Related Effects on Transportation and Traffic

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed as a result of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian- and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly

incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Increased use of low-emission vehicles (e.g., BEVs, PHEVs, ZEVs) could produce an elevated rate of battery disposal such that new or modified facilities would be required to accommodate recycling of lithium-ion batteries. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v and v2i software).

Although detailed information about potential construction activities associated with compliance responses is not currently available, short-term construction-related traffic (primarily motorized) would be generated from worker commute- and material delivery-related trips. The amount of construction activity would vary depending on the type, number, and duration of usage for the varying equipment, and the phase of construction. These variations would affect the amount of project-generated traffic for both worker commute trips and material deliveries. Depending on the amount of trip generation and the location of new facilities, implementation could conflict with applicable programs, plans, ordinances, or policies (e.g., performance standards, congestion management); and/or result in hazardous design features and emergency access issues from road closures, detours, and obstruction of emergency vehicle movement, especially due to project-generated heavy-duty truck trips.

The short-term construction-related impacts associated with the Target Update on traffic and transportation would be potentially significant.

This impact on transportation and traffic could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB.

Mitigation Measure 17-1

The Regulatory Setting in Attachment 1 includes applicable laws and regulations regarding transportation. CARB does not have the authority to require implementation of mitigation related to new development and new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or State land use approval and/or permitting authority. New development and new or modified facilities in California would qualify as a “project” under CEQA. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Project-specific impacts and mitigation would be identified during the environmental review by agencies with project-approval authority. Recognized practices that are routinely required to avoid and/or minimize construction traffic impacts include:

- Proponents of new development and new or modified facilities or infrastructure constructed as a result of reasonably foreseeable compliance responses would submit applications to State or local land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA). The local or State land use agency or governing body must follow all applicable environmental regulations as part of approval of a project for development.

- Based on the results of the environmental review, proponents would implement all feasible mitigation to reduce or substantially lessen the potentially significant scenic or aesthetic impacts of the project. Actions required to mitigate potentially significant traffic impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.
- Minimize the number and length of access, internal, service, and maintenance roads and use existing roads when feasible.
- Provide for safe ingress and egress to/from the proposed project site. Identify road design requirements for any proposed roads, and related road improvements.
- If new roads are necessary, prepare a road siting plan and consult standards contained in federal, state, or local requirements. The plans should include design and construction protocols to meet the appropriate roadway standards and be no larger than necessary to accommodate their intended functions (e.g., traffic volume and weight of vehicles). Access roads should be located to avoid or minimize impacts to washes and stream crossings, follow natural contours and minimize side-hill cuts. Roads internal to a project site should be designed to minimize ground disturbance. Excessive grades on roads, road embankments, ditches, and drainages should be avoided, especially in areas with erodible soils.
- Prepare a Construction Traffic Control Plan and a Traffic Management Plan.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and that the programmatic analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that the short-term construction-related traffic and transportation impacts associated with reasonably foreseeable compliance responses to the Target Update would be **potentially significant and unavoidable**.

Impact 17-2: Long-Term Operational-Related Effects on Transportation and Traffic

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering,

traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed as a result of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian- and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly and indirectly incentivized through funding for infrastructure, and vehicle rebate, last-mile delivery, and NEV programs. Increased use of low-emission vehicles (e.g., BEVs, PHEVs, ZEVs) could produce an elevated rate of battery disposal such that new or modified facilities would be required to accommodate recycling of lithium-ion batteries. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v and v2i software).

Land use strategies to increase infill, higher-density residential, mixed-use development, and TPA project would lead to overall statewide and regional reductions in VMT per capita by concentrating development in urban areas and reducing the distance between trip origins and destinations. These land use strategies, when combined with transportation strategies under the Target Update, would also have the effect of shifting modes of travel for some trips from automobile usage to transit, walking, or biking. However, concentrating land use development in urban areas could also result in some localized increases in vehicle trips on roadways, which could result in additional local traffic and congestion in urbanized areas with higher population densities. At the same time, transportation infrastructure strategies, such as new transit routes and stations, traffic calming, express lanes, and other roadway reconfigurations, could increase or decrease the number of lanes on roadways and freeways depending on the project. These strategies could affect roadway volumes by changing roadway capacity and result in either higher or lower levels of service. These strategies could also increase vehicle occupancy rates, reduce passenger vehicle mode share, and smooth overall vehicle traffic.

Non-infrastructure transportation strategies, such as most TSM, TDM, pricing, and vehicle technology strategies, could also increase vehicle occupancy rates, reduce passenger vehicle mode share, and smooth overall vehicle traffic.

Overall, MPOs are expected to meet new regional GHG targets through a combination of expanded or new land use and transportation strategies that would reduce per capita VMT. While increases in vehicle trips could be partially offset by other strategies and local actions such as increasing transit, walking, biking, TSM, TDM, pricing, and other strategies, localized increases in traffic congestion on local and regional roadways could still occur in some jurisdictions.

Public Resources Code § 21099(b)(2) states that automobile delay, as described solely by level of service or similar measures of traffic congestion are not a significant environmental impact except in certain specified locations; and, § 21099(c)(1) also permits OPR to establish alternative metrics for assessing traffic impacts outside transit priority areas. However, until such guidelines have been finalized and proceedings to

update the CEQA Guidelines have been completed, localized increases in traffic congestion and automobile delay could still be considered significant.

Thus, long-term operational-related impacts to transportation and traffic associated with reasonably foreseeable compliance responses to the Target Update would be **potentially significant**.

Mitigation Measure 17-2

The Regulatory Setting in Attachment 1 includes applicable laws and regulations regarding transportation and traffic. CARB does not have the authority to require implementation of mitigation related to changes to traffic patterns; these must be addressed by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local land use approval and/or permitting authority. The jurisdiction with primary approval authority over a proposed action is the Lead Agency, which is required to review the proposed action for compliance with CEQA statutes. Local agencies with project-approval authority would need to consider changes in traffic patterns in their relevant traffic management plans, regional transportation plans, or other relevant documents. Recognized practices that are routinely required to avoid and/or minimize operational traffic impacts include:

- revisions to traffic signals,
- requirements to pay a fair share contribution to local traffic operation centers,
- coordination with Caltrans, or other relevant agencies, to broadcast real-time information on existing changeable message signs,
- consultation with local authorities to revise public transit system operations, and
- consultation with local emergency service provides to ensure that operating conditions on local roadways and freeway facilities are maintained.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and that the programmatic analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that long-term operational traffic and transportation impacts associated with reasonably foreseeable compliance responses to the Target Update would be **potentially significant and unavoidable**.

18. Utilities and Service Systems

Impacts on utilities and service systems inherently long-term, thus, short-term effects are not addressed below.

Impact 18-1: Long-Term Operational-Related Effects to Utilities and Service Systems

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, and mixed-use development; focused growth in TPAs; and expansion of associated infrastructure and facilities, which could result in the demolition of existing structures. Regional and local planning documents (e.g., general plans, specific plans) could be amended to include programs to preserve rural agricultural and open space. Increased funding for transit could include construction and operation of new transit (e.g., light-rail) routes and stations. Use of TSM and TDM strategies could require the installation of metering, traffic calming (e.g., roundabouts), and park-and-ride lot infrastructure, as well as modifications to existing roadways to support managed lanes. Toll-related infrastructure could be constructed as a result of implementing pricing programs. Modifications or expansions to existing roadways could occur to support redevelopment of streets and pedestrian-and bicycle-related facilities (e.g., lanes, parking, greenbelts). Construction of public and individual electric charging and hydrogen fueling infrastructure to support low-emission transit, automobiles, and light-duty trucks could be directly incentivized through funding for infrastructure, and indirectly through vehicle rebate, last-mile delivery, and NEV programs. Roadway infrastructure modifications could be needed to support AVs and expansion of intelligent transportation systems (e.g., v2v, v2i software).

Reasonably foreseeable compliance responses associated with the Target Update including new infill, mixed-use, and high-density residential development could result in new demand for water, wastewater, landfill, electricity, and gas services. Generally, facilities would be sited in areas within existing utility infrastructure, or areas where existing utility infrastructure is easily available. New or modified utility installation, connections, and expansions would be subject to the requirements of the applicable utility providers. Changes in land use associated with new development are likely to change water demand to support residential and commercial uses depending on the size, location, and existing uses. This could result in an increase in water demand and would be subject to availability and regulatory requirements.

Any new development, regardless of size or location, would be required to seek local or State land use approvals prior to construction. In addition, depending on size, part of the land use entitlement process for new develop proposed in California requires that each of these projects undergo environmental review consistent with the requirements of CEQA and the CEQA guidelines. Through the environmental review process, utility and service demands would be calculated; agencies would provide input on available service capacity and the potential need for service-related infrastructure including expansions to wastewater treatment plants, new water supply entitlements and infrastructure, storm water infrastructure, and solid waste handling capacity (e.g., landfills). Resulting environmental impacts would also be determined through this process.

Thus, long-term operational-related impacts to utilities and services systems associated with the Target Update would be potentially significant.

This impact could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, but is beyond the authority of CARB and not within its purview.

Mitigation Measure 18-1

CARB does not have the authority to require implementation of mitigation related to new development and new or modified facilities that would be approved by local jurisdictions. The ability to require such measures is under the purview of jurisdictions with local or the corresponding state land use approval and/or permitting authority. There is uncertainty surrounding the location of construction activities, and therefore the applicable local or state laws adopted to reduce operational-related impacts to utilities and service systems will vary. The measures discussed below are based on recognized practices that are routinely required to avoid and/or mitigate utilities and service systems-related impacts, and could be implemented regardless of location:

- Proponents of new development and new facilities constructed as a result of reasonably foreseeable compliance responses would submit applications to the corresponding local or state land use agencies to seek entitlements for development including the completion of all necessary environmental review requirements (e.g., CEQA, NEPA). The local or state land use agency or governing body must comply with applicable regulations and would approve the project for development.
- Based on the results of project level environmental review, project proponents would implement all feasible mitigation identified in the environmental document to reduce or substantially lessen the environmental impacts of the project. The definition of actions required to mitigate potentially significant utility or service-related impacts may include the following; however, any mitigation specifically required for a new or modified facility would be determined by the local lead agency.

    - Comply with local plans and policies, include payment of impact fees, regarding the provision of water supply, wastewater treatment, and storm water drainage utilities, and solid waste services.
    - Where an on-site wastewater system is proposed, submit a permit application to the appropriate local jurisdiction.
    - Comply with local plans and policies regarding the provision of wastewater treatment services.

Because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts.

Consequently, while impacts could be reduced to a less-than-significant level by land use and/or permitting agency conditions of approval, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that the potentially significant impact to utilities and service systems resulting from the operation of new facilities associated with reasonably foreseeable compliance responses to the Target Update would be **potentially significant and unavoidable**.

5.0 CUMULATIVE AND GROWTH-INDUCING IMPACTS

A. Approach to Cumulative Analysis

This section satisfies requirements of the California Environmental Quality Act (CEQA) to discuss how the project could contribute to cumulative impacts. The California Air Resources Board's (CARB's) certified regulatory program (Cal. Code Regs. tit. 17, § 60000-60008) does not provide specific direction on a cumulative impacts analysis, and while CARB, by virtue of its certified program, is exempt from Chapters 3 and 4 of CEQA and corresponding sections of the CEQA Guidelines (Cal. Code Regs. tit. 14, § 15000 et. seq.), the Guidelines nevertheless contain useful information for preparation of a thorough and meaningful cumulative analysis. The CEQA Guidelines require a cumulative impact to be found if the project's incremental effect combined with the effects of other projects is "cumulatively considerable." (Cal. Code Regs. tit. 14, § 15130, subd. (a).) The discussion of cumulative impacts need not provide as much detail as the discussion of effects attributable to the project alone. (Cal. Code Regs. tit. 14, § 15130.) Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," a lead agency need not consider that effect significant, but must briefly describe its basis for concluding that the incremental effect is not cumulatively considerable.

In considering cumulative impacts, an agency may choose from among two approaches: it can prepare a list of past, present, and probable future projects that would produce related or cumulative impacts, or it can rely on a summary of projections contained in an adopted planning document or an adopted or certified environmental document for the planning document. (Cal. Code Regs. tit. 14, §15130, subd. (b).) Further, the CEQA Guidelines state that the pertinent discussion of cumulative impacts contained in one or more previously certified environmental impact reports (EIRs) may be incorporated by reference pursuant to provisions for tiering and program EIRs, and that no further cumulative analysis is required when the lead agency determines the regional and area wide impacts have already been addressed in the prior certified EIR. (Cal. Code Regs. tit. 14, § 15130.)

The CEQA Guidelines state that a previously approved plan for the reduction of GHG emissions may be used in cumulative impacts analysis, and that the pertinent discussion of cumulative impacts contained in one or more previously certified EIRs may be incorporated by reference. (Cal. Code Regs. tit. 14, § 15130, subd. (d).) Furthermore, no further cumulative impacts analysis is required when a project is consistent with a general, specific, master or comparable programmatic plan where the lead agency determines that the regional or area wide cumulative impacts of the proposed project have already been adequately addressed, as defined in § 15152, subd. (f), in a certified EIR for that plan. (Cal. Code Regs. tit. 14, § 15130, subd. (d).) CEQA further directs that a tiered EIR focus on significant environmental effects that were not already analyzed in the previous environmental analysis. (Pub. Resources Code § 21068.5; 21093; see also 21094 subd. (c).)

For purposes of this analysis, CARB is relying on the summary of projections contained in the Environmental Analysis (EA) prepared for the 2014 First Update to the Climate Change Scoping Plan (2014 Scoping Plan Update EA). The 2014 Scoping Plan Update EA provided a program level review of significant adverse impacts associated with the reasonably foreseeable compliance responses that appeared most likely to occur as a result of implementing the recommended actions identified in each of the nine sectors discussed in the 2014 Scoping Plan Update. The impact discussion includes, where relevant, construction-related effects, operational effects of new or modified facilities, and influences of the recommended actions on greenhouse gas (GHG) and air pollutant emissions. The 2014 Scoping Plan Update EA considered cumulative impacts of a full range of reasonably foreseeable compliance responses to all the recommendations in all nine sectors, including this Target Update, along with the expected background growth in California in its impacts conclusions for each resource topic area. The 2014 Scoping Plan Update EA considered the cumulative effect of other "closely related" past, present, and future reasonably foreseeable activities undertaken to reduce GHGs in response to statewide programs and policies, as well other activities with "related impacts." (Cal. Code Regs. tit. 14, § 15355, subd. (b); 15130, subd. (a)(1).) CARB has determined that the cumulative effects of the Target Update have been examined at a sufficient level of detail in the 2014 Scoping Plan Update EA.[1] Therefore, CARB has determined that for a cumulative analysis of the Target Update, it is appropriate to rely on the cumulative analysis contained in the 2014 Scoping Plan Update EA, which is the statewide plan designed to reduce GHGs. The analysis of the 2014 Scoping Plan Update EA is hereby incorporated by reference. The portions of the 2014 Scoping Plan Update EA relevant to this discussion are also summarized below.

The analysis of cumulative impacts includes the following:

- A summary of the cumulative impacts found for each resource area in the 2014 Scoping Plan Update EA.
- A discussion of the types of compliance responses associated with the Target Update, pertinent to each resource area.
- A significance conclusion that determines if the Target Update could result in a significant cumulative effect or a considerable contribution to an existing significant cumulative impact.

This approach to cumulative impacts analysis is "guided by the standards of practicality and reasonableness" (Cal. Code Regs. tit. 14, § 15130, subd. (b)) and serves the purpose of providing "a context for considering whether the incremental effects of the project at issue are considerable" when judged "against the backdrop of the environmental effects of other projects." (*CBE v. Cal. Res. Agency* (2002) 103 Cal.App.4th 98, 119.)

[1] A copy of the 2014 Scoping Plan Update EA is available at http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm.

1. Summary of the 2014 Scoping Plan Update Compliance Responses

The 2014 Scoping Plan Update EA provided a program-level review of significant adverse impacts associated with the reasonably foreseeable compliance responses that appeared most likely to occur as a result of implementing the recommended actions identified in each of the nine sectors discussed in the 2014 Scoping Plan Update. The impact discussion includes, where relevant, construction-related effects, operational effects of new or modified facilities, and influences of the recommended actions on GHG and air pollutant emissions. The 2014 Scoping Plan Update EA was prepared as a program environmental document for the entire statewide plan of GHG reductions projects, including the Target Update. The EA is available online at http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm

The 2014 Scoping Plan Update EA considered nine sectors: energy, transportation, agriculture, water waste management, natural and working lands, short-lived climate pollutants, green buildings, and cap-and-trade regulation. The compliance responses associated with these sectors are described as follows.

a) Energy Sector under the 2014 Scoping Plan Update

Reasonably foreseeable compliance responses evaluated in the 2014 Scoping Plan Update EA ranged from small modifications to existing structures to utility-scale renewable energy projects. For instance, the EA considered energy storage systems that could be developed by modifying existing hydroelectric dams; and smart-grid technology such as the installation of smart meters. Improvements to energy production, processing, storage, distribution, and transmission systems were considered, and consist of general housekeeping, vapor recovery valves, and frequent maintenance checks. In addition, renewable energy projects were considered, including the installation of solar panels and micro-turbines onto buildings (e.g., to create zero net energy buildings or combined heat and power systems) to large-scale energy generation facilities, such as solar photovoltaic and wind turbine farms, and geothermal plants

b) Transportation Sector under the 2014 Scoping Plan Update

The 2014 Scoping Plan Update contains four main types of recommended actions associated with the Transportation Sector: (1) improve vehicle efficiency and develop zero-emission technologies; (2) reduce the carbon content of fuels and provide market support to encourage the use of these fuels; (3) plan for and develop communities that would minimize vehicular GHG emissions and provide more transportation options; and (4) improve the efficiency and throughput of existing transportation systems. Reasonably foreseeable compliance responses evaluated in the 2014 Scoping Plan Update EA consisted of an increased demand for, and associated manufacturing of, a variety of alternative fuel and/or low- and zero-emission technologies and related fueling infrastructure. Increased demand for products, such as standard hybrid, plug-in hybrid electric, battery electric, and fuel-cell vehicles and trucks, were determined to require development of new and/or modified manufacturing plants. In addition, installation of

fixed-guideway systems to transport shipment containers, installed at marine ports and near dock rail yards, was evaluated.

A separate EA was prepared to evaluate the environmental effects of implementing the proposed Low Carbon Fuel Standard and Alternative Diesel Fuels Regulation, which was certified in 2015. The EA is available online at http://www.arb.ca.gov/regact/2015/lcfs2015/lcfs2015.htm.

c) Agriculture Sector under the 2014 Scoping Plan Update

The types of recommended actions for the Agriculture Sector involve GHG emission reduction and carbon sequestration opportunities. Reasonably foreseeable compliance responses evaluated in the 2014 Scoping Plan Update consisted of nitrogen management, manure management, soil management practices, water and fuel technologies, and land use planning to enhance, protect, and conserve lands in California.

d) Water Sector under the 2014 Scoping Plan Update

The 2014 Scoping Plan Update contains three types of recommended actions to reduce water-related energy use: (1) prioritizing investments in conservation; (2) adopting rate structures and pricing that maximize conservation; and (3) promoting less-energy intensive water management, such as a comprehensive groundwater policy. Reasonably foreseeable compliance responses evaluated under the Water Sector in the 2014 Scoping Plan Update EA are primarily related to the development of policies, guidance, and funding plans. These plans generally aim to provide energy conservation and efficiency measures associated with water supply, conservation, water recycling, stormwater reuse, and wastewater-to-energy goals. These actions could result in the reasonably foreseeable compliance responses of increased development of water resource facilities, such as water recycling facilities, detention structures for reuse of stormwater, and wastewater treatment-related capture of biogas for energy use. Development of new and/or modified recycled water and wastewater plants could also occur.

e) Waste Management Sector under the 2014 Scoping Plan Update

The 2014 Scoping Plan Update contains programs that would eliminate disposal of organic materials at landfills. Options considered included: legislation, direct regulation, and inclusion of landfills in Cap-and-Trade. Implementation of the recommended actions in the Waste Management sector were determined to result in construction of new, or expansion of existing, composting and anaerobic digestion facilities. These facilities would be necessary to accommodate actions such as increased recycling, development of biomass facilities, and anaerobic digestion facilities. In addition, reasonably foreseeable compliance responses may include installation of methane control devices at existing landfills. While some of these activities could occur within existing landfills, construction of new facilities may be necessary to accommodate increased demand of organic waste diversion.

f) Natural and Working Lands Sector under the 2014 Scoping Plan Update

The 2014 Scoping Plan Update addressed planning efforts aimed at urban, natural and working lands, and agricultural croplands within and across jurisdictions, which all are considered to create interconnected land areas and ecosystems. Reasonably foreseeable compliance responses involve coordination between state agencies including: California Natural Resources Agency, California Environmental Protection Agency, California Department of Food and Agriculture, California Department of Forestry and Fire Protection, California Department of Fish and Wildlife, and CARB to develop land use programs. These programs generally aim to increase urban forest canopy cover and limit the conversion of croplands, forests, rangeland, and wetlands to urban uses. In addition, increased use of green infrastructure was evaluated, such as vegetation and soils to manage stormwater runoff, rainwater harvesting, bioswales, permeable pavement, and green (e.g., growing media and vegetation) roofs. In addition to land use planning efforts, the Natural and Working Land Sector included encouragement of the use of urban, agricultural, and forest wastes to produce electricity and transportation fuels (e.g., biomass facilities).

g) Short-Lived Climate Pollutants Sector under the 2014 Scoping Plan Update

Under the 2014 Scoping Plan Update, the short-lived climate pollutant sector addressed ozone depleting substances (ODS), a large group of chemicals known to destroy the stratospheric ozone layer when released into the atmosphere. ODS were historically used in a wide variety of applications, including refrigerants, foam blowing agents, solvents, and fire suppressants. Four general concepts were associated with the Short-Lived Climate Pollutants Sector within the 2014 Scoping Plan Update: high-global warming potential (GWP) fluorinated gas phasedown, low-GWP requirements, ODS recovery and destruction, and high-GWP fees. Reasonably foreseeable compliance responses consisted of replacement of high-GWP compounds with low-GWP compounds, which was considered to require construction of new manufacturing facilities or modification of existing manufacturing facilities.

CARB staff presented an informational update on the Proposed Short-Lived Climate Pollutant (SLCP) Reduction Strategy, and associated EA, to the Board on May 19, 2016. Public comment on both documents closed on May 26, 2016. The Board approved the Final Proposed SLCP Reduction Strategy in March 2017. More information can be found at: https://www.arb.ca.gov/cc/shortlived/shortlived.htm

h) Green Buildings Sector under the 2014 Scoping Plan Update

The 2014 Scoping Plan Update evaluated development of a comprehensive GHG emission reduction program for new construction, existing building retrofits, and operation and maintenance of certified green buildings. This program would include an integrated approach to development of zero-net-carbon buildings (i.e., net zero carbon emissions over a period of a year). Reasonably foreseeable compliance responses associated with these recommended actions could consist of new requirements that

result in an increase in zero net energy and zero-net-carbon buildings. This could be accomplished through increased carbon sequestering features (e.g., urban forestry), onsite renewable energy supplies (e.g., solar, wind turbines, waste digesters), fuel cells, and construction of carbon offset technologies, including solar PV or wind turbine farms.

i) Cap-and-Trade Regulation Sector under the 2014 Scoping Plan Update

Under the 2014 Scoping Plan Update, the Cap-and-Trade Regulation was considered to be a vital component for achieving California's longer-term, emission-reduction goals. The Cap-and-Trade Regulation creates a gradually declining limit on the sources responsible for 85 percent of California's GHG emissions, establishes the price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy, and affords covered entities the flexibility to seek out and implement the lowest-cost options to reduce emissions. The Cap-and-Trade Regulation places an aggregated emissions cap on the total emissions generated by all covered facilities in the program. Over time, the cap will steadily decline. Reasonably foreseeable compliance responses evaluated under the 2014 Scoping Plan Update EA include the existing Cap-and-Trade Regulation's provision allowing for additional offset protocols: U.S. Forest Projects, Urban Forest Projects, Livestock Projects, and ODS Compliance, as well as the provisions regarding sector-based offset crediting programs. In addition, compliance responses related to covered entities under the Cap-and-Trade Regulation consist of upgrading equipment, switching to lower intensity carbon fuels, and implementing maintenance and process changes at existing facilities.

CARB has designed a California cap-and-trade program that is enforceable and meets the requirements of AB 32. The development of this program included a multi-year stakeholder process and consideration of potential impacts on disproportionately impacted communities. The program began on January 1, 2012, with an enforceable compliance obligation starting with 2013 GHG emissions. CARB is currently administering a public process to develop potential 2016 amendments to the Cap-and-Trade Regulation. The public process will help inform potential changes effective for the post-2020 program.

2. Summary of the 2014 Scoping Plan Update Environmental Impacts

The 2014 Scoping Plan Update EA evaluated the environmental impacts related to the reasonably foreseeable compliance responses described above. Table 5-1 provides a summary of the conclusions of these impacts.

Table 5-1
Summary of Scoping Plan Update EA Impacts by Sector

	Energy Sector	Transportation Sector	Agriculture Sector	Water Sector	Waste Management Sector	Natural and Working Lands Sector	Short-Lived Climate Pollutants Sector	Green Buildings	Cap-and-Trade Regulation 2
Aesthetics									
Short-Term Construction Impacts	SU	SU	LTS	SU	SU	SU	SU	SU	LTS
Long-Term Operational Impacts	SU	SU	LTS	SU	SU	SU	SU	SU	
Agriculture and Forest Resources									
Short-Term Construction Impacts	SU	SU	LTS	SU	SU	SU	SU	SU	PSU
Long-Term Operational Impacts	SU	SU	B	SU	SU	SU	SU	SU	
Air Quality									
Short-Term Construction Impacts	SU	SU	LTS	SU	SU	SU	SU	SU	LTS
Long-Term Operational Impacts	LTS	SU	B	LTS	LTS/ SU[1]	SU	LTS	B	
Biological Resources									
Short-Term Construction Impacts	SU	SU	LTS	SU	SU	SU	SU	SU	PSU
Long-Term Operational Impacts	SU	SU	B	SU	SU	LTS	SU	SU	
Cultural Resources									
Short-Term Construction Impacts	SU	SU	LTS	SU	SU	SU	SU	SU	PSU

Table 5-1
Summary of Scoping Plan Update EA Impacts by Sector

	Energy Sector	Transportation Sector	Agriculture Sector	Water Sector	Waste Management Sector	Natural and Working Lands Sector	Short-Lived Climate Pollutants Sector	Green Buildings	Cap-and-Trade Regulation 2
Long-Term Operational Impacts	NA	NA	NA	NA	NA	NA	NA	NA	
Energy Demand									
Short-Term Construction Impacts	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	B
Long-Term Operational Impacts	B	B	B	LTS	B	B	LTS	B	
Geology and Soils									
Short-Term Construction Impacts	SU	SU	LTS	SU	SU	SU	SU	SU	PSU
Long-Term Operational Impacts	SU	SU	LTS	SU	SU	SU	SU	SU	
Greenhouse Gas									
Short-Term Construction Impacts	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS
Long-Term Operational Impacts	B	B	B	B	B	LTS	B	B	B
Hazards and Hazardous Materials									
Short-Term Construction Impacts	SU	SU	LTS	SU	SU	SU	SU	SU	LTS
Long-Term Operational Impacts	SU	LTS	LTS	LTS	LTS	LTS	LTS	LTS	
Hydrology and Water Quality									
Short-Term Construction Impacts	SU	SU	B	SU	SU	SU	SU	SU	PSU
Long-Term Operational Impacts	SU	SU	B	SU	SU	B	SU	SU	
Land Use Planning									
Short-Term Construction Impacts	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	PSU
Long-Term Operational Impacts	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	

Table 5-1
Summary of Scoping Plan Update EA Impacts by Sector

	Energy Sector	Transportation Sector	Agriculture Sector	Water Sector	Waste Management Sector	Natural and Working Lands Sector	Short-Lived Climate Pollutants Sector	Green Buildings	Cap-and-Trade Regulation 2
Mineral Resources									
Short-Term Construction Impacts	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS
Long-Term Operational Impacts	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	
Noise									
Short-Term Construction Impacts	SU	SU	LTS	SU	SU	SU	SU	SU	PSU
Long-Term Operational Impacts	SU	LTS	LTS	LTS	LTS	SU	LTS	SU	
Population and Housing									
Short-Term Construction Impacts	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS
Long-Term Operational Impacts	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	
Public Services									
Short-Term Construction Impacts	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS
Long-Term Operational Impacts	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	
Recreation									
Short-Term Construction Impacts	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS
Long-Term Operational Impacts	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	
Transportation/Traffic									
Short-Term Construction Impacts	SU	SU	LTS	SU	SU	SU	SU	SU	PSU
Long-Term Operational Impacts	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	
Utilities and Service Systems									

Table 5-1 Summary of Scoping Plan Update EA Impacts by Sector									
	Energy Sector	**Transportation Sector**	**Agriculture Sector**	**Water Sector**	**Waste Management Sector**	**Natural and Working Lands Sector**	**Short-Lived Climate Pollutants Sector**	**Green Buildings**	**Cap-and-Trade Regulation 2**
Short-Term Construction Impacts	NA	NA	NA	NA	NA	NA	NA	NA	LTS
Long-Term Operational Impacts	SU	SU	LTS	SU	SU	SU	SU	SU	
Notes: B = Beneficial; LTS = Less-than-significant; NA = Not Applicable; SU = Potentially Significant and Unavoidable After Mitigation. [1]Long-term operational impacts were identified as LTS, but odor-related impacts were identified as significant and unavoidable in the Waste Management sector. [2] Impacts related to the Cap-and-Trade regulation include the effects associated with offset protocol adopted after the adoption of the Cap-and-Trade regulation									

The proposed 2017 Scoping Plan Update was released on January 20, 2017. The proposed 2017 Scoping Plan Update builds upon the successful framework established by the Initial Scoping Plan and the 2014 Update to the Scoping Plan, while also identifying new, technologically feasibility and cost-effective strategies to ensure that California meets its GHG reduction targets in a way that promotes and rewards innovation, continues to foster economic growth, and delivers improvements to the environment and public health, including in disadvantaged communities. More information on the 2017 Scoping Plan Update can be found here: https://www.arb.ca.gov/cc/scopingplan/scopingplan.htm.

B. Significance Determinations and Mitigation

Implementation of the Target Update was determined to potentially result in cumulatively considerable contributions to significant cumulative impacts in certain resource areas, as discussed below. While suggested mitigation is provided for each potentially cumulatively considerable impact, the mitigation needs to be implemented by other agencies. Where impacts cannot be feasibly mitigated, the Draft EA recognizes the impact as significant and unavoidable. The Board would need to adopt Findings and a Statement of Overriding Considerations for any significant and unavoidable environmental effects of the project as part of the approval process.

C. Cumulative Impacts by Resource Area

1. Aesthetics

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. The 2014 Scoping Plan Update EA found that implementation of the recommended actions within the various sectors discussed in the Plan could result in a significant cumulative impact to aesthetic resources. As discussed in the 2014 Scoping Plan Update EA, there is uncertainty as to the exact location of these new facilities or the modification of existing facilities. Construction and operation of these facilities (although likely to occur in areas zoned or used for manufacturing or industrial purposes), could conceivably introduce or increase the presence of artificial elements (e.g., heavy-duty equipment, removal of existing vegetation, buildings) in areas of scenic importance, such as visibility from a State scenic highway. The visual impact of such development would depend on several variables, including the type and size of facilities, distance and angle of view, visual absorption and placement in the landscape. In addition, facility operation may introduce substantial sources of glare, exhaust plumes, and nighttime glare from lighting for safety and security purposes. Implementation of mitigation measures would not reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects. Thus, the 2014 Scoping Plan Update EA found that the recommended actions in the 2014 Scoping Plan Update could result in a significant cumulative impact on aesthetic resources.

Reasonably foreseeable compliance responses associated with the Target Update include construction and operation of infill, high-density residential, mixed-use; focused growth within Transportation Priority Areas (TPAs) ; and expansion of associated infrastructure and facilities, which could require the demolition of existing structures. Compliance responses could also include construction of new infrastructure, such as transit (e.g., light-rail) routes and stations, roadway meters, traffic-calming devices (e.g., roundabouts), park-and-ride lots, and modifications to existing roadways. There is uncertainty as to the exact location of these new facilities or the modification of existing facilities. Construction and operation of these facilities (although likely to occur in areas zoned or used for commercial or industrial purposes), could conceivably introduce or increase the presence of artificial elements (e.g., heavy-duty equipment, removal of existing vegetation, buildings) in areas of scenic importance, such as visibility from a State scenic highways. The visual impact of such development would depend on several variables, including the type and size of facilities, distance and angle of view, visual absorption and placement in the landscape. In addition, facility operation may introduce substantial sources of glare, exhaust plumes, and nighttime glare from lighting for safety and security purposes. Implementation of mitigation measures might not reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects. Thus, implementation of Target Update **could result in a considerable contribution to a cumulative aesthetics-related impact**.

