Transportation-Air Quality Conformity Analysis for the Amended Plan Bay Area 2050 and 2025 Transportation Improvement Program

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METROPOLITAN
TRANSPORTATION
COMMISSION

Association of
Bay Area Governments

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I. Introduction

The Metropolitan Transportation Commission (MTC) prepares a transportation-air quality conformity analysis ("conformity analysis") when it amends or adopts a new Regional Transportation Plan (RTP), adopts a new Transportation Improvement Program (TIP), or modifies the inclusion of regionally significant, non-exempt projects into the TIP.

The purpose of this conformity analysis is to conform the Amended Plan Bay Area 2050and to re-conform the 2025 TIP in accordance with the latest U.S. Environmental Protection Agency (EPA) transportation conformity regulations and the Bay Area Conformity State Implementation Plan (Conformity SIP), which is also known as the Bay Area Air Quality Conformity Protocol (MTC Resolution No. 3757). This conformity analysis addresses the 2008 and 2015 National Ambient Air Quality Standards (NAAQS) for the 8-hour ozone and the 2006 national 24-hour fine particulate matter ($PM_{2.5}$) standards. This report also explains the basis for the conformity analysis and provides the results used by MTC to make a positive conformity finding for the Amended Plan Bay Area 2050 and the re-conformed 2025 TIP.

Purpose of Conformity Analysis

The Federal Clean Air Act (CAAA), as amended in 1990, outlines requirements for ensuring that federal transportation plans, programs, and projects are consistent with ("conform to") the purpose of the SIP. Conformity to the purpose of the SIP means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant NAAQS. A conformity finding demonstrates that the total emissions projected for a transportation plan ("RTP") or program ("TIP") are within the emissions limits ("budgets") established by the SIP, and that transportation control measures (TCMs) are implemented in a timely fashion.

Conformity requirements apply in all non-attainment and maintenance areas for transportation-related criteria pollutants and related precursor emissions (see Figure 1 for a map of the non-attainment area for the San Francisco Bay Area). For the Bay Area, the criteria pollutants to be addressed are ground-level ozone, carbon monoxide, and $PM_{2.5}$; and the precursor pollutants to be addressed include volatile organic compounds (VOC) and oxides of nitrogen (NOx) for ozone and for $PM_{2.5}$. EPA's most recent revisions to its transportation conformity regulations to implement the 1990 Federal Clean Air Act section 176 were published in the Federal Register on March 14, 2012[1].

Metropolitan Planning Organizations (MPOs), such as MTC, must adhere to regulations and other procedures outlined in the EPA-approved Conformity SIP for the Bay Area, also known as the "Transportation-Air Quality Conformity Protocol" or "Protocol". These regulations and resolutions state, in part, that MTC cannot approve any transportation plan, program, or project unless these activities conform to the purpose of the federal air quality plan. In this context, "transportation plan" refers to the RTP (i.e., Plan Bay Area), and "program" refers to the TIP (see following sections for more information). A "transportation project" is any highway or transit improvement, which is included in the RTP and TIP and requires funding or approval from the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA). Conformity regulations also affect regionally significant non-federally funded projects which must be included in a conforming transportation plan ("RTP") and program ("TIP"). Regionally significant project means a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs and would normally be included in the

[1] The current version of the regulations is available on EPA's Transportation Conformity website at: https://www.epa.gov/state-and-local-transportation/current-law-regulations-and-guidance-state-and-local-transportation

modeling of a metropolitan area's regional transportation network, including all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel.

The Bay Area's procedures were first established in September 1994 to comply with requirements of the 1990 Clean Air Act Amendment (CAAA). Since then, the procedures have undergone five amendments in August 1995, November 1995, August 1997, July 2006, and April 2020. These amendments have been adopted by the three co-lead agencies: MTC, Association of Bay Area Governments (ABAG), and Bay Area Air Quality Management District (BAAQMD). MTC Resolution 3757 represents the latest San Francisco Bay Area Transportation-Air Quality Conformity Protocol adopted by the three agencies in April 2020. Acting on behalf of the three agencies, BAAQMD submitted the amended transportation conformity procedures to the California Air Resources Board (CARB) as a revision to the Bay Area Conformity SIP. CARB subsequently approved the amended procedures in May 2021 and transmitted them to EPA for final action.

On July 27, 2023, the EPA began the process to approve the revision to the Conformity SIP for the San Francisco Bay Area. This update involves a revised memorandum of understanding between MTC and the Sacramento Area Council of Governments (SACOG). The agreement focuses on sharing travel activity data sharing and managing federal Congestion Mitigation and Air Quality (CMAQ) funds in Solano County. The public had 30 days to comment on this proposal, with the comment period closing on August 28, 2023. The SIP revision officially took effect on January 29, 2024.

Figure 1: Map of the Non-Attainment Area for the San Francisco Bay Area

Air Pollution and Human Health

On-road mobile source emissions have historically contributed significantly to air pollution. Over time, much progress has been made to improve engines and fuels so that emissions from on-road mobile sources have declined steeply, even as on-road travel has been growing. Despite the progress that has been made in reducing emissions, projections of ambient air quality show concentrations of pollutants, like ground-level ozone and $PM_{2.5}$, will continue to contribute to public health and environmental risks and on-road mobile source emissions remain important to consider for further improvements in air quality and public health[2].

There is a great deal of literature documenting the negative impact of air pollution on public health. Researchers use a variety of methods, including epidemiological studies and clinical studies, to analyze the health effects of specific air pollutants and the biological mechanisms or pathways as to how pollutants harm the body. On-going research continually improves understanding of the range of health effects. The respiratory effects of exposure to air pollution (including emissions from on-road mobile sources) such as disease or damage to lungs in the form of asthma, bronchitis, and emphysema, have been documented for decades. But, as the science advances, researchers are finding new evidence that links air pollution to a much wider variety of health effects, including cardiovascular disease (heart attacks and strokes), diabetes and dementia. Vulnerable populations, such as children, pregnant women, seniors, and people with existing cardiovascular or respiratory conditions, are most at risk[3].

Prepared by BAAQMD, Figure 2 depicts the general relationship between air pollution and public health, which is further described in the subsequent section.

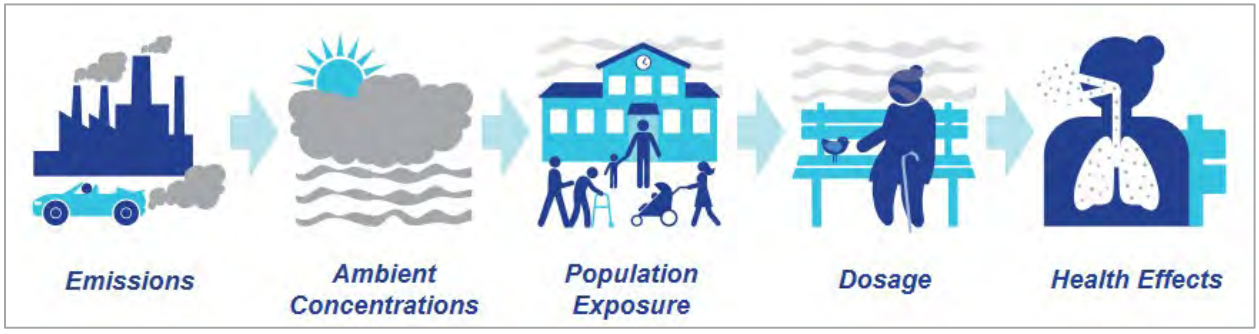

Figure 2: Relationship Between Air Pollution and Public Health

Source: BAAQMD

Emissions

Many different sources emit a wide variety of air pollutants, including PM, toxic air contaminants (TACs), and precursor compounds that react in the atmosphere to form ozone. Emission sources include stationary sources including factories, refineries, foundries, gas stations, and dry cleaners and mobile sources such as cars, trucks, locomotives, marine vessels, and farm and construction equipment. This transportation-air quality conformity analysis focuses solely on mobile source emissions.

[2] Atmospheric Environment, Mobile source contributions to ambient ozone and particulate matter in 2025, Volume 188, September 2018, Pages 129-141

[3] BAAQMD, 2017 Clean Air Plan: Spare the Air, Cool the Climate https://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en

Ambient Concentrations

Ambient concentrations refer to the level of pollutants that are measured in the air. The relationship between emissions and ambient concentrations is complex and depends upon many factors, including meteorological conditions (temperature, wind speed and direction, and vertical mixing) the ratio of precursor pollutants (e.g., the VOC to NOx ratio, in the case of ozone), and regional topography. Some pollutants such as ozone are regional in scale. In the case of particulate matter and toxic air contaminants, however, ambient concentrations can vary greatly within a small geographical area.

Population Exposure

Population exposure refers to the amount of pollution that a given individual, or population is exposed to, and the frequency and duration of that exposure. From the public health perspective, the key issue is not how much pollution is present in the air, but rather how many people are exposed to the pollution.

Dosage

Dosage refers to the actual amount of pollution that an individual takes into the body. The dosage from a given level of exposure will vary by individual depending upon age, activity, and metabolic rate.

Health Effects

Air pollution can cause or contribute to a wide range of health effects and illnesses, depending upon individual exposure and tolerance to air pollution. Just as individual exposure differs, so does the ability of our bodies to tolerate exposure to pollutants.

Exposure to air pollution can cause a wide range of health effects, including short-term (acute) effects and long-term (chronic) effects, including asthma, bronchitis, cancer, heart attacks and strokes.

Status of Transportation Improvement Program

The federally required transportation improvement program, or TIP, is a comprehensive listing of surface transportation projects for the San Francisco Bay Area that receive federal funds, are subject to a federally required action, or that are regionally significant. MTC, as the federally designated MPO, prepares and adopts the TIP at least once every four years. The TIP covers a four-year period and must be financially constrained by year, meaning that the amount of funding committed to the projects (also referred as “programmed”) must not exceed the amount of funding estimated to be available. As required by federal conformity regulations, MTC must demonstrate that the TIP is consistent with ("conforms to") the SIP and that all projects included in the TIP are consistent with the RTP, Plan Bay Area 2050.

The 2025 TIP covers four years of programming, starting with fiscal years 2024-25 through 2027-28. The 2025 TIP predominantly includes projects from the Amended 2023 TIP. Note that all projects included in the 2025 TIP are consistent with Plan Bay Area 2050 and meet all financial constraint requirements. This conformity analysis also serves to demonstrate that the 2025 TIP (as well as the Amended Plan Bay Area 2050) conform to the SIP. Refer to Appendices A and B for detailed lists of projects included in the 2025 TIP.

Status of Regional Transportation Plan

A regional transportation plan, or RTP, is a plan which includes both long-range and short-range strategies and actions that lead to the development of an integrated multimodal transportation system to facilitate the safe and efficient movement of people and goods in addressing current and future transportation demand. State law requires that RTPs include a Sustainable Communities Strategy (SCS)

to identify a forecasted land use development pattern that, when integrated with the future transportation system, will meet the region's greenhouse gas reduction target set by CARB. As required by federal and state planning regulations, the RTP covers a minimum planning horizon of 20 years and is updated every four years in areas which do not meet federal air quality standards ("non-attainment"). The RTP is financially constrained to ensure project costs do not exceed reasonably expected transportation revenues over the planning horizon. Once adopted, the RTP guides the development of the TIP for the region.

Plan Bay Area 2050 is the region's RTP/SCS, a 30-year regional plan that charts a course for a Bay Area that is affordable, connected, diverse, healthy, and vibrant for all residents through 2050 and beyond. The Plan expands in scope, compared to prior plans, by examining the themes of economic development and environmental resilience. As a result, the proposed Plan focuses on four interrelated elements—housing, the economy, transportation, and the environment. The proposed Plan consists of 35 integrated strategies across the four elements that provide a blueprint for how the Bay Area can accommodate future growth and make the region more equitable and resilient in the face of unexpected challenges and achieve regional GHG emissions reduction targets established by CARB pursuant to SB 375. The final Implementation Plan for Plan Bay Area 2050 transitions the Plan Bay Area 2050 process from long-range planning to near-term action. It details over 80 concrete actions that MTC, ABAG and our partners can take to advance the plan's 35 strategies over a five-year period. [4]

MTC and ABAG propose an amendment to Plan Bay Area 2050, revising the transportation element to include the scope and cost of the Sonoma-Marin Area Rail Transit (SMART) extension to Healdsburg in Sonoma County. This project will extend passenger rail service north from the Town of Windsor to the City of Healdsburg. The increased costs for the project will be offset by reducing the costs and scope of other Sonoma County projects and programs in the plan's fiscally constrained transportation project list. As a result, the plan remains fiscally constrained as required by federal and state planning laws.