2. Agricultural and Forest Resources

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. The 2014 Scoping Plan Update EA found that implementation of the recommended actions within the various sectors discussed in the Plan could result in a significant cumulative impact to agricultural and forest resources. As discussed in the 2014 Scoping Plan Update EA, there is uncertainty as to the exact location of these new facilities or the modification of existing facilities. Construction of new facilities could result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, Williamson Act conservation contracts, or forest land or timberland, resulting in the loss of these resources. Because CARB has no land use authority, mitigation is not within its purview to reduce potentially significant impacts to less-than-significant levels. Compliance with existing land use policies, ordinances, and regulations would serve to minimize this impact. Land use impacts would be further addressed for individual projects through the local development review process. Mitigation measures that would be applied through the development review process were identified that could reduce these impacts. However, because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and because of the programmatic nature of this EA, impacts were determined to be potentially significant and unavoidable. Thus, the 2014 Scoping Plan Update EA found that the recommended actions in the 2014 Scoping Plan Update could result in a significant cumulative impact on agricultural and forest resources.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-density residential, mixed-use development; focused growth within TPAs ; and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved transit infrastructure and facilities, and use of Transportation Demand Management (TDM) and Transit Systems Management (TSM) strategies. Where there would be new facilities (e.g., transit corridors) constructed outside of urbanized areas, undisturbed and vacant land could be used for transportation purposes. Additionally, new development approved by local agencies associated with land use measures in future RTP/SCS updates could also be located on agricultural or forest lands. These lands could have been historically or currently farmed for agriculture, been under a Williamson Act contract, or be considered forest or timber lands. While there is uncertainty as to the exact location of these new facilities or the modification of existing facilities, construction of new facilities could result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, Williamson Act conservation contracts, or forest land or timberland, resulting in the loss of these resources. Because CARB has no land use authority, mitigation is not within its purview to reduce potentially significant impacts to less-than-significant levels. Compliance with existing land use policies, ordinances, and regulations would serve to minimize this impact. Land use impacts would be further addressed for individual projects through the local development review process. Mitigation measures were identified that could reduce these impacts that would be applied through the development review process. However,

because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and because of the programmatic nature of this Draft EA, impacts were determined to be potentially significant and unavoidable. Thus, the Target Update **could result in a considerable contribution to a cumulative impact to agricultural and forest resources**.

3. Air Quality

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. The 2014 Scoping Plan Update EA found that implementation of the recommended actions within the various sectors discussed in the Plan, which included the recommendation for the Proposed Regulation under the Energy Sector, could result in a significant cumulative impact to air quality. As discussed in the 2014 Scoping Plan Update EA, reasonably foreseeable compliance responses associated with the recommended actions in the 2014 Scoping Plan Update could result in an increase in criteria air pollutants and toxic air contaminants, as well as generate unpleasant odors that could affect sensitive receptors. These would be generated by the use of heavy-duty construction equipment on a short-term basis, as well as longer-term operational impacts associated with biomass, anaerobic digestion and composting facilities; and LCFS. Therefore, the 2014 Scoping Plan Update could generate emission levels that conflict with applicable air quality plans, violate or contribute substantially to an existing or projected ambient air quality standard violation, result in a cumulatively considerable net increase in non-attainment areas, or expose sensitive receptors to substantial pollutant concentrations or odors. However, all projects, no matter their size or type would be required to seek local or State land use approvals prior to their implementation. Part of the land use entitlement process requires that each of these projects undergo environmental review consistent with California environmental review requirements (e.g., CEQA) and other applicable local requirements (e.g., local air district rules and regulations). This environmental review process would assess whether project implementation would result in short-term construction and long-term operational air quality impacts.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-density residential, mixed-use; focused growth within TPAs; and development and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved transit infrastructure and facilities, and use of TDM and TSM strategies. Demolition of existing structures and construction of new structures and infrastructure would result in short-term construction-related effects on air quality.

With regards to long-term operational air quality impacts, denser land use strategies would lead to overall statewide and regional reductions in per capita VMT by concentrating development in urban areas, thereby reducing the distances between vehicular trip origins and destinations. A reduction in per capita VMT would consequently reduce overall fuel use and criteria and toxic air pollutants from vehicles.

However, concentrating land use development in urban areas could result in localized increases in vehicle activity and thereby increase the concentration of air pollutants in areas with higher population densities and a greater number of sensitive receptors. These increases could also exceed local thresholds for carbon monoxide, TACs, and other pollutants.

Part of the land use entitlement process requires that each of these projects undergo environmental review consistent with California environmental review requirements (e.g., CEQA) and other applicable local requirements (e.g., local air district rules and regulations). Implementation of mitigation measures could potentially reduce construction-related air quality impacts; however, because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, and the programmatic level of analysis associated with the Target Update does not attempt to address project-specific details of mitigation. There is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts.

Consequently, this Draft EA takes the conservative approach in its post-mitigation significance conclusion and discloses that short-term construction-related air quality impacts and long-term operational air quality impacts resulting from the development of new facilities or modification of existing facilities could be potentially significant and unavoidable. Thus, the Target Update **could result in a considerable contribution to a cumulative air quality impact.**

4. Biological Resources

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. Implementation of reasonably foreseeable compliance responses associated with recommended actions in the 2014 Scoping Plan Update could require construction and operational activities associated with new or modified facilities or infrastructure. There is uncertainty as to the exact location of these new facilities or the modification of existing facilities. Construction could require disturbance of undeveloped area, such as clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and roadways. These activities would have the potential to adversely affect biological resources (e.g., species, habitat) that may reside or be present in those areas. Because there are biological species that occur, or even thrive, in developed settings, resources could also be adversely affected by construction and operations within disturbed areas at existing manufacturing facilities or at other sites in areas with zoning that would permit the development of manufacturing or industrial uses. Implementation of mitigation measures would not reduce these impacts to a less-than-significant level. Thus, the 2014 Scoping Plan Update EA found that the recommended actions in the 2014 Scoping Plan Update could result in a significant cumulative impact on biological resources.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-

density residential, mixed-use; focused growth within TPAs; and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved transit infrastructure and facilities, and use of TDM and TSM strategies. There is uncertainty as to the exact location of these new facilities or the modification of existing facilities. Construction could require disturbance of undeveloped areas, which could include clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and roadways. These activities would have the potential to adversely affect biological resources (e.g., species, habitat) that may reside or be present in those areas. Because there are biological species that occur, or even thrive, in developed settings, resources could also be adversely affected by construction and operations within disturbed areas at existing manufacturing facilities or at other sites in areas with zoning that would permit the development of manufacturing or industrial uses. In addition, new regulations implemented in response to the Target Update could affect biological resources depending on the type of crop, location, and need to convert lands, habitat destruction could occur, resulting in the loss of biodiversity. The location of new crop lands may affect conservation plans or disrupt important migratory routes. Indirect effects could occur as well, such as increased pesticide and nutrient use, the runoff of which could be detrimental to individual species.

The biological resources that could be affected by construction and operation associated with implementation of reasonably foreseeable compliance responses to the Target Update would depend on the specific location of any necessary construction and its environmental setting. Harmful impacts could include modifications to existing habitat; including removal, degradation, and fragmentation of riparian systems, wetlands, or other sensitive natural wildlife habitat and plan communities; interference with wildlife movement or wildlife nursery sites; loss of special-status species; and/or conflicts with the provisions of adopted habitat conservation plans, natural community conservation plans, or other conservation plans or policies to protect natural resources. Implementation of mitigation measures would not reduce these impacts to a less-than-significant level. Thus, the Target Update **could result in a considerable contribution to a cumulative impact on biological resources**.

5. Cultural Resources

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. Implementation of reasonably foreseeable compliance responses associated with the recommended actions in the 2014 Scoping Plan Update could require construction activities associated with new or modified facilities or infrastructure. There is uncertainty as to the exact location of these new facilities or the modification of existing facilities. Construction activities could require disturbance of undeveloped area, such as clearing of vegetation, earth movement and grading, trenching for utility lines, erection of new buildings, and paving of parking lots, delivery areas, and roadways. Demolition of existing structures may also occur before the construction of new buildings and structures. The cultural resources that could potentially be affected by ground disturbance activities could include, but are not limited to,

prehistoric and historical archaeological sites, paleontological resources, historic buildings, structures, or archaeological sites associated with agriculture and mining, and heritage landscapes. Properties important to Native American communities and other ethnic groups, including tangible properties possessing intangible traditional cultural values, also may exist. Historic buildings and structures may also be adversely affected by demolition-related activities. Such resources may occur individually, in groupings of modest size, or in districts. Because culturally sensitive resources can also be located in developed settings, historic, archeological, and paleontological resources, and places important to Native American communities, could also be adversely affected by construction of new facilities. Implementation of mitigation measures could reduce these impacts, however because the authority to determine specific project-level impacts and mitigation is outside the purview of CARB, any mitigation identified would not reduce these impacts to a less-than-significant level. Thus, the 2014 Scoping Plan Update EA found that the recommended actions in the 2014 Scoping Plan Update could result in a significant cumulative impact on cultural resources.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-density residential, mixed-use; focused growth within TPAs; and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved transit infrastructure and facilities, and use of TDM and TSM strategies. Demolition and construction activities would include ground disturbance, which could include disturbance of known or previously unknown resources. The cultural resources that could potentially be affected by ground disturbance activities could include, but are not limited to, prehistoric and historical archaeological sites, paleontological resources, historic buildings, structures, or archaeological sites associated with agriculture and mining, and heritage landscapes. Properties important to Native American communities and other ethnic groups, including tangible properties possessing intangible traditional cultural values, also may exist. Historic buildings and structures may also be adversely affected by demolition-related activities. Such resources may occur individually, in groupings of modest size, or in districts. Because culturally sensitive resources can also be located in developed settings, historic, archeological, and paleontological resources, and places important to Native American communities, could also be adversely affected by construction of new facilities. Implementation of mitigation measures could reduce these impacts, however because the authority to determine specific project-level impacts and mitigation is outside the purview of CARB, any mitigation identified would not reduce these impacts to a less-than-significant level. Thus, the Target Update **could result in a considerable contribution to a cumulative impact on cultural resources**.

6. Energy Conservation

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. Implementation of reasonably foreseeable compliance responses associated with the recommended actions in the 2014 Scoping Plan Update could require construction and operational activities associated with new or modified facilities or infrastructure. Temporary increases in energy demand

associated with new facilities would include fuels used during construction, and gas and electric operational demands. Typical earth-moving equipment that may be necessary for construction includes: graders, scrapers, backhoes, jackhammers, front-end loaders, generators, water trucks, and dump trucks. While energy would be required to complete construction for any new or modified facilities or infrastructure projects, it would be temporary and limited in magnitude and would not result in sustained increases in demand that would adversely affect energy supplies. Therefore, the 2014 Scoping Plan Update EA found that the recommended actions in the 2014 Scoping Plan Update would not result in a cumulative impact relative to construction-related energy demand. However, the 2014 Scoping Plan Update EA found that long-term operational energy demand impacts associated with the recommended actions under the 2014 Scoping Plan Update would be primarily beneficial, and thus no cumulative impact on long-term operational energy demand would occur.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-density residential, mixed-use; focused growth within TPAs; and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved transit infrastructure and facilities, and use of TDM and TSM strategies.

Construction of new infrastructure, transportation facilities, and alternative fueling stations would require the use of motor vehicle fuels, natural gas, and electricity. Typical earth-moving equipment would be necessary for construction of infrastructure, including: graders, scrapers, backhoes, jackhammers, front-end loaders, generators, water trucks, and dump trucks. While various forms of energy would be required for construction of new or modified facilities, specific project details are not currently known; however, the use of energy for construction would be temporary and limited in magnitude and would not be expected to result in energy demand beyond existing available supplies. Additionally, existing statewide measures to reduce electricity and natural gas consumption in stationary facilities and equipment, reduce motor vehicle emissions through improved fuel efficiency, and other measures designed to decrease emissions and improve energy reliability could contribute to reductions in construction-related energy demands over the long term. Overall, while there would be some use of non-renewable resources for construction projects, the Target Update would reduce energy demands, decrease reliance on fossil fuels and increase reliance on renewable energy sources. Implementation of the Target Update would contribute to decreased energy consumption per capita, increased demand for alternative fuel supplies, and decrease the use of fossil fuels through increased use of electric and other alternative fuel vehicles. Thus, the Target Update would support wise and efficient uses of energy, and there would be **no contributions to a cumulative impact on energy conservation**.

7. Geology, Seismicity, and Soils

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. Implementation of the reasonably foreseeable compliance responses associated with the recommended actions in the

2014 Scoping Plan Update could require construction and operational activities associated with new or modified facilities or infrastructure. There is uncertainty as to the exact location of these new facilities or the modification of existing facilities. Construction and operation could be located in a variety of relatively high-risk geologic and soil conditions that are considered to be potentially hazardous. For instance, the seismic conditions at the site of a new facility may have high to extremely high seismic-related fault rupture and ground shaking potential associated with earthquake activity. New facilities could also be subject to seismic-related ground failure, including liquefaction and landslides. Construction and operational activities could be located in a variety of geologic, soil, and slope conditions with varying amounts of vegetation that would be susceptible to soil erosion. Strong ground shaking could also trigger landslides in areas where the natural slope is naturally unstable or is over-steepened by the construction of access roads and structures. Construction and operation could also occur in locations that would expose facilities and structures to expansive soil conditions. Development of new facilities could be susceptible to the presence of expansive soils particularly in areas of fine-grained sediment accumulation typically associated with playas, valley bottoms, and local low-lying areas. These geologic, seismic, and soil-related conditions could result in damage to structures, related utility lines, and access roads, blocking access and posing safety hazards to people. Because the authority to determine project-level impacts and require project-level mitigation lies with the land use approval and/or permitting agency for individual projects, and since the programmatic analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts. Thus, the 2014 Scoping Plan Update EA found that the recommended actions in the 2014 Scoping Plan Update could result in a significant cumulative impact on geology and soils.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-density residential, mixed-use; focused growth within TPAs; and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved transit infrastructure and facilities, and use of TDM and TSM strategies. Operation of new facilities and structures constructed as potential compliance responses to the Target Update could expose additional people to areas of strong seismic shaking, liquefaction, and landslide. Further, in coastal areas, seismically induced tsunami and seiche waves could damage high-density development and transportation infrastructure associated with the Target Update.

Road cutting associated with the development of new transportation corridors could occur following implementation of the Target Update. This could expose soils to long-term erosion over the life of a roadway or rail, creating potential landslide and falling rock hazards. Further, engineered roadways could be undercut over time by uncontrolled stormwater drainage. Road cutting on steep grades or roads requiring substantial amount of cut and fill would pose the greatest potential for landslides and erosion impacts. Poorly executed construction methods or lack of maintenance could increase the likelihood of erosion-related effects to occur.

Given the uncertainty as to the exact location of new facilities or the modification of existing facilities, construction and operation could be located in a variety of relatively high-risk geologic and soil conditions that are considered to be potentially hazardous. For instance, the seismic conditions at the site of a new facility may have high to extremely high seismic-related fault rupture and ground shaking potential associated with earthquake activity. New facilities could also be subject to seismic-related ground failure, including liquefaction and landslides. Construction and operational activities could be located in a variety of geologic, soil, and slope conditions with varying amounts of vegetation that would be susceptible to soil erosion. Strong ground shaking could also trigger landslides in areas where the natural slope is naturally unstable or is over-steepened by the construction of access roads and structures. Construction and operation could also occur in locations that would expose facilities and structures to expansive soil conditions. Development of new facilities could be susceptible to the presence of expansive soils particularly in areas of fine-grained sediment accumulation typically associated with playas, valley bottoms, and local low-lying areas.

The specific design details, siting locations, seismic hazards, and geologic, slope, and soil conditions for any particular facilities that could occur as a result of reasonably foreseeable compliance responses are not known at this time and would be analyzed on a site-specific basis at the project level. Therefore, for purposes of this analysis, development of these facilities could expose people and structures to relatively high levels of risk associated with strong seismic ground shaking, including liquefaction and landslides, and instability. These geologic, seismic, and soil-related conditions could result in damage to structures, related utility lines, and access roads, blocking access and posing safety hazards to people.

Because the authority to determine project-level impacts and require project-level mitigation lies with the land use approval and/or permitting agency for individual projects, and since the programmatic analysis does not allow project-specific details of mitigation, there is inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts. However, geologic impacts are site-specific by nature, and do not combine with other projects to exacerbate the level or the impact.

Thus, the Target Update would not result in a considerable contribution to a cumulative geologic impact.

8. Greenhouse Gases

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. Implementation of reasonably foreseeable compliance responses associated with the recommended actions in the 2014 Scoping Plan Update could require construction activities associated with new or modified facilities or infrastructure. Specific, project-related construction activities could result in increased generation of short-term GHG emissions in limited amounts associated with the use of heavy-duty off-road equipment, materials transport, and worker commutes. A majority of local agencies (e.g., air pollution control districts) do not

recommend or require the quantification of short-term construction-generated GHGs for typical construction projects because these only occur for a finite period of time (e.g., during periods of construction) that is typically much shorter than the operational phase, and agencies generally recommended that GHG analyses focus on operational phase emissions, unless the project is of a unique nature requiring atypical (e.g., large scale, long-term) activity levels (e.g., construction of a new dam or levee) for which quantification and consideration (e.g., amortization of construction emissions over the lifetime of the project) may be recommended. Thus, the 2014 Scoping Plan Update EA found that short-term construction related GHG emission impacts associated with reasonably-foreseeable compliance responses for the recommended actions in the 2014 Scoping Plan Update are considered less-than-significant when considered in comparison to the overall GHG reduction associated with implementation of the 2014 Scoping Plan Update.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-density residential, mixed-use; focused growth within TPAs; and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved transit infrastructure and facilities, and use of TDM and TSM strategies. As described in Chapter 4, construction activities associated with accommodating growth under the Target Update would not be greater than statewide growth projections, so although construction emissions could exceed applicable local thresholds for construction-generated GHGs, these emissions would be similar to emissions occurring without the Target Update. Thus, short-term construction related GHG emissions impacts associated with reasonably-foreseeable compliance responses to the Target Update are considered less than significant.

Also as described in Chapter 4, the long-term operational impacts to GHG emissions from the recommended actions are beneficial, consistent with the Target Update and the goals and objectives of SB 375 to reduce emissions to achieve 2020 and 2035 emission reduction goals, and as a recommended measure in the 2017 Scoping Plan.

Thus, the Target Update **would not result in a considerable contribution to a cumulative GHG emissions impact**.

9. Hazards and Hazardous Materials

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. Construction activities may require the transport, use, and disposal of hazardous materials. Construction activities generally use heavy-duty equipment requiring periodic refueling and lubricating. Large pieces of construction equipment (e.g., backhoes, graders) are typically fueled and maintained at the construction site. However, the transport, use, and disposal of hazardous materials would be required to comply with all applicable federal, State and local laws (see Attachment 1 of this Draft Final EA). In addition, although there is uncertainty as to the exact locations where new facilities could be constructed or where existing facilities could

be reconstructed, these would likely occur within footprints of existing manufacturing facilities, or in areas with zoning that would permit the development of manufacturing or industrial uses. As a result, construction-related impacts associated with hazards and hazardous materials would be less-than-significant.

In addition, because potential facilities would likely occur within footprints of existing manufacturing facilities, the recommended actions in the 2014 Scoping Plan Update would not be expected to result in locating new facilities near schools, public (or public use) airports, private airstrips, or wildlands; or on sites included on a list of hazardous materials sites or impair implementation of or physically interfere with an adopted emergency response or evacuation plan. In addition, as noted above, the handling of hazardous materials would be required to comply with all applicable federal, State and local laws. As a result, operational impacts associated with hazards and hazardous materials would be less-than-significant. Therefore, the 2014 Scoping Plan Update EA found that the recommended actions in the 2014 Scoping Plan Update would not result in cumulative hazards or hazardous materials impacts.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-density residential, mixed-use; focused growth within TPAs; and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved transit infrastructure and facilities, and use of TDM and TSM strategies.

These construction activities may require the transport, use, and disposal of hazardous materials. Construction activities generally use heavy-duty equipment requiring periodic refueling and lubricating fluids. Large pieces of construction equipment (e.g., backhoes, graders) are typically fueled and maintained at the construction site as they are not designed for use on public roadways. Thus, such maintenance uses a service vehicle that mobilizes to the location of the construction equipment. It is during the transfer of fuel that the potential for an accidental release is most likely. Although precautions would be taken to ensure that any spilled fuel is properly contained and disposed, and such spills are typically minor and localized to the immediate area of the fueling (or maintenance), the potential still remains for a substantial release of hazardous materials into the environment. Consequently, construction activities could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Maintenance of transportation facilities (e.g., light rail) could also entail the use of hazardous materials such as fuels, solvents, paints, and other architectural coatings. It would be expected that implementation of tolls or fees for dedicated truck lane facilities could induce transfer of goods movement to the freight sector, including movement of hazardous materials. Increased transport and handling of hazardous materials via freight could increase the risk of accidental release near neighborhoods and communities adjacent to freight facilities.

Further, there in uncertainty surrounding the exact locations of new high-density development, transit networks, and low-emission vehicle-related infrastructure; therefore, it would be expected that construction and maintenance activities associated with reasonably foreseeable compliance responses to the Target Update could occur near a school, hospital, or nursing center resulting in the possible release of hazardous materials within a quarter mile of a sensitive receptor.

As noted in Chapter 4, the handling of hazards materials would be required to comply with all applicable federal, State and local laws. The short-term construction-related and long-term operational-related impact associated with the Target Update on hazards and hazardous materials would be potentially significant.

Mitigation measures are available that would reduce these impacts to a less-than-significant level; however, there is inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts and the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects. However, hazards and hazardous materials impacts are site-specific by nature and do not combine with other projects to exacerbate the level or the impact.

Thus, the Target Update would not result in a considerable contribution to a cumulative hazard and hazardous impact.

10. Hydrology and Water Quality

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. Construction activities and long-term operations associated with reasonably foreseeable compliance responses to the recommended actions in the 2014 Scoping Plan Update could be located in a variety of conditions with regards to altering drainage patterns, flooding, and inundation by seiche, tsunami, or mudflow. The level of susceptibility varies by location. The specific design details, siting locations, and associated hydrology and water quality issues are not known at this time and would be analyzed on a site-specific basis at the project level. Therefore, for purposes of CEQA disclosure, these potential hydrology and water quality-related impacts could be significant. Implementation of mitigation measures to reduce these impacts would not reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects. Thus, the 2014 Scoping Plan Update EA found that the recommended actions in the 2014 Scoping Plan Update could result in a significant cumulative impact to hydrology and water quality.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-density residential, mixed-use; focused growth within TPAs; and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved

transit infrastructure and facilities, and use of TDM and TSM strategies. Construction activities and long-term operations associated with reasonably foreseeable compliance responses could be located in a variety of conditions with regards to altering drainage patterns, flooding, and inundation by seiche, tsunami, or mudflow. The level of susceptibility varies by location. Furthermore, fuels regulations could alter agricultural practices, resulting in discharges to waterways of sediment, nutrients, pathogens, pesticides, metals, and salts. The specific design details, siting locations, and associated hydrology and water quality issues are not known at this time and would be analyzed on a site-specific basis at the project level. Therefore, for purposes of CEQA disclosure, these potential hydrology and water quality-related impacts could be significant. Implementation of mitigation measures to reduce these impacts would not reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects. Thus, the Target Update **could result in a considerable contribution to a cumulative impact to hydrology and water quality**.

11. Land Use and Planning

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. Implementation of reasonably foreseeable compliance responses associated with the recommended actions in the 2014 Scoping Plan Update could require both construction and long-term operation of new or modified facilities or infrastructure. There is uncertainty as to the exact location of these new facilities or the modification of existing facilities. However, facilities would likely occur within the footprints of existing manufacturing facilities, or in areas with zoning that would permit the development of these facilities. Thus, implementation of the recommended actions would not be anticipated to divide an established community or conflict with a land use or conservation plan. Therefore, the 2014 Scoping Plan Update EA found that the recommended actions in the 2014 Scoping Plan Update would not result in a significant cumulative land use planning-related impact.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-density residential, mixed-use; focused growth within TPAs; and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved transit infrastructure and facilities, and use of TDM and TSM strategies. There is uncertainty as to the exact location of these new facilities or the modification of existing facilities.

MPOs are required to update their RTP/SCS every four years in consultation with local governments within each MPO region. Local governments maintain land use authority and are responsible for implementing and updating local general plans, community plans, conservation plans, zoning ordinances, and other applicable plans that address land use. While MPOs are required to update RTP/SCSs in response to the Target Update, they do not have the authority to carry out or approve local land use plans or development projects that are under the jurisdiction of local agencies, nor do they have

the authority to require changes or updates to local land use plans. Local governments may amend or update local plans in response to RTP/SCS updates, and thus changes in land use or the approval of amendments or updates to existing general plans or other land use plans in response future to RTP/SCS updates are reasonably foreseeable. However, the precise nature and timing of any future plan updates or proposed land use changes is uncertain. MPOs typically consult with local agencies during development of RTP/SCS updates, including consideration of permitted or planned land uses and associated standards in existing local land use plans, along with potential changes that could occur in the future, in order to avoid conflicts with existing local plans. Thus, reasonably foreseeable compliance responses would not be expected to divide an established community or conflict with a land use or conservation plan.

Localized implementation of specific land use and transportation projects or programs included in future RTP/SCSs under the Target Update could result in variety of localized adverse effects, such as the conversion or modification of natural and working lands, adverse effects on sensitive species or habitat, long-term erosion effects, adverse effects on local or regional water resources, long-term water quality deterioration associated with erosion and run-off, and, other effects. The specific environmental effects associated with land use changes are considered in their respective sections of this Draft EA. Thus, because the Target Update would inform development of future land use plans and policies, **there would be no contributions to a cumulative impact related to land use incompatibility**.

12. Mineral Resources

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. Implementation of reasonably foreseeable compliance responses associated with the recommended actions in the 2014 Scoping Plan Update could require both the construction and operation of new or modified facilities or infrastructure. There is uncertainty as to the exact location of these new facilities or the modification of existing facilities. New facilities would likely occur within existing footprints or in areas with consistent zoning, where original permitting and analyses considered these issues. In addition, some of the recommended actions in the 2014 Scoping Plan Update and associated compliance responses could require the extraction of minerals (i.e., lithium or platinum) used to manufacture fuel cell and battery technologies. However, implementation of these measures would not substantially deplete the supply of lithium or platinum and both are currently used in auto manufacturing processes. Therefore, the recommended actions in the 2014 Scoping Plan Update would not result in a significant cumulative impact to mineral resources.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-density residential, mixed-use; focused growth within TPAs; and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved transit infrastructure and facilities, and use of TDM and TSM strategies. Construction of

new infill, high-density residential, TPA, and mixed-use development, and new transportation, EV charging, and hydrogen fueling infrastructure could conceivably result in the loss of available land containing known mineral resources, or loss of an available locally important mineral resource recovery site. Although it is reasonably foreseeable that construction activities could occur following implementation of the Target Update, the location and extent of construction activities related to new development cannot be determined at this time. However, new development, facilities, and infrastructure would likely occur within areas of consistent zoning where original permitting and analyses considered these issues. Local agencies designate land with known mineral resources through the general plan and typically include policies on the use, management and protection of these resources in the conservation element, consistent with the requirements of the Surface Mining and Reclamation Act (SMARA) and sections 2762-2763 of the Public Resources Code. Further, pursuant to SB 375, RTP/SCSs focus growth within or near existing urban centers to reduce transportation-related emissions. As such, TPA, infill, high-density residential, and mixed-use development would be concentrated within appropriate zoning as identified in applicable general plans. Therefore, construction and operation of new development and transportation-related infrastructure would not affect the availability of a known mineral resource or recovery site.

Therefore, the Target Update **would not result in a considerable contribution to a cumulative impact to mineral resources**.

13. Noise

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. Implementation of reasonably foreseeable compliance responses associated with the recommended actions in the 2014 Scoping Plan Update could require construction and operation of new or modified facilities or infrastructure. These activities could result in the generation of short-term construction noise in excess of applicable standards or that result in a substantial increase in ambient levels at nearby sensitive receptors, and exposure to excessive vibration levels, which would be potentially significant. Operational noise impacts would not typically be expected due to the fact that typical compliance response activities would likely occur within footprints of existing facilities, or in areas with zoning that would permit the development of these facilities. However, operational effects of equipment constructed as a result of implementation of recommended actions associated with the 2014 Scoping Plan Update could result in potentially significant impacts. Implementation of mitigation measures could reduce potential construction-related or operational noise impacts to a less-than-significant level; however, the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects. Thus, the recommended actions in the 2014 Scoping Plan Update could result in a significant cumulative construction-related and operational noise impacts.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-

density residential, mixed-use; focused growth within TPAs; and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved transit infrastructure and facilities, and use of TDM and TSM strategies. These activities could result in the generation of short-term construction noise in excess of applicable standards or that result in a substantial increase in ambient levels at nearby sensitive receptors, and exposure to excessive vibration levels, which would be potentially significant. In addition, operational noise related to new facilities could emit excessive levels of noise near sensitive receptors. Thus, operational effects of facilities and infrastructure constructed as a result of implementation the Target Update could result in potentially significant impacts. Implementation of mitigation measures could reduce potential construction-related or operational noise impacts to a less-than-significant level; however, the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects. Thus, the Target Update **could result in a considerable contribution to a cumulative noise impact**.

14. Population and Housing

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. Implementation of reasonably foreseeable compliance responses associated with the recommended actions in the 2014 Scoping Plan Update could require construction and operation of new or modified facilities or infrastructure. There is uncertainty as to the exact location of these new facilities or the modification of existing facilities. These would likely occur within footprints of existing facilities, or in areas with zoning that would permit the development of such facilities. Construction of these facilities would require relatively small crews, and demand for these crews would be temporary (e.g., 6 – 12 months per project). Therefore, a substantial amount of construction worker migration would not be likely to occur, and a sufficient construction employment base would likely be available. Construction activities would not require new additional housing or generate changes in land use. Therefore, the 2014 Scoping Plan Update EA found that the recommended actions in the 2014 Scoping Plan Update would not result in a significant cumulative impact related to population and housing growth.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-density residential, mixed-use; focused growth within TPAs; and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved transit infrastructure and facilities, and use of TDM and TSM strategies. There is uncertainty as to the exact location of these new facilities or the modification of existing facilities. Construction of these facilities would require work crews, and demand for these crews would be temporary (e.g., 6 – 12 months per project). Therefore, a substantial amount of construction worker migration would not be likely to occur, and a sufficient construction employment base would likely be available.

Regional and local planning documents could include goals for increased residential densities in urban areas to accommodate population projections. Additionally, existing housing supply may be displaced to make room for higher-density housing or transit or transportation facilities. Thus, displacement could occur. While displacement itself is not a direct environmental impact, a project that would displace a substantial number of people and/or require the construction of new housing elsewhere could result in indirect adverse effects on the environment. Therefore, the Target Update **could result in a considerable contribution to a cumulative impact related to population and housing growth**.

15. Public Services

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. Reasonably foreseeable compliance responses associated with the recommended actions in the 2014 Scoping Plan Update could include construction and operation of new or modified facilities or infrastructure. There is uncertainty as to the exact location of these new facilities or the modification of existing facilities. These would likely occur within footprints of existing facilities, or in areas with zoning that would permit the development of these facilities. Construction activities would be anticipated to require relatively small crews, and demand for these crews would be temporary (e.g., 6 – 12 months per project). Therefore, it would be anticipated that the need for a substantial amount of construction worker migration would not occur and that a sufficient construction employment base would likely be available. Construction activities would not require new additional housing to accommodate or generate changes in land use and, therefore, would not affect the provision of public services. Therefore, the 2014 Scoping Plan Update EA found that the recommended actions in the 2014 Scoping Plan Update would not result in a significant cumulative impact related to public services.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-density residential, mixed-use; focused growth within TPAs; and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved transit infrastructure and facilities, and use of TDM and TSM strategies. There is uncertainty as to the exact location of these new facilities or the modification of existing facilities. Construction associated with the Target Update would occur over the course of an RTP/SCS projected horizon. This would result in a steady amount of construction-related work such that communities would be have adequate population to support these activities as well as public services. Additional public service resources would not be required to meet construction-related demands.

To reduce automobile-generated sources of GHGs, growth is often focused within or near existing urban centers and uses mixed-use, TPA, high-density residential, and infill development to keep growth localized. Population growth would increase demand for schools; fire, police, and emergency services; and other general government services (e.g., libraries). Depending on growth and housing patterns, these public services could

exceed their capacity and thus **could result in a considerable contribution to a cumulative impact related to public services**.

16. Recreation

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. Implementation of reasonably foreseeable compliance responses associated with the recommended actions in the 2014 Scoping Plan Update could require construction and operations of new or modified facilities or infrastructure. There is uncertainty as to the exact locations of potential new or modified facilities. These activities would likely occur within footprints of existing facilities, or in areas with zoning that would permit their development. In addition, demand for construction of these crews would be temporary (e.g., 6 – 12 months per project). Therefore, it would be anticipated that the need for a substantial amount of construction worker migration would not occur and that a sufficient construction employment base would likely be available. Thus, construction activities associated with reasonably foreseeable compliance responses would not be anticipated to increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration would occur. In addition, the demand for new (or expansion of) recreational-related facilities would not occur as a result of construction activities. Therefore, the 2014 Scoping Plan Update EA found that the recommended actions in the 2014 Scoping Plan Update would not result in a significant cumulative impact related to recreational facilities.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-density residential, mixed-use; focused growth within TPAs; and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved transit infrastructure and facilities, and use of TDM and TSM strategies. There is uncertainty as to the exact locations of potential new or modified facilities. Demand for construction crews would be temporary (e.g., 6 – 12 months per project). Therefore, it would be anticipated that the need for a substantial amount of construction worker migration would not occur and that a sufficient construction employment base would likely be available. Thus, construction activities associated with reasonably foreseeable compliance responses would not be anticipated to increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration would occur. In addition, the demand for new (or expansion of) recreational-related facilities would not occur as a result of new development because of Quimby Act requirements for dedication of parkland to meet these needs. Therefore, the 2030 Target Scoping Plan **would not result in a considerable contribution to a cumulative impact related to recreational facilities**.

17. Transportation and Traffic

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. Implementation of reasonably

foreseeable compliance responses associated with the recommended actions in the 2014 Scoping Plan Update could require construction and operations of new or modified facilities or infrastructure. Although detailed information about potential specific construction activities is not currently available, some of the potential compliance responses could result in short-term construction traffic (primarily motorized) from worker commute- and material delivery-related trips. The amount of construction activity would vary depending on the particular type, number, and duration of usage for the varying equipment, and the phase of construction. These variations would affect the amount of project-generated traffic for both worker commute trips and material deliveries. Depending on the amount of trip generation and the location of new facilities, implementation could conflict with applicable programs, plans, ordinances, or policies (e.g., performance standards, congestion management); and/or result in hazardous design features and emergency access issues from road closures, detours, and obstruction of emergency vehicle movement, especially due to project-generated heavy-duty truck trips. Implementation of mitigation measures could reduce short-term construction related impacts to a less-than-significant level, but because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, the impacts are considered potentially significant and unavoidable. Thus, the 2014 Scoping Plan Update EA found that the recommended actions in the 2014 Scoping Plan Update could result in a cumulative short-term transportation and traffic-related impact. However, the 2014 Scoping Plan Update EA found that implementation of the reasonably foreseeable compliance responses under the 2014 Scoping Plan Update would not result in cumulative impacts associated with long-term operational changes in traffic patterns or vehicle trips, or conflict with existing circulation plans.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-density residential, mixed-use; focused growth within TPAs; and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved transit infrastructure and facilities, and use of TDM and TSM strategies. Although detailed information about potential specific construction activities is not currently available, some of the potential compliance responses could result in short-term construction traffic (primarily motorized) from worker commute- and material delivery-related trips. The amount of construction activity would vary depending on the type, number, and duration of usage for the construction equipment, and the phase of construction. These variations would affect the amount of project-generated traffic for both worker commute trips and material deliveries. Depending on the amount of trip generation and the location of new facilities, implementation could conflict with applicable programs, plans, ordinances, or policies (e.g., performance standards, congestion management); and/or result in hazardous design features and emergency access issues from road closures, detours, and obstruction of emergency vehicle movement, especially due to project-generated heavy-duty truck trips. As a result, transportation and traffic impacts during construction projects associated with the Target Update would be potentially significant.

Land use strategies to increase infill development, and higher-density residential and mixed-use development and TPA projects, would lead to overall statewide and regional reductions in VMT per capita by concentrating development in urban areas and reducing the distance between trip origins and destinations. Transportation infrastructure strategies, such as new transit routes and stations, traffic calming, express lanes, and other roadway reconfigurations, could increase or decrease the number of lanes on roadways and freeways depending on the project. These strategies would affect roadway volumes by changing roadway capacity and result in either higher or lower levels of service. Localized increases in vehicle trips and roadway volumes could result in increases in congestion and automobile delay. Thus, long-term operational traffic impacts as a result of the Target Update would be potentially significant impacts on.

Implementation of mitigation measures could reduce short-term construction and long-term operational impacts to a less-than-significant level, but because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, the impacts are considered potentially significant and unavoidable. Thus, the Target Update **could result in a considerable contribution to a cumulative transportation and traffic-related impact**.

18. Utility Service Systems

The 2014 Scoping Plan Update includes the reasonably foreseeable compliance responses discussed above under section 5.A.1. Implementation of reasonably foreseeable compliance responses associated with the recommended actions in the 2014 Scoping Plan Update could require construction and operations of new or modified facilities or infrastructure. Newly constructed or modified facilities could generate substantial increases in the demand for water supply, wastewater treatment, storm water drainage, and solid waste services in their local areas. Any new or modified facilities, no matter their size and location would be required to seek local or State land use approvals prior to their development. Part of the land use entitlement process for facilities proposed in California requires that each of these projects undergo environmental review consistent with the requirements of CEQA and the CEQA Guidelines. It is assumed that facilities proposed in other states would be subject to comparable federal, state, and/or local environmental review requirements (e.g., CEQA) and that the environmental review process would assess whether adequate utilities and services (i.e., wastewater services, water supply services, solid waste facilities) would be available and whether the project would result in the need to expand or construct new facilities to serve the project. Implementation of mitigation measures could reduce potential impacts to a less-than-significant level; however, the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects. Thus, the recommended actions in the 2014 Scoping Plan Update could result in a significant cumulative impact on utility service systems.

Reasonably foreseeable compliance responses associated with the Target Update include demolition of existing structures and construction and operation of infill, high-

density residential, mixed-use; focused growth within TPAs; and expansion of associated infrastructure and facilities. Compliance responses could also include transportation strategies such as development of complete streets, new or improved transit infrastructure and facilities, and use of TDM and TSM strategies. Newly constructed or modified facilities could generate substantial increases in the demand for water supply, wastewater treatment, storm water drainage, and solid waste services in their local areas. Any new or modified facilities, no matter their size and location would be required to seek local or State land use approvals prior to their development. Part of the land use entitlement process for facilities proposed in California requires that each of these projects undergo environmental review consistent with the requirements of CEQA and the State CEQA Guidelines.

At this time, the specific location and type of construction needs is not known and would be dependent upon a variety of factors that are not within the control of CARB including: economic costs, product demands, environmental constraints, and other market constraints. Thus, the specific impacts from construction on utility and service systems cannot be identified with any certainty, and individual compliance responses could potentially result in significant environmental impacts.

Implementation of mitigation measures would not reduce these impacts to a less-than-significant level because the authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects. Thus, the Target Update **could result in a considerable contribution to a cumulative impact with respect to utilities and service systems**.

D. Growth-Inducing Impacts

Growth inducement occurs when an activity removes an obstacle to growth or accelerates normal rates of growth. The Target Update will not have a growth inducing impact because it will not influence the amount or rate of population growth in the State. SB 375 anticipates that the State’s population will grow and encourages regions to develop plans for accommodating that growth. The Target Update will have no effect on demographics, population growth rates, or external factors such as immigration policy that might influence the rate of growth in the State. Population projections used for SCS planning will be based on regional forecasts and state projections.

SB 375 is intended to reduce GHG emissions as a result of better coordinated transportation and land use planning that generally commits fewer petroleum and other resources to accommodate a given level of population growth. There would be no net increase or decrease in overall growth resulting from the Target Update; instead the project calls for a decrease in per capita GHG emissions, even as the State’s population increases.

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6. MANDATORY FINDINGS OF SIGNIFICANCE

Consistent with the requirements of the California Environmental Quality Act (CEQA) Guidelines § 15065 and section 18 of the Environmental Checklist, this Draft Environmental Analysis (Draft EA) addresses the mandatory findings of significance for the proposed Target Update.

A. Mandatory Findings of Significance

1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat for a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

CEQA requires a finding of significance if a project “has the potential to substantially degrade the quality of the environment.” (Cal. Code Regs. tit 14, § 15065, subd. (a).) In practice, this is the same standard as a significant impact on the environment, defined as “a substantial or potentially substantial adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.” (Cal. Code Regs. tit 14, § 15382.)

As with all environmental impacts and issue areas, the precise nature, location and magnitude of impacts would be highly variable, and would depend on a range of reasonably foreseeable compliance responses that could occur with implementation of the Target Update. The specific location, extent, and a variety of other site-specific factors related to future projects that could be undertaken as a result compliance responses are not known at this time but would be addressed by environmental reviews to be conducted by local or regional agencies with regulatory authority at the project-specific level.

This Draft EA, in its entirety, addresses and discloses potential environmental impacts associated with the recommended actions with the proposed regulations, including direct, indirect, and cumulative impacts in the following resource areas:

Aesthetics
Agricultural and Forest Resources
Air Quality
Biological Resources
Cultural Resources
Energy Demand
Geology, Seismicity, and Soils
Greenhouse Gases
Hazards and Hazardous Materials
Hydrology and Water Quality
Land Use and Planning
Mineral Resources
Noise
Population and Housing
Public Services
Recreation
Transportation and Traffic
Utilities and Service Systems

As described in Chapter 4, this Draft EA discloses potential environmental impacts, the level of significance prior to mitigation, proposed mitigation measures, and the level of significance after the incorporation of mitigation measures.

a) Impacts on Species

CEQA requires a lead agency to find that a project may have a significant impact on the environment where there is substantial evidence that the project has the potential to (1) substantially reduce the habitat of a fish or wildlife species; (2) cause a fish or wildlife population to drop below self-sustaining levels; or (3) substantially reduce the number or restrict the range of an endangered, rare, or threatened species. (Cal. Code Regs. tit. 14, §15065, subd. (a)(1).) Chapter 4 of this Draft EA addresses impacts that could occur to biological resources, including the reduction of fish or wildlife habitat, the reduction of fish or wildlife populations, and the reduction or restriction of the range of special-status species.

b) Impacts on Historical Resources

CEQA states that a lead agency shall find that a project may have a significant impact on the environment where there is substantial evidence that the project has the potential to eliminate important examples of a major period of California history or prehistory. (Cal. Code Regs. tit. 14, § 15065, subd. (a)(1).) This incorporates the requirement that major periods of California history are preserved for future generations and a finding of significance for substantial adverse changes to historical resources. (Pub. Resources Code § 21001, subd. (c), 21084.1.) CEQA establishes standards for determining the significance of impacts to historical resources and archaeological sites that are a historical resource. (Cal. Code Regs. tit. 14, § 15064.5.) Chapter 4 of this Draft EA addresses impacts that could occur related to California history and prehistory, historic resources, archaeological resources, and paleontological resources.

2. Does the project have impacts that are individually limited, but cumulatively considerable?

CEQA Guidelines requires a lead agency shall find that a project may have a significant impact on the environment where there is substantial evidence that the project has potential environmental impacts that are individually limited, but cumulatively considerable. (Cal. Code Regs. tit. 14, § 15065.) Cumulatively considerable means “that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.” (Cal. Code Regs. tit. 14, § 15065, subd. (a)(3).) Cumulative impacts are addressed for each of the environmental topics listed above and are provided in Chapter 5, “Cumulative and Growth-Inducing Impacts,” in this Draft EA.

3. Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

CEQA requires a lead agency to find that a project may have a significant impact on the environment where there is substantial evidence that the project has the potential to

cause substantial adverse impacts on human beings, either directly or indirectly (Cal. Code Regs. tit. 14, § 15065, subd. (a)(4)). Under this standard, a change to the physical environment that might otherwise be minor must be treated as significant if people would be significantly affected. This factor relates to adverse changes to the environment of human beings generally, and not to impacts on certain individuals. While changes to the environment that could indirectly affect human beings would be represented by all the designated CEQA issue areas, those that could directly affect human beings include air quality, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, population and housing, public services, transportation/traffic, and utilities, which are addressed in Chapter 4 of this Draft EA.

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7. ALTERNATIVES ANALYSIS

This section provides an overview of the regulatory requirements and guidance for alternatives analyses under the California Environmental Quality Act (CEQA), a description of each of the alternatives to the Proposed Update to the SB 375 GHG Emissions Reduction Targets (Target Update), a discussion of whether and how each alternative meets the project's objectives, and an analysis of each alternative's environmental impacts.

A. Approach to Alternatives Analysis

The California Air Resources Board's (CARB or Board) certified regulatory program (Cal. Code Regs. tit. 17, § 60000 – 60008) requires that where a contemplated action may have a significant effect on the environment, a staff report shall be prepared in a manner consistent with the environmental protection purposes of CARB's certified regulatory program and with the goals and policies of CEQA. Among other things, the staff reports must address feasible alternatives to the proposed action that would substantially reduce any significant adverse impact identified.

The certified regulatory program provides general guidance that any action or proposal for which significant adverse environmental impacts have been identified during the review process shall not be approved or adopted as proposed if there are feasible mitigation measures or feasible alternatives available which would substantially reduce these adverse impacts. For purposes of this section, "feasible" means capable of being accomplished in a successful manner within a reasonable period, considering economic, environmental, social, and technological factors, and consistent with the CARB's legislatively mandated responsibilities and duties. (Cal. Code Regs. tit. 17, § 60006.)

While CARB, by its certified regulatory program, is exempt from Chapters 3 and 4 of CEQA and corresponding sections of the State CEQA Guidelines, the Guidelines nevertheless contain useful information for preparation of a thorough and meaningful alternatives analysis. CEQA Guidelines § 15126.6(a) speaks to evaluation of "a range of reasonable alternatives to the project, or the location of the project, which would feasibly attain most of the basic project objectives but would avoid or substantially lessen any of the significant effects, and evaluate the comparative merits of the alternatives." The purpose of the alternatives analysis is to determine whether different approaches to or variations of the project would reduce or eliminate significant project impacts, within the basic framework of the objectives, a principle that is consistent with CARB's certified regulatory program requirements. Alternatives considered in an environmental document should be potentially feasible and should attain most of the basic project objectives. It is, therefore, critical that the alternatives analysis define the project's objectives. The range of alternatives is governed by the "rule of reason," which requires evaluation of only those alternatives "necessary to permit a reasoned choice." (Cal. Code Regs. tit. 14, § 15126.6, subd. (f).) Further, an agency "need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative." (Cal. Code Regs. tit. 14, § 15126.6, subd. (f)(3).) The analysis should focus on alternatives that are feasible and that take economic, environmental,

social, and technological factors into account. Alternatives that are remote or speculative need not be discussed. Furthermore, the alternatives analyzed for a project should focus on reducing or avoiding significant environmental impacts associated with the project as proposed.

B. Selection of Range of Alternatives

This chapter evaluates a reasonable range of alternatives to the Target Update that could reduce or eliminate the project's significant effects on the environment, while meeting most of the basic project objectives. (Cal. Code Regs. tit. 14, § 15126.6, subd. (a).) Pursuant to CARB's certified regulatory program, this chapter also contains an analysis of each alternative's feasibility and the likelihood that it will substantially reduce any significant adverse environmental impacts identified in the impact analysis contained in Chapter 4 of this Draft EA. (Cal. Code Regs. tit. 17, § 60005(b), 60006.)

As described earlier, the Target Update builds upon previous approaches used in establishing the initial SB 375 Targets. The initial SB 375 Targets were established as per capita passenger vehicle greenhouse gas (GHG) emissions reductions targets for each Metropolitan Planning Organization (MPO) for the years 2020 and 2035, relative to a 2005 emissions baseline. The Target Update recommends new targets for each MPO for both 2020 and 2035 goals. Reasonably foreseeable compliance responses to the Target Update include a broad, comprehensive range of land use and transportation strategies that include both expanded use of existing strategies and new approaches, with considerable variability in the mix of strategies and local implementation actions that could occur across all 18 MPO regions. Likewise, suitable alternatives considered in this Draft EA need also to be broad-based, comprehensive approaches that could meet the basic project objectives, while reducing or eliminating the project's significant effects on the environment.

While the Target Update recognizes the need for overall emissions reductions, the needs and abilities to reduce emissions vary for each MPO. Therefore, specific actions are not yet fully defined at this stage of planning. The level of detail for each alternative must reflect that the Target Update is a broad action and, accordingly, the analysis cannot provide the level of detail that would be contained in subsequent environmental review when MPOs act to update their RTP/SCS, or when local agencies adopt and implement specific programs or projects in response to RTP/SCS updates. (See Cal. Code Regs. tit. 14, §15168.)

CARB has identified four alternatives, which is considered a reasonable range in the context of the project, that allow the public and Board to understand differences in potential approaches to the Target Update. Various land use and transportation strategies in RTP/SCSs that were adopted and are in various stages of implementation per the initial 2010 reduction targets are considered a part of the No-Project Alternative. Since these programs are already planned, they are reasonably expected to continue. In addition to the No Project Alternative, CARB made a good faith effort to identify other potentially feasible project alternatives. This included examining comments received at the public workshops held in Los Angeles, Sacramento, and Fresno during March 2017

to determine if any commenters suggested potentially feasible alternatives. While commenters made suggestions for particular components of recommended targets, no comments suggested an alternative, broad-based comprehensive approach to the project itself. CARB staff found no comments suggesting an alternative comprehensive approach to meet the State's long-term goals.

Despite the challenge of identifying alternative approaches to the project as a whole, rather than just alternatives to components within the project, CARB staff identified three potentially feasible action alternatives, in addition to the No-Project Alternative. These include a Re-Adoption of Existing Targets Alternative, a Substantially More Stringent Targets Alternative, and an Adoption of MPO Target Recommendations Alternative. These are described more fully below. These alternatives to the project do not alter the basic nature of the project, while providing sufficient information to allow a comparison with the proposed project.

C. Project Objectives

The project objectives described in Chapter 2, Project Description, are provided below. These objectives are derived from the requirements of SB 375 and the 2017 Climate Change Scoping Plan Update. The analysis that follows in section E of this chapter includes a discussion of the degree to which each alternative meets these basic project objectives:

1. Update the regional GHG emission reduction targets at least every eight years and take into account:

    a) GHG emissions reductions that will be achieved by improved vehicle emission standards, changes in fuel composition, and other measures CARB has approved that will reduce GHG emissions in the affected regions, and prospective measures CARB plans to adopt to reduce GHG emissions from other sources as that term is defined in subd. (i) of § 38505 of the Health and Safety Code and consistent with the regulations promulgated pursuant to the California Global Warming Solutions Act of 2006 (Division 12.5 (commencing with § 38500) of the Health and Safety Code).

    b) Updated technical data, forecasts, and other information provided by the Department of Transportation, MPOs, local governments, affected air districts, and public and private stakeholders.

    c) Advancement of technical tools and methods, such as consistent standards for data and modeling assumptions, model improvements, and measures of achievement of emission reductions.

2. Update regional GHG emissions reduction targets to continue to achieve a balance between goals that motivate further positive planning and action

toward more sustainable communities that foster co-benefits such as improved public health outcomes, more mobility choices, more housing choices, and resource and land conservation; but are not out of reach for regions and local governments.

3. Update regional GHG emissions reduction targets to further the objectives set forth in SB 32 and Executive Order B-30-15, specifically that would, if implemented, result in greater GHG emission reductions from the transportation sector compared to reductions that would be achieved under currently adopted SCSs. Targets would contribute to achieving the overall statewide GHG emissions reduction target of 40 percent below 1990 levels by 2030, as well as support achievement of our statewide public health and air quality objectives. (CARB 2017a)

D. Description of Alternatives

Detailed descriptions of each alternative are presented below. The analysis that follows the descriptions of the alternatives includes a discussion of the degree to which each alternative meets the basic project objectives, and the degree to which each alternative avoids potentially significant impacts identified in Chapter 4.

E. Evaluation of Target Update Alternatives

Alternative 1: No-Project Alternative

Alternative 1 Description

CARB is including Alternative 1, the No-Project Alternative, to provide a good faith effort to disclose environmental information that is important for considering the Target Update. CARB's certified regulatory program does not mandate consideration of a "No-Project Alternative." (Cal. Code Regs. tit. 17, § 60006.) Under CARB's certified regulatory program, the alternatives considered, among other things, must be "consistent with the state board's legislatively mandated responsibilities and duties." (Cal. Code Regs. tit. 17, § 60006.)

Under Alternative 1, CARB would not take action to update the existing targets. It is not clear that it would be legally feasible for CARB to implement the No-Project Alternative. First, SB 375 requires that CARB take action to update the targets every 8 years. Further, in April 2015, Governor Brown issued Executive Order B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. In doing so, the Governor called on California to pursue a new and ambitious set of strategies, in line with the five climate change pillars from his inaugural address to reduce GHG emissions and prepare for the unavoidable impacts of climate change. In order to develop a clear plan of action to achieve the State's goals, the Executive Order called on CARB to update the AB 32 Climate Change Scoping Plan to incorporate the 2030 target. In summer 2016, the Legislature affirmed the importance of addressing climate

change through passage of SB 32 (Pavley, Chapter 249, Statutes of 2016), which codified into statute the 2030 GHG reduction target contained in Executive Order B-30-15. The proposed 2017 Climate Change Scoping Plan Update reflects the 2030 target and would serve as the framework to define the State's climate change priorities for the next 13 years and beyond. The proposed 2017 Climate Change Scoping Plan Update includes a reduction of vehicle miles traveled (VMT) that is to be achieved at least in part by increasing the stringency of the regional per capita GHG targets for SCSs for 2035 as part of the statewide strategy to achieve the 2030 statewide emissions target.

The No-Project Alternative is included only to assist in the analysis and consideration of this portion of the Target Update and the action alternatives. It is useful to include a "No-Project Alternative" in this analysis for the same reasons that this type of alternative is called for in the State CEQA Guidelines. As noted in the CEQA Guidelines, "the purpose of describing and analyzing a no-project alternative is to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project." (Cal. Code Regs. tit. 14, § 15126.6, subd. (e)(1).) The No-Project Alternative also provides an important point of comparison to understand the potential environmental benefits and impacts of the other alternatives.

The No-Project Alternative does not contemplate that there would be no further action by CARB or other state agencies related to SB 375. As part of the MPOs' regular SCS reevaluation and update processes, they may find that implementing the existing targets may involve implementing or expanding existing strategies discussed in Table 2-2 and including some of the potential new GHG reduction strategies identified in Table 2-3. Therefore, it is foreseeable that impacts discussed in Chapter 4 could occur even under the No Project Alternative. Further, implementation of some of those strategies could occur as a result of requirements required by other statutes or because of commitments in existing plans or ones under development for other purposes.

Alternative 1 Discussion

i) Objectives

The No-Project Alternative would not meet the project's objectives of updating targets to reflect the latest information on State GHG-reduction measures and technical data, tools, and methods (Objective 1), would not foster increased co-benefits relative to existing conditions, and would not encourage further innovation, action, and planning toward more sustainable communities compared to existing conditions (Objective 2). Most importantly, considering more stringent VMT per capita reductions needed to achieve the 2030 GHG emissions limit as codified in SB 32 and detailed in the 2017 Scoping Plan Update, the No-Project Alternative would not be consistent with Objective 3 (helping to attain SB 32 GHG targets).

ii) Environmental Impacts

The No-Project Alternative would result in compliance responses carried out in existing SCSs developed to achieve the existing regional GHG targets that are ongoing or already implemented. Direct and indirect environmental impacts associated with

implementation of these measures were analyzed in the 2010 Functional Equivalent Document (FED). Further, the No-Project Alternative would result in potential adverse environmental impacts that are similar to those described in Chapter 4 of the Draft EA, but to a lesser degree because emissions reduction targets and actions needed to achieve them would not be as stringent as proposed for the Target Update. Potential impacts include those resulting from short-term construction and long-term operational impacts that may occur because of activities carried out in response to regulations or programs enacted to implement the recommended targets. As described in Chapter 4, the resource areas affected include: aesthetics; agricultural and forest resources; air quality; biological resources; cultural resources; geology, seismicity, and soils; greenhouse gases; hazards and hazardous materials; hydrology and water quality; noise; population and housing; public services; transportation and traffic; and utilities and service systems.

Alternative 2: Re-Adoption of Existing Targets Alternative

Alternative 2 Description

Under Alternative 2, CARB would consider all information and conclude that no changes should be made to the existing targets for each MPO, and take action to re-adopt the existing targets that were established in 2010 for each MPO for 2020 and 2035, as shown below in Table 7-1.

Table 7-1 Existing SB 375 GHG Emission Reduction Targets

	Existing GHG Targets[1] (adopted in 2010)	
MPO	**2020**	**2035**
SANDAG	-7%	-13%
SCAG	-8%	-13%
SACOG	-7%	-16%
MTC/ABAG	-7%	-15%
Butte CAG	1%	1%
Tahoe MPO	-7%	-5%
Santa Barbara	0%	0%
Monterey Bay	0%	-5%
San Luis Obispo COG	-8%	-8%
Shasta RTA	0%	0%
Stanislaus COG	-5%	-10%
Kern COG	-5%	-10%
San Joaquin COG	-5%	-10%
Fresno COG	-5%	-10%
Tulare COG	-5%	-10%
Madera CTC	-5%	-10%
Kings CAG	-5%	-10%
Merced CAG	-5%	-10%

Table 7-1 Existing SB 375 GHG Emission Reduction Targets

	Existing GHG Targets[1] (adopted in 2010)	
MPO	**2020**	**2035**
Notes: CAG = County Association of Governments; COG = Council of Governments; CTC = County Transportation Commission; GHG = greenhouse gas; MTC/ABAG = Metropolitan Transportation Commission/Association of Bay Area Governments; MPO = Metropolitan Planning Organization; SACOG = Sacramento Area Council of Governments; SANDAG = San Diego Association of Governments; SCAG = Southern California Association of Governments; RTA = Regional Transportation Agency. [1]Targets are expressed as percent change in per capita GHG emissions relative to 2005 levels for each region.		

Alternative 2 Discussion

i) Objectives

Alternative 2 would not meet the project's objectives of updating targets to reflect the latest information on State GHG-reduction measures and technical data, tools, and methods (Objective 1), would not foster increased co-benefits relative to existing conditions, and would not encourage further innovation, action, and planning toward more sustainable communities compared to existing conditions (Objective 2). Most importantly, considering more stringent VMT per capita reductions needed to achieve the 2030 GHG emissions limit as codified in SB 32 and detailed in the 2017 Scoping Plan Update, the No-Project Alternative would not be consistent with Objective 3 (helping to attain SB 32 GHG targets).

ii) Environmental Impacts

Alternative 2 would result in compliance responses to achieve the existing regional GHG targets that are ongoing or already implemented. Direct and indirect environmental impacts associated with implementation of these measures were analyzed in the 2010 Functional Equivalent Document (FED). Further, Alternative 2 would result in potential adverse environmental impacts that are similar to those described in Chapter 4 of the Draft EA, but to a lesser degree because emissions reduction targets and actions needed to achieve them would not be as stringent as proposed for the Target Update. Potential impacts include those resulting from short-term construction and long-term operational impacts that may occur as a result of activities carried out in response to regulations or programs enacted to implement the recommended targets. As described in Chapter 4, the resource areas affected include: aesthetics; agricultural and forest resources; air quality; biological resources; cultural resources; geology, seismicity, and soils; greenhouse gases; hazards and hazardous materials; hydrology and water quality; noise; population and housing; public services; transportation and traffic; and utilities and service systems.

Alternative 3: Adoption of MPO Target Recommendations Alternative

Alternative 3 Description

Alternative 3 includes accepting the MPO's target recommendations, which in aggregate are less stringent than the proposed Updated Targets. SB 375 allows each MPO to provide a target recommendation to CARB based on region-specific technical information. Each MPO's target recommendation is described in detail in Appendices A and B of the Staff Report. CARB staff have been engaged in a multi-year dialogue with each of the 18 MPOs to understand what GHG emissions reduction strategies their regions are undertaking. According to the information submitted by the MPOs, many MPOs would look to pursue additional strategies, such as increased funding for transit and active transportation, that foster additional co-benefits; they would pursue cutting-edge strategies not included in prior SCSs, such as funding for innovative mobility solutions like on-demand ride sourcing services for rural areas; and the recommended targets could be achieved through financially constrained, enforceable SCSs.

Alternative 3 Discussion

i. Objectives

Alternative 3 would meet the project's objectives of updating targets to reflect the latest information on State GHG-reduction measures and technical data, tools, and methods (Objective 1), and would help foster increased co-benefits relative to existing conditions, as well as encourage further innovation, action, and planning toward more sustainable communities compared to existing conditions (Objective 2). Most importantly, considering more stringent VMT per capita reductions needed to achieve the 2030 GHG emissions limit as codified in SB 32 and detailed in the 2017 Scoping Plan Update, Alternative 3 does not provide appreciable change in GHG emission reductions compared to commitments under currently adopted SCSs and the proposed 2017 Scoping Plan Update baseline, and does notmeet Objective 3 (helping to attain SB 32 GHG targets) to the same extent as the proposed targets, .

ii. Environmental Impacts

Alternative 3 would result in potential adverse environmental impacts that are similar to those described in Chapter 4 of the Draft EA, but possibly to a lesser degree because emissions reduction targets and actions needed to achieve them would not be as stringent as proposed for the Target Update. Potential impacts include those resulting from short-term construction and long-term operational impacts that may occur as a result of activities carried out in response to regulations or programs enacted to implement the recommended targets. As described in Chapter 4, the resource areas affected include: aesthetics; agricultural and forest resources; air quality; biological resources; cultural resources; geology, seismicity, and soils; greenhouse gases; hazards and hazardous materials; hydrology and water quality; noise; population and housing; public services; transportation and traffic; and utilities and service systems.

Alternative 4: Substantially More Stringent Targets Alternative

Alternative 4 Description

Alternative 4 includes a substantial increase in reduction targets for each MPO that would require further GHG emissions reductions beyond the proposed targets shown in Table 2-1 of this Draft EA. An example of substantially more stringent targets would include setting MPO 2035 targets to a level that would meet the full VMT reduction needs assumed in the 2017 Scoping Plan Update. If distributed equally by regional population, this would mean increasing staff's proposed targets by two to three percentage points for the largest four MPOs in the State, up to six percentage point increases for the eight MPOs in the Valley, and up to nine percentage point increases for the remaining MPOs. This alternative would rely on either additional new strategies, or an increase in the intensity or extent of expanded or new strategies already described under the reasonably foreseeable compliance responses discussed in this Draft EA, to meet the increased targets if feasible, or the development of an alternative planning strategy (APS).

Alternative 4 Discussion

i) Objectives

Under Alternative 4, MPOs would be required to update their RTP/SCS in a manner that would achieve more stringent targets than currently proposed under the Target Update. However, SB 375 provides that if an MPO determines that it is not feasible to achieve its target through a sustainable communities strategy (SCS), then the MPO must prepare an alternative planning strategy (APS), which is independent of the RTP. The APS must show how the targets would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies not included in the RTP.

Under Alternative 4, CARB anticipates many MPOs will prepare an APS. To date, no MPO has prepared and relied on an APS, so the impacts are unknown. By using an APS rather than an RTP/SCS, however, it would be less certain that actual gains of target increases would ever come to fruition considering:

- APSs do not appear to be subject to the same extensive and comprehensive environmental review that RTP/SCSs are, which makes it less certain that local governments and developers will be able to access the CEQA streamlining incentives created as part of SB 375 law; and
- Some new and existing incentive funding programs that support implementation of land use and transportation strategies include consistency with an RTP/SCS in their evaluation criteria, which makes it less certain that regional and local governments relying upon an APS will be able to successfully compete and implement projects.

There are many valid reasons an MPO may need to temporarily rely on an APS for one planning cycle, for example a short-term decrease in funding. This is, however, different than setting targets that ensure the majority of MPOs must rely on an APS over the long

term to meet targets. If MPOs are unable to utilize RTP/SCSs, this alternative would not be consistent with Objective 2.

For these reasons, if targets were substantially more stringent than proposed levels under the Target Update, the actual gains of that increase would be less likely to ever come to fruition. In a situation where most MPOs adopt APSs, status quo development patterns could continue for the foreseeable future because the incentives designed to support SB 375 would no longer be attainable. While Alternative 3 could appear to be consistent with the requirement for more stringent reduction targets, the inability to utilize RTP/SCSs could hinder achievement of GHG emissions reduction goals stated in Objective 3.

It is foreseeable that CARB would engage in the exchange of information with various agencies (Objective 1) while determining the reduction targets under Alternative 4. Thus, Alternative 4 would be expected to meet this objective.

ii) Environmental Impacts

Under Alternative 4, for MPOs that would be able to achieve substantially more stringent GHG targets, there could be more individual construction projects than anticipated for the Target Update in order to meet substantially GHG emissions reductions targets. For example, substantial construction of new infrastructure could be required to support new alternative fuel technologies, increased density of infill development could bring substantial building construction, and new or expanded transit options could require construction of infrastructure and facilities. This would result in a greater magnitude to impacts such as aesthetics, air quality, biological resources, and transportation and traffic as compared to the Target Update. For instance, substantially increased reduction targets could incent suburban residents to move to urban areas to take advantage of transit opportunities and avoid extended commutes. Thus, increased density of residential dwelling units within urban areas would contribute to a greater demand on public services and would likely cause substantially worse effects on transportation and traffic. Additionally, while a substantial increase in urban densities could result in increased air emissions as vehicles (e.g., delivery trucks and transit vehicles) experience greater traffic congestion, leading to increase emissions from idling vehicles, overall per capita VMT could decrease.

For MPOs that would not be able to achieve the substantially-increased targets under Alternative 4 through preparation of an RTP/SCS, preparation of an APS could result in status quo development patterns that rely less on the mix of sustainable land use and transportation strategies than would have come to fruition under an RTP/SCS. This could result in increased land use development and transportation investments in greenfield areas or areas outside transit priority areas. Such actions could result in potentially greater magnitude of adverse environmental impacts to agriculture and forest resources, biological resources, cultural resources, air quality, hydrology and water quality, public services, utility and service systems, and traffic and transportation.

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ATTACHMENT 1: ENVIRONMENTAL AND REGULATORY SETTING

1. AESTHETICS

A. Existing Conditions

The visual character of California varies greatly related to topography and climate. The foothills form a transitional landform from the valley floor to the higher Sierra Nevada, Cascade, and Coast Ranges. The valley floor is cut by two rivers that flow west out of the Sierra Nevada and east out of the Coast Ranges. Irrigated agriculture land is the primary landscape in the Sacramento and San Joaquin Valleys, and the foothill landscape has been altered by grazing, mining, reservoir development, and residential and commercial development. The visual character of the state also varies dramatically from the north, which is dominated by forest lands, and the south, which is primarily residential and commercial development.

B. Regulatory Setting

Applicable laws and regulations associated with aesthetics and scenic resources are discussed in Table 1.