As part of the periodic review of the transportation modeling network assumptions in consultation with the Air Quality Conformity Task Force (per MTC Resolution No. 3757), MTC revised baseline network assumptions based on new data received from project sponsors. Refer to Appendix C for a list of regionally significant transportation projects included in the Amended Plan Bay Area 2050 and 2025 TIP.

II. Bay Area Air Pollutant Designations

Background

One of the original goals of the federal Clean Air Act was to set and achieve NAAQS in every state by 1975 to address the public health and welfare risks posed by certain widespread air pollutants. The setting of these pollutant standards was coupled with directing the states to develop state implementation plans (SIPs), applicable to appropriate industrial sources in the state, to achieve these standards. EPA has four transportation-related pollutants established standards5:

- ground level ozone formed by volatile organic compounds (VOCs) and oxides of nitrogen (NO_X);
- carbon monoxide (CO);
- particulate matter (less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$); and,

[4] https://www.planbayarea.org/finalplan2050

[5] National Ambient Air Quality Standards (NAAQS)

- nitrogen dioxide (NO_2).

The standards for these pollutants are based upon EPA's assessment of the health risks associated with each of the pollutants on at-risk populations. These assessments are based upon short- and long-term scientific studies by noted health professionals and medical research institutions. At-risk groups include children, the elderly, persons with respiratory illnesses, and even healthy people who exercise outdoors. Detailed descriptions of all the above NAAQS pollutants are contained in the Glossary in Appendix J-6.

National 1-Hour Ozone Standard

The Bay Area was initially designated as nonattainment for ozone on March 3, 1978. On November 6, 1991, the EPA designated the Bay Area as a moderate ozone non-attainment area. Based on "clean" air monitoring data from 1990 to 1992, the co-lead agencies—BAAQMD, MTC, and ABAG— determined that the Bay Area was attaining the 1-hour ozone standard and requested that CARB forward a re-designation request and an ozone maintenance plan to EPA.

On May 25, 1995, after evaluating 1990-1992 monitoring data and determining that the Bay Area had continued to attain the standard, the EPA re-designated the Bay Area as an ozone maintenance area. Shortly thereafter, the area began violating the standard again and on July 10, 1998, the EPA published a Notice of Final Rulemaking re-designating the Bay Area back to an ozone non-attainment area. This action became effective on August 10, 1998.

The re-designation to nonattainment triggered an obligation for the State to submit a SIP revision designed to provide for attainment of the 1-hour ozone NAAQS by November 15, 2000. This revision (the San Francisco Bay Area Ozone Attainment Plan for the 1-hour National Ozone Standard – June 1999 or "1999 Plan") was partially approved and partially disapproved by EPA on September 20, 2001, in conjunction with a determination that the area had failed to attain by the November 2000 deadline. The attainment demonstration and its associated motor vehicle emissions budgets were among the plan elements that were disapproved.

As a result of the EPA's finding of failure to attain and partial disapproval of the 1999 Plan, the State was required to submit a SIP revision for the Bay Area to EPA by September 20, 2002, that included an updated volatile organic compounds (VOC) and nitrogen oxides (NOx) emissions inventory, new transportation conformity budgets, and provided for attainment of the 1-hour ozone standard no later than September 20, 2006. On November 1, 2001, CARB approved the San Francisco Bay Area 2001 Ozone Attainment Plan for the 1-Hour National Ozone Standard (2001 Plan) as a revision to the SIP. The BAAQMD and its co-lead agencies, (MTC and ABAG) adopted the 2001 Plan on October 26, 2001.

The 2001 Plan contains a control strategy with seven stationary source measures, five transportation control measures (TCMs), and eleven further-study measures. In the 2001 Plan, the District also committed to strengthening the then existing Smog Check program by requesting the State Bureau of Automotive Repair to implement two VOC-reducing program elements. The new measures and on-going programs provided 271 tons per day of combined VOC and NOx emission reductions between 2000 and 2006. The 2001 Plan also included an attainment assessment based on Bay Area data.

On November 30, 2001, ARB submitted the 2001 Plan, which included VOC and NOx motor vehicle emissions budgets (164.0 tons per day [tpd] and 270.3 tpd, respectively) for the 2006 attainment year, to EPA for approval as a revision to the California SIP. To support the on-road motor vehicle emission inventory and transportation conformity budgets in the Plan, CARB also transmitted the San Francisco

Bay Area-EMFAC2000 model to EPA for approval for the Bay Area ozone non-attainment area. On February 14, 2002, the EPA found the motor vehicle emissions budgets in the 2001 Plan adequate for transportation conformity purposes, based on its preliminary determination that the plan provided for timely attainment of the 1-hour ozone standard.

On April 22, 2004, based on air quality monitoring data from the 2001, 2002, and 2003 ozone season, EPA determined that Bay Area had attained the national 1-hour ozone standard. Because of this determination, requirements for some of the elements of the 2001 Ozone Attainment Plan, submitted to EPA to demonstrate attainment of the 1-hour standard, were suspended. The determination of attainment did not mean the Bay Area had been re-designated as an attainment area for the 1-hour standard. To be re-designated, the region would have had to submit a formal re-designation request to EPA, along with a maintenance plan showing how the region would continue to attain the standard for ten years. However, this re-designation request was no longer necessary upon the establishment of the new national 8-hour ozone standard.

National 8-Hour Ozone Standard

In July 1997, EPA revised the ozone standard, setting it to 80 parts per billion (ppb) in concentration based specifically on the 3-year average of the annual 4th highest daily maximum 8-hour ozone concentrations. In April 2004, EPA issued final designations for attainment and non-attainment areas. In June 2004, EPA formally designated the Bay Area as a non-attainment area for national 8-hour ozone and classified the region as “marginal” based on five classes of non-attainment areas for ozone, ranging from marginal to extreme.

In March 2008, EPA lowered the national 8-hour ozone standard from 80 ppb to 75 ppb. On March 12, 2009, CARB submitted its recommendations for area designations for the revised national 8-hour ozone standard. These recommendations were based on ozone air quality data collected during 2006 through 2008. The CARB recommended that the Bay Area be designated as non-attainment for the national 8-hour ozone standard. EPA had one year to review the recommendations and were to notify states by November 12, 2009 if they planned to modify the state-recommended areas. EPA issued final designations by March 12, 2010, based on more up to date monitoring data.

On October 1, 2015, EPA strengthened the NAAQS for ground-level ozone to 70 ppb, based on extensive scientific evidence about ozone’s effects on public health and welfare. The updated standards will improve public health protection, particularly for at-risk groups including children, older adults, people of all ages who have lung diseases such as asthma, and people who are active outdoors, especially outdoor workers. They also will improve the health of trees, plants, and ecosystems. The proposed implementation rule for the 2015 ozone standard was published November 17, 2016 and proposed a framework for nonattainment area classifications and SIP requirements. In addition, the proposed rule follows the approach adopted for the previous Classifications Rule and SIP Requirements Rule (SRR) for the 2008 ozone NAAQS.

In September 2016, CARB recommended to EPA that the San Francisco Bay Area be designated in nonattainment for the 70 ppb 2015 ozone NAAQS. EPA concurred with CARB’s recommendation and on April 30, 2018, EPA completed area designations for most of the United States (including the San Francisco Bay Area). On June 4, 2018, EPA published a final rule that designated 51 areas as nonattainment for the 2015 ozone NAAQS. These final designations took effect on August 3, 2018, 60 days after the notice was published in the *Federal Register*. Nonattainment areas must demonstrate

conformity of transportation plans and transportation improvement programs (TIPs) to the 2015 ozone NAAQS by August 3, 2019[6], the end of the grace period.

In addition, because marginal 8-hour ozone areas are not required to submit an attainment demonstration SIP (containing on-road motor vehicle emission budgets required to demonstrate conformity), the conformity finding in this report is based on the approved 1-hour ozone on-road motor vehicle emission budgets contained in the Bay Area's 2001 Plan.

National $PM_{2.5}$ Standard

In 1987, the EPA established a standard for particle pollution equal to or smaller than 10 micrometers in diameter. A decade later, the 1997 revision to the standard set the stage for change, when a separate standard was set for fine particulate matter (particles that are 2.5 micrometers in diameter and smaller). Citing the link between serious health problems and premature death in people with heart or lung disease, the 1997 revision ultimately distinguished and set forth regulation on particle pollutants known as particulate matter 2.5 ($PM_{2.5}$) and particulate matter 10 (PM_{10}). Based on air quality monitoring data, the Bay Area was found to be attaining the 1997 $PM_{2.5}$ standards.

In 2006, the EPA revised the air quality standards for particle pollution. The 24-hour $PM_{2.5}$ standard was strengthened by lowering the level from 65 micrograms per cubic meter (µg/m³) to 35 µg/m³. The annual fine particle standard at 15 µg/m³ remained the same. Also, in 2006, the EPA published a final rule that established transportation conformity criteria and procedures to determine transportation projects that required analysis for local air quality impacts for $PM_{2.5}$ in non-attainment and maintenance areas. The established criteria and procedures require that those areas designated as nonattainment areas must undergo a regional conformity analysis for $PM_{2.5}$. Furthermore, the procedures also mandate areas designated as non-attainment must complete an additional project-level $PM_{2.5}$ hot-spot analysis of localized impacts for transportation projects of air quality concern.

On December 14, 2009, EPA designated the Bay Area as non-attainment for the national 24-hour $PM_{2.5}$ standard based upon violations of the standard over the three-year period from 2007 through 2009. Pursuant to the Clean Air Act, the Bay Area and MTC were subject to the requirement (beginning on December 14, 2010) to demonstrate that the RTP and TIP conformed to the SIP. In addition, beginning on December 14, 2010, certain roadway and transit projects that involve significant levels of diesel vehicle traffic needed to prepare $PM_{2.5}$ hot-spot analyses.

On February 7, 2024, EPA strengthened the NAAQS for particulate matter to better protect millions of Americans from serious health risks, including heart attacks and premature death. The EPA set the primary (health-based) annual standard for $PM_{2.5}$ at 9.0 µg/m³, aiming to enhance public health protection in line with current health science.

EPA did not change:

- primary and secondary (welfare-based) 24-hour, daily, $PM_{2.5}$ standards,
- secondary annual $PM_{2.5}$ standard, and
- primary and secondary PM_{10} standards.

[6] Transportation Conformity Guidance for 2015 Ozone Nonattainment Areas at: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100UN3X.pdf

emissions for analysis years 2025, 2030, 2040, and 2050.The main elements of EPA's PM NAAQS final decision is represented in Table 1 below:

Table 1: PM NAAQS (Primary)

Indicator	*Averaging Time*	*Previous Level*	*Existing Bay Area Status*	*EPA Proposal*
$PM_{2.5}$	Annual	12.0 µg/m^3	Unclassifiable/ Attainment	9.0 µg/m^3
$PM_{2.5}$	24-Hours	35 µg/m^3	Nonattainment	No change
PM_{10}	24-Hours	150 µg/m^3	Unclassifiable/Attainment	No change

EPA determines which areas are attaining or not attaining the NAAQS within two years of issuing a final revised or new standard which will occur in February 2026. A preliminary review of Bay Area air quality data shows $PM_{2.5}$ exposure levels at 9.6 µg/m^3. EPA's designations will rely on air quality data from year 2025 (and possibly 2025) while year-to-year variability makes predictions about future year $PM_{2.5}$ exposure levels difficult.

National 8-Hour Carbon Monoxide Standard

In April 1998, the Bay Area became a "maintenance area" for the national 8-hour carbon monoxide (CO) standard, having demonstrated attainment of the standards. As a maintenance area, the region must assure continued attainment of the CO standard.

Under 40 CFR 93.102(b)(4) of EPA's regulations, transportation conformity applies to maintenance areas through the 20-year maintenance planning period, unless the maintenance plan specifies that the transportation conformity requirements apply for a longer time period. Pursuant to the CAAA's section 176(c)(5) and as explained in the preamble of the 1993 final rule, conformity applies to areas that are designated nonattainment or are subject to a maintenance plan approved under the CAAA section 175A. The section 175A maintenance planning period is 20 years unless the applicable implementation plan specifies a longer maintenance period[7]. The EPA further clarified this conformity provision in its January 24, 2008, final rule[8].

The approved maintenance plan for the San Francisco-Oakland-San Jose Carbon Monoxide nonattainment area did not extend the maintenance plan period beyond 20 years from re-designation. Consequently, transportation conformity requirements for CO ceased to apply after June 1, 2018 (i.e., 20 years after the effective date of the EPA's approval of the first 10-year maintenance plan and re-designation of the area to attainment for CO NAAQS). As a result, as of June 1, 2018, transportation conformity requirements no longer apply for the CO NAAQS in the San Francisco-Oakland-San Jose CO nonattainment area for Federal Highway Administration/Federal Transit Association projects as defined in 40 CFR 93.101.