Table 1: Applicable Laws and Regulations for Aesthetic Resources

Applicable Regulations	Description
Federal	
Federal Land Policy and Management Act of 1976 (FLPMA)	FLPMA is the enabling legislation establishing the Bureau of Land Management's (BLM's) responsibilities for lands under its jurisdiction. Section 102 (a) of the FLPMA states that "…the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archeological values…" Section 103(c) identifies "scenic values" as one of the resources for which public land should be managed.
BLM Contrast Rating System	The contrast rating system is a systematic process used by BLM to analyze visual impacts of proposed projects and activities. It is primarily intended to assist BLM personnel in the resolution of visual impact assessment.
Natural Historic Preservation Act (NHPA)	Under regulations of the NHPA, visual impacts to a listed or eligible National Register property that may diminish the integrity of the property's "setting … [or] … feeling" in a way that affects the property's eligibility for listing may result in a potentially significant adverse effect. "Examples of adverse effects … include…: Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features." (Title 36 Code of Federal Regulations (CFR) Part 800.5)
National Scenic Byways Program	Title 23, Sec 162 outlines the National Scenic Byways Program. This program is used to recognize roads having

Table 1: Applicable Laws and Regulations for Aesthetic Resources	
Applicable Regulations	**Description**
	outstanding scenic, historic, cultural, natural, recreational, and archaeological qualities through designation of road as: National Scenic Byways; All-American Roads; or America's Byways. Designation of the byways provides eligibility for Federal assistance for safety improvement, corridor management plans, recreation access, or other project that protect scenic, historical, recreational, cultural, natural, and archaeological resources.
State	
Ambient Air Quality Standard for Visibility-Reducing Particles	Extinction coefficient (measure of absorption of light in a medium) of 0.23 per kilometer — visibility of 10 miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent.
California Public Resources Code, Section 21099(d)	Aesthetics and parking impacts of certain projects on infill sites within a transit priority area are not considered significant environmental impacts.
California Streets and Highway Code, Section 260 through 263 – Scenic Highways	The State Scenic Highway Program promotes protection of designated State scenic highways through certification and adoption of local scenic corridor protection programs that conform to requirements of the California Scenic Highway Program.
Local	
County and City Controls	Most local planning guidelines to preserve and enhance the visual quality and aesthetic resources of urban and natural areas are established in the jurisdiction's general plan. The value attributed to a visual resource generally is based on the characteristics and distinctiveness of the resource and the number of persons who view it. Vistas of undisturbed natural areas, unique or unusual features forming an important or dominant portion of a viewshed, and distant vistas offering relief from less attractive nearby features are frequently considered to be scenic resources. In some instances, a case-by-case determination of scenic value may be needed, but often there is agreement within the relevant community about which features are valued as scenic resources. In addition to federal and State designations, counties and cities have their own scenic highway designations, which are intended to preserve and enhance existing scenic resources. Criteria for designation are commonly included in the conservation/open space element of the city or county general plan.

2. AGRICULTURAL AND FOREST RESOURCES

A. Existing Conditions

1. Agricultural Resources

The State of California maps and classifies farmland through the California Department of Conservation Farmland Mapping and Monitoring Program (FMMP). Classifications are based on a combination of physical and chemical characteristics of the soil and climate that determine the degree of suitability of the land for crop production. The classifications under the FMMP are as follows:

- Prime Farmland—land that has the best combination of features for the production of agricultural crops;
- Farmland of Statewide Importance—land other than Prime Farmland that has a good combination of physical and chemical features for the production of agricultural crops, but that has more limitations than Prime Farmland, such as greater slopes or less ability to store soil moisture;
- Unique Farmland—land of lesser quality soils used for the production of the state's leading agricultural cash crops;
- Farmland of Local Importance—land of importance to the local agricultural economy;
- Grazing Land—existing vegetation that is suitable for grazing;
- Urban and Built-Up Land—land occupied by structures in density of at least one dwelling unit per 1.5 acres;
- Land Committed to Nonagricultural Use—vacant areas; existing land that has a permanent commitment to development but has an existing land use of agricultural or grazing lands; and
- Other Land— land not included in any other mapping category, common examples of which include low-density rural developments, brush, timber, wetland, and vacant and nonagricultural land surrounded on all sides by urban development.

CEQA § 21095 and CEQA Guidelines Appendix G, together, define Prime, Unique, and Farmland of Statewide Importance as "Important Farmland," whose conversion may be considered significant. Local jurisdictions can further consider other classifications of farmland as important, and can also utilize an agricultural land evaluation and site assessment (LESA) model to determine farmland importance and impacts from conversion.

As of 2012, California contained 41,570 acres of Prime Farmland; 33,337 acres of Farmland of Statewide Importance; 28,725 acres of Unique Farmland; 15,168 acres of Farmland of Local Importance; and 197,866 acres of grazing land (FMMP 2012).

Williamson Act

The California Land Conservation Act of 1965--commonly referred to as the Williamson Act--enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments which are much lower than normal because they are based upon farming and open space uses as opposed to full market value. The Open Space Subvention Act of 1971 provided local governments an annual subvention of forgone property tax revenues from the state through the year 2009; these payments have been suspended in more recent years due to revenue shortfalls.

Of California's 58 counties, 52 have executed contracts under the Land Conservation Act Program. The 15.4 million acres reported as enrolled in Land Conservation Act contracts statewide in 2013, represents approximately 50 percent of California's farmland total of about 30 million acres, or about 31 percent of the State's privately owned land (California Department of Conservation [DOC] 2015).

2. Forestry Resources

Forestland is defined as land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits (Public Resources Code [PRC] 12220[g]). There are 40,233,000 acres of forested land within California including oak woodlands and conifer forests (California Department of Fish and Wildlife [CDFW] 2014a).

Timberland is privately-owned land, or land acquired for state forest purposes, which is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses of, at minimum, 15 cubic feet per acre (PRC 51104[g]). Forest managed for harvest is called timberland, and includes 2,932,000 acres in private ownership, 146,000 acres in State ownership, 10,130,000 acres in federal ownership, and 4,551,000 acres of non-industrial timberland in private ownership (CDFW 2014a).

B. Regulatory Setting

Table 2 below provides a general description of applicable laws and regulations that may pertain to agriculture and forest resources.

Table 2: Applicable Laws and Regulations for Agriculture and Forest Resources

Applicable Regulations	Description
Federal	
Farmland Protection Policy Act (FPPA)	FPPA directs federal agencies to consider the effects of federal programs or activities on farmland, and ensure that such programs, to the extent practicable, are compatible with state, local, and private farmland protection programs, and

Table 2: Applicable Laws and Regulations for Agriculture and Forest Resources	
Applicable Regulations	**Description**
	policies. The rating process established under the FPPA was developed to help assess options for land use on an evaluation of productivity weighed against commitment to urban development.
National Forest Management Act (NFMA) of 1976	NFMA is the primary statute governing the administration of national forests. The act requires the Secretary of Agriculture to assess forest lands, develop a management program based on multiple-use, sustained-yield principles, and implement a resource management plan for each unit of the National Forest System. Goal 4 of the U.S. Forest Service's (USFS) National Strategic Plan for the National Forests states that the nation's forests and grasslands play a significant role in meeting America's need for producing and transmitting energy. Unless otherwise restricted, National Forest Service lands are available for energy exploration, development, and infrastructure (e.g., well sites, pipelines, and transmission lines). However, the emphasis on non-recreational special uses, such as utility corridors, is to authorize the special uses only when they cannot be reasonably accommodated on non-National Forest Service lands.
State	
The California Land Conservation Act, also known as the Williamson Act (Government Code Section 51200)	The DOC's Division of Land Resource Protection administers the Williamson Act program, which permits property tax adjustments for landowners who contract with a city or county to keep their land in agricultural production or approved open space uses for at least 10 years. Lands covered by Williamson Act contracts are assessed on the basis of their agricultural value instead of their potential market value under nonagricultural uses. In return for the preferential tax rate, the landowner is required to contractually agree to not develop the land for a period of at least 10 years. Williamson Act contracts are renewed annually for 10 years unless a party to the contract files for nonrenewal. The filing of a non-renewal application by a landowner ends the automatic annual extension of a contract and starts a 9-year phase-out of the contract. During the phase-out period, the land remains restricted to agricultural and open-space uses, but property taxes gradually return to levels associated with the market value of the land. At the end of the 9-year non-renewal process, the contract expires and the owner's uses of the land are restricted only by applicable local zoning. The Williamson Act defines compatible use of contracted lands as any use determined by the county or city administering the agricultural preserve to be compatible with the agricultural, recreational, or open space use of land within the

Table 2: Applicable Laws and Regulations for Agriculture and Forest Resources	
Applicable Regulations	**Description**
	preserve and subject to contract (Government Code Section 51202[e]). However, uses deemed compatible by a county or city government must be consistent with the principles of compatibility set forth in Government Code Section 51238.1. Approximately 16 million acres of farmland (about 50 percent of the State's total farmland) are enrolled in the program.
California Farmland Conservancy Program (CFCP) (PRC Section 10200)	The program provides grant funding for agricultural conservation easements. Although the easements are always written to reflect the benefits of multiple resource values, there is a provision in the CFCP statute that prevents easements funded under the program from restricting husbandry practices. This provision could prevent restricting those practices to benefit other natural resources.
FMMP (Government Code Section 65570, PRC Section 612)	Under the FMMP, DOC assesses the location, quality, and quantity of agricultural lands and conversion of these lands over time. Agricultural designations include the categories of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban and Built-Up Land, and Other Land. The FMMP uses the following definitions to describe farmland types. • Prime Farmland is defined by DOC as "Land with the best combination of physical and chemical features able to sustain long term production of agricultural crops. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for production of irrigated crops at some time during the past four years." • Farmland of Statewide Importance is defined by DOC as "Land similar to Prime Farmland that has a good combination of physical and chemical characteristics for the production of agricultural crops. This land has minor shortcomings, such as greater slopes or less ability to store soil moisture than Prime Farmland. Land must have been used for production of irrigated crops at some time during the past four years." • Unique Farmland is defined by DOC as "Lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyard as found in some climatic zones in California."
State Lands Commission Significant Land Inventory	The State Lands Commission is responsible for managing lands owned by the State, including lands that the State has received from the federal government. These lands total more than 4 million acres and include tide and submerged lands,

Table 2: Applicable Laws and Regulations for Agriculture and Forest Resources	
Applicable Regulations	**Description**
	swamp and overflow lands, the beds of navigable waterways, and State School Lands. The State Lands Commission has a legal responsibility for, and a strong interest in, protecting the ecological and Public Trust values associated with the State's sovereign lands, including the use of these lands for habitat preservation, open space, and recreation. Target Update projects located within these lands would be subject to the State Lands Commission permitting process.
Local	
Open Space Element	State law requires each city and county to adopt a general plan containing at least seven mandatory elements including an open space element. The open space element identifies open space resources in the community and strategies for protection and preservation of these resources. Agricultural and forested lands are among the land use types identified as open space in general plans.
Zoning	The city or county zoning code is the set of detailed requirements that implement the general plan policies at the level of the individual parcel. The zoning code presents standards for different land uses and identifies which land uses (e.g., agriculture, residential, commercial, industrial) are allowed in the various zoning districts of the jurisdiction. Since 1971, state law has required the city or county zoning code to be consistent with the jurisdiction's general plan, except in charter cities.

3. AIR QUALITY

A. Existing Conditions

Federal, State, and local governments all share responsibility for reducing air pollution. The California Air Resources Board (CARB) is California's lead air agency and controls emissions from mobile sources, fuels, and consumer products, as well as air toxics. CARB also coordinates local and regional emission reduction measures and plans that meet federal and State air quality limits. At the federal level, the U.S. Environmental Protection Agency (U.S. EPA) has oversight of State programs. In addition, U.S. EPA alone has jurisdiction to establish emission standards for certain mobile sources such as ships, trains, and airplanes.

1. Criteria Air Pollutants

Concentrations of emissions of criteria air pollutants (CAPs) are used to indicate the quality of the ambient air because these are the most prevalent air pollutants known to

be deleterious to human health. A brief description of emission sources and acute and chronic health effects associated with each CAP is provided in Table 3.

Table 3: Sources and Health Effects of Criteria Air Pollutants			
Pollutant	**Sources**	**Acute[1] Health Effects**	**Chronic[2] Health Effects**
Ozone	Secondary pollutant resulting from reaction of reactive organic gases (ROG) and oxides of nitrogen (NO_X) in presence of sunlight. ROG emissions result from incomplete combustion and evaporation of chemical solvents and fuels; NO_X results from the combustion of fuels	Increased respiration and pulmonary resistance; cough, pain, shortness of breath, lung inflammation	Permeability of respiratory epithelia, possibility of permanent lung impairment
Carbon monoxide (CO)	Incomplete combustion of fuels; motor vehicle exhaust	Headache, dizziness, fatigue, nausea, vomiting, death	Permanent heart and brain damage
Nitrogen dioxide (NO_2)	Combustion devices; e.g., boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines	Coughing, difficulty breathing, vomiting, headache, eye irritation, chemical pneumonitis or pulmonary edema; breathing abnormalities, cyanosis, chest pain, rapid heartbeat, death	Chronic bronchitis, decreased lung function
Sulfur dioxide (SO_2)	Coal and oil combustion, steel mills, refineries, and pulp and paper mills	Irritation of upper respiratory tract, increased asthma symptoms	Insufficient evidence linking SO_2 exposure to chronic health impacts
Respirable particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$)	Fugitive dust, soot, smoke, mobile and stationary sources, construction, fires and natural windblown dust, and formation in the atmosphere by condensation and/or transformation of SO_2 and ROG	Breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, premature death	Alterations to the immune system, carcinogenesis
Lead	Metal processing	Reproductive/ developmental effects (fetuses and children)	Numerous effects including neurological, endocrine, and cardiovascular effects

[1] "Acute" refers to effects of short-term exposures to criteria air pollutants, usually at relatively high concentrations.

[2] "Chronic" refers to effects of long-term exposures to criteria air pollutants, even at relatively low concentrations.

Sources: U.S. EPA 2011.

2. Ozone

Ozone is a photochemical oxidant (a substance whose oxygen combines chemically with another substance in the presence of sunlight) and the primary component of smog. Ozone is not directly emitted into the air but is formed through complex chemical reactions between precursor emissions of reactive organic gases (ROG) and oxides of nitrogen (NO_X) in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_X are a group of gaseous compounds of nitrogen and oxygen that result from the combustion of fuels.

Anthropogenic emissions of the ozone precursors ROG and NO_X have decreased over the past several years because of more stringent motor vehicle standards and cleaner burning fuels. During the last 20 years, the maximum amount of ROG and NO_X over an 8-hour period decreased by 17 percent. However, most counties in California are still in nonattainment for ozone.

3. Nitrogen Dioxide

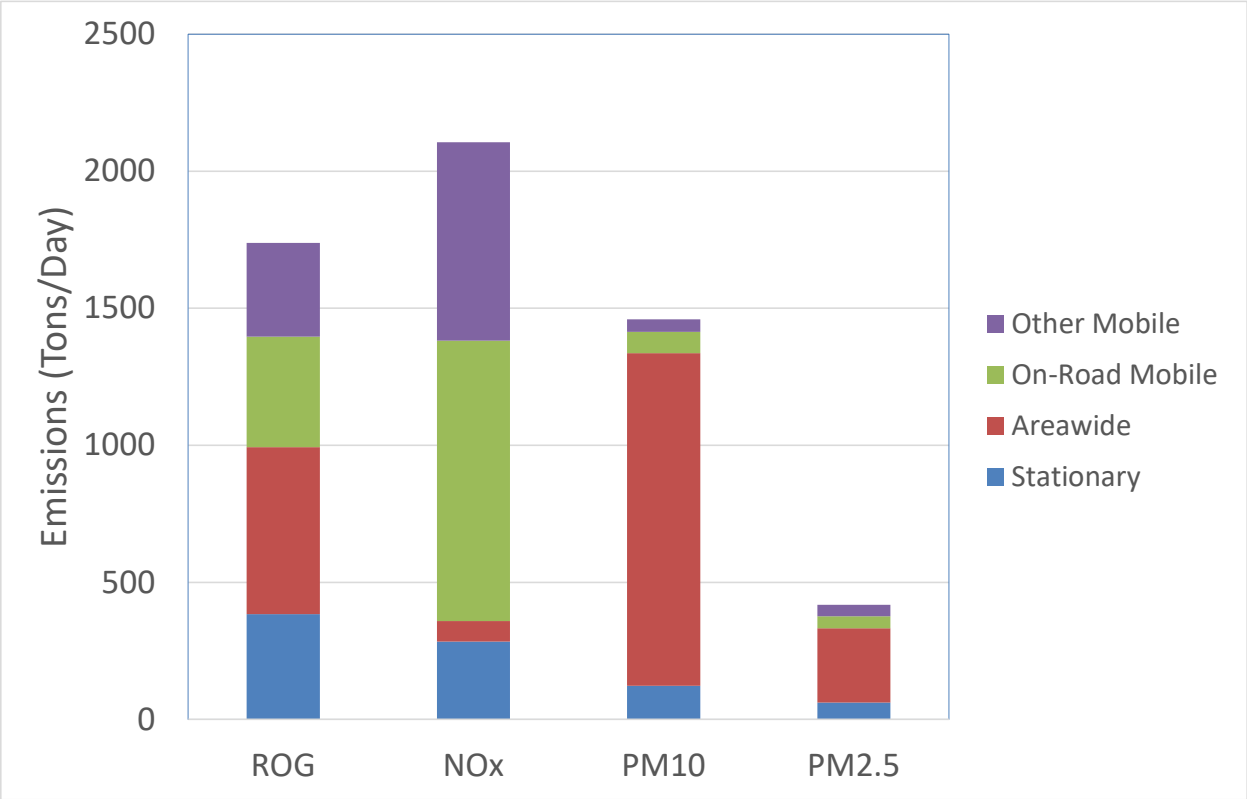
NO_2 is a brownish, highly-reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2. The combined emissions of NO and NO_2 are referred to as NO_X and are reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2 concentration in a particular geographical area may not be representative of the local sources of NO_X emissions (U.S. EPA 2011).

4. Particulate Matter

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. PM_{10} consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction equipment, fires and natural windblown dust, and particulate matter formed in the atmosphere by reaction of gaseous precursors (CARB 2009). $PM_{2.5}$ includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less. PM_{10} emissions in California are dominated by emissions from area sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, farming operations, construction and demolition, and particles from residential fuel combustion. Direct emissions of PM_{10} have increased slightly in California over the last 20 years, and are projected to continue to increase. $PM_{2.5}$ emissions have remained relatively steady over the last 20 years and are projected to increase slightly through 2020. Emissions of $PM_{2.5}$ are dominated by the same sources as emissions of PM_{10} (CARB 2009).

5. Emission Inventory

Exhibit 1 summarizes emissions of CAPs within California for various source categories. According to California's emission inventory, mobile sources are the largest contributor to the estimated annual average for air pollutant levels of ROG and NO_X accounting for approximately 43 percent and 83 percent, respectively, of the total emissions. Area wide sources account for approximately 83 percent and 65 percent of California's PM_{10} and $PM_{2.5}$ emissions, respectively (CARB 2013).



Source: CARB 2013

Exhibit 1 California 2012 Emission Inventory

6. Toxic Air Contaminants

Concentrations of toxic air contaminants (TACs) are also used to indicate the quality of ambient air. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

According to the *California Almanac of Emissions and Air Quality* (CARB 2009), the majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most predominant being particulate-exhaust emissions from

diesel-fueled engines (diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emissions control system is being used. Unlike some TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists; however, CARB has made preliminary concentration estimates based on a PM exposure method. This method uses the CARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, paradichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.

Diesel PM poses the greatest health risk among these 10 TACs mentioned. Since 1990, the health risk associated with diesel PM has been in California has reduced by 52 percent. Overall, levels of most TACs, except paradichlorobenzene and formaldehyde, have decreased since 1990 (CARB 2009: Chapter 5).

B. Regulatory Setting

Applicable laws and regulations associated with air quality are discussed in Table 4.

Table 4: Applicable Laws and Regulations for Air Quality

Regulation	Description
Federal	
Clean Air Act (CAA) (40 CFR)	The CAA, which was last amended in 1990, requires the U.S. EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The CAA established two types of NAAQS: primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly; and secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. The U.S. EPA Office of Air Quality Planning and Standards has set NAAQS for six principal pollutants, which are called "criteria" pollutants. Title III of the CAA directed U.S. EPA to promulgate national emissions standards for Hazardous Air Pollutants. The CAA also required U.S. EPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions, at a minimum to benzene and formaldehyde. Performance criteria were established to limit mobile source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 required the use of reformulated gasoline in selected areas with the most severe

Table 4: Applicable Laws and Regulations for Air Quality	
Regulation	**Description**
	ozone nonattainment conditions to further reduce mobile source emissions.
SmartWay	SmartWay is a U.S. EPA program that reduces transportation-related emissions by creating incentives to improve supply chain fuel efficiency. It aims to increase the availability and market penetration of fuel efficient technologies and strategies that help freight companies save money while also reducing adverse environmental impacts.
State	
California Clean Air Act (CCAA) CCR (Titles 13 and 17)	CARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing the CCAA. The CCAA, which was adopted in 1988, required the CARB to establish California ambient air quality standards (CAAQS).
Local	
Air Districts	Air Districts have primary responsibility for preparation, adoption, and implementation of mobile, stationary, and area emission control measures and for the preparation of state implementation plans (SIPs) and any amendments.

4. BIOLOGICAL RESOURCES

A. Existing Conditions

The state's geography and topography have created distinct local climates ranging from high rainfall in northwestern mountains to the driest place in North America, Death Valley. North to south, the state extends for almost 800 miles, bridging the temperate rainforests in the Pacific Northwest and the subtropical arid deserts of Mexico. Many parts of the state experience Mediterranean weather patterns, with cool, wet winters and hot, dry summers. Summer rain is indicative of the eastern mountains and deserts, driven by the western margin of the North American monsoon. Along the northern coast, abundant precipitation and ocean air produces foggy, moist conditions. High mountains have cooler conditions, with a deep winter snow pack in normal climate years. Desert conditions exist in the rain shadow of the mountain ranges (CDFW 2015).

While the state is largely considered to have a Mediterranean climate, it can be further subdivided into six major climate types: Desert, Marine, Cool Interior, Highland, Steppe, and Mediterranean. California deserts, such as the Mojave, are typified by a wide range of elevation with more rain and snow in the high ranges, and hot, dry conditions in valleys. Cool Interior and Highland climates can be found on the Modoc Plateau, Klamath, Cascade, and Sierra ranges. Variations in slope, elevation, and aspect of valleys and mountains result in a range of microclimates for habitats and wildlife. For example, the San Joaquin Valley, exhibiting a Mediterranean climate, receives sufficient

springtime rain to support grassland habitats, while still remaining hot and relatively dry in summer. Steppe climates include arid, shrub-dominated habitats that can be found in the Owens Valley, east of the Sierra Nevada, and San Diego, located in coastal southern California (CDFW 2015).

The Marine climate has profound influence over terrestrial climates, particularly near the coast. Additionally, the state is known for variability in precipitation because of the El Niño-Southern Oscillation (ENSO) and the Pacific Decadal Oscillation (PDO). Oscillations are the cyclical shifting of high and low pressure systems, as evidenced by the wave pattern of the jet stream in the northern hemisphere. The ENSO is the cycle of air pressure systems influenced by the location of warm and cold sea temperatures. El Niño events occur when waters are warmer in the eastern Pacific Ocean, typically resulting in greater precipitation in southern California and less precipitation in northern California. La Niña events occur when waters are colder in the eastern Pacific resulting in drier than normal conditions in southern California and wetter conditions in northern California during late summer and winter. The warmer ocean temperatures associated with El Niño conditions also result in decreased upwelling in the Pacific Ocean (CDFW 2015).

a) Plant Diversity

California has the highest numbers of native and endemic plant species of any state, with approximately 6,500 species, subspecies, and varieties of plants, representing 32 percent of all vascular plants in the United States. Nearly one-third of the state's plant species are endemic, and California has been recognized as one of 34 global hotspots for plant diversity. Within the California Floristic Province, which encompasses the Mediterranean area of Oregon, California, and northwestern Baja, 2,124 of the 3,488 species are endemic, representing a 61 percent rate of endemism. Over 200 species, subspecies, and varieties of native plants are designated as rare, threatened, or endangered by state law, and over 2,000 more plant taxa are considered to be of conservation concern (CDFW 2015).

b) Wildlife Diversity

California has a large number of animal species, representing a substantial proportion of the wildlife species nationwide. The state's diverse natural communities provide a wide variety of habitat conditions for wildlife. The state's wildlife species include approximately 100 reptile species, 75 amphibian species, 650 bird species, and 220 mammal species. Additionally, 48 mammals, 64 birds, 72 amphibians and reptiles, and 20 freshwater fish live in California and nowhere else (CDFW 2015).

California exhibits a wide range of aquatic habitats from the Pacific Ocean to isolated hillside seeps, to desert oases that support both water-dependent species and provide essential seasonal habitat for terrestrial species. Perennial and ephemeral rivers and streams, riparian areas, vernal pools, and coastal wetlands support a diverse array of flora and fauna, including 150 animal and 52 plant species that are designated special status species. The California Natural Diversity Database identifies 123 different aquatic habitat-types in California based on fauna. Of these, 78 are stream habitat-types located in seven major drainage systems: Klamath, Sacramento-San Joaquin, North/Central Coast, Lahontan, Death Valley, South Coast, and Colorado River. These drainage

systems are geologically separated and contain distinctive fishes and invertebrates. California has approximately 70 native resident and anadromous fish species, and 72 percent of the native freshwater fishes in California are either listed, or possible candidates for listing as threatened or endangered, or are extinct (CDFW 2015).

B. Regulatory Setting

Applicable laws and regulations associated with biological resources are discussed in Table 5.

Table 5: Applicable Laws and Regulations for Biological Resources	
Applicable Law	**Description**
Federal	
Federal Endangered Species Act (ESA)	Designates and provides for protection of threatened and endangered plant and animal species, and their critical habitat. Two sections of the ESA address take of threatened and endangered species. Section 7 covers actions that would result in take of a federally-listed species and have a federal discretionary action. Section 10 regulates actions that would result in take of threatened or endangered species and a non-federal agency is the lead agency for the action. Section 10 of the ESA requires preparation of a habitat conservation plan (HCP). More than 430 HCPs have been approved nation-wide.
Migratory Bird Treaty Act (MBTA)	Makes it unlawful to take or possess any migratory nongame bird (or any part of such migratory nongame bird) as designated in the MBTA.
Clean Water Act (CWA)	Requires the permitting and monitoring of all discharges to surface water bodies. Section 404 requires a permit from the U.S. Army Corps of Engineers (USACE) for a discharge from dredged or fill materials into Waters of the U.S., including wetlands. Section 401 requires a permit from a regional water quality control board (RWQCB) for the discharge of pollutants. By federal law, every applicant for a federal permit or license for an activity that may result in a discharge into a California water body, including wetlands, must request State certification that the proposed activity would not violate State and federal water quality standards.
Rivers and Harbors Act of 1899	Requires permit or letter of permission from USACE prior to any work being completed within navigable waters.
U.S. EPA Section 404 (b)(1) Guidelines	Requires USACE to analyze alternatives in a sequential approach such that USACE must first consider avoidance and minimization of impacts to the extent practicable to determine whether a proposed discharge can be authorized.

Table 5: Applicable Laws and Regulations for Biological Resources	
Applicable Law	**Description**
California Desert Conservation Area Plan (CDCA)	Comprises one of two national conservation areas established by Congress in 1976. The FLPMA outlines how BLM would manage public lands. Congress specifically provided guidance for the management of the CDCA and directed the development of the 1980 CDCA Plan.
Federal Noxious Weed Act of 1974 (P.L. 93-629) (7 U.S. Code [USC]. 2801 et seq.; 88 Stat. 2148)	Establishes a federal program to control the spread of noxious weeds. Authority is given to the Secretary of Agriculture to designate plants as noxious weeds by regulation, and the movement of all such weeds in interstate or foreign commerce was prohibited except under permit.
Executive Order (EO) 13112, “Invasive Species,” February 3, 1999	Federal agencies are mandated to take actions to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause.
EO 11988, “Floodplain Management,” May 24, 1977	Requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.
EO 11990, “Protection of Wetlands,” May 24, 1977	Requires all federal agencies to consider wetland protection as an important part of their policies and take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.
EO 13186, “Responsibilities of Federal Agencies to Protect Migratory Birds,” January 10, 2001	Requires that each federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations develop and implement a Memorandum of Understanding (MOU) with the U.S. Fish and Wildlife Service (USFWS) that shall promote the conservation of migratory bird populations.
Bald and Golden Eagle Protection Act	Declares it is illegal to take, possess, sell, purchase, barter, offer to sell or purchase or barter, transport, export or import a bald or golden eagle, alive or dead, or any part, nest or egg of these eagles unless authorized. Active nest sites are also protected from disturbance during the breeding season.
BLM Manual 6840 — Special Status Species Management	Establishes special status species policy on BLM land for plant and animal species and the habitats on which they depend. The policy refers to species designated by the BLM State Director as sensitive.
Listed Species Recovery Plans and Ecosystem Management Strategies	Provides guidance for the conservation and management of sufficient habitat to maintain viable populations of listed species and ecosystems. Relevant examples include, but are not limited to, the Desert Tortoise Recovery Plan,

Table 5: Applicable Laws and Regulations for Biological Resources	
Applicable Law	**Description**
	Flat-tailed Horned Lizard Rangewide Management Strategy; Amargosa Vole Recovery Plan; and Recovery Plan for Upland Species of the San Joaquin Valley.
State	
California Endangered Species Act of 1984 (Fish and Game Code sections 2050 through 2098)	Protects California's rare, threatened, and endangered species.
Natural Community Conservation Planning (NCCP) Act 1991	The primary objective of the NCCP program is to conserve natural communities at the ecosystem level while accommodating compatible land use. An NCCP identifies and provides for the regional or areawide protection of plants, animals, and their habitats, while allowing compatible and appropriate economic activity. There are currently 23 NCCPs that have been adopted or are in progress in California (CDFW 2014b).
Porter-Cologne Water Quality Control Act	Requires that each of the nine RWQCBs prepare and periodically update basin plans for water quality control. Each basin plan sets forth water quality standards for surface water and groundwater and actions to control nonpoint and point sources of pollution to achieve and maintain these standards.
Wetlands Preservation (Keene-Nejedly California Wetlands Preservation Act) (PRC Section 5810 et seq.)	California has established a successful program of regional, cooperative efforts to protect, acquire, restore, preserve, and manage wetlands. These programs include, but are not limited to, the Central Valley Habitat Joint Venture, the San Francisco Bay Joint Venture, the Southern California Wetlands Recovery Project, and the Inter-Mountain West Joint Venture.
California Wilderness Preservation System (PRC Section 5093.30 et seq.)	Establishes a California wilderness preservation system that consists of State-owned areas to be administered for the use and enjoyment of the people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, provide for the protection of such areas, preserve their wilderness character, and provide for the gathering and dissemination of information regarding their use and enjoyment as wilderness.
Significant Natural Areas (Fish and Game Code section 1930 et seq.)	Designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitat.

Table 5: Applicable Laws and Regulations for Biological Resources	
Applicable Law	**Description**
Protection of Birds and Nests (Fish and Game Code sections 3503 and 3503.5)	Protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Raptors (e.g., hawks and owls) are specifically protected.
Migratory Birds (Fish and Game Code section 3513)	Protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame birds.
Fur-bearing Mammals (Fish and Game Code sections 4000 and 4002)	Lists fur-bearing mammals which require a permit for take.
Fully Protected Species (Fish and Game Code sections 3511,4700, 5050, and 5515)	Identifies several amphibian, reptile, fish, bird, and mammal species that are Fully Protected. CDFW cannot issue a take permit for these species, except for take related to scientific research.
California Environmental Quality Act (CEQA Guidelines 15380)	CEQA defines rare species more broadly than the definitions for species listed under the state and federal Endangered Species Acts. Under section 15830, species not protected through state or federal listing but nonetheless demonstrable as "endangered" or "rare" under CEQA should also receive consideration in environmental analyses. Included in this category are many plants considered rare by the California Native Plant Society (CNPS) and some animals on the CDFW's Special Animals List.
Oak Woodlands (PRC Section 21083.4)	Requires counties to determine if a project within their jurisdiction may result in conversion of oak woodlands that would have a significant adverse effect on the environment. If the lead agency determines that a project would result in a significant adverse effect on oak woodlands, mitigation measures to reduce the significant adverse effect of converting oak woodlands to other land uses are required.
Lake and Streambed Alteration Agreement (Fish and Game Code section 1600 et seq.)	Regulates activities that may divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake in California designated by CDFW in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. Impacts to vegetation and wildlife resulting from disturbances to waterways are also reviewed and regulated during the permitting process.
California Desert Native Plants Act of 1981 (Food and Agricultural Code [FAC] section 80001 et seq. and Fish and Game	Protects non-listed California desert native plants from unlawful harvesting on both public and private lands in Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego counties. Unless issued a valid permit, wood receipt, tag, and seal by the

Table 5: Applicable Laws and Regulations for Biological Resources	
Applicable Law	**Description**
Code sections 1925-1926)	commissioner or sheriff, harvesting, transporting, selling, or possessing specific desert plants is prohibited.
FAC Section 403	The California Department of Food and Agriculture is designated to prevent the introduction and spread of injurious insect or animal pests, plant diseases, and noxious weeds.
Noxious Weeds (Title 3, California Code of Regulations, Section 4500)	List of plant species that are considered noxious weeds.
Local	
Various City and County General Plans	General plans typically designate areas for land uses, guiding where new growth and development should occur while providing a plan for the comprehensive and long-range management, preservation, and conservation of and natural resources and open-space lands.
Various Local Ordinances	Local ordinances provide regulations for proposed projects for activities such as grading plans, erosion control, tree removal, protection of sensitive biological resources and open space.