Approved Motor Vehicle Emissions Budgets and Conformity Tests

The Bay Area has conformity requirements for national ozone and $PM_{2.5}$ standards. Under the ozone standard, the Bay Area must meet an on-road motor vehicle emission "budget" test. Because the Bay Area does not have on-road motor vehicle emission budgets for $PM_{2.5}$ that have been determined to be adequate by EPA, it must meet an emission interim test for the $PM_{2.5}$ standard. To make a positive conformity finding for ozone MTC must demonstrate that the calculated on-road motor vehicle emissions in the region are lower than the approved budgets. To make a positive "interim" conformity

[7] See 58 FR 62188, 62206 (November 24, 1993)
[8] See 73 FR 4420, at 4434-5 (January 24, 2008)

finding for $PM_{2.5}$, MTC must meet "build not greater than no build" or "build not greater than baseline year" tests based on $PM_{2.5}$ exhaust, tire wear, and brake wear, and NO_X as a $PM_{2.5}$ precursor emissions.

On-road motor vehicle emissions budgets for VOC and NO_X, which are ozone precursors, were developed for the 2006 attainment year as part of the 2001 1-hour Ozone Attainment Plan. The VOC and NO_X budgets were found to be adequate by EPA on February 14, 2002 (67 FR 8017) and were subsequently approved by EPA on April 22, 2004 (69 FR 21717). Note that under EPA's conformity rule for the national 8-hour ozone standard, the existing 1-hour on-road motor vehicle emission budgets are to be used for conformity analyses until they are replaced.

The on-road motor vehicle emission budgets are listed below:

- VOC: 164 tons per day (2006 and beyond)
- NO_X: 270.3 tons per day (2006 and beyond)

For $PM_{2.5}$, initially the Bay Area was required to prepare a SIP by December 2012 to show how the region would attain the standard by December 2014. In addition, although the Bay Area was designated as non-attainment for the national 24-hour $PM_{2.5}$ standard based on monitoring data for the 2006-2008 period, the region exceeded the standard by only a slight margin.

Monitoring data shows that the Bay Area currently meets the national standards for both annual and 24-hour $PM_{2.5}$ levels. However, because the health effects of PM are serious and far-reaching, and no safe threshold of exposure to PM has yet been identified, it is important efforts continue to further reduce PM emissions and concentrations.[9]

Under US EPA guidelines, a region with monitoring data showing that it currently attains an air quality standard can submit a "re-designation request" and a "maintenance plan" in lieu of a SIP attainment plan. However, the BAAQMD believes that it would be premature to submit a $PM_{2.5}$ re-designation request for the Bay Area at this time. Instead, the BAAQMD has pursued another option provided by US EPA guidelines for areas with monitoring data showing that they currently meet the $PM_{2.5}$ standard. In December 2011, CARB submitted a "clean data finding" request on behalf of the Bay Area. On January 9, 2013, EPA took final action to determine that the Bay Area attained the 2006 24-hour $PM_{2.5}$ standard. EPA's determination was based on complete, quality-assured, and certified ambient air monitoring data showing that the area monitored attainment based on the 2009-2011 monitoring period. Based on EPA's determination, the requirements for the Bay Area to submit an attainment demonstration, together with reasonably available control measures (RACMs), an RFP plan, and contingency measures for failure to meet RFP and attainment deadlines are suspended for so long as the region continues to attain the 2006 24-hour $PM_{2.5}$ standard.

Since an approved on-road motor vehicle emissions budget for $PM_{2.5}$ is not available for use in this conformity analysis, MTC must complete one of the two interim emissions tests:

- the build-no-greater-than-no-build test ("build/no-build test") found at 40 CFR 93.119(e)(1), or
- the no-greater-than-baseline year emissions test ("baseline year test"), described at 40 CFR 93.119(e)(2).

[9] See BAAQMD's *2017 Clean Air Plan: Spare the Air, Cool the Climate* at: http://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en

Per the interagency consultation via the Air Quality Conformity Task Force meeting dated May 28, 2015, MTC elected to use the "baseline year test". In this test, conformity is demonstrated if in each analysis year, the RTP or TIP (the "build" scenarios) on-road motor vehicle emissions are less than or equal to emissions in the "baseline year" emission inventory. The "baseline year" for the 2006 24-hour $PM_{2.5}$ standard is the year 2008[10].

Under a determination of conformity, the following criteria are applied:

1. The latest planning assumptions and emission models are used.
2. The transportation plan ("RTP") and program ("TIP") pass an emissions budget test using a budget that has been found adequate by EPA or an interim emissions test when budgets have not been established.
3. The transportation plan ("RTP") and program ("TIP") provide for the timely implementation of TCMs.
4. Interagency and public consultation is part of the process.

III. Conformity Analysis & Results

Approach to Conformity Analysis

The latest planning assumptions were used when preparing this conformity analysis. Regional estimates of future travel activity data were estimated using MTC's land use model (referred to as "*Bay Area UrbanSim 2, hereby referred to as BAUS2*"[11]) and MTC's activity-based travel model (referred to as "*Travel Model 1.5.2*" [12]). This integrated model framework allows for analysis of how transportation strategies affect the surrounding land use pattern, as well as how changes to residential and commercial activity affect travel activity. *Travel Model 1.5.2* was developed for the Horizon initiative (the predecessor to Plan Bay Area 2050) and added representation for transportation demand management initiatives, commute trip reduction programs at major employers, ride-hailing (or Transportation Network Companies – TNC) and taxi modes and estimation of autonomous vehicle travel. The model forecasts travel activity on the Bay Area transportation network for a typical weekday across all modes.

This conformity analysis for the Amended Plan Bay Area 2050 and 2025 TIP involves a sequence of modeling tools used together to create and study regional transportation investment impacts. The regional growth forecast is the first step, identifying how much the Bay Area might grow between the plan baseline year (2015) and the plan horizon year (2050), including population, jobs, households, and associated housing units. The location of these households and jobs are then projected on a more localized level throughout the Bay Area by Land Use Model (*BAUS2*, which represents the potential effects of land use strategies and infrastructure investments. These first two models each represent the entire sequence of years in five-year increments, starting with the plan baseline year and ending at the plan horizon year. Finally, the travel model is used to analyze an average weekday for a single given model year, simulating a day's worth of travel for each Bay Area resident given their daily activities and

[10] Additional information is available here: https://www.epa.gov/state-and-local-transportation/baseline-year-baseline-year-test-40-cfr-93119

[11] Additional information is available here: https://github.com/BayAreaMetro/bayarea_urbansim

[12] Additional information is available here: https://www.planbayarea.org/sites/default/files/documents/Plan_Bay_Area_2050_Forecasting_Modeling_Report_October_2021.pdf

enabling staff to understand the effects of transportation strategies on daily vehicle miles traveled, transit ridership and active transportation.

BAUS2 and *Travel Model 1.5.2* work as a system to capture the interaction between transportation and land use. Accessibility to a variety of destinations and amenities is a key driver in both household and business location choice. For instance, households often prefer locations near employment, retail, and similar households but avoid other features such as industrial land use. Business preferences vary by sector with some firms looking for locations popular with similar firms (e.g., Silicon Valley) while others desire locations near an airport or university. In all cases, the accessibility between a given location in the region (defined as a transportation analysis zone or TAZ) and all other locations/TAZs is provided to *BAUS2* by *Travel Model 1.5.2*. This data represents overall regional accessibility for future years considering changing infrastructure and policy.

Moving in the other direction, *BAUS2* provides the travel model with a projected land use pattern and spatial distribution of activities for each year into the future. This pattern includes the location of housing, jobs, and other activities that serve as the start and end locations for trips predicted by the travel model. This information is provided to the travel model at a TAZ level aggregation for each future year examined. Overall, the linkages between the two models allow land use patterns to evolve in relation to changes in the transportation system and for future travel patterns to reflect dynamic shifts in land use, thus representing long-term induced demand.

Travel Model 1.5.2 generates spatially- and temporally- specific estimates of vehicle activity data—roadway usage and speed. Travel data estimates will incorporate the latest project assumptions, including the project list and scopes from the Amended Plan Bay Area 2050 and 2025 TIP. The 2025 TIP is expected to be adopted by MTC in September 2024. This vehicle activity data is input into CARB's latest EMission FACtors (EMFAC2021) [1] model to estimate on-road motor vehicle emissions.

CARB officially released an updated version of the EMFAC2021 software to the public on Monday, May 2, 2022. EMFAC2021 is the latest emission inventory model that CARB uses to assess emissions from on-road motor vehicles including cars, trucks, and buses in California, and to support CARB's planning and policy development. This newest model reflects CARB's current understanding of statewide and regional vehicle activities, emissions, and recently adopted regulations such as Advanced Clean Trucks (ACT) and Heavy-Duty Omnibus regulations. It represents the next step forward in the ongoing improvement for EMFAC. EPA's approval of the EMFAC2021 emissions model (and EMFAC2017 adjustment factors) for SIP, conformity purposes, and applicable CAA purposes effective November 15, 2022.

EMFAC2021 model offers a variety of new features such as:

- Expansion of fuel technologies to include Plug-in Hybrid Electric Vehicles (PHEV) and Natural Gas (NG) powered vehicles.
- Energy Consumption: EMFAC2021 now includes estimates of energy consumption from light- and heavy-duty zero emission vehicles (ZEV)
- Ammonia Emissions: For the first time, ammonia (NH3) emissions are being included in the EMFAC model.
- Expansion of Heavy-Duty Truck Categories
- A New Heavy-Duty VMT Forecasting Framework (Section 4.5.2): EMFAC2017 projected diesel heavy-duty VMT at a statewide level based on a regression model fitted to historical diesel fuel sales data.

During EMFAC2021 development, CARB staff worked closely with EPA and Caltrans to conduct a comprehensive brake wear testing using the European Commission Joint Research Committee (JRC) protocol/procedure. Specifically, this involved measuring emissions with a brake dynamometer simulating real-world conditions. The testing would look at the most popular brake configurations and would address13 regenerative braking. CARB's Heavy-Duty Inspection and Maintenance (HD I/M) Regulation was a new program which started in January 2023 to ensure polluting, poorly maintained heavy-duty vehicles operating in California are quickly identified and repaired. Most densely populated areas in California, such as the South Coast and San Joaquin Valley air basins, exceed federal ozone and $PM_{2.5}$ standards. Many major populated regions and economically disadvantaged communities are situated near heavy trucking traffic areas. The HD I/M program is critical for achieving SIP commitments and moving closer to meeting federal ambient air quality standards and improving public health in these regions, across the State, and especially in disadvantaged communities disproportionately impacted by air pollution.

CARB's HD I/M regulation's emissions reduction were not included in the current version of EMFAC2021 due to fact the regulation was approved after the model was released. Therefore, on May 26, 2023, EPA approved CARB's HD I/M adjustment factors for EMFAC2021 and EMFAC2017 for regional emissions analyses in transportation plan and TIP conformity determinations, and not for CO, PM_{10}, or $PM_{2.5}$ hot-spot analysis for project-level conformity determinations. As described in CARB's February 17, 2023 document titled "EMFAC Off-Model Adjustment Factors to Account for Emission Benefits of the Heavy-Duty Vehicle Inspection and Maintenance Program," the EMFAC2021 HD I/M adjustment factors in Appendix J-1 apply to EMFAC2021 total emissions for each calendar year, vehicle category, and region in the EMFAC model. The interim off-model adjustment factors have been developed for three regions: South Coast Air Basin, San Joaquin Valley Air Basin, and the rest of California (i.e., regions not within the South Coast or San Joaquin Valley air basins).[14]

Analysis Years

The analysis years for the budget and baseline year tests are to be within five years from the date the analysis is done, the horizon year of the RTP and intermediate years as necessary so that analysis years are not more than ten years apart. For this conformity analysis, the analysis years are 2025, 2030, 2040 and 2050 for the 2008 and 2015 ozone and 2006 $PM_{2.5}$ standards. MTC used *Travel Model 1.5.2* to forecast vehicle activity data for the 2025, 2030, 2040 and 2050 analysis years. The forecasted vehicle activity data for each analysis year were then input into the EMFAC2021 model to calculate on-road motor vehicle emissions.