5. CULTURAL RESOURCES

A. Existing Conditions

a) Prehistoric Overview

California was occupied by different prehistoric cultures dating to at least 12,000 to 13,000 years ago. Evidence for the presence of humans during the Paleoindian Period prior to about 8,000 years ago is relatively sparse and scattered throughout the State; most surface finds of fluted Clovis or Folsom projectile points or archaeological sites left by these highly mobile hunter-gatherers are associated with Pleistocene lakeshores, the Channel Islands, or the central and southern California coast (Rondeau et al. 2007). Archaeological evidence from two of the Northern Channel Islands located off the coast from Santa Barbara indicates the islands were colonized by Paleoindian peoples at least 12,000 years ago, likely via seaworthy boats (Erlandson et al. 2007). By 10,000 years ago, inhabitants of this coastal area were using fishhooks, weaving cordage and basketry, hunting marine mammals and sea birds, and producing ornamental shell beads for exchange with people living in the interior of the State (Erlandson et al. 2007). This is the best record of early maritime activity in the Americas, and combined with the fluted points, indicates California was colonized by both land and sea during the Paleoindian period (Jones and Klar 2007).

With climate changes between 10,000 and 7,000 years ago at the end of the Pleistocene and into the early Holocene, Lower Archaic peoples adjusted to the drying of pluvial lakes, rise in sea level, and substantial alterations in vegetation communities. Approximately 6,000 years ago, vegetation communities similar to those of the present were established in the majority of the state, while the changes in sea level also affected the availability of estuarine resources (Jones and Klar 2007). The archaeological record indicates subsistence patterns during the Lower Archaic and subsequent Middle Archaic Period shifted to an increased emphasis on plant resources, as evidenced by an abundance of milling implements in archaeological sites dating between 8,000 and 3,000 years ago.

Approximately 3,000 years ago, during the Upper Archaic and Late Prehistoric Periods, the complexity of the prehistoric archaeological record reflects increases in specialized adaptations to locally available resources such as acorns and salmon, in permanently occupied settlements, and in the expansion of regional populations and trade networks (Moratto 1984; Jones and Klar 2007). During the Upper Archaic, marine shell beads and obsidian continue to be the hallmark of long-distance trade and exchange networks developed during the preceding period (Hughes and Milliken 2007). Large shell middens/mounds at coastal and inland sites in central and southern California, for example, attest to the regular refuse of these locales over hundreds of years or more from the Upper Archaic into the Late Prehistoric period. In the San Francisco Bay region alone, over 500 shell mounds were documented in the early 1900s (Moratto 1984).

Changes in the technology used to pursue and process resources are some of the hallmarks of the Late Prehistoric period. These include an increase in the prevalence of mortars and pestles, a diversification in types of watercraft and fishhooks, and the earliest record for the bow and arrow in the State that occurs in both the Mojave Desert and northeast California nearly 2,000 years ago (Jones and Klar 2007). The period also witnessed the beginning of ceramic manufacture in the southeast desert region, southwest Great Basin, and parts of the Central Valley.

During the Late Prehistoric period, the development of social stratification and craft specialization accompanied the increase in sedentism, as indicated by the variety of artifacts, including bone tools, coiled and twined basketry, obsidian tools, marine shell beads, personal ornaments, pipes, and rattles, by the use of clamshell disk beads and strings of dentalium shell as a form of currency, and by variation in burial types and associated grave goods (Moratto 1984; Jones and Klar 2007). Pictographs, painted designs that are likely less than 1,000 years old, and other non-portable rock art created during this period likely had a religious or ceremonial function (Gilreath 2007). Osteological evidence points to intergroup conflict and warfare in some regions during this period (Jones and Klar 2007), and there also appears to have been a decline or disruption in the long-distance trade of obsidian and shell beads approximately 1,200 years ago in parts of the State (Hughes and Milliken 2007).

b) Ethnographic Overview

At the time of European contact, California was the home of approximately 310,000 indigenous peoples with a complex of cultures distinguished by linguistic affiliation and

territorial boundaries (Kroeber 1925; Cook 1978; Heizer 1978; Ortiz 1983; d'Azevedo 1986). At least 70 distinct native Californian cultural groups, with even more subgroups, inhabited the vast lands within the State. The groups and subgroups spoke between 74 and 90 languages, plus a large number of dialects (Shipley 1978: p. 80; University of California at Berkeley 2009-2010).

In general, these mainly sedentary, complex hunter-gatherer groups of indigenous Californians shared similar subsistence practices (hunting, fishing, and collecting plant foods), settlement patterns, technology, material culture, social organization, and religious beliefs (Kroeber 1925; Heizer 1978; Ortiz 1983; d'Azevedo 1986). Permanent villages were situated along the coast, interior waterways, and near lakes and wetlands. Population density among these groups varied, depending mainly on availability and dependability of local resources, with the highest density of people in the northwest coast and Santa Barbara Channel areas and the least in the State's desert region (Cook 1976). Networks of foot trails were used to connect groups to hunting or plant gathering areas, rock quarries, springs or other water sources, villages, ceremonial places, or distant trade networks (Heizer 1978).

The social organization of California's native peoples varied throughout the State, with villages or political units generally organized under a headman who was also the head of a lineage or extended family or achieved the position through wealth (Bean 1978). For some groups, the headman also functioned as the religious ceremonial leader. Influenced by their Northwest Coast neighbors, the differential wealth and power of individuals was the basis of social stratification and prestige between elites and commoners for the Chilula, Hupa, Karok, Tolowa, Wiyot, and Yurok in the northwest corner of the State. Socially complex groups were also located along the southern California coast where differential wealth resulted in hierarchical classes and hereditary village chiefs among the Chumash, Gabrielino, Juaneño, and Luiseño (Bean and Smith 1978; Arnold and Graesch 2004).

At the time of Spanish contact, religious practices among native Californian groups varied, but ethnographers have recognized several major religious systems (Bean and Vane 1978). Many of the groups in the north-central part of the State practiced the *Kuksu* cult, primarily a ceremonial and dance organization, with a powerful shaman as the leader. Log drums, flutes, rattles, and whistles accompanied the elaborate ceremonial dances. The World Renewal cult in the northwestern corner of the State extended as far north as Alaska and entailed a variety of annual rites to prevent natural disasters, maintained natural resources and individual health, and were funded by the wealthy class. The *Toloache* cult was widespread in central and southern California and involved the use of narcotic plant (commonly known as datura or jimsonweed) materials to facilitate the acquisition of power. On the southern coast among Takic-speaking groups, the basis of Gabrielino, Juaneño, and Luiseño religious life was the *Chinigchinich* cult, which appeared to have developed from the Toloache cult. Chinigchinich, the last of a series of heroic mythological figures, gave instruction on laws and institutions, taught people how to dance, and later withdrew into heaven where he rewarded the faithful and punished those who disobeyed his laws. The Chinigchinich

religion seems to have been relatively new when the Spanish arrived, and could have been influenced by Christianity.

Trade and exchange networks were a significant part of the economy and social organization among California's Native American groups (Heizer 1978). Obsidian, steatite, beads, acorns, baskets, animal skins, and dried fish were among the variety of traded commodities. Inland groups supplied obsidian from sources along the Sierra Nevada Mountains, in Napa Valley, and in the northeast corner of the State. Coastal groups supplied marine shell beads, ornaments, and marine mammal skins. In addition to trading specific items, clamshell disk beads made from two clam species available on the Pacific coast were widely used as a form of currency (Kroeber 1922). In northwestern California, groups used strings of dentalium shell as currency.

The effect of Spanish settlement and missionization in California marks the beginning of a devastating disruption of native culture and life ways, with forced population movements, loss of land and territory (including traditional hunting and gathering locales), enslavement, and decline in population numbers from disease, malnutrition, starvation, and violence during the historic period (Castillo 1978). In the 1830s, foreign disease epidemics swept through the densely populated Central Valley, adjacent foothills, and North Coast Ranges decimating indigenous population numbers (Cook 1978). By 1850, with their lands, resources, and way of life being overrun by the steady influx of non-native people during the Gold Rush, California's native population was reduced to about 100,000. By 1900, there were only 20,000 or less than seven percent of the pre-contact number. Existing reservations were created in California by the federal government beginning in 1858 but encompass only a fraction of native lands.

In 2004, the Native American population in California was estimated at over 383,000 (Office of Planning and Research [OPR] 2005). Although acknowledged as non-federally recognized California Native American tribes on the contact list maintained by the Native American Heritage Commission (NAHC), many groups continue to await federal tribal status recognition. As of 2005, there were 109 federally recognized tribes within the state, along with dozens of non-federally recognized tribes. Members of these tribes have specific cultural beliefs and traditions with unique connections to areas of California that are their ancestral homelands.

c) Historic Overview

Post-contact history for the State is generally divided into the Spanish period (1769–1822), Mexican period (1822–1848), and American period (1848–present). The establishment of Fort Ross by Alaska-based Russian traders also influenced post-contact history for a short period (1809–1841) in the region north of San Francisco Bay. Although there were brief visits along the Pacific coast by European explorers (Spanish, Russian, and British) between 1529 and 1769 of the territory claimed by Spain, the expeditions did not journey inland.

i) Spanish Period (1769–1822)

Spain's colonization of California began in 1769 with the overland expeditions from San Diego to San Francisco Bay by Lt. Colonel Gaspar de Portolá, and the establishment of

a mission and settlement at San Diego. Between 1769 and 1823, the Spanish and the Franciscan Order established a series of 21 missions paralleling the coast along El Camino Real between San Diego and Sonoma (Rolle 1969). Between 1769 and 1782, Spain built four presidios (San Diego, Monterey, San Francisco, and Santa Barbara) to protect the missions, and by 1871 had established two additional pueblos at Los Angeles and San José.

Under Spanish law, large tracts of land, including cattle ranches and farms, fell under the jurisdiction of the missions. Native Americans were removed from their traditional lands, converted to Christianity, concentrated at the missions, and used as labor on the mission farms and ranches (Castillo 1978). Since the mission friars had civil as well as religious authority over their converts, they held title to lands in trust for indigenous groups. The lands were to be repatriated once the native peoples learned Spanish laws and culture.

ii) Russian Period (1809–1841)

In 1809, Alaska-based Russians started exploring the northern California coast with the goal of hunting otter and seal, and feeding their Alaskan colonies. The first Russian settlement was established in 1811–1812 by the Russian–American Fur Company to protect the lucrative marine fur trade and to grow produce for their Alaskan colonies. In 1841, as a result of the decline in local sea otter population and the failure of their agricultural colony, combined with a change in international politics, the Russians withdrew from California (Schuyler 1978).

iii) Mexican Period (1822–1848)

Following independence from Spain in 1822, the economy during the Mexican period depended on the extensive rancho system, carved from the former Franciscan missions and at least 500 land grants awarded in the State's interior to Mexican citizens (Beck and Haase 1974; Staniford 1975). Captain John Sutter, who became a Mexican citizen, received the two largest land grants in the Sacramento Valley. In 1839, Sutter founded the trading and agricultural empire named New Helvetia that was headquartered at Sutter's Fort, near the confluence of the Sacramento and American Rivers in today's City of Sacramento (Hoover et al. 2002).

Following adoption of the Secularization Act of 1833, the Mexican government privatized most Franciscan lands, including holdings of their California missions. Although secularization schemes had called for redistribution of lands to Native American neophytes who were responsible for construction of the mission empire, the vast mission lands and livestock holdings were instead redistributed by the Mexican government through several hundred land grants to private, non-indigenous ranchers (Castillo 1978, Hoover et al. 2002). Most Native American converts returned to traditional lands that had not yet been colonized or found work with the large cattle ranchos being carved out of the mission lands.

iv) American Period (1848–present)

In 1848, shortly after California became a territory of the U.S. with the signing of the Treaty of Guadalupe Hidalgo ending Mexican rule, gold was discovered on the

American River at Sutter's Mill in Coloma. The resulting Gold Rush era influenced the history of the State, the nation, and the world. Thousands of people flocked to the gold fields in the Mother Lode region that stretches along the western foothills of the Sierra Nevada Mountains, and to the areas where gold was also discovered in other parts of the State, such as the Klamath and Trinity River basins (California Department of Transportation [Caltrans] 2008). In 1850, California became the 31st state, largely as a result of the Gold Rush.

d) Paleontological Setting

California's fossil record is exceptionally prolific with abundant specimens representing a diverse range of marine, lacustrine, and terrestrial organisms recovered from Precambrian rocks as old as 1 billion years to as recent as 6,000-year old Holocene deposits (refer to geologic timescale in Table 6). These fossils provide key data for charting the course of the evolution or extinction of a variety of life on the planet, both locally and internationally. Paleontological specimens also provide key evidence for interpreting paleoenvironmental conditions, sequences and timing of sedimentary deposition, and other critical components of the earth's geologic history. Fossils are considered our most significant link to the biological prehistory of the earth (Jefferson 2004).

Table 6: Divisions of Geologic Time

Era	Period	Time in Millions of Years Ago (approximately)	Epoch
Cenozoic	Quaternary	< 0.01	Holocene
		2.6	Pleistocene
	Tertiary	5.3	Pliocene
		23	Miocene
		34	Oligocene
		56	Eocene
		65	Paleocene
Mesozoic	Cretaceous	145	
	Jurassic	200	
	Triassic	251	
Paleozoic	Permian	299	
	Carboniferous	359	
	Devonian	416	
	Silurian	444	
	Ordovician	488	
	Cambrian	542	
Precambrian		2,500	

Source: USGS Geologic Names Committee 2010

Because the majority of the State was underwater until the Tertiary period, marine fossils older than 65 million years are not common and are exposed mainly in the mountains along the border with Nevada and the Klamath Mountains, and Jurassic shales, sandstones, and limestones are exposed along the edges of the Central Valley, portions of the Coast, Transverse, and Peninsular Ranges, and the Mojave and Colorado deserts. Some of the oldest fossils in the State, extinct marine vertebrates called conodonts, have been identified at Anza-Borrego Desert SP in Ordovician sediments dating to circa 450 million years ago. Limestone outcrops of Pennsylvanian and Permian in the Providence Mountains SRA contain a variety of marine life, including brachiopods, fusulinids, crinoids, that lived some 300 to 250 million years ago.

Fossils from the Jurassic sedimentary layers in San Joaquin, San Luis Obispo, and Stanislaus counties include ammonites, bivalves, echinoderms, and marine reptiles, all of which were common in the coastal waters. Gymnosperms (seed-bearing plants) such as cycads, conifers, and ginkgoes are preserved in terrestrial sediments from this period, evidence that the Jurassic climate was warm and moderately wet. In the great Central Valley, marine rocks record the position of the Cretaceous shoreline as the eroded ancestral Sierra Nevada sediments were deposited east of the rising Coast Ranges and became the rock layers of the Sacramento and San Joaquin valleys. These Cretaceous sedimentary deposits have yielded abundant fossilized remains of plants, bivalves, ammonites, and marine reptiles (Paleontology Portal 2003).

Along coastal southern California where steep coastal mountains plunged into the warm Pacific Ocean an abundance of fossil marine invertebrates, such as ammonites, nautilus, and tropical snails and sea stars, have been found in today's coastal and near-coastal deposits from the Cretaceous Period. A rare armored dinosaur fossil dated to about 75 million years ago during the Cretaceous was discovered in San Diego County during a highway project. It is the most complete dinosaur skeleton ever found in California (San Diego Natural History Museum 2010). The lack of fossil remains of the majority of earth's large vertebrates, particularly terrestrial, marine, and flying reptiles (dinosaurs, ichthyosaurs, mosasaurs, pleisosaurs, and pterosaurs), as well as many species of terrestrial plants, after the end of the Cretaceous and the start of the Tertiary periods 65 million years ago (the K-T boundary) attests to their abrupt extinction.

B. Regulatory Setting

Applicable laws and regulations associated with cultural resources are discussed in Table 7.

Table 7: Applicable Laws and Regulations for Cultural Resources

Applicable Regulation	Description
Federal	
NHPA of 1966	The NHPA requires federal agencies to consider the preservation of historic and prehistoric resources. The Act authorizes the Secretary of the Interior to expand and maintain a National Register of Historic Places (NRHP), and it establishes an Advisory Council on Historic Preservation

Table 7: Applicable Laws and Regulations for Cultural Resources	
Applicable Regulation	**Description**
	(ACHP) as an independent federal entity. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and afford the ACHP a reasonable opportunity to comment on the undertaking prior to licensing or approving the expenditure of funds on any undertaking that may affect properties listed, or eligible for listing, in the NRHP.
National Environmental Policy Act (NEPA) of 1969	NEPA requires federal agencies to foster environmental quality and preservation. Section 101(b)(4) declares that one objective of the national environmental policy is to “preserve important historic, cultural, and natural aspects of our national heritage.” For major federal actions significantly affecting environmental quality, federal agencies must prepare, and make available for public comment, an environmental impact statement.
Archaeological Resources Protection Act of 1979 (NRPA)(16 USC 470aa-470II)	The NRPA requires a permit for any excavation or removal of archaeological resources from public lands or Indian lands. The statute provides both civil and criminal penalties for violation of permit requirements and for excavation or removal of protected resources without a permit.
Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (PL 101–601)	The NAGPRA vests ownership or control of certain human remains and cultural items excavated or discovered on federal or tribal lands, in designated Native American tribes, organizations, or groups. The NAGPRA further requires notification of the appropriate Secretary or other head of any federal agency upon the discovery of Native American cultural items on federal or tribal lands; proscribes trafficking in Native American human remains and cultural items; requires federal agencies and museums to compile an inventory of Native American human remains and associated funerary objects, and to notify affected Indian tribes of this inventory; and provides for the repatriation of Native American human remains and specified objects possessed or controlled by federal agencies or museums.
Advisory Council Regulation, Protection of Historic Properties (36 CFR 800)	Establishes procedures for compliance with Section 106 of the NHPA. These regulations define the Criteria of Adverse Effect, define the role of State Historic Preservation Officer (SHPO) in the Section 106 review process, set forth documentation requirements, and describe procedures to be followed if significant historic properties are discovered during implementation of an undertaking. Prehistoric and historic resources deemed significant (i.e., eligible for listing in the NRHP, per 36 CFR 60.4) must be considered in project planning and construction. The responsible federal agency must submit any proposed undertaking that may affect NRHP-eligible

Table 7: Applicable Laws and Regulations for Cultural Resources	
Applicable Regulation	**Description**
	properties to the SHPO for review and comment prior to project approval.
National Park Service Regulations, NRHP (36 CFR 60)	Sets forth procedures for nominating properties to the NRHP, and present the criteria to be applied in evaluating the eligibility of historic and prehistoric resources for listing in the NRHP.
Archaeology and Historic Preservation; Secretary of the Interior's Standards and Guidelines (Federal Register [FR] 190:44716–44742)	Non-regulatory technical advice about the identification, evaluation, documentation, study, and other treatment of cultural resources. Notable in these Guidelines are the "Standards for Archaeological Documentation" (pp. 44734) and "Professional Qualifications Standards for Archaeology" (pp. 44740–44741).
American Indian Religious Freedom Act of 1978	The American Indian Religious Freedom Act pledges to protect and preserve the traditional religious rights of American Indians, Aleuts, Eskimos, and Native Hawaiians. Before the act was passed, certain federal laws interfered with the traditional religious practices of many American Indians. The Act establishes a national policy that traditional Native American practices and beliefs, sites (and right of access to those sites), and the use of sacred objects shall be protected and preserved.
Department of Transportation Act of 1966, Section 4(f)	Section 4(f) of the Act requires a comprehensive evaluation of all environmental impacts resulting from federal-aid transportation projects administered by the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), and Federal Aviation Administration (FAA) that involve the use—or interference with use—of several types of land: public park lands, recreation areas, and publicly or privately owned historic properties of federal, state, or local significance. The Section 4(f) evaluation must be sufficiently detailed to permit the U.S. Secretary of Transportation to determine that there is no feasible and prudent alternative to the use of such land, in which case the project must include all possible planning to minimize harm to any park, recreation, wildlife and waterfowl refuge, or historic site that would result from the use of such lands. If there is a feasible and prudent alternative, a proposed project using Section 4(f) lands cannot be approved by the Secretary. Detailed inventories of the locations and likely impacts on resources that fall into the Section 4(f) category are required in project-level environmental assessments.
State	
California Health and Safety Code and California PRC	Disturbance of human remains without the authority of law is a felony (California Health and Safety Code Section 7052). According to State law (California Health and Safety Code

Table 7: Applicable Laws and Regulations for Cultural Resources	
Applicable Regulation	**Description**
	Section 7050.5, California PRC Section 5097.98), if human remains are discovered or recognized in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until 1) the coroner of the county has been informed and has determined that no investigation of the cause of death is required; 2) and if the remains are of Native American origin, and if the descendants from the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work for means of treating or disposing of with appropriate dignity the human remains and any associated grave goods as provided in PRC Section 5097.98; or 3) the Native American Heritage Commission was unable to identify a descendent or the descendent failed to make a recommendation within 24 hours after being notified by the Commission. According to the California Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and disturbance of Native American cemeteries is a felony (Section 7052). Section 7050.5 requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the Native American Heritage Commission, who has jurisdiction over Native American remains (California Health and Safety Code, 7052.5c; PRC, Section 5097.98).
CEQA (Guidelines Sections 15064.5 and 15380)	CEQA requires that public agencies financing or approving public or private projects must assess the effects of the project on cultural resources. Furthermore, it requires that, if a project results in significant impacts on important cultural resources, alternative plans or mitigation measures must be considered; only significant cultural resources, however, need to be addressed. Thus, prior to the development of mitigation measures, the importance of cultural resources must be determined. CEQA defines historical resources and provides guidance for determining whether a substantial adverse change in the significance of a resource. The regulations also provide guidance should any previously undiscovered archaeological resources be discovered on the project site.

Table 7: Applicable Laws and Regulations for Cultural Resources	
Applicable Regulation	**Description**
Assembly Bill (AB) 52 (Statutes of 2014)	AB 52 recognizes that tribal sovereignty and the unique relationship of California local governments and public agencies with California Native American tribal governments, while respecting the interests and roles of project proponents. This requires specific consultation processes for project review and approval.
Local	
City/County General Plans	Policies, goals, and implementation measures in county or city general plans may contain measures applicable to cultural and paleontological resources. In addition to the enactment of local and regional preservation ordinances, CEQA requires that resources included in local registers be considered (pursuant to section 5020.1(k) of the PRC). Therefore, local county and municipal policies, procedures, and zoning ordinances must be considered in the context of project-specific undertakings. Cultural resources are generally discussed in either the open space element or the conservation element of the general plan. Many local municipalities include cultural resources preservation elements in their general plans that include some mechanism pertaining to cultural resources in those communities. In general, the sections pertaining to archaeological and historical properties are put in place to afford the cultural resources a measure of local protection. The policies outlined in the individual general plans should be consulted prior to any undertaking or project.
Cooperative Agreements Among Agencies	Cooperative agreements among land managing agencies (BLM, National Park Service [NPS], USFS, California Department of Parks and Recreation [CDPR], Bureau of Indian Affairs, Department of Defense, to name a few) the SHPO and ACHP may exist and will need to be complied with on specific projects. In addition, certain agencies have existing Programmatic Agreements requiring permits (California Public Utilities Commission [CPUC], BLM) to complete archaeological investigations and employ the Secretary of Interior's Professional Qualification Standards and Guidelines (36 CFR 61).

6. ENERGY DEMAND

A. Existing Conditions

Excluding Federal offshore areas, California ranks third in the Nation in crude oil production in 2014. California ranks third in the Nation in conventional hydroelectric

generation, second in net electricity generation from other renewable energy resources, and first as a producer of electricity from geothermal energy (in 2012). In 2012, California, left with one remaining nuclear power plant (the Diablo Canyon Nuclear Power Plant) after the San Onofre Nuclear Generating Station was permanently shut down in 2012, ranked fourteenth in net electricity generation from nuclear power plants and eighth in nuclear net summer capacity. Average site electricity consumption in California homes is among the lowest in the nation (6.9 megawatt hours per year), according to the Energy Information Administration's (U.S. EIA's) Residential Energy Consumption Survey last conducted in 2009. In 2012, California's per capita energy consumption ranked 49th in the Nation, due in part to its mild climate and energy efficiency programs (U.S. EIA 2013b).

In 2013, California's in-state electricity generation sources consisted of: 44.3 percent natural gas, 18.8 percent renewable sources, 8.8 percent nuclear, 7.8 percent large hydropower, and 7.8 percent from coal. Approximately 63 percent of total electricity generation was from in-state sources, with the remaining electricity coming from out-of-state imports from the Pacific Northwest (12 percent) and the Southwest (21 percent) (CEC 2014a).

In 2012, Californians consumed 274,449 gigawatt hours (GWh) of electricity and 12,897 million therms of natural gas, primarily in the commercial, residential, and industrial sectors. A CEC staff forecast of future energy demand shows that electricity consumption will grow by between 0.79 and 1.56 percent per year between 2014 and 2024, and natural gas consumption is expected to reach up to 12,801 million therms by 2024 for an annual average growth rate of up to 0.02 percent (CEC 2014b).

CEC is the State's primary energy policy and planning agency. Created by the Legislature in 1974, and located in Sacramento, six basic responsibilities guide CEC as it sets state energy policy: forecasting future energy needs; promoting energy efficiency and conservation by setting the State's appliance and building efficiency standards; supporting public interest energy research that advances energy science and technology through research, development and demonstration programs; developing renewable energy resources and alternative renewable energy technologies for buildings, industry and transportation; licensing thermal power plants 50 megawatts (MW) or larger; and planning for and directing state response to energy emergencies.

CPUC also plays a key role in regulating investor-owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. CPUC regulates investor-owned electric and natural gas utilities operating in California, including Pacific Gas and Electric Company, Southern California Edison, San Diego Gas and Electric Company, and Southern California Gas Company.

B. Regulatory Setting

Applicable laws and regulations associated with energy resources are discussed in Table 8.

Table 8: Applicable Laws and Regulations for Energy Resources	
Regulation	**Description**
Federal	
Energy Policy and Conservation Act of 1975	The Energy Policy and Conservation Act sought to ensure that all vehicles sold in the U.S. would meet certain fuel economy goals. Through this Act, Congress established the first fuel economy standards for on-road motor vehicles in the U.S. Pursuant to the Act, the National Highway Traffic and Safety Administration (NHTSA), which is part of the U.S. Department of Transportation (USDOT), is responsible for establishing additional vehicle standards and for revising existing standards. From 1986 to 2012, fuel economy standards for passenger vehicles remained nearly stagnant at between 20.7 miles per gallon (mpg) for trucks and 27.5 mpg for light-duty cars. In 2010, U.S. EPA adopted new passenger vehicle standards starting with the 2012 model year that incorporates greenhouse gas (GHG) emissions standards on a vehicle-footprint basis and to accommodate the efficiencies of electric and other alternatively fueled vehicles. Additional standards for models years through 2025 were adopted in 2012. Translating the GHG standards to mpg equivalents, the projected fuel economy standard for new passenger cars and light trucks combined would increase from 30.1 to 54.5 between 2012 and 2025 model years. Until 2010, heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds [lbs] gross vehicle weight) were not subject to fuel economy standards. In 2011, NHTSA and U.S. EPA released fuel economy standards for medium- and heavy-duty vehicles (over 8,500 lbs gross vehicle weight) for 2014 through 2018 model years. Fuel economy standards for these vehicles vary by vehicle profession and include explicit mpg goals as well as percent reduction targets. Stricter fuel economy standards for medium- and heavy-duty vehicles are expected in 2015. Compliance with federal fuel economy standards is determined on the basis of each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the U.S. The Corporate Average Fuel Economy (CAFE) program, administered by U.S. EPA, was created to determine vehicle manufacturers' compliance with the fuel economy standards. U.S. EPA calculates a CAFE value for each manufacturer based on city and highway fuel economy test results and vehicle sales. Based on the information generated under the CAFE program, USDOT is authorized to assess penalties for noncompliance.

Table 8: Applicable Laws and Regulations for Energy Resources	
Regulation	**Description**
Energy Policy Act (EPAct) of 1992	The EPAct was passed to reduce the country's dependence on foreign petroleum and improve air quality. The EPAct includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. The EPAct requires certain federal, state, and local government and private fleets to purchase a percentage of light duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are included in the EPAct. Federal tax deductions will be allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to consider a variety of incentive programs to help promote AFVs.
EPAct of 2005	The EPAct of 2005 was signed into law on August 8, 2005. Generally, the act provides for renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for a clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.
State	
Warren-Alquist State Energy Resources Conservation and Development Act of 1974	The Warren-Alquist Act is the legislation that created and gives statutory authority to CEC (formally called the State Energy Resources Conservation and Development Commission).
Integrated Energy Policy Reports (Senate Bill [SB] 1389)	SB 1389 (Bowen, Chapter 568, Statutes of 2002) requires CEC to prepare a biennial integrated energy policy report that contains an assessment of major energy trends and issues facing the State's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the State's economy; and protect public health and safety (PRC Section 25301[a]). CEC prepares these assessments and associated policy recommendations every 2 years, with updates in alternate years, as part of the Integrated Energy Policy Report (IEPR). Preparation of the IEPR involves close collaboration with federal, State, and local agencies and a wide variety of stakeholders in an extensive public process to identify critical energy issues and develop strategies to address those issues.
California Long-Term Energy	On September 18, 2008, CPUC adopted California's first Long Term Energy Efficiency Strategic Plan, presenting a single roadmap to achieve maximum energy savings across all major

Table 8: Applicable Laws and Regulations for Energy Resources	
Regulation	**Description**
Efficiency Strategic Plan	groups and sectors in California. This comprehensive plan for 2009 to 2020 is the State's first integrated framework of goals and strategies for saving energy, covering government, utility, and private sector actions, and holds energy efficiency to its role as the highest priority resource in meeting California's energy needs. The plan was updated in January 2011 to include a lighting chapter.
California Building Energy Efficiency Standards (24 CCR Part 6)	California's Building Energy Efficiency Standards conserve electricity and natural gas in new building construction and are administered by CEC. Local governments enforce the standards through local building permitting and inspections. CEC has updated these standards on a periodic basis. The new 2016 Building Energy Efficiency Standards, which take effect on January 1, 2017, are approximately 28 percent more efficient than previous standards for residential construction and 5 percent more efficient for nonresidential construction as compared to the 2013 standards.
Comprehensive Energy Efficiency Plan for Existing Buildings (AB 758)	AB 758 (Skinner, Chapter 470, Statutes 2009) requires CEC, in collaboration with CPUC and stakeholders, to develop a comprehensive program to achieve greater energy efficiency in the State's existing buildings.
California Renewable Energy Portfolio Standard (RPS) (SB X1-2 and SB 350)	In 2011, Governor Brown signed SB X1-2, which requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 33 percent of their electricity supply (portfolio) from renewable sources by 2020. CPUC and CEC jointly implement the Statewide RPS program through rulemakings and monitoring the activities of electric energy utilities in the state. SB 350 (De Leon, Chapter 547, Statues of 2015) extends the RPS to 50 percent by 2030.
California Qualifying Facility and Combined Heat and Power Program Settlement	In December 2010, CPUC approved California's Qualifying Facility and Combined Heat and Power Program Settlement, which established a CHP framework for the State's investor-owned utilities. The settlement established a near-term target of 3,000 MW of CHP for entities under the jurisdiction of CPUC, although this target includes not just new CHP, but capacity from renewal of contracts due to expire in the next 3 years. CPUC has also adopted a settlement agreement that includes reforms to the Rule 21 interconnection process to provide a clear, predictable path to interconnection of distributed generation while maintaining the safety and reliability of the grid (CEC 2012).
California Strategy to Reduce Petroleum	AB 2076 (Chapter 936, Statutes of 2000) requires CEC and CARB to develop and submit to the Legislature a strategy to reduce petroleum dependence in California. The statute

Table 8: Applicable Laws and Regulations for Energy Resources	
Regulation	**Description**
Dependence (AB 2076)	requires the strategy to include goals for reducing the rate of growth in the demand for petroleum fuels. In addition, the strategy is required to include recommendations to increase transportation energy efficiency as well as the use of non-petroleum fuels and advanced transportation technologies including AFVs, hybrid vehicles, and high-fuel efficiency vehicles. The strategy, *Reducing California's Petroleum Dependence*, was adopted by CEC and CARB in 2003. The strategy recommends that California reduce inroad gasoline and diesel fuel demand to 15 percent below 2003 demand levels by 2020 and maintain that level for the foreseeable future; the Governor and Legislature work to establish national fuel economy standards that double the fuel efficiency of new cars, light-duty trucks, and sport utility vehicles; and increase the use of nonpetroleum fuels to 20 percent of on-road fuel consumption by 2020 and 30 percent by 2030.
Alternative and Renewable Fuel and Vehicle Technology Program (AB 118)	AB 118 (Statues of 2007) created the CEC's Alternative and Renewable Fuel and Vehicle Technology Program. The statute, subsequently amended by AB 109 (Statues of 2008), authorizes CEC to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the State's climate change policies.
Alternative Fuels Plan (AB 1007)	AB 1007 requires CEC to prepare a state plan to increase the use of alternative fuels in California. Any environmental document prepared for a strategic growth plan, regional blueprint general plan, and metropolitan planning or transportation plan should include an evaluation of alternative fuels for emissions or CAPs, TACs, GHGs, water pollutants, and other harmful substances, and their impacts on petroleum consumption; set goals for increased alternative fuel use in the state for the next decades; and recommend policies to ensure the alternative fuel goals are attained, including standards on transportation fuels and vehicles, and policy mechanisms to ensure vehicles operating on alternative fuels use those fuels to the maximum extent feasible.
Bioenergy Action Plan (EO S-06-06)	EO S-06-06 establishes targets for the use and production of biofuels and biopower and directs state agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. This executive order establishes the following target to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its biofuels within California by 2010, 40 percent by 2020, and

Table 8: Applicable Laws and Regulations for Energy Resources	
Regulation	**Description**
	75 percent by 2050. The Executive Order also calls for the state to meet a target for use of biomass electricity.
Governor's Low Carbon Fuel Standard (LCFS) (EO S-01-07)	EO S-01-07 establishes a statewide goal to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020 through establishment of the LCFS. The EO requires LCFS to be incorporated into the State Alternative Fuels Plan required by AB 1007 and is one of the proposed discrete early action GHG reduction measures identified by CARB pursuant to the Global Warming Solutions Act (AB 32). In January 2010, the Office of Administrative Law approved the LCFS regulation.
The Sustainable Communities and Climate Protection Act of 2008 (SB 375)	SB 375 augments the existing federal requirement for metropolitan planning organizations (MPOs) to prepare regional transportation plans (RTPs) by requiring RTPs to include sustainable community strategies (SCSs). SCSs contain land use, transportation, and housing strategies to reduce vehicle miles traveled (VMT)-related GHG emissions from the automobile and light-duty truck sector. In 2010, CARB released the first round of GHG reduction targets for each of California's 18 MPOs. Strategies to reduce GHGs include incentive programs for the use of zero emission vehicles (ZEVs) and plug-in hybrid electric vehicles (PHEVs) and the construction of ZEV and PHEV infrastructure.
Local	
City/County General Plans	Many cities and counties have general plan elements and policies that specifically address energy use and conservation. Those energy conservation measures outlined in the various county and city general plans contain goals, objectives, and policies aimed at reducing energy consumption. Proponents of specific projects would be required to consult the applicable general plans and design the projects consistent with the guidelines of those general plans in which the projects are located.