Consultation Process

MTC has consulted on the preparation of this conformity analysis with the Bay Area's Air Quality Conformity Task Force. The Conformity Task Force is composed of representatives of EPA, CARB, FHWA, FTA, Caltrans, MTC, BAAQMD, ABAG, the nine county Congestion Management Agencies, and Bay Area transit operators. The Conformity Task Force reviews conformity analysis assumptions, consults on TCM implementation issues, and reviews conformity analysis results. The task force meetings are open to the

[13] https://ww2.arb.ca.gov/sites/default/files/2021-08/emfac2021_technical_documentation_april2021.pdf
[14] Additional information is available here:
https://ww2.arb.ca.gov/sites/default/files/2023-05/epa_emfac_hd_im_adj_letter.pdf

public. Consultation with the Air Quality Conformity Task Force regarding the preparation of this conformity analysis has taken place and will include discussions on the following meeting dates:

June 2024: Presentation of the approach to the draft conformity analysis for the Amended Plan Bay Area 2050 and 2025 TIP.

July 2024: Presentation on the findings and schedule of the public comment period for the draft conformity analysis of the Amended Plan Bay Area 2050 and 2025 TIP.

August & September 2024: Presentation of public comments and responses for the final conformity analysis of the Amended Plan Bay Area 2050 and 2025 TIP.

Comparison of Motor Vehicle Emissions to Budgets

As explained earlier in "Approved Motor Vehicle Emissions Budgets and Conformity Tests," on-road motor vehicle emissions budgets are established in the SIP for VOCs and NO_X. To make a positive conformity finding, the regional on-road motor vehicle emissions must be equal to or less than these budgets. The results of the vehicle activity forecast, and on-road motor vehicle emission calculations are described in the following section.

Ozone Motor Vehicle Emission Budgets

For VOC and NO_X, the on-road motor vehicle emission budgets also reflect emission reductions from five Transportation Control Measures (TCMs) incorporated in the 2001 Ozone Attainment Plan (Table 2).

Table 2: VOC and NO_X Emissions Budgets from 2001 Ozone Attainment Plan (tons/day)

VOC	
2006 On Road Motor Vehicle Emissions	168.5
2006 Mobile Source Control Measure Benefits	(4.0)
2006 TCM Benefits	(0.5)
2006 Emissions Budget	164.0

NO_X	
2006 On Road Motor Vehicle Emissions	271.0
2006 TCM Benefits	(0.7)
2006 Emissions Budget	270.3

The vehicle activity forecasts by analysis year for the Amended Plan Bay Area 2050 and 2025 TIP (the "build" scenarios), generated by *Travel Model 1.5.2*, are shown in Table 3. The regional growth forecast has the most significant effect on these vehicle activity forecasts. The addition of 1.4 million new households and 1.4 million new jobs between 2015 and 2050 will increase demand on the region's transportation systems, leading to more vehicles in use, higher daily VMT (vehicle miles traveled), and more daily engine starts, as reflected in Table 3. Daily VMT is forecasted to increase from 2015, albeit at a rate slower than forecasted population growth. As a result, daily VMT per capita is forecasted to decrease over time.

MTC will use the 1-hour motor vehicle emissions budget from the 2001 Ozone Attainment Plan as the 8-hour motor vehicle emissions budget to demonstrate conformity to both the 2008 and 2015 8-hour ozone standards. The ozone budgets for VOCs and NO_X were compared to quantified emissions for analysis years 2025, 2030, 2040, and 2050.

Table 3: Vehicle Activity Forecasts

	2025	*2030*	*2040*	*2050*
Vehicles in use	4,600,160	4,714,759	5,061,590	5,519,747
Daily VMT (1000s)	169,364	170,647	180,076	192,583
Daily Engine Starts	23,327,832	23,909,011	25,736,453	28,199,084

Comparison of Estimated Regional On-Road Motor Vehicle Emissions to the Ozone Precursor Budgets

The vehicle activity forecasts for the Amended Plan Bay Area 2050 and 2025 TIP, Table 3, are converted to emission estimates by MTC using EMFAC2021, as described in the proceeding *Approach to Conformity Analysis* section. Table 4, below, compares the results of the various emissions analyses with the applicable budgets. The analyses show that the on-road motor vehicle emissions are substantially below the budgets.

Table 4: Emissions Budget Comparisons for Ozone Precursors – Summertime Conditions (tons/day)

Year	*VOC Budget*[1]	*On-Road Motor Vehicles Net VOC Emissions*[2]	*On-Road Motor Vehicles Net VOC Emissions with 2001 Ozone Plan TCM Benefits*[4]
2025	164.0	29.54	29.04
2030	164.0	23.99	23.49
2040	164.0	19.13	18.63
2050	164.0	18.15	17.65
Year	*NO_X Budget*[1]	*On-Road Motor Vehicles Net NO_X*[2,3]	*On-Road Motor Vehicles Net NO_X Emissions with 2001 Ozone Plan TCM Benefits*[4]
2025	270.3	31.82	31.12
2030	270.3	23.16	22.46
2040	270.3	16.87	16.17
2050	270.3	16.25	15.55

[1] 2001 Ozone Attainment Plan

[2] The transit services for TCM A Regional Express Bus Program were modeled. The emission benefits from TCM A are therefore included in the On-Road Motor Vehicles VOC and NO_X emission inventories for 2006 and beyond.

[3] CARB EMFAC2021 HD/IM off-model adjustment factors applied to years 2025 thru 2050.

[4] TCM Reduction Benefits of (0.5) tons/day of ROG and (0.7) tons/day of NO_X applied to all On-Road Motor Vehicles emission inventories in the Table 4 above.

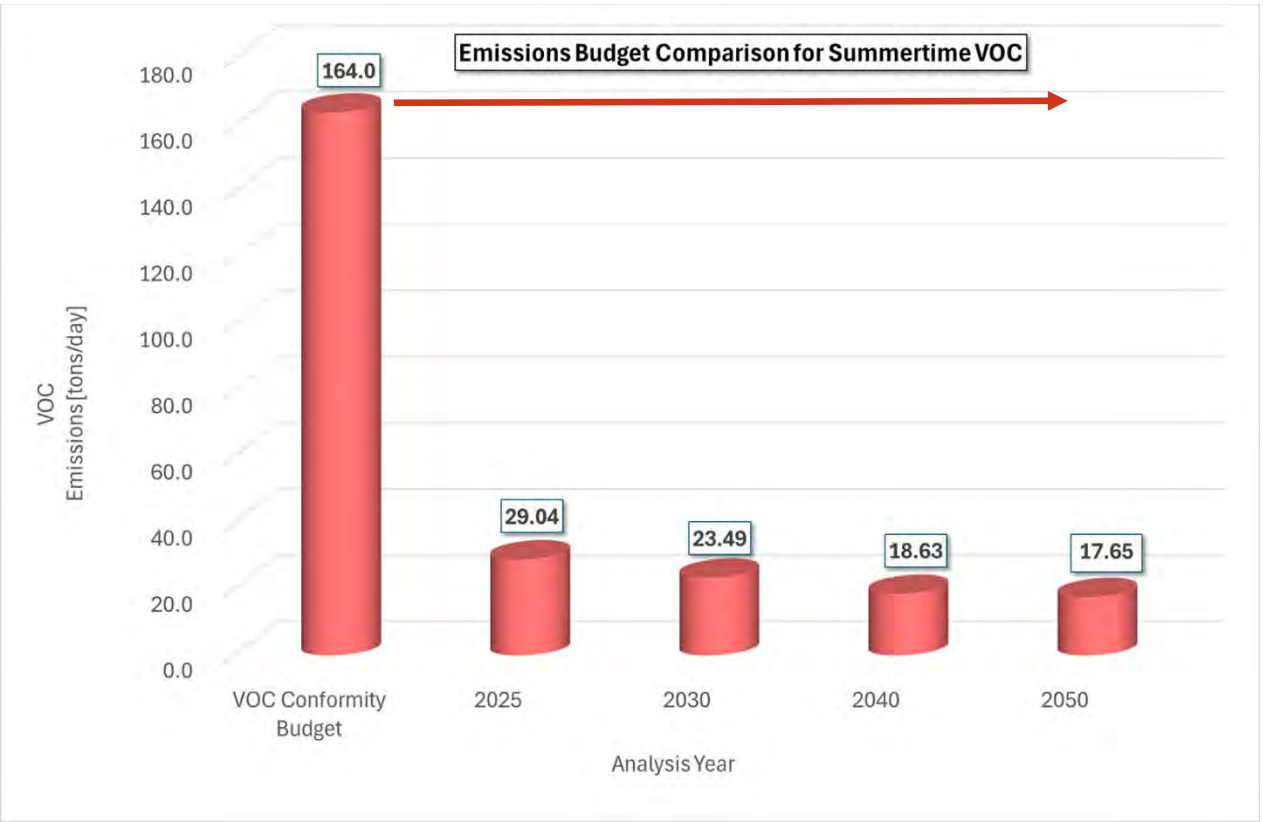

Figure 3. Emissions Budget Comparisons for Ozone Precursors (VOC)

*The horizontal **RED** line represents the **164.0** tons per day VOC emission budget for the Ozone pollutant. Emissions for the analysis years must not exceed this budget.*

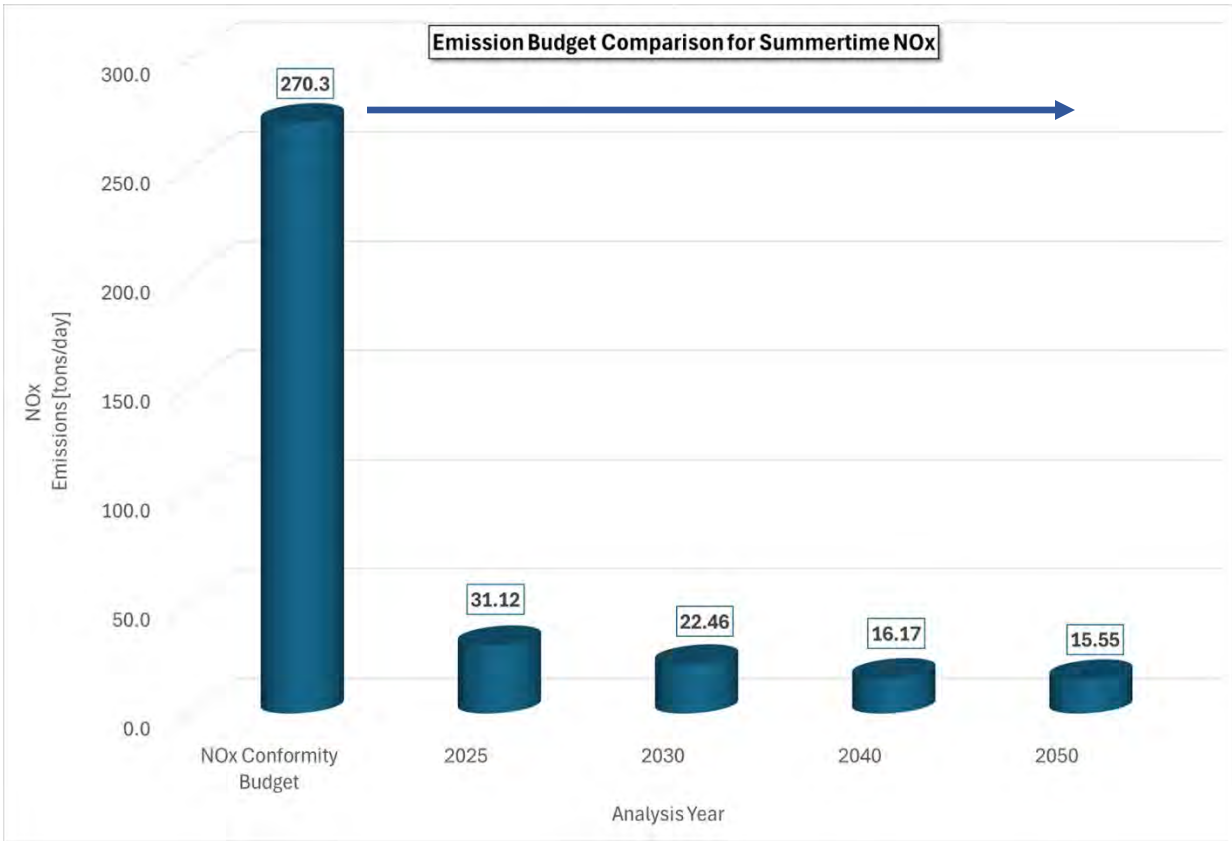

Figure 4. Emissions Budget Comparisons for Ozone Precursors (NO_X)

*The horizontal **BLUE** line represents the **270.3** tons per day NO_X emission budget for the Ozone pollutant. Emissions for the analysis years must not exceed this budget.*

The estimated effectiveness of the various TCMs, given their current implementation status, is shown in Table 5. TCMs A through E are fully implemented. They have achieved the required cumulative total emission reductions of 0.5 tons per day of VOC and 0.7 tons per day of NO_X by 2006.

Table 5: Emission Reductions for Transportation Control Measures A – E in State Implementation Plan (tons/day)

TCM	*VOC Emission Reductions through December 2006*	*NO_X Emission Reductions through December 2006*
TCM A: Regional Express Bus Program	0.20	0.20
TCM B: Bicycle/Pedestrian Program	0.04	0.03
TCM C: Transportation for Livable Communities	0.08	0.12
TCM D: Expansion of Freeway Service Patrol	0.10	0.25
TCM E: Transit Access to Airports	0.09	0.13
Total Reductions	**0.5**	**0.7**

Baseline Year Emissions Test for $PM_{2.5}$

For the baseline year test, emissions for both directly emitted $PM_{2.5}$ and NO_X (as the precursor to $PM_{2.5}$ emissions) were compared to the analysis years of 2025, 2030, 2040 and 2050. The Bay Area generally experiences its highest particulate matter concentrations in the winter and exceedances of the 24-hour

national $PM_{2.5}$ standard almost always occur between November and February. Therefore, the inputs used for the baseline year test in the analysis for $PM_{2.5}$ and NO_X were for the winter season. Note, particulate matter levels in the Bay Area can experience occasional spikes in response to wildfires that occur either within the region or in adjacent regions. [15]

The vehicle activity forecasts by analysis year for the Amended Plan Bay Area 2050 and 2025 TIP (the "build" scenarios), generated by *Travel Model 1.5.2*, are shown in Table 6. This vehicle activity data was then input into CARB's EMFAC2021 emissions model, generating regional vehicle activity and emissions estimates.

Table 6: Vehicle Activity Forecasts for the $PM_{2.5}$ Baseline Year Test

	2008 Baseline Year	*2025*	*2030*	*2040*	*2050*
Vehicles in Use	4,503,765	4,600,160	4,714,759	5,061,590	5,519,747
Daily VMT (1000s)	154,100	169,364	170,647	180,076	192,583
Engine Starts	22,756,344	23,327,832	23,909,011	25,736,453	28,199,084

Table 7 presents the results of the Baseline Year test for $PM_{2.5}$ emissions and the NO_X precursor for the 2006 24-hour $PM_{2.5}$ standard. Regional conformity analyses must be completed for directly emitted $PM_{2.5}$ (40 CFR 93.102(b)(1)). Directly emitted $PM_{2.5}$ includes exhaust, brake, and tire wear emissions. Figure 5 shows the Baseline Year Emissions Test for $PM_{2.5}$, and Figure 6 shows the Baseline Year Emissions Test for Wintertime NO_X, which occur on subsequent pages.

Table 7: Emissions Comparison for the $PM_{2.5}$ Baseline Year Test[1]

	2008 Baseline Year	*2025[2]*	*2030[2]*	*2040[2]*	*2050[2]*
$PM_{2.5}$	8.21	1.67	1.65	1.60	1.70
NO_X	227.71	36.41	26.43	20.73	18.59

[1] Emissions for wintertime only

[2] CARB **HD/IM** EMFAC2021 off-model adjustment factors applied to years 2025 thru 2050

[15] See BAAQMD's *2017 Clean Air Plan: Spare the Air, Cool the Climate* at: http://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en

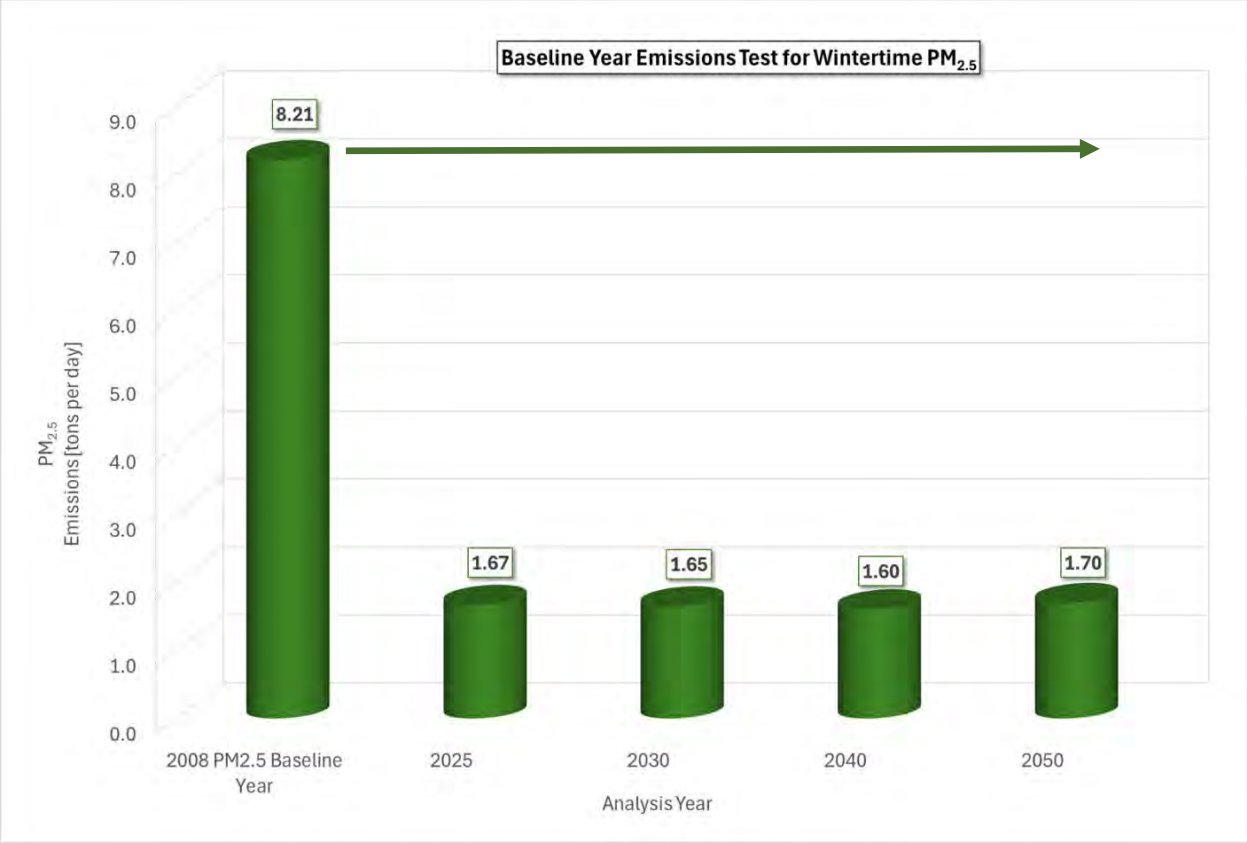

Figure 5. Baseline Year Emissions Test for $PM_{2.5}$

*The horizontal **GREEN** line represents the **8.21** tons per day Year 2008 Baseline Year Emissions for the $PM_{2.5}$ pollutant. Emissions for the analysis years must not exceed this baseline.*

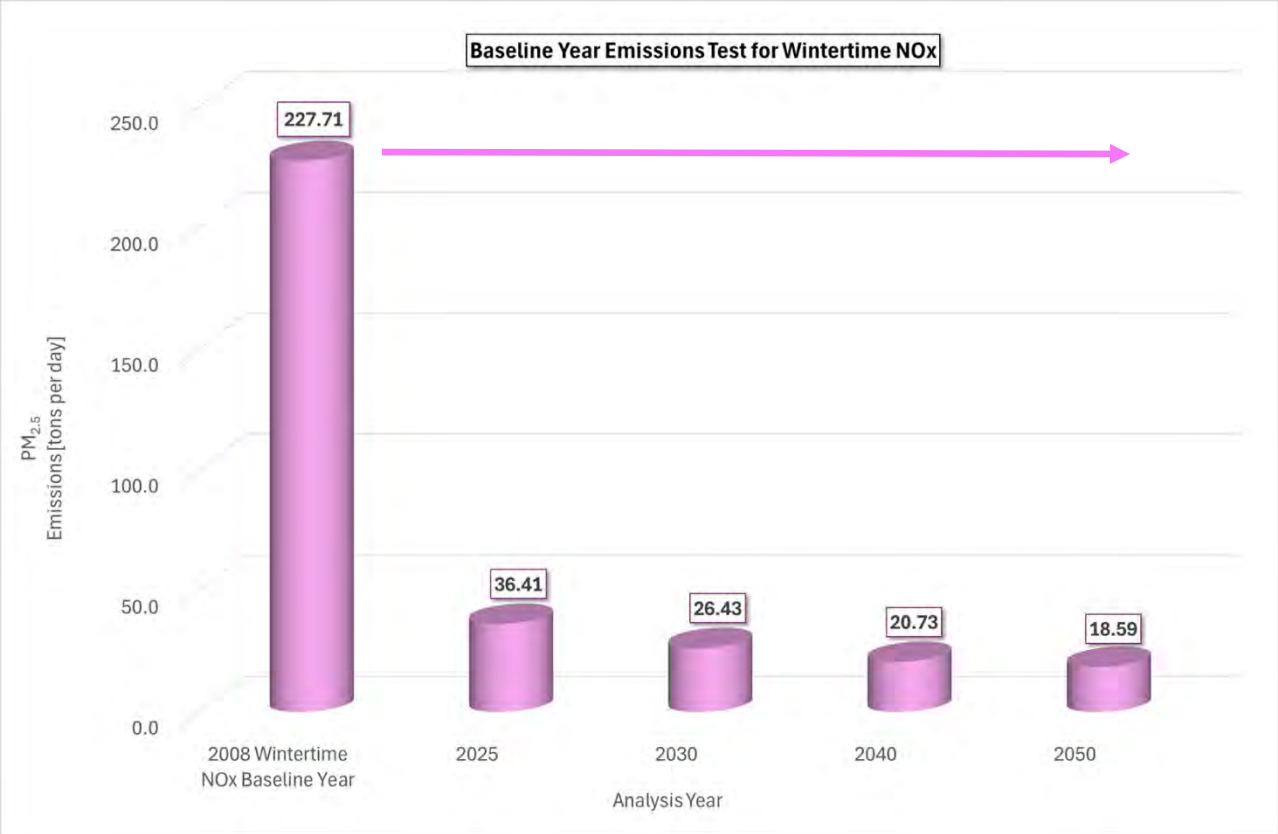

Figure 6. Baseline Year Emissions Test for Wintertime NO_x

The horizontal **PURPLE** *line represents the* **227.71** *(NOx emissions) tons per day Year 2008 Baseline Year for the $PM_{2.5}$ pollutant. Emissions for the analysis years must not exceed this baseline.*

IV. Transportation Control Measures

History of Transportation Control Measures

TCMs are strategies to reduce vehicle emissions. They include such strategies as improved transit service and transit coordination, ridesharing services and new carpool lanes, signal timing, freeway incident management, and increased gas taxes and bridge tolls to encourage use of alternative modes, etc. The original set of TCMs plus the five most recent TCMs (A-E) have been fully implemented. The TCMs were added over successive revisions to the SIP (see Table 7). For more information on TCMs 1-28, which are completed, see the *Transportation-Air Quality Conformity Analysis for the 2001 Regional Transportation Plan and FY 2001 Transportation Improvement Program Amendment 01-32 (February 2002)*. This report can be found in the MTC/ABAG Library.

- Twelve (12) ozone measures were originally listed in the 1982 Bay Area Air Quality Plan.
- In response to a 1990 lawsuit in the federal District Court, sixteen (16) additional TCMs were subsequently adopted by MTC in February 1990 as contingency measures to bring the region back on the "Reasonable Further Progress" (RFP) line. The Federal District order issued on May 11, 1992, found that these contingency TCMs were sufficient to bring the region back on the RFP track anticipated in the SIP. These measures became part of the SIP when EPA approved the 1994 Ozone Maintenance Plan.
- Two (2) transportation control measures from the 1982 Bay Area Air Quality Plan apply to carbon monoxide control strategies, for which the region is in attainment with the federal standard, and primarily targeted downtown San Jose (which had the most significant CO problem at that time.) MTC also adopted a set of TCM enhancements in November 1991 to eliminate a shortfall in regional carbon monoxide emissions identified in the District Court's April 19, 1991, order. Carbon monoxide standards have been achieved primarily using oxygenated/reformulated fuels in motor vehicles and with improvements in the Smog Check program.
- As part of EPA's partial approval/partial disapproval of the 1999 Ozone Attainment Plan, four (4) TCMs were deleted from the ozone plan (but two (2) of these remain in the Carbon Monoxide Maintenance Plan).
- Five (5) new TCMs were adopted as part of the new 2001 1-Hour Ozone Attainment Plan and were fully funded in the 2001 TIP and 2001 Regional Transportation Plan.