7. GEOLOGY AND SOILS

A. Existing Conditions

The state's topography is highly varied and includes 1,340 miles of seacoast, as well as high mountains, inland flat valleys, and deserts. Elevations in California range from 282 feet below sea level in Death Valley to 14,494 feet at the peak of Mount Whitney. The mean elevation of California is approximately 2,900 feet. The climate of California is as highly varied as its topography. Depending on elevation, proximity to the coast, and altitude, climate types include temperate oceanic, highland, sub-arctic, Mediterranean,

steppe, and desert (U.S. Geological Survey [USGS] 1995). The average annual precipitation across all California climate types is approximately 23 inches and approximately 75 percent of the state's annual precipitation falls between November and March, primarily in the form of rain, with the exception of high mountain elevations (California Department of Water Resources [DWR] 2003). Average annual precipitation ranges from more than 100 inches in the mountainous areas within the Smith River in Del Norte County to less than 2 inches in Death Valley, illustrating the extreme differences in precipitation levels within the State (Mount 1995). Overall, northern California is wetter than southern California with the majority of the State's annual precipitation occurring in the northern coastal region.

a) Geology

Plate tectonics and climate have played major roles in forming California's dramatic landscape. California is located on the active western boundary of the North American continental plate in contact with the oceanic Pacific Plate and the Gorda Plate north of the Mendocino Triple Junction. The dynamic interactions between these three plates and California's climate are responsible for the unique topographic characteristics of California, including rugged mountain ranges, long and wide flat valleys, and dramatic coastlines. Tectonics and climate also have a large effect on the occurrence natural environmental hazards, such as earthquakes, landslides, and volcanic formations.

b) Landslides

Landsliding or mass wasting is a common erosional process in California and has played an integral part in shaping the State's landscape. Typically, landslides occur in mountainous regions of the State, but they can also occur in areas of low relief, including coastal bluffs, along river and stream banks, and inland desert areas. Landsliding is the gravity-driven downhill mass movement of soil, rock, or both and can vary considerably in size, style and rate of movement, and type depending on the climate of a region, the steepness of slopes, rock type and soil depth, and moisture regime (Harden 1997).

c) Earthquakes

Earthquakes are a common and unpredictable occurrence in California. The tectonic development of California began millions of years ago by a shift in plate tectonics that converted the passive margin of the North American plate into an active margin of compressional and translational tectonic regimes. This shift in plate tectonics continues to make California one of the most geomorphically diverse, active, and picturesque locations in the U.S. While some areas of California are more prone to earthquakes, such as northern, central, and southern coastal areas of California, all areas of California are prone to the effects of ground shaking due to earthquakes. While scientists have made substantial progress in mapping earthquake faults where earthquakes are likely to occur, and predicting the potential magnitude of an earthquake in any particular region, they have been unable to precisely predict where or when an earthquake will occur and what its magnitude will be.

d) Tsunamis

Coastal communities around the circum Pacific have long been prone to the destructive effects of tsunamis. Tsunamis are a series of long-period, high-magnitude ocean waves that are created when an outside force displaces large volumes of water. Throughout time, major subduction zone earthquakes in both the Northern and Southern Hemispheres have moved the Earth's crust at the ocean bottom sending vast amounts of waters into motion and spreading tsunami waves throughout the Pacific Ocean.

Tsunamis can also occur from subareal and submarine landslides that displace large volumes of water. Subaeral landslide-generated tsunamis can be caused by seismically generated landslides, rock falls, rock avalanches, and eruption or collapse of island or coastal volcanoes. Submarine landslide-generated tsunamis are typically caused by major earthquakes or coastal volcanic activity. In contrast to a seismically generated tsunami, seismic seiches are standing waves that are caused by seismic waves traveling through a closed (lake) or semi-enclosed (bay) body of water. Due to the long-period seismic waves that originate after an earthquake, seiches can be observed several thousand miles away from the origin of the earthquakes. Small bodies of water, including lakes and ponds, are especially vulnerable to seismic seiches.

e) Volcanoes

A volcano is an opening in the Earth's crust through which magma escapes to the surface where it is extruded as lava. Volcanism may be spectacular, involving great fountains of molten rock, or tremendous explosions that are caused by the build-up of gases within the volcano (Ritchie and Gates 2001). Some of the most active volcanic areas in California are located within the Cascade Range - a volcanic chain that is a result of compressional tectonics along the Cascadia subduction zone.

f) Active Faults

A fault is defined as a fracture or zone of closely associated fractures along rocks that on one side have been displaced with respect to those on the other side. Most faults are the result of repeated displacement that may have taken place suddenly or by slow creep. A fault is distinguished from fractures or shears caused by landsliding or other gravity-induced surficial failures. A fault zone is a zone of related faults that commonly are braided and subparallel, but may be branching and divergent. A fault zone has significant width (with respect to the scale of the fault being considered, portrayed, or investigated), ranging from a few feet to several miles (Bryant and Hart 2007).

In the State of California, earthquake faults have been designated as being active through a process that has been described by the 1972 Alquist-Priolo Earthquake Fault Zoning Act. An active fault is defined by the State as one that has "had surface displacement within Holocene time (about the last 11,000 years)." This definition does not, of course, mean that faults lacking evidence for surface displacement within Holocene time are necessarily inactive. A fault may be presumed to be inactive based on satisfactory geologic evidence; however, the evidence necessary to prove inactivity sometimes is difficult to obtain and locally may not exist.

B. Regulatory Setting

Applicable laws and regulations associated with geology and soils are discussed in Table 9.

Table 9: Applicable Laws and Regulations for Geology and Soils	
Regulation	**Description**
Federal	
Clean Water Act (CWA) of 1972	The CWA was enacted to restore and maintain the chemical, physical, and biological integrity of the nation's waters by regulating point and nonpoint pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands. This includes the creation of a system that requires states to establish discharge standards specific to water bodies (National Pollution Discharge Elimination System [NPDES]), which regulates storm water discharge from construction sites through the implementation of a Storm Water Pollution Prevention Plan (SWPPP). In California, the State's NPDES permit program is implemented and administered by the local RWCQBs.
Earthquake Hazards Reduction Act and National Earthquake Hazards Reduction Program Act	This Act established the National Earthquake Hazards Reduction Program to reduce the risks to life and property from future earthquakes. This program was significantly amended in November 1990 by the National Earthquake Hazards Reduction Program Act by refining the description of agency responsibilities, program goals, and objectives.
State	
Seismic Hazards Mapping Act, PRC Section 2690–2699.	The Seismic Hazards Mapping Act of 1990 (PRC, Chapter 7.8, Division 2) directs the DOC Division of Mines and Geology (now called California Geological Survey [CGS]) to delineate Seismic Hazard Zones. The purpose of the Act is to reduce the threat to public health and safety and to minimize the loss of life and property by identifying and mitigating seismic hazards. These include areas identified that are subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches. Cities, counties, and State agencies are directed to use seismic hazard zone maps developed by CGS in their land-use planning and permitting processes. The Act requires that site-specific geotechnical investigations be performed prior to permitting most urban development projects within seismic hazard zones.
Alquist-Priolo Earthquake Fault Zoning Act	California's Alquist-Priolo Act (PRC 2621 et seq.), originally enacted in 1972 as the Alquist-Priolo Special Studies Zones Act and renamed in 1994, is intended to reduce the risk to life and property from surface fault rupture during earthquakes. The

Table 9: Applicable Laws and Regulations for Geology and Soils	
Regulation	**Description**
	Alquist-Priolo Act prohibits the location of most types of structures intended for human occupancy across the traces of active faults and strictly regulates construction in the corridors along active faults (Earthquake Fault Zones). It also defines criteria for identifying active faults, giving legal weight to terms such as “active,” and establishes a process for reviewing building proposals in and adjacent to Earthquake Fault Zones. Under the Alquist-Priolo Act, faults are zoned, and construction along or across them is strictly regulated if they are “sufficiently active” and “well-defined.” A fault is considered sufficiently active if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for the purposes of the act as within the last 11,000 years). A fault is considered well-defined if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria, and judgment.
California Division of Oil, Gas, and Geothermal Resources (DOGGR), PRC Section 3106.	PRC Section 3106 mandates the supervision of drilling, operation, maintenance, and abandonment of oil wells for the purpose of preventing: damage to life, health, property, and natural resources; damage to underground and surface waters suitable for irrigation or domestic use; loss of oil, gas, or reservoir energy; and damage to oil and gas deposits by infiltrating water and other causes. In addition, the DOGGR regulates drilling, production, injection, and gas storage operations in accordance with 14 CCR Chapter 4, Subchapter 1.
Landslide Hazard Identification Program, PRC Section 2687(a)	The Landslide Hazard Identification Program requires the State Geologist to prepare maps of landslide hazards within urbanizing areas. According to PRC Section 2687(a), public agencies are encouraged to use these maps for land use planning and for decisions regarding building, grading, and development permits.
California Building Standards Code (CBSC) (24 CCR)	California’s minimum standards for structural design and construction are given in the CBSC (24 CCR). The CBSC is based on the Uniform Building Code (International Code Council 1997), which is used widely throughout U.S. (generally adopted on a state-by-state or district-by-district basis) and has been modified for California conditions with numerous, more detailed or more stringent regulations. The CBSC provides standards for various aspects of construction, including, but not limited to: excavation, grading, and earthwork construction; fills and embankments; expansive soils; foundation investigations; and liquefaction potential and soil strength loss. In accordance

Table 9: Applicable Laws and Regulations for Geology and Soils	
Regulation	**Description**
	with California law, proponents of specific projects would be required to comply with all provisions of the CBSC for certain aspects of design and construction.
Local	
Geotechnical Investigation	Local jurisdictions typically regulate construction activities through a process that may require the preparation of a site-specific geotechnical investigation. The purpose of a site-specific geotechnical investigation is to provide a geologic basis for the development of appropriate construction design. Geotechnical investigations typically assess bedrock and Quaternary geology, geologic structure, soils, and the previous history of excavation and fill placement. Proponents of specific projects that require design of earthworks and foundations for proposed structures will need to prepare geotechnical investigations on the physical properties of soil and rock at the site prior to project design.
Local Grading and Erosion Control Ordinances	Many counties and cities have grading and erosion control ordinances. These ordinances are intended to control erosion and sedimentation caused by construction activities. A grading permit is typically required for construction-related projects. As part of the permit, project applicants usually must submit a grading and erosion control plan, vicinity and site maps, and other supplemental information. Standard conditions in the grading permit include a description of Best Management Practices similar to those contained in a SWPPP.
City/County General Plans	Most city and county general plans include an element that covers geology and soil resources within that jurisdiction.

8. GREENHOUSE GASES

A. Existing Conditions

1. The Physical Scientific Basis of Climate Change

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. The earth has a much lower temperature than the sun; therefore, the earth emits lower frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This

phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Human-caused emissions of these GHGs in excess of natural ambient concentrations are believed responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is "extremely likely" that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic causes of climate change together (Intergovernmental Panel on Climate Change [IPCC] 2014).

Climate change is a global problem. GHGs are global pollutants, unlike CAPs and TACs, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the lifetime of any particular GHG molecule is dependent on multiple variables and cannot be determined with any certainty, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 55 percent is sequestered through ocean and land uptake every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO_2 emissions remains stored in the atmosphere (IPCC 2013).

The quantity of GHGs in the atmosphere that ultimately result in climate change is not precisely known, but is enormous; no single project alone would measurably contribute to an incremental change in the global average temperature, or to global, local, or micro climates. From the standpoint of CEQA, GHG impacts relative to global climate change are inherently cumulative.

2. Greenhouse Gas Emission Sources

GHG emissions are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural emissions sectors. In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (CARB 2015b). Emissions of CO_2 are byproducts of fossil fuel combustion. CH_4 is a highly potent GHG that primarily results from escaped emissions of natural gas and from anaerobic decomposition of organic substances in agricultural practices and landfills. N_2O is also largely attributable to agricultural practices and soil management. CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution (CO_2 dissolving into the water), respectively, two of the most common processes for removing CO_2 from the atmosphere.

The potency of a GHG is defined by its global warming potential (GWP). GWP is a metric used to compare the heat-trapping abilities and atmospheric lifetimes of GHGs. GHG GWPs are expressed relative to CO_2, which has a GWP of 1.0. According to the IPPC Fifth Assessment Report, CH_4 and N_20 have a GWP of 28 and 265, respectively. HFCs and PFCs have GWPs ranging from 4 to 23,500 with SF_6 having the highest GWP.

3. Effects of Climate Change on the Environment

The IPCC was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme to provide the world with a scientific view on climate change and its potential effects. According to the IPCC, global average temperature is expected to increase relative to the 1986-2005 period by 0.3 to 4.8 degrees Celsius (°C) (0.5-8.6 degrees Fahrenheit [°F]) by the end of the 21st century (2081-2100), depending on future GHG emission scenarios (IPCC 2014). According to the California Natural Resources Agency (CNRA), temperatures in California are projected to increase 2.7°F above 2000 averages by 2050 and, depending on emission levels, 4.1 to 8.6°F by 2100 (CNRA 2012).

Physical conditions beyond average temperatures could be affected by the accumulation of GHG emissions. For example, changes in weather patterns resulting from increases in global average temperature are expected to result in a decreased volume of precipitation falling as snow in California and an overall reduction in snowpack in the Sierra Nevada. Based upon historical data and modeling, the DWR projects that the Sierra snowpack will decrease by 25 to 40 percent from its historic average by 2050 (DWR 2008). An increase in precipitation falling as rain rather than snow also could lead to increased potential for floods because water that would normally be held in the Sierra Nevada until spring could flow into the Central Valley concurrently with winter storm events (CNRA 2012). This scenario would place more pressure on California’s levee/flood control system.

Another outcome of global climate change is sea level rise. Sea level rose approximately seven inches during the last century and, assuming that sea-level changes along the California coast continue to reflect global trends, sea level along the state’s coastline in 2050 could be 10-18 inches higher than in 2000, and 31-55 inches higher by the end of this century (CNRA 2012).

As the existing climate throughout California changes over time, the ranges of various plant and wildlife species could shift or be reduced, depending on the favored temperature and moisture regimes of each species. In the worst cases, some species would become extinct or be extirpated from the state if suitable conditions are no longer available (CNRA 2012).

Changes in precipitation patterns and increased temperatures are expected to alter the distribution and character of natural vegetation and associated moisture content of plants and soils. An increase in frequency of extreme heat events and drought are also expected. These changes are expected to lead to increased frequency and intensity of large wildfires (CNRA 2012).

B. Regulatory Setting

Applicable laws and regulations specific to the reduction of GHG emissions are listed in Table 10 below. It should be noted that other laws and regulations described under Energy Demand in this Environmental Setting would also reduce GHG emissions.

Table 10: Applicable Laws and Regulations for Greenhouse Gases	
Regulation	**Description**
Federal	
Mandatory Greenhouse Gas Reporting Rule	On September 22, 2009, U.S. EPA issued a final rule for mandatory reporting of GHGs from large GHG emissions sources in the U.S. In general, this national reporting requirement will provide U.S. EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons or more of CO_2 per year. This publicly available data will allow the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial GHGs along with vehicle and engine manufacturers will report at the corporate level. An estimated 85 percent of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule.
National Program to Cut Greenhouse Gas Emissions and Improve Fuel Economy for Cars and Trucks	On September 15, 2009, U.S. EPA and NHTSA proposed a new national program that would reduce GHG emissions and improve fuel efficiency for all new cars and trucks sold in the U.S. U.S. EPA proposed the first-ever national GHG emissions standards under the CAA, and NHTSA proposed CAFE standards under the Energy Policy and Conservation Act. This proposed national program would allow automobile manufacturers to build a single light-duty national fleet that satisfies all requirements under both Federal programs and the standards of California and other states. The President requested that U.S. EPA and NHTSA, on behalf of USDOT, develop, through notice and comment rulemaking, a coordinated National Program under the CAA and the Energy Policy and Conservation Act (EPCA), as amended by the Energy Independence and Security Act (EISA), to reduce fuel consumption by and GHG emissions of light-duty vehicles for model years 2017-2025. U.S. EPA and NHTSA are developing the proposal based on extensive technical analyses, an examination of the factors required under the respective statutes and on discussions with individual motor vehicle manufacturers and other stakeholders. The National Program would apply to passenger cars, light-duty

Table 10: Applicable Laws and Regulations for Greenhouse Gases	
Regulation	**Description**
	trucks, and medium-duty passenger vehicles (light-duty vehicles) built in those model years (76 FR 48758). The first part of this program (i.e., 2012-2016) is implemented. The next part (i.e., 2017-2025) is currently in process for which CARB is proposed to accept compliance thereof as also being acceptable for California compliance, similar to what was done for the first part.
Endangerment and Cause or Contribute Findings	On December 7, 2009, U.S. EPA adopted its Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA (Endangerment Finding). The Endangerment Finding is based on Section 202(a) of the CAA, which states that the Administrator (of U.S. EPA) should regulate and develop standards for “emission[s] of air pollution from any class of classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.” The rule addresses Section 202(a) in two distinct findings. The first addresses whether or not the concentrations of the six key GHGs (i.e., CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in the atmosphere threaten the public health and welfare of current and future generations. The second addresses whether or not the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and therefore the threat of climate change. The Administrator found that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA. The evidence supporting this finding consists of human activity resulting in “high atmospheric levels” of GHG emissions, which are very likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher likelihood of heat waves, wild fires, droughts, sea level rise, and higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations. The Administrator also found that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. EPA’s final findings respond to the 2007 U.S. Supreme Court decision that GHGs fit within the CAA definition of air pollutants. The

Table 10: Applicable Laws and Regulations for Greenhouse Gases	
Regulation	**Description**
	findings do not in and of themselves impose any emission reduction requirements but rather allow U.S. EPA to finalize the GHG standards proposed earlier in 2009 for new light-duty vehicles as part of the joint rulemaking with the USDOT.
Significant New Alternatives Policy (SNAP)	EPA's SNAP program provides an evolving list of alternatives (i.e., chemicals that may replace one that is currently in use for a specific purpose). U.S. EPA makes decisions informed by the overall understanding of the environmental and human health impacts as well as the current knowledge regarding available substitutes. Where U.S. EPA is determining whether to add a new substitute to the list, U.S. EPA compares the risk posed by the new substitute to the risks posed by other alternatives on the list and determines whether that specific new substitutes poses more risk than already-listed alternatives for the same use. Section 612 of the CAA provides that U.S. EPA must prohibit the use of a substitute where it has determined that there are other available substitutes that pose less overall risk to human health and the environment.
State	
AB 32, the California Global Warming Solutions Act, Statutes of 2006	In September 2006, former Governor Arnold Schwarzenegger signed AB 32, the California Global Warming Solutions Act of 2006. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. AB 32 requires that CARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state achieves the reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions. Reductions are being accomplished through an enforceable statewide cap on GHG emissions that began in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from substantial stationary and mobile source categories. AB 32 requires CARB to produce a Scoping Plan by January 1, 2009 and at least every 5 years afterwards that details how the state

Table 10: Applicable Laws and Regulations for Greenhouse Gases	
Regulation	**Description**
	will meet its GHG reduction targets. CARB adopted the first Scoping Plan in 2008, and an update to the Scoping Plan was adopted in 2013.
SB 32 and AB 197, Statutes of 2016	Governor Brown signed SB 32 (Pavley, Chapter 249, Statutes of 2016) and AB 197 (Garcia, Chapter 250, Statutes of 2016) on September 8, 2016. SB 32 establishes a statewide target of reducing statewide GHG emissions to 40 percent below 1990 levels by 2030. This is the same target as Executive Order B-30-15 (2015). SB 32 authorizes CARB to adopt regulations to achieve the maximum technologically-feasible and cost-effective GHG reductions. AB 197 creates a legislative committee to oversee CARB and requires CARB to take specific actions when adopting plans and regulations pursuant to SB 32 related to disadvantaged communities, identification of specific information regarding reduction measures, and information regarding existing greenhouse gases at the local level. CARB is currently preparing a second update to the Scoping Plan that will identify GHG reduction measures necessary to achieve the statewide 2030 target established by SB 32.
SB 375, Statutes of 2008	SB 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires MPOs to adopt a SCS or Alternative Planning Strategy (APS), which will prescribe land use allocation in that MPO's RTP. CARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light-duty trucks in the region for the years 2020 and 2035. These reduction targets will be updated every 8 years, but can be updated every 4 years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012. This bill also extends the minimum time period for the Regional Housing Needs Allocation (RHNA) cycle from 5 years to 8 years for local governments located within an MPO that meets certain requirements. City or county land use policies (including general plans) are not required to be consistent with the RTP (and associated SCS or APS); however, provisions of SB 375 would incent qualified projects that are consistent with an approved SCS

Table 10: Applicable Laws and Regulations for Greenhouse Gases	
Regulation	**Description**
	or APS, categorized as “transit priority projects,” by allowing projects to be streamlined under CEQA.
EO S-3-05	EO S-3-05, which was signed by former Governor Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra’s snowpack, further exacerbate California’s air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total GHG emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050. The Executive Order directed the Secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. The Secretary will also submit biannual reports to the governor and state legislature describing: progress made toward reaching the emission targets, impacts of global warming on California’s resources, and mitigation and adaptation plans to combat these impacts. To comply with the Executive Order, the Secretary of the CalEPA created the Climate Action Team (CAT) made up of members from various state agencies and commission. CAT released its first report in March 2006. The report proposed to achieve the targets by building on voluntary actions of California businesses, local government, and community actions, as well as through state incentive and regulatory programs.
EO B-30-15	EO B-30-15 established a California GHG reduction target of 40 percent below 1990 levels by 2030. To accomplish this goal, State agencies are directed to take measures consistent with their existing authority to reduce GHG emissions. In addition, CARB will initiate a public process in the summer of 2015 and work closely with other state agencies to update the State’s climate change Scoping Plan. The updated Scoping Plan will provide a framework for achieving the 2030 target and will be completed and adopted by CARB in 2016. Concurrent planning efforts related to energy efficiency in existing buildings (AB 758), short-lived climate pollutants (SLCPs), sustainable freight, Greenhouse Gas Reduction Fund Investments, forest health, and others will be coordinated with, and feed into, the updated Scoping Plan.
Senate Bill 350, Clean Energy and Pollution Reduction	The Clean Energy and Pollution Reduction Act of 2015 (De León, Chapter 547, Statutes of 2015) requires the amount of electricity generated and sold to retail customers per year from eligible

Table 10: Applicable Laws and Regulations for Greenhouse Gases	
Regulation	**Description**
Act of 2015, Statues of 2015	renewable energy resources be increased to 50 percent by December 31, 2030. This act also requires doubling of the energy efficiency savings in electricity and natural gas for retail customers, through energy efficiency and conservation, by December 31, 2030.
SB 605, SLCPs	SB 605 directs CARB to complete a comprehensive strategy to reduce emissions of SLCPs in the state through the following actions: (1) Complete an inventory of sources and emissions of SLCPs in the state based on available data. (2) Identify research needs to address any data gaps. (3) Identify existing and potential new control measures to reduce emissions. (4) Prioritize the development of new measures for SLCPs that offer co-benefits by improving water quality or reducing other air pollutants that impact community health and benefit disadvantaged communities, as identified pursuant to Section 39711. (5) Coordinate with other state agencies and districts to develop measures identified as part of the comprehensive strategy.
AB 1493, Statutes of 2002	In September 2004, CARB approved regulations to reduce GHG emissions from new motor vehicles. The Board took this action pursuant to Chapter 200, Statutes of 2002 (AB 1493, Pavley) which directed the Board to adopt regulations that achieve the maximum feasible and cost effective reduction in GHG emissions from motor vehicles. The regulations, which took effect in 2006 following an opportunity for legislative review, apply to new passenger vehicles and light-duty trucks beginning with the 2009 model year.
EO S-1-07	EO S-1-07, which was signed by former Governor Schwarzenegger in 2007, proclaims that the transportation sector is the main source of GHG emissions in California, at over 40 percent of statewide emissions. It establishes a goal that the carbon intensity of transportation fuels sold in California should be reduced by a minimum of 10 percent by 2020. This order also directed CARB to determine if this LCFS could be adopted as a discrete early action measure after meeting the mandates in AB 32. CARB adopted the LCFS on April 23, 2009.
SB 1368, Statutes of 2006	SB 1368 is the companion bill of AB 32 and was signed by former Governor Schwarzenegger in September 2006. SB 1368 requires

Table 10: Applicable Laws and Regulations for Greenhouse Gases	
Regulation	**Description**
	CPUC to establish a GHG emission performance standard for baseload generation from investor owned utilities by February 1, 2007. CEC must establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural gas fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by CPUC and CEC.
SB 1078, Statutes of 2002, SB 107, Statutes of 2006, and SBx1 2	SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In 2010, SBx1 2 was chaptered, which expanded the State's RPS to 33 percent renewable power by 2020.
SB 97, Statutes of 2007	As directed by SB 97, CNRA adopted Amendments to the CEQA Guidelines for GHG emissions on December 30, 2009. On February 16, 2010, the Office of Administrative Law approved the Amendments, and filed them with the Secretary of State for inclusion in the CCR. The Amendments became effective on March 18, 2010.
EO S-13-08	Sea level rise is a foreseeable indirect environmental impact associated with climate change, largely attributable to thermal expansion of the oceans and melting polar ice. As discussed above in the environmental setting (subheading "Adaptation to Climate Change"), sea level rise presents impacts to California associated with coastal erosion, water supply, water quality, saline-sensitive species and habitat, land use compatibility, and flooding. Former Governor Arnold Schwarzenegger signed EO S-13-08 on November 14, 2008. This executive order directed the CNRA to develop the 2009 California Climate Adaptation Strategy (CNRA 2009), which summarizes the best-known science on climate change impacts in seven distinct sectors—public health, biodiversity and habitat, ocean and coastal resources, water management, agriculture, forest resources, and transportation and energy infrastructure—and provides recommendations on how to manage against those threats. This executive order also directed the OPR, in cooperation with CNRA, to provide land use planning guidance related to sea level rise and other climate change impacts by May 30, 2009, which is also provided in the 2009 California Climate Adaptation Strategy (CNRA 2009) and

Table 10: Applicable Laws and Regulations for Greenhouse Gases	
Regulation	**Description**
	OPR continues to further refine land use planning guidance related to climate change impacts. EO S-13-08 also directed CNRA to convene an independent panel to complete the first California Sea Level Rise Assessment Report. This report is to be completed no later than December 1, 2010. The report is intended to provide information on the following: • Relative sea level rise projections specific to California, taking into account issues such as coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, and land subsidence rates; • The range of uncertainty in selected sea level rise projections; • A synthesis of existing information on projected sea level rise impacts to state infrastructure (such as roads, public facilities, and beaches), natural areas, and coastal and marine ecosystems; and • Discussion of future research needs regarding sea level rise for California.
CARB's Landfill Methane Control Measure	The regulation requires owners and operators of certain uncontrolled municipal solid waste landfills to install gas collection and control systems, and requires existing and newly installed gas and control systems to operate in an optimal manner. The regulation allows local air districts to voluntarily enter into agreements with CARB to implement and enforce the regulation and to assess fees to cover costs. Some local air districts have also adopted rules to implement federal standards for the installation of gas collection and control systems.
AB 341, Statutes of 2011	AB 341 (Chesbro, Chapter 476, Statutes of 2011) established a State target to reduce the amount of solid waste sent to landfills by 2020 by 75 percent through recycling, composting, and source reduction practices.
AB 1826, Statutes of 2014	AB 1826 (Chesbro, Chapter 727, Statutes of 2014) requires businesses generating specified amounts of organic wastes to begin arranging for the recycling and diversion of those wastes from landfill disposal beginning in 2016.

Table 10: Applicable Laws and Regulations for Greenhouse Gases	
Regulation	**Description**
Refrigerant Management Program	CARB's Refrigerant Management Program requires facilities with refrigeration systems with more than 50 lbs of high-GWP refrigerant to: conduct and report periodic leak inspections, promptly repair leaks, and keep service records on site.
Compliance Offset Protocols under the State's Cap-and-Trade Program	Compliance Offset Protocols under the State's Cap-and-Trade Program include a livestock protocol, rice cultivation protocol, and mine methane capture protocol. The protocols provide methods to quantify, report, and credit GHG emission reductions from sectors not covered by the Cap-and-Trade Program.
AB 1257, Statutes of 2013	AB 1257 directs CEC to assemble a report by November 2015 (and every four years after), in consultation with other State agencies, to identify strategies for maximizing the benefits obtained from natural gas as an energy source.
AB 1900, Statutes of 2012	AB 1900 directed CPUC to adopt natural gas constituent standards (in consultation with CARB and the Office of Environmental Health and Hazard Assessment). The legislation is also designed to streamline and standardize customer pipeline access rules, and encourage the development of statewide policies and programs to promote all sources of biomethane production and distribution.
LCFS	The LCFS requires transportation fuel providers to procure clean fuels to reduce the carbon intensity of California's fuel mix. The LCFS provides a market signal to incentivize using captured methane as a transportation fuel, among other clean fuel options.
SB 1122, Statutes 2012	SB 1122 directed CPUC to require the State's investor-owned utilities to develop and offer 10- to 20-year market-price contracts to procure an additional 250 MW of cumulative electricity generation from biogas facilities that commence operating on or after June of 2013.

9. HAZARDS AND HAZARDOUS MATERIALS

A. Existing Conditions

California Health and Safety Code (Section 25501) defines "hazardous materials" as any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety

or to the environment if released into the workplace or the environment. Hazardous materials are grouped into four categories based on their characteristics: toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), and reactive (causes explosions or generates toxic gases). A hazardous waste is any hazardous material that is finished with its intended use and is discarded. This may include items, such as spent fuels, industrial solvents and chemicals, process water, and other spent materials (i.e., some types of batteries and fuel cells). California's hazardous waste regulations provides the following means to determine whether or not a waste is hazardous: (1) a list of criteria (toxic, ignitable, corrosive, and reactive) that a waste may exhibit; (2) a list of those wastes that are subject to regulation; and (3) a list of chemical names and common names that are presumed to be hazardous in California. The California Hazardous Waste Control Law recognizes more than 780 hazardous chemicals and nearly 30 additional common materials that may be hazardous. Naturally occurring asbestos (NOA) is also often found in a type of rock (serpentine) located in the California Coast Ranges and Sierra foothills.

B. Regulatory Setting

Applicable laws and regulations associated with hazards and hazardous materials are discussed in Table 11.

Table 11: Applicable Laws and Regulations for Hazards and Hazardous Materials

Regulations	Description
Federal	
CWA (40 CFR 112)	The 1972 amendments to the CWA provide the statutory basis for the NPDES permit program and the basic structure for regulating the discharge of pollutants from point sources to waters of the U.S. Section 402 of the CWA specifically required U.S. EPA to develop and implement the NPDES program.
The Safe Drinking Water Act (SDWA) of 1974	The SDWA is the main federal law that ensures the quality of Americans' drinking water. Under the SDWA, U.S. EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. The SDWA was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and ground water wells. The SDWA does not regulate private wells which serve fewer than 25 individuals.
Federal Hazardous Materials Regulations (FHMR) Title 49, Code of Federal	The regulations establish criteria for the safe transport of hazardous materials. Compliance is mandatory for intrastate and interstate transportation.

Table 11: Applicable Laws and Regulations for Hazards and Hazardous Materials	
Regulations	**Description**
Regulations, Parts 100-180	
Toxic Substances Control Act (TSCA) 15 USC Section 2601 et seq.	TSCA provides U.S. EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. TSCA addresses the production, importation, use, and disposal of specific chemicals including polychlorinated biphenyls (PCBs), asbestos, radon, and lead-based paint.
Resource Conservation and Recovery Act (RCRA) 42 USC Section 6901 et seq. (40 CFR)	The RCRA of 1976 gives U.S. EPA the authority to control hazardous waste from the “cradle-to-grave.” This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. The RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to the RCRA enabled U.S. EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. The Federal Hazardous and Solid Waste Amendments (HSWA) are the 1984 amendments to the RCRA that focused on waste minimization and phasing out land disposal of hazardous waste as well as corrective action for releases. Some of the other mandates of this law include increased enforcement authority for U.S. EPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program. Federal regulations adopted by U.S. EPA are found in 40 CFR.
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)	CERCLA, commonly known as Superfund, was enacted by Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA also enabled the revision of the National Contingency Plan (NCP). The NCP provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The NCP also established the National Priorities List (NPL). The Superfund Amendments and Reauthorization Act (SARA) of 1986 reauthorized CERCLA to continue cleanup activities around the country. Several site-specific amendments, definitions clarifications, and technical requirements were added to the legislation, including additional enforcement authorities. Also, Title III of SARA authorized the Emergency Planning and Community Right-to-Know Act (EPCRA).