With respect to TCM 2 from the 1982 SIP, there was a protracted debate, leading to a citizen's lawsuit in federal court, about the obligations associated with this TCM. On April 6, 2004, MTC prevailed in the U.S. Court of Appeals for the Ninth Circuit which concluded that TCM 2 does not impose any additional enforceable obligation on MTC to increase ridership on public transit ridership by 15 percent over 1982-83 levels by November 2006 (Bayview Hunters Point Community Advocates v. Metropolitan Transportation Commission, (2004 WL 728247, 4 Cal. Daily Op. Serv. 2919, 2004 Daily Journal D.A.R. 4209, 9th Cir.(Cal.), Apr 06, 2004)). Thus TCM 2 has been resolved, and there are no further implementation issues to address in this TCM.

Table 8: Transportation Control Measure in the State Implementation Plan

TCM	*Description*
Original TCMs from 1982 Bay Area Air Quality Plan	
TCM 1	Reaffirm Commitment to 28 percent Transit Ridership Increase Between 1978 and 1983
TCM 2	Support Post-1983 Improvements in the Operators' Five-Year Plans and, After Consultation with the Operators, Adopt Ridership Increase Target for the Period 1983 through 1987
TCM 3	Seek to Expand and Improve Public Transit Beyond Committed Levels
TCM 4	High Occupancy Vehicle (HOV) Lanes and Ramp Metering
TCM 5	Support RIDES Efforts
TCM 6[1]	Continue Efforts to Obtain Funding to Support Long Range Transit Improvements
TCM 7	Preferential Parking
TCM 8	Shared Use Park and Ride Lots
TCM 9	Expand Commute Alternatives Program
TCM 10	Information Program for Local Governments
TCM 11[2]	Gasoline Conservation Awareness Program (GasCAP)
TCM 12[2]	Santa Clara County Commuter Transportation Program
Contingency Plan TCMs Adopted by MTC in February 1990 (MTC Resolution 2131)	
TCM 13	Increase Bridge Tolls to $1.00 on All Bridges
TCM 14	Bay Bridge Surcharge of $1.00
TCM 15	Increase State Gas Tax by 9 Cents
TCM 16[1]	Implement MTC Resolution 1876, Revised — New Rail Starts
TCM 17	Continue Post-Earthquake Transit Services
TCM 18	Sacramento-Bay Area Amtrak Service
TCM 19	Upgrade Caltrain Service
TCM 20	Regional HOV System Plan
TCM 21	Regional Transit Coordination
TCM 22	Expand Regional Transit Connection Ticket Distribution
TCM 23	Employer Audits
TCM 24	Expand Signal Timing Program to New Cities
TCM 25	Maintain Existing Signal Timing Programs
TCM 26	Incident Management on Bay Area Freeways
TCM 27	Update MTC Guidance on Development of Local TSM Programs
TCM 28	Local Transportation Systems Management (TSM) Initiatives
New TCMs in 2001 Ozone Attainment Plan	
TCM A	Regional Express Bus Program
TCM B	Bicycle/Pedestrian Program
TCM C	Transportation for Livable Communities
TCM D	Expansion of Freeway Service Patrol
TCM E	Transit Access to Airports

[1] Deleted by EPA action from ozone plan

[2] Deleted by EPA action from ozone plan but retained in Carbon Monoxide Maintenance Plan.

Source: Bay Area Air Quality Management District, Metropolitan Transportation Commission, 2001.

Status of Transportation Control Measures

TCMs A-E were approved into the SIP as part of EPA's Finding of Attainment for the San Francisco Bay Area (April 2004). The conformity analysis must demonstrate that TCMs are being implemented on schedule (40 CFR 93.113). TCMs A-E have specific implementation steps which are used to determine progress in advancing these TCMs (see Table 8). TCMs A-E are now fully implemented.

Table 9: Implementation Status of Federal Transportation Control Measures for Ozone (A – E)

#	TCM	Description	Ozone Attainment Plan Implementation Schedule	Implementation Status
A	Regional Express Bus Program	Program includes purchase of approximately 90 low emission buses to operate new or enhanced express bus services. Buses will meet all applicable CARB standards, and will include particulate traps or filters. MTC will approve $40 million in funding to various transit operators for bus acquisition. Program assumes transit operators can sustain service for a five-year period. Actual emission reductions will be determined based on routes selected by MTC.	FY 2003. Complete once $40 million in funding pursuant to Government Code Section 14556.40 is approved by the California Transportation Commission and obligated by bus operators	$40 million for this program was allocated by the CTC in August 2001. The participating transit operators have ordered and received a total of 94 buses. All buses are currently in operations. TCM A is fully implemented.
B	Bicycle / Pedestrian Program	Fund high priority projects in countywide plans consistent with TDA funding availability. MTC would fund only projects that are exempt from CEQA, have no significant environmental impacts, or adequately mitigate any adverse environmental impacts. Actual emission reductions will be determined based on the projects funded.	FY 2004 – 2006. Complete once $15 million in TDA Article 3 is allocated by MTC.	MTC allocated over $20 million in TDA Article 3 funds during FY2004, FY2005, and FY2006. TCM B is fully implemented.
C	Transportation for Livable Communities (TLC)	Program provides planning grants, technical assistance, and capital grants to help cities and nonprofit agencies link transportation projects with community plans. MTC would fund only projects that are exempt from CEQA, have no significant environmental impacts, or adequately mitigate any adverse	FY 2004 – 2006. Complete once $27 million in TLC grant funding is approved by MTC	In December 2003, the Commission reaffirmed its commitment of $27 million annually over 25 years for the TLC program as part of Phase 1 of the Transportation 2030 Plan. MTC and the county Congestion Management Agencies (CMAs) have approved over $27 million in TLC grant funding by FY 2006. In November

		environmental impacts. Actual emission reductions will be based on the projects funded.		2004, MTC approved $500,000 for regional TLC Community Design Planning Program, and in December 2004, MTC approved $18.4 million in TLC funding for the regional TLC Capital program. As of December 2006, CMAs in Alameda, Marin and Sonoma counties approved an additional $12.4 million in their county-level TLC Capital programs for a regional total of $31.2 million. TCM C is fully implemented.
D	Additional Freeway Service Patrol	Operation of 55 lane miles of new roving tow truck patrols beyond routes which existed in 2000. TCM commitment would be satisfied by any combination for routes adding 55 miles. Tow trucks used in service are new vehicles meeting all applicable CARB standards.	FY 2001. Complete by maintaining increase in FSP mileage through December 2006	FSP continues to maintain the operation of the 55 lane miles of new roving tow truck coverage. This level of service was maintained through 2006. FSP continues to expand its service areas. TCM D is fully implemented.
E	Transit Access to Airports	Take credit for emission reductions from air passengers who use BART to SFO, as these reductions are not included in the Baseline.	BART – SFO service to start in FY 2003. Complete by maintaining service through December 2006	Service began June 2003. Service adjustments have been made since start of revenue service. The BART to SFO service has been maintained through 2006 and is continued. TCM E is fully implemented.

V. Response to Public Comments

The Draft Transportation-Air Quality Conformity Analysis for the Amended Plan Bay Area 2050 and the 2025 TIP documents were released for public review and comment beginning on August 12, 2024. The draft document was available online at: https://planbayarea.org/sites/default/files/documents/Draft_Plan_Bay_Area_2050_SMART_Amendment_AQ_Conformity.pdf

The comment period officially closed at 5:00 p.m., on September 11, 2024. While no comments were submitted on the draft conformity analysis, the amendment comment period generated just over fifty responses. While some comments expressed opposition to the amendment, the majority of feedback supported the SMART extension to Healdsburg. Many also advocated for including a further extension to Cloverdale. A summary of the public comments is provided at the PBA 2050 website, https://planbayarea.org/finalplan2050.

VI. Conformity Findings

Based on the analysis, the following conformity findings are made:

- This conformity analysis was conducted in accordance with EPA's transportation conformity regulations and with the Bay Area Air Quality Conformity Protocol adopted by MTC as Resolution No. 3757.

    - The Amended Plan Bay Area 2050 and 2025 TIP provide for implementation of TCMs pursuant to the following federal regulation:

(1) An examination of the specific steps and funding source(s) needed to fully implement each TCM indicates that TCMs which are eligible for funding under title 23 U.S.C. or the Federal Transit Laws are on or ahead of the schedule established in the applicable implementation plan, or, if such TCMs are behind the schedule established in the applicable implementation plan, the MPO and DOT have determined that past obstacles to implementation of the TCMs have been identified and have been or are being overcome, and that all State and local agencies with influence over approvals or funding for TCMs are given maximum priority to approval or funding to TCMs over other projects within their control, including projects in locations outside the non-attainment or maintenance area.

(2) If TCMs in the applicable implementation plan have previously been programmed for Federal funding but the funds have not been obligated and the TCMs are behind the schedule in the implementation plan, then the TIP cannot be found to conform if the funds intended for those TCMs are reallocated to projects in the TIP other than TCMs, or if there are no other TCMs in the TIP, if the funds are reallocated to projects in the TIP other than projects which are eligible for Federal funding intended for air quality improvements projects, e.g., the Congestion Mitigation and Air Quality Improvement Program.

(3) Nothing in the TIP may interfere with the implementation of any TCM in the applicable implementation plan. (40 CFR Part 93.113(c)).

    - For the two ground-level ozone precursors (VOC and NO_X), motor vehicle emissions in the Amended Plan Bay Area 2050 and 2025 TIP are lower than the applicable motor vehicle emission budgets for the 2008 and 2015 national 8-hour ozone standards.

- For $PM_{2.5}$ and NO_X, the Baseline Year test shows that the motor vehicle emissions are lower under the Build scenario for the various analysis years when compared to the baseline year emissions scenario.