Table 11: Applicable Laws and Regulations for Hazards and Hazardous Materials	
Regulations	**Description**
EPCRA (42 USC Section 9601 et seq.)	The SARA of 1986 created EPCRA (40 CFR Parts 350-372), also known as SARA Title III, a statute designed to improve community access to information about chemical hazards and to facilitate the development of chemical emergency response plans by state/tribe and local governments. EPCRA required the establishment of state/tribe emergency response commissions (State Emergency Response Commissions/Tribal Emergency Response Commissions [SERCs/TERCs]), responsible for coordinating certain emergency response activities and for appointing local emergency planning committees.
State	
Hazardous Materials Transportation California Vehicle Code Sections 31301-31309	Regulations pertaining to the safe transport of hazardous materials are in California Vehicle Code Sections 31301-31309. All motor carriers and drivers involved in transportation of hazardous materials must comply with the requirements contained in federal and State regulations, and must apply for and obtain a hazardous materials transportation license from the California Highway Patrol. A driver is required to obtain a hazardous materials endorsement issued by the driver's country or state of domicile to operate any commercial vehicle carrying hazardous materials. The driver is required to display placards or markings while hauling hazardous waste, unless the driver is exempt from the endorsement requirements. A driver who is a California resident is required to obtain an endorsement from the California Highway Patrol.
Hazardous Waste Control Law California Health & Safety Code, Division 20, Chapter 6.5, 22 CCR, Division 4.5	California requirements and statutory responsibilities in managing hazardous waste in California – this includes the generation, transportation, storage, treatment, recycling, and disposal of hazardous waste. The statute and regulation are implemented by CalEPA Department of Toxic Substances Control (DTSC).
California Accidental Release Prevention (CalARP) Program 19 CCR Division 2, Chapter 4.5, Sections 2735-2785	The purpose of the CalARP program is to prevent accidental releases of substances that can cause serious harm to the public and the environment, to minimize the damage if releases do occur, and to satisfy community right-to-know laws. This is accomplished by requiring businesses that handle more than a threshold quantity of a regulated substance listed in the regulations to develop a Risk Management Plan (RMP). An RMP is a detailed engineering analysis of the potential accident

Table 11: Applicable Laws and Regulations for Hazards and Hazardous Materials	
Regulations	**Description**
	factors present at a business and the mitigation measures that can be implemented to reduce this accident potential.
Hazardous Material Business Plan & Area Plan Program Health and Safety Code Sections 25500 – 25520 19 CCR, Division 2, Chapter 4, Article 3 & 4	The business and area plans program, relating to the handling and release or threatened release of hazardous materials, was established in California to protect the public health and safety and the environment. Basic information on the location, type, quantity, and the health risks of hazardous materials handled, used, stored, or disposed of in the state, which could be accidently released into the environment, is now available to firefighters, health officials, planners, public safety officers, health care providers, regulatory agencies, and other interested persons. The information provided by business and area plans is necessary in order to prevent or mitigate the damage to the health and safety of persons and the environment from the release or threatened release of hazardous materials into the workplace and environment. Certified Unified Program Agencies (CUPAs) use information collected from the Business Plan and CalARP programs to identify hazardous materials in their communities. This information provides the basis for the Area Plan and is used to determine the appropriate level of emergency planning necessary to respond to a release.
Unified Program Administration Health and Safety Code, Chapter 6.11, Sections 25404-25404.8 27 CCR, Division 1, Subdivision 4, Chapter 1, Sections 15100-15620	A CUPA, which is authorized by the Secretary of CalEPA to carry out several of the hazardous waste/hazardous materials regulatory programs administered by the State in a coordinated and consistent manner. The six hazardous waste and materials program elements covered by the CUPA include: 1) Hazardous Waste Generators 2) Underground Tanks 3) Above Ground Tanks 4) Accidental Release Program 5) Hazardous Material Release Response Plans & Spill Notification 6) Hazardous Materials Management Plans & Inventory Reporting The intent of the CUPA is to simplify the hazardous materials regulatory environment and provide a single point of contact for businesses to address inspection, permitting, billing, and enforcement issues.
Fuels and Fuel Additive Program (40 CFR 79)	U.S. EPA regulates diesel fuels under two programs; one is administered under the Office of Pollution Prevention and Toxic Substances (OPPTS) and the other is administered under the Transportation and Air Quality group. The OPPTS requires that

Table 11: Applicable Laws and Regulations for Hazards and Hazardous Materials	
Regulations	**Description**
	all chemicals produced in the U.S. are registered with the TSCA. The Transportation and Air Quality group requires that any fuels sold for ground transportation purposes must be registered with U.S. EPA and the volumes reported on a quarterly basis.
Local	
Various Local Ordinances	Various ordinances and codes may be adopted at the local level to provide stricter requirements in the management of hazardous materials and waste activities within the jurisdiction.

10. HYDROLOGY AND WATER QUALITY

A. Existing Conditions

1. Surface Waters

Surface waters occur as streams, lakes, ponds, coastal waters, lagoons, estuaries, floodplains, dry lakes, desert washes, wetlands, and other collection sites. Water bodies modified or developed by man, including reservoirs and aqueducts, are also considered surface waters. Surface water resources are very diverse throughout the state, due to the high variance in tectonics, topography, geology/soils, climate, precipitation, and hydrologic conditions. Overall, California has the most diverse range of watershed conditions in the U.S., with varied climatic regimes ranging from Mediterranean climates with temperate rainforests in the north coast region to desert climates containing dry desert washes and dry lakes in the southern central region.

The average annual runoff for the State is 71 million acre-feet (DWR 2003). The state has more than 60 major stream drainages and more than 1,000 smaller, but significant drainages that drain coastal mountains and inland mountainous areas. High snowpack levels and resultant spring snowmelt yield high surface runoff and peak discharge in the Sierra Nevada and Cascade Mountains that feeds surface flows, fills reservoirs, and recharges groundwater. Federal, State, and local engineered water projects, aqueducts, canals, and reservoirs serve as the primary conduits of surface water sources to areas that have limited surface water resources. Most of the surface water storage is transported for agricultural, urban, and rural residential needs to the San Francisco Bay Area and to cities and areas extending to southern coastal California. Surface water is also transported to southern inland areas, including Owens Valley, Imperial Valley, and Central Valley areas.

2. Groundwater

The majority of runoff from snowmelt and rainfall flows down mountain streams into low gradient valleys and either percolates into the ground or is discharged to the sea. This percolating flow is stored in alluvial groundwater basins that cover approximately 40 percent of the geographic extent of the state (DWR 2003). Groundwater recharge occurs more readily in areas underlain by coarse sediments, primarily in mountain base alluvial fan settings. As a result, the majority of California’s groundwater basins are located in broad alluvial valleys flanking mountain ranges, such as the Cascade Range, Coast Ranges, Transverse Ranges, and the Sierra Nevada.

There are 250 major groundwater basins that serve approximately 30 percent of California’s urban, agricultural, and industrial water needs, especially in southern portion of San Francisco Bay, the Central Valley, greater Los Angeles area, and inland desert areas where surface water is limited. On average, more than 15 million acre-feet of groundwater is extracted each year in the State, of which more than 50 percent is extracted from 36 groundwater basins in the Central Valley.

3. Water Quality

Land uses have a great effect on surface water and groundwater water quality in the State of California. Water quality degradation of surface waters occurs through nonpoint- and point-source discharges of pollutants. Nonpoint-source pollution is defined as not having a discrete or discernible source and is generated from land runoff, precipitation, atmospheric deposition, seepage, and/or hydrologic modification (U.S. EPA 1993). Nonpoint-source pollution includes runoff containing pesticides, insecticides, and herbicides from agricultural areas and residential areas; acid drainage from inactive mines; bacteria and nutrients from septic systems and livestock; volatile organic compounds (VOCs) and toxic chemicals from urban runoff and industrial discharges; sediment from timber harvesting, poor road construction, improperly managed construction sites, and agricultural areas; and atmospheric deposition and hydromodification. In comparison, point-source pollution is generated from identifiable, confined, and discrete sources, such as a smokestack, sewer, pipe or culvert, or ditch. These pollutant sources are regulated by U.S. EPA and the State Water Resources Control Board (SWRCB) through RWQCBs. Many of the pollutants discharged from point-sources are the same as for nonpoint-sources, including municipal (bacteria and nutrients), agricultural (pesticides, herbicides, and insecticides), and industrial pollutants (VOCs and other toxic effluent).

B. Regulatory Setting

Applicable laws and regulations associated with hydrology, water quality, and water supply are discussed in Table 12.

Table 12: Applicable Laws and Regulations for Hydrology, Water Quality, and Water Supply

Regulation	Description
Federal	
National Flood Insurance Program (NFIP)	Designated floodplain mapping program, flooding and flood hazard reduction implementation, and federal subsidized flood insurance for residential and commercial property are components of the NFIP which is administered by the Federal Emergency Management Agency (FEMA).
EO 11988	Requires actions to be taken for federal activities to reduce the risks of flood losses, restore and preserve floodplains, and minimize flooding impacts to human health and safety.
CWA	Administered primarily by the EPA. Pertains to water quality standards, state responsibilities, and discharges of waste to waters of the U.S. Sections 303, 401, 402, and 404.
CWA Section 303	Defines water quality standards consisting of: 1) designated beneficial uses of a water, 2) the water quality criteria (or “objectives” in California) necessary to support the uses, and 3) an antidegradation policy that protects existing uses and high water quality. Section 303(d) requires states to identify water quality impairments where conventional control methods

Table 12: Applicable Laws and Regulations for Hydrology, Water Quality, and Water Supply	
Regulation	**Description**
	will not achieve compliance with the standards, and establish Total Maximum Daily Load (TMDL) programs to achieve compliance.
CWA Section 401	State certification system for federal actions which may impose conditions on a project to ensure compliance with water quality standards.
CWA Section 402	Section 402 mandates permits for municipal stormwater discharges, which are regulated under the NPDES General Permit for Municipal Separate Storm Sewer Systems (MS4) (MS4 Permit). Several of the cities and counties issue their own NPDES municipal stormwater permits for the regulations of stormwater discharges. These permits require that controls are implemented to reduce the discharge of pollutants in stormwater discharges to the maximum extent possible, including management practices, control techniques, system design and engineering methods, and other measures as appropriate. As part of permit compliance, these permit holders have created Stormwater Management Plans for their respective locations. These plans outline the requirements for municipal operations, industrial and commercial businesses, construction sites, and planning and land development. These requirements may include multiple measures to control pollutants in stormwater discharge. During implementation of specific projects, applicants will be required to follow the guidance contained in the Stormwater Management Plans as defined by the permit holder in that location.
CWA Section 404	Permit system for dredging or filling activity in waters of the U.S., including wetlands, and administered by USACE.
National Toxics Rule and California Toxics Rule	Applicable receiving water quality criteria promulgated by U.S. EPA for priority toxic pollutants consisting generally of trace metals, synthetic organic compounds, and pesticides.
State	
California Water Rights	The SWRCB administers review, assessment, and approval of appropriative (or priority) surface water rights permits/licenses for diversion and storage for beneficial use. Riparian water rights apply to the land and allow diversion of natural flows for beneficial uses without a permit, but users must share the resources equitably during drought. Groundwater management planning is a function of local government. Groundwater use by overlying property owners is not formally regulated, except in cases where the groundwater basin supplies are limited and uses have been adjudicated, or through appropriative procedures for groundwater transfers.

Table 12: Applicable Laws and Regulations for Hydrology, Water Quality, and Water Supply	
Regulation	**Description**
Public Trust Doctrine	Body of common law that requires the state to consider additional terms and conditions when issuing or reconsidering appropriative water rights to balance the use of the water for many beneficial uses irrespective of the water rights that have been established. Public trust resources have traditionally included navigation, commerce, and fishing, and have expanded over the years to include protection of fish and wildlife, and preservation goals for scientific study, scenic qualities, and open-space uses.
Porter-Cologne Water Quality Control Act and California Water Code (Title 23)	SWRCB is responsible for statewide water quality policy development and exercises the powers delegated to the State by the federal government under the CWA. Nine RWQCBs adopt and implement water quality control plans (Basin Plans) which designate beneficial uses of surface waters and groundwater aquifers, and establish numeric and narrative water quality objectives for beneficial use protection. RWQCBs issue waste discharge requirements for discharge activities to water and land, require monitoring and maintain reporting programs, and implement enforcement and compliance policies and procedures. Other state agencies with jurisdiction in water quality regulation in California include the Department of Public Health (drinking water regulations), Department of Pesticide Regulation, DTSC, CDFW, and the Office of Environmental Health and Hazard Assessment (OEHHA).
Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California	Commonly referred to as the State Implementation Policy, which provides implementation procedures for discharges of toxic pollutants to receiving waters.
Thermal Plan	The Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California was adopted by SWRCB in 1972 and amended in 1975. The Thermal Plan restricts discharges of thermal waste or elevated temperature waste to waters of the state. Generally, the Thermal Plan prohibits discharges from increasing ambient temperatures by more than 1ºF over more than 25 percent of a stream cross section, increasing ambient temperatures by more than 4ºF in any location, and prohibits discharge of waste that exceeds more than 20ºF above the ambient temperature.

Table 12: Applicable Laws and Regulations for Hydrology, Water Quality, and Water Supply	
Regulation	**Description**
Statewide NPDES General Permit for Stormwater Associated with Land Disturbance and Construction Activity (Order No. 2009-0009-DWQ, NPDES No. CAR000002)	NPDES permit for stormwater and non-storm discharges from construction activity that disturbs greater than 1 acre. The general construction permit requires the preparation of a SWPPP that identifies Best Management Practices (BMPs) to be implemented to control pollution of storm water runoff. The permit specifies minimum construction BMPs based on a risk-level determination of the potential of the project site to contribute to erosion and sediment transport and sensitivity of receiving waters to sediment. While small amounts of construction-related dewatering are covered under the General Construction Permit, the RWQCB has also adopted a General Order for Dewatering and Other Low Threat Discharges to Surface Waters (General Dewatering Permit). This permit applies to various categories of dewatering activities and may apply to some construction sites, if construction of specific projects required dewatering in greater quantities than that allowed by the General Construction Permit and discharged the effluent to surface waters. The General Dewatering Permit contains waste discharge limitations and prohibitions similar to those in the General Construction Permit.
Statewide NPDES General Permit for Discharges of Stormwater Associated with Industrial Facilities (Order No. 97-003-DWQ, NPDES No. CAS000001)	NPDES permit for stormwater and non-storm discharges from types of industrial sites based on the Standard Industrial Classification. The general industrial permit requires the preparation of a SWPPP that identifies potential onsite pollutants, BMPs to be implemented, and inspection/monitoring.
SB 1168, Statutes of 2014	SB 1168 requires all groundwater basins designated as high- or medium-priority basins by DWR that are designated as basins subject to critical conditions of overdraft to be managed under a groundwater sustainability plan or coordinated groundwater sustainability plans by January 31, 2020, and requires all other groundwater basins designated as high- or medium-priority basins to be managed under a groundwater sustainability plan or coordinated groundwater sustainability plans by January 31, 2022. This bill would require a groundwater sustainability plan to be developed and implemented to meet the sustainability goal, established as prescribed, and would require the plan to include prescribed components.
AB 1739, Statutes of 2014	AB 1739 establishes groundwater reporting requirements for a person extracting groundwater in an area within a basin that is

Table 12: Applicable Laws and Regulations for Hydrology, Water Quality, and Water Supply	
Regulation	**Description**
	not within the management area of a groundwater sustainability agency or a probationary basin. The bill requires the reports to be submitted to SWRCB or, in certain areas, to an entity designated as a local agency by SWRCB.
SB 1319, Statutes of 2014	SB 1319 allows SWRCB to designate a groundwater basin as a probationary basin subject to sustainable groundwater management requirements. This bill also authorizes SWRCB to develop an interim management plan in consultation with the DWR under specified conditions.
Local	
Water Agencies	Water agencies enter into contracts or agreements with the federal and state governments to protect the water supply and to ensure the lands within the agency have a dependable supply of suitable quality water to meet present and future needs.
Floodplain Management	General plans guide county land use decisions, and require the identification of water resource protection goals, objectives, and policies. Floodplain management is addressed through ordinances, land use planning, and development design review and approval. Local actions may be coordinated with FEMA for the NFIP. Typical provisions address floodplain use restrictions, flood protection requirements, allowable alteration of floodplains and stream channels, control of fill and grading activities in floodplains, and prevention of flood diversions where flows would increase flood hazards in other areas.
Drainage, Grading, and Erosion Control Ordinances	Counties regulate building activity under the federal Uniform Building Code, local ordinances, and related development design review, approval, and permitting. Local ordinances are common for water quality protection addressing drainage, stormwater management, land grading, and erosion and sedimentation control.
Environmental Health	RWQCBs generally delegate permit authority to county health departments to regulate the construction and operation/maintenance of on-site sewage disposal systems (e.g., septic systems and leach fields, cesspools).

11. LAND USE AND PLANNING

A. Existing Conditions

In California, the State Planning and Zoning Law (California Government Code section 65000 et seq.) provides the primary legal framework that cities and counties must follow in land use planning and controls. Planned land uses are designated in the city or county general plan, which serves as the comprehensive master plan for the community. Also, city and county land use and other related resource policies are defined in the General Plan. The primary land use regulatory tool provided by the California Planning and Zoning Law is the zoning ordinance adopted by each city and county. Planning and Zoning Law requirements are discussed in the regulatory setting below.

When approving land use development, cities and counties must comply with CEQA, which requires that they consider the significant environmental impacts of their actions and the adoption of all feasible mitigation measures to substantially reduce significant impacts, in the event a project causes significant or potentially significant effects on the environment. In some cases, building permits may be ministerial, and therefore exempt from CEQA, but most land use development approval actions by cities and counties require CEQA compliance.

Land use decisions in California are also be governed by state agencies such as the California Coastal Commission, California State Lands Commission, California Department of Parks and Recreation, and others, where the state has land ownership or permitting authority with respect to natural resources or other state interests.

1. RTP/SCSs

MPOs representing local and regional urban entities were established following the passage of the Federal-Aid Highway Act of 1956. The Act created the requirement for MPOs to develop RTPs to demonstrate a regional blueprint for transportation planning. In 2008, SB 375 was passed in California as a means to contribute to the goals of AB 32. To reduce VMT-related emissions of GHGs from the automobile and light-duty truck sector, SB 375 established a State requirement for federally prepared RTPs to include SCSs. CARB, the agency charged with developing reduction goals for each MPO, released the first round of targets in 2010. RTP/SCSs prepared pursuant to SB 375 contain an array of GHG-reducing land use, transportation, and housing measures to meet the targets set forth by CARB.

Examples of land use strategies include focusing urban development within the sphere of influence (SOI) through infill, multi-use, high-density residential, and transportation oriented development (TOD). MPOs develop RTP/SCSs through coordination with local jurisdictions and public outreach and input. Following the adoption of an RTP/SCS, local land use agencies have the responsibility to apply land use strategies contained in the plan; however, MPOs may direct compliance with an RTP/SCS through the allocation of federal and State transportation funding. RTP/SCSs must be updated every four years.

B. Regulatory Setting

Applicable laws and regulations associated with land use and planning are discussed in Table 13.

Table 13: Applicable Laws and Regulations for Land Use and Planning	
Regulation	**Description**
Federal	
FLPMA	FLPMA is the principal law governing how the BLM manages public lands. FLPMA requires the BLM to manage public land resources for multiple use and sustained yield for both present and future generations. Under FLPMA, the BLM is authorized to grant rights-of-ways for generation, transmission, and distribution of electrical energy. Although local agencies do not have jurisdiction over the federal lands managed by BLM, under FLPMA and the BLM regulations at 43 CFR Part 1600, BLM must coordinate its planning efforts with state and local planning initiatives. FLPMA defines an Area of Critical Environmental Concern (ACEC) as an area within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards. BLM identifies, evaluates, and designates ACECs through its resource management planning process. Allowable management practices and uses, mitigation, and use limitations, if any, are described in the planning document and the concurrent or subsequent ACEC Management Plan. ACECs are considered land use authorization avoidance areas because they are known to contain resource values that could result in denial of applications for land uses that cannot be designed to be compatible with management objectives and prescriptions for the ACEC.
BLM Resource Management Plans	Established by FLPMA, Resource Management Plans are designed to protect present and future land uses and to identify management practices needed to achieve desired conditions within the management area covered by the Resource Management Plans. Management direction is set forth in the Resource Management Plans in the form of goals, objectives, standards, and guidelines. These, in turn, direct management actions, activities, and uses that affect land management, and water, recreation, visual, natural, and cultural resources.
NFMA	NFMA is the primary statute governing the administration of national forests. The act requires the Secretary of Agriculture to

Table 13: Applicable Laws and Regulations for Land Use and Planning	
Regulation	**Description**
	assess forest lands, develop a management program based on multiple-use, sustained-yield principles, and implement a resource management plan for each unit of the National Forest System. Goal 4 of the USFS's National Strategic Plan for the National Forests states that the nation's forests and grasslands play a significant role in meeting America's need for producing and transmitting energy. Unless otherwise restricted, National Forest Service lands are available for energy exploration, development, and infrastructure (e.g., well sites, pipelines, and transmission lines). However, the emphasis on non-recreational special uses, such as utility corridors, is to authorize the special uses only when they cannot be reasonably accommodated on non-National Forest Service lands.
State	
State Planning and Zoning Law	California Government Code section 65300 et seq. establishes the obligation of cities and counties to adopt and implement general plans. The general plan is a comprehensive, long-term, and general document that describes plans for the physical development of the city or county. The general plan addresses a broad range of topics, including, at a minimum, land use, circulation, housing, conservation, open space, noise, and safety. In addressing these topics, the general plan identifies the goals, objectives, policies, principles, standards, and plan proposals that support the city or county's vision for the area. The general plan is also a long-range document that typically addresses the physical character of an area over a 20-year period. Although the general plan serves as a blueprint for future development and identifies the overall vision for the planning area, it remains general enough to allow for flexibility in the approach taken to achieve the plan's goals.
Subdivision Map Act (Government Code section 66410 et seq.)	In general, land cannot be divided in California without local government approval. The primary goals of the Subdivision Map Act are: (a) to encourage orderly community development by providing for the regulation and control of the design and improvements of the subdivision with a proper consideration of its relation to adjoining areas; (b) to ensure that the areas within the subdivision that are dedicated for public purposes will be properly improved by the subdivider so that they will not become an undue burden on the community; and (c) to protect the public and individual transferees from fraud and exploitation. (61 Ops. Cal.Atty. Gen. 299, 301 [1978]; 77 Ops. Cal.Atty. Gen. 185 [1994]). Dividing land for sale, lease or financing is regulated by local ordinances based on the state Subdivision Map Act (Government Code section 66410 et seq.).

Table 13: Applicable Laws and Regulations for Land Use and Planning	
Regulation	**Description**
SB 375	SB 375 augments the existing federal requirement for MPOs to develop RTPs for their respective regions. Under SB 375, MPOs must prepare an SCS to supplement their RTPs. RTP/SCSs contain land use strategies to reduce VMT-related emissions of GHGs. Following the adoption of an RTP/SCSs, land use strategies must be implemented at the local level by land use agencies.
Local	
General Plans	The most comprehensive land use planning is provided by city and county general plans, which local governments are required by State law to prepare as a guide for future development. The general plan contains goals and policies concerning topics that are mandated by State law or which the jurisdiction has chosen to include. Required topics are: land use, circulation, housing, conservation, open space, noise, and safety. Other topics that local governments frequently choose to address are public facilities, parks and recreation, community design, or growth management, among others. City and county general plans must be consistent with each other. County general plans must cover areas not included by city general plans (i.e., unincorporated areas).
Specific and Community Plans	A city or county may also provide land use planning by developing community or specific plans for smaller, more specific areas within their jurisdiction. These more localized plans provide for focused guidance for developing a specific area, with development standards tailored to the area, as well as systematic implementation of the general plan. Specific and community plans are required to be consistent with the city or county's general plan.
Zoning	The city or county zoning code is the set of detailed requirements that implement the general plan policies at the level of the individual parcel. The zoning code presents standards for different uses and identifies which uses are allowed in the various zoning districts of the jurisdiction. Since 1971, state law has required the city or county zoning code to be consistent with the jurisdiction's general plan, except in charter cities.
CEQA Guidelines 15332	CEQA guidelines 15332 provides for certain types of infill projects that may be determined to be categorically exempt from CEQA review by local lead agencies. Infill projects that may be exempt from environmental review under this class of categorical exemption must: be consistent with the applicable general plan and zoning designations; be within city limits and on a parcel no greater than five acres; not contain valuable

Table 13: Applicable Laws and Regulations for Land Use and Planning	
Regulation	**Description**
	habitat for any federal or state listed species; not contribute to any significant effects to traffic, noise, or air and water quality; and be adequately served by existing utilities and public services.

12. MINERAL RESOURCES

A. Existing Conditions

The CGS classifies the regional significance of mineral resources in accordance with the California Surface Mining and Reclamation Act of 1975 and assists in the designation of land containing significant aggregate resources. Mineral Resources Zones (MRZs) have been designated to indicate the significance of mineral deposits. The MRZ categories follow:

MRZ-1: Areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence.

MRZ-2: Areas where adequate information indicates significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.

MRZ-3: Areas containing mineral deposits the significance of which cannot be evaluated from available data.

MRZ-4: Areas where available information is inadequate for assignment to any other MRZ.

California ranks as 7th in the U.S. for non-fuel mineral production, accounting for approximately 3.9 percent of the nation's total. In 2011, there were approximately 700 active mineral mines that produced: sand and gravel, boron, Portland cement, crushed stone, gold, masonry cement, clays, gemstones, gypsum, salt, silver, and other minerals (Clinkenbeard and Smith 2013).

B. Regulatory Setting

Applicable laws and regulations associated with mineral resources are discussed in Table 14.

Table 14: Applicable Laws and Regulations for Mineral Resources	
Regulation	**Description**
Federal	
Mining and Mineral Policy Act	The Mining and Mineral Act of 1970 declared that the Federal Government policy is to encourage private enterprise in the

Table 14: Applicable Laws and Regulations for Mineral Resources	
Regulation	**Description**
	development of a sound and stable domestic mineral industry, domestic mineral deposits, minerals research, and methods for reclamation in the minerals industry.
State	
Surface Mining and Reclamation Act (SMARA)	The intent of SMARA of 1975 is to promote production and conservation of mineral resources, minimize environmental effects of mining, and to assure that mined lands will be reclaimed to conditions suitable for alternative uses. An important part of the SMARA legislation requires the State Geologist to classify land according to the presence or absence of significant mineral deposits. Local jurisdictions are given the authority to permit or restrict mining operations, adhering to the SMARA legislation. Classification of an area using MRZs to designate lands that contain mineral deposits are designed to protect mineral deposits from encroaching urbanization and land uses that are incompatible with mining. The MRZ classifications reflect varying degrees of mineral significance, determined by available knowledge of the presence or absence of mineral deposits as well as the economic potential of the deposits.
CBSC (24 CCR)	California's minimum standards for structural design and construction are given in the CBSC (24 CCR). CBSC is based on the Uniform Building Code (International Code Council 1997), which is used widely throughout the U.S. (generally adopted on a state-by-state or district-by-district basis) and has been modified for California conditions with numerous, more detailed or more stringent regulations. CBSC provides standards for various aspects of construction, including, but not limited to, excavation, grading, and earthwork construction; fills and embankments; expansive soils; foundation investigations; and liquefaction potential and soil strength loss. In accordance with California law, proponents of specific projects would be required to comply with all provisions of CBSC for certain aspects of design and construction.
Public Resources Code Sections 2762-3	Public Resources Code Section 2762 states that the general plan must establish mineral resource management policies if the State Geologist has identified resources of statewide or regional significance within the city or county. Public Resources Code Section 2763 requires that city and county land use decisions affecting areas with minerals of regional or statewide significance be consistent with mineral

Table 14: Applicable Laws and Regulations for Mineral Resources	
Regulation	**Description**
	resource management policies in the general plan, including protection of known mineral resources.
Local	
Local Grading and Erosion Control Ordinances	Many counties and cities have grading and erosion control ordinances. These ordinances are intended to control erosion and sedimentation caused by construction activities. A grading permit is typically required for construction-related projects. As part of the permit, project applicants usually must submit a grading and erosion control plan, vicinity and site maps, and other supplemental information. Standard conditions in the grading permit include a description of BMPs similar to those contained in a SWPPP.
City/County General Plans	Most city and county general plans have an element that addresses management of mineral resources within that jurisdiction, in conformance with SMARA and Sections 2762-3 of the Public Resources Code.

13. NOISE

A. Existing Conditions

Acoustics is the scientific study that evaluates perception, propagation, absorption, and reflection of sound waves. Sound is a mechanical form of radiant energy, transmitted by a pressure wave through a solid, liquid, or gaseous medium. Sound that is loud, disagreeable, unexpected, or unwanted is generally defined as noise. Common sources of environmental noise and noise levels measured in A-weighted decibels (dBA) are presented in Table 15.

Table 15: Typical Noise Levels		
Common Outdoor Activities	**Noise Level (dBA)**	**Common Indoor Activities**
	110	Rock band
Jet flyover at 1,000 ft	100	--
Gas lawnmower at 3 ft	90	--
Diesel truck moving at 50 mph at 50 ft	80	Food blender at 3 ft, Garbage disposal at 3 ft
Noisy urban area, Gas lawnmower at 100 ft	70	Vacuum cleaner at 10 ft, Normal speech at 3 ft
Commercial area, Heavy traffic at 300 ft	60	

Table 15: Typical Noise Levels		
Common Outdoor Activities	**Noise Level (dBA)**	**Common Indoor Activities**
Quiet urban daytime	50	Large business office, Dishwasher in next room
Quiet urban nighttime	40	Theater, Large conference room (background)
Quiet suburban nighttime	30	Library, Bedroom at night, Concert hall (background)
Quiet rural nighttime	20	Broadcast/Recording Studio
	10	--
Threshold of Human Hearing	0	Threshold of Human Hearing
Notes: dBA=A-weighted decibels; ft=feet, mph=miles per hour Source: Caltrans 2009: p.2-21		

1. Sound Properties

A sound wave is initiated in a medium by a vibrating object (e.g., vocal chords, the string of a guitar, the diaphragm of a radio speaker). The wave consists of minute variations in pressure, oscillating above and below the ambient atmospheric pressure. The number of pressure variation cycles occurring per second is referred to as the frequency of the sound wave and is expressed in hertz.

Directly measuring sound pressure fluctuations would require the use of a very large and cumbersome range of numbers. To avoid this and have a more useable numbering system, the decibel (dB) scale was introduced. A sound level expressed in decibels is the logarithmic ratio of two like pressure quantities, with one pressure quantity being a reference sound pressure. For sound pressure in air, the standard reference quantity is generally considered to be 20 micropascals, which directly corresponds to the threshold of human hearing. The use of the dB is a convenient way to handle the million-fold range of sound pressures to which the human ear is sensitive. A dB is logarithmic; it does not follow normal algebraic methods and cannot be directly summed. For example, a 65-dB source of sound, such as a truck, when joined by another 65-dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). A sound level increase of 10 dB corresponds to 10 times the acoustical energy, and an increase of 20 dB equates to a 100-fold increase in acoustical energy.

The loudness of sound perceived by the human ear depends primarily on the overall sound pressure level and frequency content of the sound source. The human ear is not equally sensitive to loudness at all frequencies in the audible spectrum. To better relate overall sound levels and loudness to human perception, frequency-dependent weighting networks were developed. The standard weighting networks are identified as A through

E. There is a strong correlation between the way humans perceive sound and dBA. For this reason, the dBA can be used to predict community response to noise from the environment, including noise from transportation and stationary sources. Sound levels expressed as dB in this section are dBA, unless noted otherwise.

Noise can be generated by a number of sources, including mobile sources (i.e., transportation) such as automobiles, trucks, and airplanes and stationary sources (i.e., non-transportation) such as construction sites, machinery, and commercial and industrial operations. As acoustic energy spreads through the atmosphere from the source to the receiver, noise levels attenuate (i.e., decrease) depending on ground absorption characteristics, atmospheric conditions, and the presence of physical barriers. Noise generated from mobile sources generally attenuate at a rate of 4.5 dB per doubling of distance. Stationary noise sources spread with more spherical dispersion patterns that attenuate at a rate of 6 to 7.5 dB per doubling of distance.

Atmospheric conditions such as wind speed, turbulence, temperature gradients, and humidity may additionally alter the propagation of noise and affect levels at a receiver. Furthermore, the presence of a large object (e.g., barrier, topographic features, and intervening building façades) between the source and the receptor can provide significant attenuation of noise levels at the receiver. The amount of noise level reduction (i.e., shielding) provided by a barrier primarily depends on the size of the barrier, the location of the barrier in relation to the source and receivers, and the frequency spectra of the noise. Natural (e.g., berms, hills, and dense vegetation) and human-made features (e.g., buildings and walls) may be used as noise barriers.

All buildings provide some exterior-to-interior noise reduction. A building constructed with a wood frame and a stucco or wood sheathing exterior typically provides a minimum exterior-to-interior noise reduction of 25 dB with its windows closed, whereas a building constructed of a steel or concrete frame, a curtain wall or masonry exterior wall, and fixed plate glass windows of one-quarter-inch thickness typically provides an exterior-to-interior noise reduction of 30–40 dB with its windows closed (Paul S. Veneklasen & Associates 1973, cited in Caltrans 2002: pp. 7-37).

2. Common Noise Descriptors

The intensity of environmental noise fluctuates over time, and several different descriptors of time-averaged noise levels are used. The selection of a proper noise descriptor for a specific source depends on the spatial and temporal distribution, duration, and fluctuation of both the noise source and the environment. The noise descriptors most often in relation to the environment are defined below (Caltrans 2009).

Equivalent Noise Level (L_{eq}): The equivalent steady-state noise level in a stated period of time that would contain the same acoustic energy as the time-varying noise level during the same period (i.e., average noise level).

Maximum Noise Level (L_{max}): The highest instantaneous noise level during a specified time period.

Minimum Noise Level (L_{min}): The lowest instantaneous noise level during a specified time period.

Day-Night Noise Level (L_{dn}): The 24-hour L_{eq} with a 10-dB penalty applied during the noise-sensitive hours from 10 p.m. to 7 a.m., which are typically reserved for sleeping.

Community Noise Equivalent Level (CNEL): Similar to the L_{dn} described above with an additional 5-dB penalty applied during the noise-sensitive hours from 7 p.m. to 10 p.m., which are typically reserved for relaxation, conversation, reading, and watching television.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the L_{eq} descriptor listed above, which corresponds to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptors such as L_{dn} and CNEL, as defined above, and shows very good correlation with community response to noise.

3. Effects of Noise on Humans

Excessive and chronic exposure to elevated noise levels can result in auditory and non-auditory effects on humans. Auditory effects of noise on people are those related to temporary or permanent hearing loss caused by loud noises. Non-auditory effects of exposure to elevated noise levels are those related to behavioral and physiological effects. The non-auditory behavioral effects of noise on humans are associated primarily with the subjective effects of annoyance, nuisance, and dissatisfaction, which lead to interference with activities such as communications, sleep, and learning. The non-auditory physiological health effects of noise on humans have been the subject of considerable research attempting to discover correlations between exposure to elevated noise levels and health problems, such as hypertension and cardiovascular disease. The mass of research infers that noise-related health issues are predominantly the result of behavioral stressors and not a direct noise-induced response. The extent to which noise contributes to non-auditory health effects remains a subject of considerable research, with no definitive conclusions.

The degree to which noise results in annoyance and interference is highly subjective and may be influenced by several non-acoustic factors. The number and effect of these non-acoustic environmental and physical factors vary depending on individual characteristics of the noise environment such as sensitivity, level of activity, location, time of day, and length of exposure. One key aspect in the prediction of human response to new noise environments is the individual level of adaptation to an existing noise environment. The greater the change in the noise levels that are attributed to a new noise source, relative to the environment an individual has become accustom to, the less tolerable the new noise source will be perceived.

With respect to how humans perceive and react to changes in noise levels, a 1-dB increase is imperceptible, a 3-dB increase is barely perceptible, a 6-dB increase is clearly noticeable, and a 10-dB increase is subjectively perceived as approximately twice as loud (Egan 2007: pp. 21). These subjective reactions to changes in noise levels was developed on the basis of test subjects' reactions to changes in the levels of steady-state pure tones or broad-band noise and to changes in levels of a given noise source. It is probably most applicable to noise levels in the range of 50 to 70 dB, as this is the usual range of voice and interior noise levels. For these reasons, a noise level increase of 3 dB or more is typically considered substantial in terms of the degradation of the existing noise environment.

Negative effects of noise exposure include physical damage to the human auditory system, interference, and disease. Exposure to noise may result in physical damage to the auditory system, which may lead to gradual or traumatic hearing loss. Gradual hearing loss is caused by sustained exposure to moderately high noise levels over a period of time; traumatic hearing loss is caused by sudden exposure to extremely high noise levels over a short period. Gradual and traumatic hearing loss both may result in permanent hearing damage. In addition, noise may interfere with or interrupt sleep, relaxation, recreation, and communication. Although most interference may be classified as annoying, the inability to hear a warning signal may be considered dangerous. Noise may also be a contributor to diseases associated with stress, such as hypertension, anxiety, and heart disease. The degree to which noise contributes to such diseases depends on the frequency, bandwidth, and level of the noise, and the exposure time (Caltrans 2009).

4. Vibration

Vibration is the periodic oscillation of a medium or object with respect to a given reference point. Sources of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, (e.g., operating factory machinery or transient in nature, explosions). Vibration levels can be depicted in terms of amplitude and frequency, relative to displacement, velocity, or acceleration.

Vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings (FTA 2006; Caltrans 2004). PPV and RMS vibration velocity are normally described in inches per second (in/sec).

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to average vibration amplitude. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a 1-second period. As with airborne sound, the RMS

velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to compress the range of numbers required to describe vibration (FTA 2006). This is based on a reference value of 1micro (μ) inch/second.

The typical background vibration-velocity level in residential areas is approximately 50 VdB. Groundborne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels (FTA 2006).

Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Construction activities could generate groundborne vibrations that potentially pose a risk to nearby structures. Constant or transient vibrations can weaken structures, crack facades, and disturb occupants (FTA 2006).

Construction vibrations can be transient, random, or continuous. Transient construction vibrations are generated by blasting, impact pile driving, and wrecking balls. Continuous vibrations result from vibratory pile drivers, large pumps, and compressors. Random vibration can result from jackhammers, pavement breakers, and heavy construction equipment. Table 16 describes the general human response to different levels of groundborne vibration-velocity levels.

Table 16: Human Response to Different Levels of Groundborne Noise and Vibration

Vibration-Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Notes: VdB = vibration decibels referenced to 1 μ inch/second and based on the root mean square (RMS) velocity amplitude.
Source: FTA 2006: p. 7-8

5. Sensitive Land Uses

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to

both interior and exterior noise levels. Additional land uses such as parks, schools, historic sites, cemeteries, and recreation areas are also generally considered sensitive to increases in exterior noise levels. Places of worship and transit lodging, and other places where low interior noise levels are essential are also considered noise-sensitive. These types of receptors are also considered vibration-sensitive land uses in addition to commercial and industrial buildings where vibration would interfere with operations within the building, including levels that may be well below those associated with human annoyance.

B. Regulatory Setting

Applicable laws and regulations associated with noise are discussed in Table 17.

Table 17: Applicable Laws and Regulations for Noise

Regulation	Description
Federal	
Federal Noise Control Act (1972) U.S. EPA (40 CFR 201-211)	This act established a requirement that all federal agencies administer their programs to promote an environment free of noise that jeopardizes public health or welfare. U.S. EPA was given the responsibility for providing information to the public regarding identifiable effects of noise on public health or welfare, publishing information on the levels of environmental noise that will protect the public health and welfare with an adequate margin of safety, coordinating federal research and activities related to noise control, and establishing federal noise emission standards for selected products distributed in interstate commerce. This act also directed that all federal agencies comply with applicable federal, state, interstate, and local noise control regulations.
Quiet Communities Act (1978)	This act promotes the development of effective state and local noise control programs, to provide funds for noise research, and to produce and disseminate educational materials to the public on the harmful effects of noise and ways to effectively control it.
14 CFR, Part 150 (FAA)	These address airport noise compatibility planning and include a system for measuring airport noise impacts and present guidelines for identifying incompatible land uses. All land uses are considered compatible with noise levels of less than 65 dBA L_{dn}. At higher noise levels, selected land uses are also deemed acceptable, depending on the nature of the use and the degree of structural noise attenuation provided.
International Standards and Recommended Practices (International Civil	This contains policies and procedures for considering environmental impacts (e.g., aircraft noise emission standards and atmospheric sound attenuation factors).

Table 17: Applicable Laws and Regulations for Noise	
Regulation	**Description**
Aviation Organization)	
32 CFR, Part 256 (Department of Defense Air Installations Compatible Use Zones [AICUZ] Program)	AICUZ plans prepared for individual airfields are primarily intended as recommendations to local communities regarding the importance of maintaining land uses which are compatible with the noise and safety impacts of military aircraft operations.
23 CFR, Part 772, FHWA standards, policies, and procedures	FHWA standards, policies, and procedures provide procedures for noise studies and noise abatement measures to help protect the public health and welfare, to supply noise abatement criteria, and to establish requirements for information to be given to local officials for use in the planning and design of highways.
29 CFR, Part 1910, Section 1910.95 (U.S. Department of Labor Occupational Safety and Health Administration [OSHA])	This regulation established a standard for noise exposure in the workplace and is enforced by OSHA.
FTA Guidance	This guidance presents procedures for predicting and assessing noise and vibration impacts of proposed mass transit projects. All types of bus and rail projects are covered. Procedures for assessing noise and vibration impacts are provided for different stages of project development, from early planning before mode and alignment have been selected through preliminary engineering and final design. Both for noise and vibration, there are three levels of analysis described. The framework acts as a screening process, reserving detailed analysis for projects with the greatest potential for impacts while allowing a simpler process for projects with little or no effects. This guidance contains noise and vibration impact criteria that are used to assess the magnitude of predicted impacts. A range of mitigation is described for dealing with adverse noise and vibration impacts.
49 CFR 210 (Federal Rail Administration [FRA] Railroad Noise Emission Compliance	This section and guidance provides criteria and procedures for use in analyzing the potential noise and vibration impacts of various types of high-speed fixed guideway transportation systems.

Table 17: Applicable Laws and Regulations for Noise	
Regulation	**Description**
Standards) and FRA Guidance (2005)	
State	
CPUC Section 21670	The State Aeronautics Act of CPUC establishes statewide requirements for airport land use compatibility planning and requires nearly every county to create an Airport Land Use Commission or other alternative.
Section 5000 et seq. (21 CCR Division 2.5, Chapter 6), California Airport Noise Regulations promulgated in accordance with the State Aeronautics Act	In Section 5006, the regulations state that: “The level of noise acceptable to a reasonable person residing in the vicinity of an airport is established as a CNEL value of 65 dBA for purposes of these regulations. This criterion level has been chosen for reasonable persons residing in urban residential areas where houses are of typical California construction and may have windows partially open. It has been selected with reference to speech, sleep, and community reaction.
24 CCR, Part 2	These establish standards governing interior noise levels that apply to all new single-family and multi-family residential units in California. These standards require that acoustical studies be performed before construction at building locations where the existing L_{dn} exceeds 60 dBA. Such acoustical studies are required to establish mitigation that will limit maximum Ldn levels to 45 dBA in any habitable room.
Local	
City/County General Plan Noise Elements	Local general plans in California must include a noise element per CA Government Code Section 65302(f). The General Plan Guidelines maintained and published by OPR provide detailed guidance to local agencies on standards and methods of analysis that should be used when developing or updating a noise element. Local governments must “analyze and quantify” noise levels and the extent of noise exposure through actual measurement or the use of noise modeling. Technical data relating to mobile and point sources must be collected and synthesized into a set of noise control policies and programs that “minimizes the exposure of community residents to excessive noise.” Noise level contours must be mapped and the conclusions of the element used as a basis for land use decisions. The noise element must include implementation measures and possible solutions to existing and foreseeable noise problems. Furthermore, the policies and standards must be sufficient to

Table 17: Applicable Laws and Regulations for Noise	
Regulation	**Description**
	serve as a guideline for compliance with sound transmission control requirements. The noise element directly correlates to the land use, circulation, and housing elements. A noise element is to be used as “a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise.” (OPR 2003)
City/County Noise Regulations	Most local governments in California maintain and enforce noise regulations contained in local codes and ordinances that apply to diverse types of activities in the community. These regulations may include noise standards that apply to construction activities associated with new development projects, as well as ongoing operational activities associated with existing or future land uses.

14. EMPLOYMENT, POPULATION, AND HOUSING

A. Existing Conditions

a) Population

The estimated population of California in 2016 was estimated to be approximately 39,226,000 (Department of Finance [DOF] 2016). Since California became a state in 1850, the population has been increasing rapidly. Within the first 150 years of California’s statehood, the population increased from fewer than 100,000 citizens to approximately 37 million in 2000 (DOF 2013). It is expected that the population of California will reach approximately 44 million in 2030 and approximately 50 million in 2050 (DOF 2013).

b) Housing

As population within the state increases, housing distribution and household conditions are expected to evolve. Estimated housing units, households, and vacancy rates for the State of California in 2013 are shown below in Table 18. Data was derived from the 2010 Census (U.S. Census Bureau 2014).

Table 18: California Housing Profile	
Housing units, 2014	13,900,766
Homeownership rate, 2009-2013	55.3 percent
Households, 2009-2013	12,542,460
Persons per Household, 2009-2013	2.94
Housing units in Multi-units structures, 2009-2013	31 percent
Source: U.S. Census Bureau 2014	

c) Employment

In mid-2015, the civilian labor force in California was approximately 19,043,000. Of this labor force, approximately 17,484,000 people were employed and 1,195,000 were considered unemployed. The number of and the unemployment rate decreased steadily decreased in 2015 from 7.0 percent in January to 6.3 percent in June (DOF 2015).

B. Regulatory Setting

See land use planning and housing-related regulations in Section 11.0, Land Use and Planning.

15. PUBLIC SERVICES

A. Existing Conditions

1. Law Enforcement

Enforcement of environmental laws in California is the responsibility of the Attorney General's Office and the CalEPA. The Attorney General represents the people of California in civil and criminal matters before trial courts, appellate courts and the supreme courts of California and the U.S. In regards to environmental issues, the Attorney General enforces laws that safeguard the environment and natural resources in the state. Recent actions by the Attorney General related to air quality and climate change issues include: legally defending the state's clean cars law against multiple challenges, filing numerous actions against the Bush Administration regarding regulation of global warming pollution, working with local governments to ensure that land use planning processes take account of global warming, promoting renewable energy and enhanced energy efficiency in California, and working with other state leaders and agencies to implement AB 32, the Global Warming Solutions Act of 2006.

CalEPA was created in 1991 by EO. CalEPA's mission is to restore, protect and enhance the environment, to ensure public health, environmental quality and economic vitality. The CalEPA is comprised of various boards, departments and offices, including: CARB, Department of Pesticide Regulation, DTSC, OEHHA, and SWRCB (including the nine RWQCBs).

California's environmental laws are enforced by State and local agencies, each charged with enforcing the laws governing a specific media such as air, water, hazardous waste, solid waste, and pesticides. Enforcement agencies for these media are as follows:

- Air: CARB (part of CalEPA) and Local Air Districts.
- Water: SWRCB (part of CalEPA), RWQCBs (part of CalEPA), local waste water officials, and the California Department of Public Health.
- Hazardous Waste: DTSC (part of CalEPA) and CUPA.
- Carcinogens/Reproductive Toxins: Prop. 65 through the OEHHA (part of CalEPA).

- Pesticides: Department of Pesticide Regulation (part of CalEPA) and County Agricultural Commissioners.

Statewide law enforcement service is provided by the California Highway Patrol, which is responsible for protecting State resources and providing crime prevention services and traffic enforcement along the State's highways and byways.

Community law enforcement service is provided by local police and sheriff agencies (i.e., cities and counties, respectively) to prevent crime, respond to emergency incidents, and provide traffic enforcement on local roadways.

2. Fire Protection and Emergency Medical Response Services

State-level fire protection and emergency response service is provided by the California Department of Forestry and Fire Protection (CAL FIRE), primarily in rural areas of the State. CAL FIRE is an emergency response and resource protection department. CAL FIRE protects lives, property and natural resources from fire, responds to emergencies of all types, and protects and preserves timberlands, wildlands, and urban forests.

Local and urban fire protection service is provided by local fire districts and/or local agencies (e.g., fire departments of cities and counties). In addition to providing fire response services most fire agencies also provide emergency medical response services (i.e., ambulance services) within their service areas.

3. Schools

Statewide, the regulation of education for youth is provided by the California Department of Education. The State Board of Education (SBE) is the governing and policy-making body of the California Department of Education. The SBE sets K-12 education policy in the areas of standards, instructional materials, assessment, and accountability. Locally, school districts are responsible for the management and development of elementary, middle, and high-school facilities.

B. Regulatory Setting

Applicable laws and regulations associated with public services are discussed in Table 19.

Table 19: Applicable Laws and Regulations for Public Services

Regulation	Description
Federal	
American with Disabilities Act	Guidelines to ensure that facilities are accessible to individuals with disabilities. Implements requirements for the design and construction of buildings.
State	

Table 19: Applicable Laws and Regulations for Public Services	
Regulation	**Description**
State Fire Responsibility Areas	Areas delineated by CAL FIRE for which the State assumes primary financial responsibility for protecting natural resources from damages of fire. Local jurisdictions are required to adopt minimum recommended requirements for road design, road identification, emergency fire suppression and fuel breaks and greenbelts. All projects within or adjacent to a State Fire Responsibility Area must meet these requirements.
State School Funding	Education Code Section 17620 authorizes school districts to levy a fee, charge, dedication, or other requirement for any development project for the construction or reconstruction of school facilities.

16. RECREATION

A. Existing Conditions

California contains 118 state parks, nine state recreation areas, eight state forests, as well as numerous reserve, wildlife areas, and fish hatcheries. General plans for State Parks, recreation areas, and beaches are publicly available. The California Outdoor Recreation Plan and associated research provide policy guidance to all public agencies – federal, State, local, and special districts that oversee outdoor recreation on lands, facilities, and services throughout California. Agencies and departments that have involvement in recreational activities include Boating and Waterways, Fish and Wildlife, Tahoe Regional Planning Association, various conservancies, and others (California State Parks [CSP] 2008).

Recreational lands and facilities are also managed by regional and local park and recreation agencies and open space districts. City and county general plans contain recreation elements that provide framework for planning agencies to consider when projects are developed and implemented.

B. Regulatory Setting

Applicable laws and regulations associated with recreation are discussed in Table 20.

Table 20: Applicable Laws and Regulations for Recreation	
Regulation	**Description**
Federal	
FLPMA, 1976 – 43 CFR 1600	Establishes public land policy; guidelines for administration; and provides for the “multiple use” management, protection, development, and enhancement of public lands. Multiple use management, defined as “management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of

Table 20: Applicable Laws and Regulations for Recreation	
Regulation	**Description**
	the American people" with recreation identified as one of the resource values.
State	
Quimby Act	The 1975 Quimby Act authorizes cities and counties to adopt ordinances requiring developers to set aside land, donate conservation easements, or pay fees for park improvements.
Local	
General Plans	General plans for cities and counties contain designations for recreational areas. These are policy documents with planned land use maps and related information that are designed to give long-range guidance to those local officials making decisions affecting the growth and resources of their jurisdictions. Because of the number and variety of general plans and related local plans, they are not listed individually.

17. TRANSPORTATION, TRAFFIC, AND SHIPPING

A. Existing Conditions

Existing roadway systems in the U.S. and California generally consist of highways, freeways, arterials, local streets, and intersections/ramps. The existing average annual daily traffic (AADT) volumes on the roadway segments that comprise these systems vary considerably (i.e., from hundreds to hundreds of thousands). The level of service (LOS), a scale used to determine the operating quality of a roadway segment or intersection based on volume-to-capacity ratio (V/C) or average delay, also vary from LOS A, the best and smoothest operating conditions, to LOS F, most congested operating conditions. Other roadway and traffic volume characteristics such as roadway length, number of lanes and facility type (e.g., two-lane freeway), right-of-way width and pavement width, terrain classification (e.g., flat), percent of heavy-duty truck traffic, and accident rates (e.g., number of accidents per million vehicle miles traveled) also vary substantially depending on the location. In addition to the roadway systems, circulation networks provide additional transportation opportunities and include mass transit, airports, and non-motorized travel (e.g., pedestrian and bicycle paths).

1. RTP/SCSs

Following the passage of the Federal-Aid Highway Act, MPOs were established as collaborative agency composed of urban regional and local entities. Under the Act, MPOs must develop comprehensive RTPs that demonstrate how federal and State transportation funding will be applied to an urban region. In 2008, the State adopted SB 375, which serves to further the State GHG reduction goals of AB 32. Pursuant to SB 375, MPOs must supplement their RTPs with SCSs that address VMT-related emissions of GHGs from the automobile and light-duty truck sector. In 2008, CARB released the first round of GHG reduction targets for each MPO. Through a collaborative process with local jurisdictions and private and public stakeholders, MPOs have developed RTP/SCSs with an amalgamation of land use, transportation, and housing strategies designed to reduce GHGs associated with VMT.

Transportation strategies to reduce VMT-related GHG emissions include allocating funding for more efficient transit and roadway systems, use of Transportation Demand Management (TDM) and Transportation Systems Management (TSM), development of clean streets, and low-emission vehicle rebate programs. MPOs can directly affect transportation-related GHG emissions through funding projects based on region-specific needs. RTP/SCSs must be updated every four years.

B. Regulatory Setting

Applicable laws and regulations associated with transportation and traffic are discussed in Table 21.

Table 21: Applicable Laws and Regulations for Transportation and Traffic

Regulation	Description
Federal	
Federal-Aid Highway Act of 1962	Signed by Dwight D. Eisenhower, the Federal-Aid Highway Act granted federal funding for a national highway network. The Act resulted in the established of MPOs made up of representatives of regional and local entities. Under the Act, MPOs must develop RTPs, which allocate federal funding for transportation projects. Pursuant to the Act, RTPs must be updated every four to five years.
40 CFR, Part 77 (FAA)	Requires a determination of no hazard to air navigation for structures that will be more than 200 feet above ground level.
State	
SB 375	SB 375 supplements the requirements under the Federal-Aid Highway Act. In addition to preparing RTPs, under SB 375, MPOs must develop SCSs that address VMT-related GHG emissions and include strategies to reduce emissions. Through the RTP/SCSs, MPOs

Table 21: Applicable Laws and Regulations for Transportation and Traffic	
Regulation	**Description**
	allocate federal and State transportation funding to local and regional projects that would reduce VMT-related emissions.
California Vehicle Code (VC) Sections 353; 2500-2505; 31303-31309; 32000-32053; 32100-32109; 31600-31620; California Health and Safety Code Section 25160 et seq.	Regulates the highway transport of hazardous materials.
VC Sections 13369; 15275 and 15278	Addresses the licensing of drivers and the classification of licenses required for the operation of particular types of vehicles and also requires certificates permitting operation of vehicles transporting hazardous materials.
VC Sections 35100 et seq.; 35250 et seq.; 35400 et seq.	Specifies limits for vehicle width, height, and length.
VC Section 35780	Requires permits for any load exceeding Caltrans weight, length, or width standards on public roadways.
California Streets and Highways Code Section 117, 660-672	Requires permits for any load exceeding Caltrans weight, length, or width standards on County roads.
California Streets and Highways Code Sections 117, 660-670, 1450, 1460 et seq., and 1480 et seq.	Regulate permits from Caltrans for any roadway encroachment from facilities that require construction, maintenance, or repairs on or across State highways and County roads.
SB 1298	Signed into law on September 25, 2012 by Governor Brown, SB 1298 establishes safety and performance standards for autonomous vehicles (AVs). The bill states that operation of an AV may only occur if a licensed driver is seated in the driver's seat in case of technology failure or other emergency. The bill also contains language that ensures that AVs meet Federal Motor Vehicle Safety Standards.
CEQA [Public Resources Code CEQA Sections 21099(b)(2) and (c)(1)]	CEQA Section 21099(b)(2) states that automobile delay, as described solely by level of service or similar measures of traffic congestion are not a significant environmental impact except in certain specified locations. Section 21099(c)(1) permits OPR to establish alternative metrics for assessing traffic impacts outside transit priority areas.
Local	

Table 21: Applicable Laws and Regulations for Transportation and Traffic	
Regulation	**Description**
City/County Local General Plan Circulation Element	Local general plans in California must include a circulation element per CA Government Code Section 65302(b) that addresses the location and extent of existing or future transportation routes, terminals, major thoroughfares, and airports and ports as they relate to the land use element of a general plan. The General Plan Guidelines maintained and published by OPR provide detailed guidance to local agencies on standards and methods of analysis that should be used when developing or updating a circulation element. Local governments must coordinate with state transportation agencies to successfully integrate land use and transportation systems. During the general plan planning process, local governments must assess existing and future levels of service and develop strategies to improve or mitigate adverse conditions within a transportation system (OPR 2003).
City/County Codes	Many local governments in California maintain and enforce local codes that apply standards to transportation facilities and services.

18. UTILITIES AND SERVICE SYSTEMS

A. Existing Conditions

a) Water Supply and Distribution

The principal water supply facilities in California are operated by the USBR and DWR. In California, the Mid-Pacific Region of the U.S. Bureau of Reclamation (USBR) is responsible for the management of the Central Valley Project (CVP). The CVP serves farms, homes, and industry in California's Central Valley as well as the major urban centers in the San Francisco Bay Area. The CVP consists of 20 dams and reservoirs, 11 power plants, and 500 miles of major canals and reaches from the Cascade Mountains near Redding in the north to the Tehachapi Mountains near Bakersfield in the south. In addition to delivering water for municipal and industrial uses and the environment, the CVP produces electric power and provides flood protection, navigation, recreation, and water quality benefits (USBR 2011).

DWR is a State agency that is responsible for managing and implementing the State Water Project (SWP). The SWP is a water storage and delivery system of reservoirs, aqueducts, power plants and pumping plants. Its main purpose is to store water and distribute it to 29 urban and agricultural water suppliers in Northern California, the San

Francisco Bay Area, the San Joaquin Valley, the Central Coast, and Southern California (DWR 2010).

Local water districts, irrigation districts, special districts, and jurisdictions (e.g., cities and counties) manage and regulate the availability of water supplies and the treatment and delivery of water to individual projects. Depending on their location and the source of their supplies, these agencies may use groundwater, surface water through specific water entitlements, or surface water delivered through the CVP or SWP. In some remote areas not served by a water supply agency, individual developments may need to rely upon the underlying groundwater basin for their water supply. In these cases, the project would be required to secure a permit from the local or State land use authority and seek approval for development of the groundwater well(s).

b) Wastewater Collection and Treatment

SWRCB is the state agency responsible for the regulation of wastewater discharges to surface waters and groundwater via land discharge. SWRCB and nine RWQCBs are responsible for development and enforcement of water quality objectives and implementation plans that protect the beneficial uses of the federal and State waters. SWRCB also administers water rights in California. RWQCBs are responsible for issuing permits or other discharge requirements to individual wastewater dischargers and for ensuring that they are meeting the requirements of the permit through monitoring and other controls.

Wastewater collection, treatment, and discharge service for developed and metropolitan areas is typically provided by local wastewater service districts or agencies that may or may not be operated by the local jurisdiction (e.g., city or county). These agencies are required to secure treatment and discharge permits for the operation of a wastewater facility from the RWQCB. Wastewater is typically collected from a specific development and conveyed through a series of large pipelines to the treatment facility where it is treated to permitted levels and discharged to surface waters or the land.

In areas that are remote or that are not served by an individual wastewater service provider, developments would be required to install an individual septic tank or other on-site wastewater treatment system. These facilities would need to be approved by the local or state land use authority and the RWQCB.

c) Electricity and Natural Gas

CPUC regulates investor-owned electric and natural gas companies located within California. The CPUC’s Energy Division develops and administers energy policy and programs and monitors compliance with the adopted regulations. One-third of California’s electricity and natural gas is provided by one of three companies: Pacific Gas and Electric Company, Southern California Edison, San Diego Gas and Electric Company (CPUC 2010).

Locally, energy service is provided by a public or private utility. New development projects would need to coordinate with the local service provider to ensure adequate capacity is available to serve the development.

d) Solid Waste Collection and Disposal

Statewide, the California Department of Resources Recycling and Recovery (CalRecycle), which is a department of the CNRA, is responsible for the regulation of the disposal and recycling of all solid waste generated in California. CalRecycle acts as an enforcement agency in the approval and regulation of solid waste disposal and recycling facilities. Local agencies can create local enforcement agencies and, once approved by CalRecycle, they can serve as the enforcement agency for landfills and recycling facilities with their jurisdictions.

Local agencies or private companies own and operate landfill facilities and solid waste is typically hauled to these facilities by private or public haulers. Individual projects would need to coordinate with the local service provider and landfill to determine if adequate capacity exists to serve the project.

B. Regulatory Setting

Applicable laws and regulations associated with utilities are discussed in Table 22.

Table 22: Applicable Laws and Regulations for Utilities

Regulation	Description
Federal	
Federal Power Act of 1935	In the Federal Power Act of 1935 (49 Stat. 803), created the Federal Power Commission, an independent regulatory agency with authority over both the interstate transmission of electricity and the sale of hydroelectric power at the wholesale level. The act requires the commission to ensure that electricity rates are “reasonable, nondiscriminatory and just to the consumer.” The Federal Power Act of 1935 also amended the criteria that the commission must apply in deciding whether to license the construction and operation of new hydroelectric facilities.
Natural Gas Act (NGA) of 1938	Together with the Federal Power Act of 1935, the NGA (P.L. 75-688, 52 Stat. 821) was an essential piece of energy legislation in the first half of the 20th century. These statutes regulated interstate activities of the electric and natural gas industries, respectively. The acts are similarly structured and constitute the classic form of command-and-control regulation authorizing the federal government to enter into a regulatory compact with utilities. In short, the NGA enabled federal regulators to set prices for gas sold in interstate commerce in exchange for exclusive rights to transport the gas.
Natural Gas Policy Act (NGPA) of 1978	The NGPA granted the Federal Energy Regulatory Commission (FERC) authority over intrastate as well as interstate natural gas production. The NGPA established price ceilings for wellhead first sales of gas that vary with the applicable gas category and gradually increase over time.
State	

Table 22: Applicable Laws and Regulations for Utilities	
Regulation	**Description**
Waste Heat and Carbon Emissions Reduction Act of 2007	The Waste Heat and Carbon Emissions Reduction Act of 2007 (AB 1613), placed requirements on CPUC, CEC, and local electric utilities to develop incentive programs and technical efficiency guidelines to encourage the installation of small CHP systems. CEC approved efficiency and certification guidelines for eligible systems under AB 1613 in January 2010, and CPUC approved standardized contracting and pricing provisions between CHP operators and the Investor Owned Utilities in November 2012.
Section 21151.9 of the PRC Section 10910 et seq. of the Water Code	Required the preparation of a water supply assessment (WSA) for large developments. These assessments are prepared by public water agencies responsible for providing service and address whether there are adequate existing and projected future water supplies to serve the proposed project. All projects that meet the qualifications for preparing a WSA must identify the water supplies and quantities that would serve the project as well as project the total water demand for the service area (including the project's water demands) by source in 5-year increments over a 20-year period. This information must include data for a normal, single-dry, and multiple-dry years. A WSA is required to be approved by the water service agency before the project can be implemented.
Local	
City/County General Plan	Local general plans in California must include a circulation element per CA Government Code Section 65302(b), which includes identification of the locations and extent of existing and proposed public utilities and facilities. The circulation element of a general plan should assess the adequacy and availability of community water, sewer, and drainage facilities and the need for expansion and improvements; trends in peak and average daily flows; the number and location of existing and proposed power plants, oil and gas pipelines, and major electric transmission lines and corridors; existing and projected capacity of treatment plants and trunk lines; and potential future development of power plants (OPR 2003).
City/County Codes and Ordinances	Most cities and counties have adopted municipal codes and ordinances that pertain to utilities and service systems. Local codes and ordinances include, but not limited to, limitations on the locations of wells, sewers, and other water-related facilities; and development standards for future utility land use projects.

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ATTACHMENT 2: IMPACTS SUMMARY TABLE

Table 1: Summary of Impacts	
	Target Update
Aesthetics	
Short-Term Construction-Related Impacts	PSU
Long-Term Operational-Related Impacts	
Agriculture & Forest Resources	
Short-Term Construction-Related Impacts	PSU
Long-Term Operational-Related Impacts	
Air Quality	
Short-Term Construction-Related Impacts	PSU
Long-Term Operational-Related Impacts	PSU
Short-Term and Long-Term Odor Impacts	PSU
Biological Resources	
Short-Term Construction-Related Impacts	PSU
Long-Term Operational-Related Impacts	
Cultural Resources	
Short-Term Construction-Related Impacts	PSU
Long-Term Operational-Related Impacts	
Energy Demand	
Short-Term Construction-Related Impacts	LTS
Long-Term Operational-Related Impacts	
Geology and Soils	
Short-Term Construction-Related Impacts	PSU
Long-Term Operational-Related Impacts	
Greenhouse Gas	
Short-Term Construction-Related Impacts	LTS
Long-Term Operational-Related Impacts	B
Hazards & Hazardous Materials	

Table 1: Summary of Impacts	
	Target Update
Short-Term Construction-Related Impacts	PSU
Long-Term Operational-Related Impacts	
Hydrology and Water Quality	
Short-Term Construction-Related Impacts	PSU
Long-Term Operational-Related Impacts	
Land Use Planning	
Short-Term Construction-Related Impacts	May not be consistent
Long-Term Operational-Related Impacts	
Mineral Resources	
Short-Term Construction-Related Impacts	LTS
Long-Term Operational-Related Impacts	
Noise	
Short-Term Construction-Related Impacts	PSU
Long-Term Operational-Related Impacts	
Population and Housing	
Short-Term Construction-Related Impacts	LTS
Long-Term Operational-Related Impacts	PSU
Public Services	
Short-Term Construction-Related Impacts	LTS
Long-Term Operational-Related Impacts	PSU
Recreation	
Short-Term Construction-Related Impacts	LTS
Long-Term Operational-Related Impacts	
Transportation/Traffic	
Short-Term Construction-Related Impacts	PSU
Long-Term Operational-Related Impacts	PSU

Table 1: Summary of Impacts	
	Target Update
Utilities and Service Systems	
Short-Term Construction-Related Impacts	NA
Long-Term Operational-Related Impacts	PSU
Notes: B = Beneficial; LTS = Less than Significant; NA = Not Applicable; PSU = Potentially Significant and Unavoidable After Mitigation.	