Appendix A

List of Projects in the 2025 Transportation Improvement Program

List of 2025 TIP Projects by County and Air Quality Status

County	Sponsor	Project Name	Project Description	TIP ID	RTP ID	Air Quality Description	Conformity Analysis Year
Non-Exempt Projects							
Alameda	ACTC	Oakland/Alameda Access Project	Between Fallon Street and Washington Street: Reconfigure interchanges and intersections to improve connections between I-880, the Posey and Webstertubes and the downtown Oakland area. Removal, reconstruction and reconfiguration of ramps with I-880 and I-980 including a new horseshoe connector between Posey Tube and I-880, removal of NB I-880/Broadway off-ramp viaduct, construction of a new through 6th Street connecting Oak Road to Broadway, reconstruction of Westbound I-980/Jackson Street off-ramp, widening of the NB 880 Oak St off-ramp, construction of new sidewalks, bicycle lanes and bike paths, intersection improvements, and local street modifications in downtown Oakland, China Town, Jack London Square, and within City of Alameda.	ALA070009	21-T06-024	Non-Exempt (N/A) - N/A	2030
Alameda	Hayward	Rt 92/Clawiter/Whitesell Interchange Improvements	Hayward: Rt 92/Clawiter Rd: Upgrade existing Clawiter interchange. Add ramps and overcrossing for Whitesell St. extension. Signalize ramp intersections.	ALA090016	21-T06-041	Non-Exempt (N/A) - N/A	2040
Alameda	Hayward	I-880 Auxiliary lanes at Industrial Parkway	Hayward: I-880 NB between Industrial Pkwy and Alameda Creek I-880 SB between Industrial Pkwy and Whipple Rd: Construct auxiliary lanes	ALA090020	21-T06-024	Non-Exempt (N/A) - N/A	2030
Alameda	Hayward	I-880/Industrial Parkway West Interchange	In Hayward: At I-880/Industrial Parkway West: Reconstruct the interchange including replacement of overcrossing structure and a new 2-lane northbound off-ramp by realigning a section of Ward Creek. Realign northbound diagonal on-ramp, widen and realign southbound off-ramp, construct a southbound loop on-ramp to provide a HOV bypass. Create an auxiliary lane along northbound I-880 between Industrial Parkway West Interchange and Whipple Road/Industrial Parkway Southwest Interchange by restriping existing lanes and shoulders. This project includes widening of local streets to provide dedicated bikeways and sidewalks, signalization modifications and construction of a multi use bike and pedestrian path over the new overcrossing structure.	ALA110002	21-T06-024	Non-Exempt (N/A) - N/A	2030
Alameda	Dublin	Dublin Blvd. - North Canyons Pkwy Extension	Alameda County, Dublin and Livermore: Dublin Blvd-North Canyons Parkway from Fallon Rd to Croak Rd: Construct six lane extension Dublin Blvd-North Canyons Parkway from Croak Rd to Doolan Rd: Construct four lane extension. The new extended street is planned to have bike lanes, off-street Class I trail, sidewalks, landscaping curb and gutter, traffic signals, a raised median, bus stops, and all street utilities. This project will consider the provision of dedicated transit lanes and/or queue jump lanes in addition to the mixed flow travel lanes for higher level of transit service with 10 to 20 minute headways during appropriate peak demand periods. This project will also require enhanced multimodal connectivity to various land uses along its stretch and at its terminus, including creating connectivity to 5 PDAs in two cities.	ALA150003	21-T07-056	Non-Exempt (N/A) - N/A	2030
Alameda	ACTC	East Bay Greenway Phase 2	Generally along the BART alignment from Fruitvale BART station to South Hayward BART station: Construct a regional trail facility comprised of Class I and Class IV bikeway facilities that generally follows the BART alignment from Fruitvale Station to South Hayward Station. The project would span approximately 13 miles, traversing East Oakland, San Leandro, Ashland/Cherryland, and Hayward. The project would utilize a combination of BART and Union Pacific Railroad (UPRR) Oakland Subdivision rights-of-way as well as adjacent streets including San Leandro Streets, San Leandro Blvd, and Whitman St. Many sections of the project will be constructed under the elevated BART tracks. Two road diet segments are included, from 47th Ave. to Seminary Ave. in Oakland and from Broadmoor Blvd. to Peralta Ave. in San Leandro, and intersections will be modified at various locations for enhanced bicycle and pedestrian safety.	ALA150008	21-T08-060	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
Alameda	ACTC	State Route 262 (Mission Blvd) Improvements	In Fremont: Mission Blvd/I-680 IC: Implement interchange improvements at I-680, new freeway lanes between I-680 and I-880 that create grade separations at Mohave Drive and Warm Springs Boulevard. Reconstruct local access with one-way frontage roads between Warm Springs Boulevard and I-680. The project construction will likely be phased to construct a fundable project that meets independent utility.	ALA170001	21-T06-046	Non-Exempt (N/A) - N/A	2050
Alameda	ACTC	I-880/Whipple Rd Industrial Pkwy SW I/C Imps	Union City/Hayward: at I-880/Whipple Rd Interchange: Implement interchange improvements including widening and reconfiguration of northbound diagonal off-ramp, northbound off-ramp, northbound diagonal on-ramp, northbound on-ramp widening of Industrial Parkway Southwest, an auxiliary lane on northbound I-880 from the Alvarado Niles Road interchange to the Whipple Road-Industrial Parkway SW interchange, local street intersection improvements, and construction of ped/bike improvements.	ALA170005	21-T06-024	Non-Exempt (N/A) - N/A	2030
Alameda	ACTC	I-680 Express Lanes from SR84 to Alcosta Boulevard	Alameda and Contra Costa Counties: SB I-680 from SR-84 to north of Alcosta Blvd: express lane improvements (Phase 1) NB and SB I-680 from SR-84 to north of Alcosta Blvd: Widen for express lanes (Phase 2). Project limit in Alameda County are PM10.6 to PM21.9 and in Contra Costa County are PM0.0 to PM1.1	ALA170009	21-T12-116	Non-Exempt (N/A) - N/A	2030
Alameda	MTC	Bay Bridge Forward - West Grand HOV/Bus Only Lane	Oakland: Along W Grand Ave from Mandela Pkwy through the I-80 on-ramp: Phase 1 of the project was completed in 2019, where a portion of shoulder (approximately 1,300 feet) at the on-ramp was converted to a bus/HOV lane. Phase 2 of the project will convert approximately half a mile of the existing right shoulder on West Grand Avenue to a bus lane in the westbound direction, between the Frontage Road intersection and the on-ramp to the Bay Bridge. The lane will be designated as a full-time bus lane, while allowing high occupancy vehicles (HOVs) to access the lane during the peak commute hours. In addition, the project will also provide a multiuse path for bicyclists and pedestrians along the eastbound direction on West Grand Avenue, utilizing the existing sidewalk and right shoulder, between Maritime Street and Mandela Parkway.	ALA170011	21-T06-049	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
Alameda	ACE	ACE Platform Extensions	ACE System: At Fremont, Pleasanton, Livermore, Vasco, Tracy, and Manteca stations: Extend existing ACE platforms to accommodate longer train sets	ALA170042	21-T11-105	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled

Alameda	Dublin	I-580 Interchange Imps at Hacienda/Fallon Rd, Ph 2	In Dublin: I-580/Fallon Rd I/C: Phase 2 reconstruct overcrossing to provide four-lanes in each direction, reconstruct the southbound to eastbound loop on-ramp, widen the eastbound off-ramp to provide two exit lanes with two left turn and two right tum lanes, widen the eastbound on-ramp, widen the westbound off-ramp to provide two left turn and two right turn lanes, and widen the westbound on-ramp, add new bicycle lanes and sidewalks to close a significant gap in these modes I-580 Hacienda Drive Interchange: Reconstruct overcrossing to provide additional northbound lane, widen the eastbound off-ramp to include a third left-turn lane, modify the westbound loop on-ramp, and widen the westbound off-ramp to include a third left-turn lane, and add new bicycle lanes and sidewalks to close a significant gap in these modes. The project will be phased.	ALA170045	21-T06-019	Non-Exempt (N/A) - N/A	2040
Alameda	Hayward	I-880 I/C Improvements (Winton Ave and A St)	Hayward: I-880/A St. I/C: Reconstruct interchange, add bike lanes, modify signals and reconfigure intersections to improve truck-turning maneuvers. The interchange reconstruction will provide Caltrans with additional width on the I-880 mainline to accommodate auxiliary lanes in each direction between the I-880/Winton Avenue and I-880/A Street interchanges. This project has potential/conditional funding through Local Area Transportation Improvement Program (LATIP).	ALA170046	21-T06-024	Non-Exempt (N/A) - N/A	2030
Alameda	ACTC	7th Street Grade Separation West	Oakland: Within the Port: Implement roadway and rail improvements including realigning and grade separating the intersection of 7th Street and Maritime St and constructing a rail spur underneath connecting the Joint Intermodal Terminal and the Oakland Harbor Intermodal Terminal yard, also reconstruct and widen the existing multi-use path.	ALA170086	21-T07-055	Non-Exempt (N/A) - N/A	2030
Alameda	MTC	Bay Bridge Forward: Alameda I-580 WB HOV Lane Ext	Alameda County: On I-580 westbound approach to the San Francisco-Oakland Bay Bridge toll plaza from the SR 24/I-980 interchange to I-80: convert one general purpose lane to an HOV lane. This is part of Bay Bridge Forward 2020.	ALA190018	21-T06-049	Non-Exempt (N/A) - N/A	2025
Alameda	AC Transit	AC Transit: Quick Builds Transit Lanes	Berkeley: Durant Ave between Ellsworth and College Oakland: MacArthur Blvd between Alma Ave and 13th Ave: Design and construct "red carpet" bus only lanes and minor bus improvements such as bus bulbs.	ALA210018	21-T10-065	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
Alameda	Oakland	West Oakland Howard Terminal Downtown	Between West Oakland, Downtown Oakland, the Port of Oakland, and Jack London District: Provide connectivity with major improvements along several corridors serving the area. Market Street between the railroad tracks and 8th Street would be improved with at-grade railroad crossing improvements, new and modified traffic signals, lane geometric changes, bike lanes, and sidewalks. A transit hub would be constructed on 2nd Street generally between Brush Street and Broadway. Within the Jack London District, west of Broadway, there are several sidewalk gaps along 3rd Street that would be closed. Access between the Port and I-880 via Adeline Street would be improved with new and modified traffic signals and lane geometric changes. 8th Street from Martin Luther King Jr Way (MLK) to Fallon Street will be improved to enhance pedestrian safety and access to the Lake Merritt BART Station. Freeway undercrossings at five locations (I-980 at 7th St, I-880 at Market Street, I-880 at MLK, I-880 at Washington St, and I-880 at Broadway) will be improved to reconnect communities currently separated by dark, uninviting spaces. All intersection changes along the stated corridors would include improved pedestrian crossing treatments. The project also includes railroad corridor improvements including at-grade railroad crossing improvements between Schnitzer Steel and Oak Street, and a grade separated over crossing at Adeline Street. Last, this project includes intersection safety changes at Brush Street intersection with 17th and 18th Streets, Martin Luther King Jr. Way at 17th Street, and Castro Street at 5th Street.	ALA210023	21-T08-060	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
Alameda	Oakland	Oakland Grand Avenue Roadway Improvements	Oakland: Grand Ave between MacArthur and Mandela: Enhance alternative transportation opportunities to connect diverse communities with jobs, education, services, and various regional transportation connections. This project will implement improvements to bus operations, walking, and biking without impeding the necessary goods movement by freight. These improvements will include transit signal priority, bus only lanes, a continuous bike facility, sidewalk improvements, and a road diet on Grand Avenue between Mandela and Macarthur (from four lanes to two lanes).	ALA210024	21-T08-060	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
Alameda	Dublin	Tassajara Road Widening	Dublin: Tassajara Road between North Dublin Ranch Drive and Quarry Lane School Road: Widen and improve approximately ? mile of Tassajara Road to a four-lane arterial standard, with buffered bike lanes, sidewalks, landscaped median, stormwater treatment areas, and other associated street improvements including pavement replacement, grinding/overlay, and cross slope correction operations, new and revised striping. The widening project will increase the capacity of Tassajara Road and accommodate future traffic in the next 10 to 15 years generated by several approved developments in eastern Dublin and in Contra Costa County. PBA2050 ID is 21-T07-056	ALA210026	21-T07-056	Non-Exempt (N/A) - N/A	2030
Alameda	MTC	BBF: I-80 WB Bus Only Lane Extension	Alameda County: On I-80 westbound between SFOBB Toll Plaza and Powell Street interchange: Construct a bus only or HOV lane to reduce transit delays and increase reliability. When completed, the project will extend the existing bus lane on I-80 approaching the (SFOBB) Toll Plaza to the Powell Street westbound on-ramp that serves as a queue jump lane for buses to bypass congestion and improve operations.	ALA210028	21-T06-049	Non-Exempt (N/A) - N/A	2030
Alameda	CCJPA	CCJPA SR84 Intermodal Bus Facility	Fremont: On SR84 near the Ardenwood Park-n-Ride: Construct an intermodal bus facility including the addition of westbound and eastbound bus stop platforms on SR84, allowing buses to pick-up and drop-off passengers from the Park-n-Ride at the elevated highway level. This will reduce bus travel time, especially during congestion, since buses will not need to get on and off SR84 to pick up and drop off passengers using the Park-n-Ride	ALA210033	21-T11-111	Non-Exempt (N/A) - N/A	Not Modeled
Alameda	Fremont	Irvington BART Station	Fremont: Along the BART corridor in the Irvington District, adjacent to the future alignment of the East Bay Greenway and the future Sabercat Trail (north fork): Construct a new BART station	ALA230004	21-T11-104	Non-Exempt (N/A) - N/A	2030
Alameda	Valley Link	Valley Link Rail System (Phase 1)	Construction of a new 22-mile, four-station passenger rail system between the Dublin/Pleasanton BART station in Alameda County and the Mountain House Community Services District in San Joaquin County including stations at Isabel Avenue and Southfront Road in the City of Livermore.	ALA230204	21-T11-114	Non-Exempt (N/A) - N/A	2030
Alameda	Port of Oakland	Port of Oakland Green Power Microgrid	Plan, design, and install 145 chargers for battery-electric heavy duty trucks and cargo handling equipment in the Seaport; and 1 megawatt (MW) of solar panels; and up to 6.5 MW of battery storage; and associated substation upgrades. This project will support and accelerate the transition of heavy-duty equipment from diesel to zero emissions, in alignment with the Port's Seaport Air Quality 2020 and Beyond Plan – the Pathway to Zero Emissions.	ALA250222	21-T07-055	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled

Alameda	Union City	East-West Connector: Decoto and Quarry Lakes Pkwy	Union City and Fremont: Decoto Rd from I-880 to SR-238 (Mission Blvd): Widen roadway and implement complete streets improvements. Decoto Complete Streets is a transit priority corridor with separate Class I system for bikes and pedestrians Quarry Lakes Pkwy alignment between Paseo Padre Pkwy and SR-238: Construct new, 4-lane multimodal corridor. QLP is a new four-lanes, multimodal corridor with buffer bike lanes and separated Class I trail for bikes and pedestrian with landscaped areas, street trees, and utilities to support the 100 acres Union City BART Station PDA. Project will be constructed in usable phases to support new housing developments, access to Union City BART Station and complete trail connections. PBA2050 ID is 21-T07056. Other State funds are SR-84 LATIP funds	ALA978004	21-T07-056	Non-Exempt (N/A) - N/A	2040
Contra Costa	CCTA	I-680/SR 4 I/C Reconstruction - Ph 1,2a,4	Contra Costa County. I680/SR4 I/C. Phase 1: NB680 to WB SR4 Connector, construct a two-lane flyover direct connector from NB680 to WB SR4 and remove the existing NB680 to WB SR4 loop, construct auxiliary lanes, a slip ramp and install a ramp metering facility. Phase 2A: extend the SB680 collector-distributor ramp and install a ramp metering facility for the WB SR4 on-ramp. Phase 4: Construct Southbound I-680 to Eastbound SR 4 connector.	CC-010023	21-T06-022	Non-Exempt (N/A) - N/A	2030
Contra Costa	Hercules	Hercules Intercity Rail Station	Hercules: At future train station: Relocate the Kinder Morgan pipeline, Shell pipeline, fiber optic line construct the 3rd track for the new station, construct the new station building, multi-use trail, retaining walls, and parking structure.	CC-030002	21-T11-115	Non-Exempt (N/A) - N/A	2030
Contra Costa	Richmond	I-80/Central Avenue - Local Portion	Richmond: I-80/Central Ave Interchange: Improve traffic operations, increase spacing between signalized intersections east of I-80, relocate signal at Pierce St/Central Ave to San Mateo St/Central Ave, convert Pierce St at Central Ave to "right in, right out" access, Construct new roadway between San Mateo St and Pierce St. Project elements include new and removed signals, pavement resurfacing/reconstruction, widened turn pocket, street parking reconfiguration, striping, undergrounding/relocation of power/telecom poles as needed with local funds, underground utility adjustments, relocation of bus stops with possible bus shelter, parking lot reconfiguration, class III bike route, landscaping and bioretention, new and replacement street lighting, and sidewalk, curb ramp, driveway apron, and curb and gutter improvements. PBA2050 ID: 21-TO6-013	CC-050076	21-T06-013	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
Contra Costa	Brentwood	Brentwood Boulevard Widening - North (Phase I)	Brentwood: Brentwood Boulevard from Havenwood Avenue to Homecoming Way: Phase I-Widen from 2 to 4 lanes, with two lanes in each direction with two bike lanes, curbs, gutters, medians, sidewalks, street lights and landscaping on each side of the roadway, including a new parallel bridge over Marsh Creek, traffic signal modification at Brentwood Boulevard / Grant Street, and moving overhead power lines, telephone lines and cable lines underground. CIP 336-3162.	CC-070011	21-T07-056	Non-Exempt (N/A) - N/A	2030
Contra Costa	Concord	SR 242 / Clayton Road Interchange Improvements	Concord: At the SR242/Clayton Rd Interchange: Construct NB on-ramp and SB off-ramp. On ramp will access NB SR242. SB SR242 Off-ramp will intersect Franquette Way near the Clayton west Rd intersection. Current phase- PSR phase to evaluate interchange and local road improvement alternatives. CCTA Website: http://www.ccta.net/projects/project/97	CC-070024	21-T06-045	Non-Exempt (N/A) - N/A	2040
Contra Costa	CCTA	Reconstruct I-80/San Pablo Dam Rd Interchange Phas	San Pablo: At the I-80/San Pablo Dam Rd (SPDR) I/C: Reconstruct I/C, includes providing access to McBryde Ave through a new connector. Project will enhance operations and safety for autos, pedestrians, and bicyclists in the vicinity of the interchange.	CC-070035	21-T06-013	Non-Exempt (N/A) - N/A	2030
Contra Costa	Contra Costa County	Byron Highway - Vasco Road Connection	Contra Costa County: Construct an east-west connection road between Byron Highway and Vasco Road in unincorporated Byron.	CC-070081	21-T06-047	Non-Exempt (N/A) - N/A	2040
Contra Costa	CCTA	SR 4 Integrated Corridor Management	Contra Costa County: Along SR 4 between I-80 in Hercules to the SR 4/SR 160 Interchange in the City of Antioch: create an integrated and arterial network along the SR 4 from I-80 in Hercules to the SR 4/SR 160 interchange in Antioch.	CC-150013	21-T07-057	Non-Exempt (N/A) - N/A	2040
Contra Costa	Brentwood	Brentwood Boulevard Widening - North (Phase II)	Brentwood: Brentwood Blvd. between Homecoming Way and Lone Tree Way: Widen existing roadway from 2 to 4 lanes for 2600 linear feet including curb, gutter , sidewalk, bike lanes, street lights and landscaping	CC-170015	21-T07-056	Non-Exempt (N/A) - N/A	2030
Contra Costa	Contra Costa County	Camino Tassajara Realignment, S of Windemere Pkwy	Contra Costa County: Camino Tassajara between Windemere Parkway and the City of Dublin: Realign curves along Camino Tassajara, widen roadway to four lanes, and install Class II bike lanes. The project will be coordinated with the City of Dublin to tie into existing improvements along Tassajara Road.	CC-170016	21-T07-056	Non-Exempt (N/A) - N/A	2030
Contra Costa	CCTA	I-680 NB Express Lane Completion	Contra Costa County: NB I-680 from Livorna Rd to Arthur Rd. 1) From Livorna Rd to SR-242: Extend Managed Lane; 2) From SR-242 to Arthur Rd: Convert Existing HOV Lane to Express Lane; 3) From N Main St to Treat Blvd: Operational improvements; and 4) Various locations along NB I-680: Install limited access buffers and mitigation projects.	CC-170017	21-T12-116	Non-Exempt (N/A) - N/A	2030
Contra Costa	CCTA	SR-4 Operational Improvements - Initial Phases	State Route 4 Operational Improvements - Eastbound: (a) Extend a lane from the lane drop at Port Chicago Interchange to the Willow Pass Rd off-ramp and end as a mandatory exit lane. (b)Construct a new general purpose lane between the Willow Pass Rd off-ramp and the Willow Pass Rd on-ramp. The new general purpose lane would eliminate the mandatory exit at Willow Pass Rd off-ramp from (a) and connect to the existing auxiliary lane between Willow Pass Rd on-ramp & San Marco Blvd off ramp. Construct a second exit lane at the EB SR4 off-ramp to San Marco Blvd to accommodate existing and future peak hour traffic volumes. (c) Construct auxiliary lane from the San Marco Blvd loop on ramp to the existing deceleration lane at Bailey Rd off-ramp. (d) Construct an auxiliary lane between the Port Chicago Highway on-ramp and the Willow Pass Road off-ramp. Westbound: Construct a lane from Willow Pass Rd on-ramp connecting to the existing added lane, east of the Port Chicago Highway off-ramp and a second exit lane at Port Chicago Highway off-ramp. Modify one of the mandatory exit lanes to SR242 to an optional exit lane, allowing three lanes exit to SR242 and three lanes to continue on WB SR4. RTP ID: 21-T06-031	CC-170018	21-T06-031	Non-Exempt (N/A) - N/A	2030

Contra Costa	Oakley	Civic Center Railroad Platform Park n Ride Complex	Oakley: Main Street between 2nd Street and O'Hara Avenue: construct two parking lots (approximately 150 spaces each) on a portion of one City owned parcel covering a total of approximately 104,000 square feet, or 2.38 acres. The project components consist of site clearing, curb and gutter, vertical curb, storm drain system, street and parking lot paving, landscaping and irrigation, electrical and communications infrastructure for the parking lots and a future train platform, signing and striping, and design and construction management. The project will also include fencing, lighting, and bicycle racks. The parking lots project is the first step toward the construction of a train platform at this location. The future train platform will be part of an expanded service to be established and operated by the San Joaquin Joint Powers Authority (SJJPA), which operates the rail service line. The train platform is identified as a potential stop in the recently updated 2016 SJJPA Business Plan. The new parking lots in Oakley will provide the infrastructure necessary for connection to an accessible rail transportation system for the multi-modal movement of goods and people. Constructing a train platform before there is parking to serve it is not practical unless there is parking located near it. At present, there is little to no parking near this location. The future train platform will also be regional in nature as there is no train platform in nearby Brentwood. The future train platform would serve Discovery Bay, Knightsen, Bethel Island and Byron, in addition to Oakley. The City of Oakley is working in collaboration with the San Joaquin JPA and also working on finding other funding mechanisms for the train platform. The City anticipates applying for federal Transportation Investment Generating Economic Recovery (TIGER) discretionary grant funds in addition to other available funding for the train platform.	CC-170019	21-T11-105	Non-Exempt (N/A) - N/A	Not Modeled
Contra Costa	CCTA	I-680 Part Time Transit Lane	In Contra Costa County: On NB I-680 between Bollinger Canyon Road and Ygnacio Valley Rd: Increase bus service efficiency by implementing bus operations on shoulder (BOS). Conduct testing and training at GoMentum Station. PBA2050 ID: 21-T12-122	CC-170061	21-T12-122	Non-Exempt (N/A) - N/A	2030
Contra Costa	San Ramon	Crow Canyon Road (Alcosta to Indian Rice) Widening	San Ramon: Crow Canyon Rd from Alcosta Blvd to Indian Rice Rd: Widen to three lanes in each direction. Work will be completed in two phases. Phase 1 limits: Alcosta to St. George. Phase 2 limits: St. George to Indian Rice Road. PBA 2050 ID 21-T07-056	CC-190001	21-T07-056	Non-Exempt (N/A) - N/A	2030
Contra Costa	SJRC	Oakley Station Platform	Oakley: North of Main Street between 2nd St and O'Hara Ave: Construct a new train station platform for the Amtrak San Joaquin inter-city rail service. Constructs a station track siding with two turnouts, within the existing railroad right-of-way. Includes shelters, lighting, signage, ADA-compliant pedestrian sidewalks and other associated improvements.	CC-190002	21-T11-115	Non-Exempt (N/A) - N/A	2025
Contra Costa	MTC	RSR Forward: ORT and I-580 WB HOV Lane	Contra Costa County: On westbound I-580 approaching the Richmond-San Rafael (RSR) Bridge beginning at the I-580 / Regatta Avenue Interchange: Provide safety and operational improvements by converting one of the three existing general-purpose lanes to a high-occupancy vehicle (HOV) lane and replacing the existing tolling structure with overhead toll gantries east of the existing toll booths. PBA 2050 ID: 21-T06-020	CC-210010	21-T06-020	Non-Exempt (N/A) - N/A	2030
Marin	TAM	US 101 HOV Lanes - Marin-Sonoma Narrows (Marin)	Marin and Sonoma Counties: From SR 37 in Novato to Old Redwood Highway in Petaluma Convert expressway to freeway and widen to 6 lanes for HOV lanes. Provide funds for TAM management, oversight, and coordination with Caltrans for the PSE phase. Funds include the following: HPRR #2444 (100% of the total $12Million Earmark) a portion of HPP #3762 ($1.5M of the total $15M Earmark) and FY05/06 Annual Appropriation (100% of the total $850k Earmark). Also includes completed Phase 1 work.	MRN050034	21-T06-026	Non-Exempt (N/A) - N/A	2025
Marin	San Anselmo	San Anselmo - Center Blvd Bridge Replace (27C0079)	San Anselmo: Center Blvd Bridge over San Anselmo Creek, at Sycamore Ave: Replace existing 2 lane bridge with 3 lane bridge	MRN110032	21-T01-004	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
Marin	GGBHTD	Golden Gate Ferry: New Vessel	GGBHTD: 1 vehicle: Purchase a new, 500-passenger, high-speed ferry vessel to continue to provide expanded commute service from Larkspur and Tiburon to San Francisco.	MRN190001	21-T11-094	Non-Exempt (N/A) - N/A	2030
Marin	GGBHTD	GGBHTD Replacement Ferry CARB Compliance	Replacement of 4 catamarans to comply with CARB regulation	MRN230205	21-T01-002	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
Marin	MCTD	US101 Part Time Transit Lane	US 101 Part Time Transit Lane Project (PTTL) is a proposed pilot project on the shoulder of the southbound US 101, in Marin County between Delong Avenue in Novato and Mission Avenue in San Rafael. This project will improve bus travel times for Marin County Transit District (Marin Transit) and Golden Gate Transit Services during peak congestion. This project has been identified as a low cost way to provide highly visible transit priority for transit buses and provide significant time travel savings for bus riders.	MRN230206	21-T10-093	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
Napa	NVTA	SR 12/29/221 Soscol Junction Interchange Imps.	In Napa County: At SR-221/SR-29 Soscol Ferry Road: Construct improvements	NAP090003	21-T06-034	Non-Exempt (N/A) - N/A	2025
Napa	American Canyon	Eucalyptus Drive Realignment Complete Streets	American Canyon: Eucalyptus Dr. from Theresa Rd to Hwy 29: Extend Eucalyptus 450' to the east, connecting at SR 29. Construct travel lanes, median, curb, gutter and sidewalk, Class 1 bicycle facilities, landscaping, striping, signage, drainage and traffic signal improvements. Complete the 4th leg of the Eucalyptus/SR29 intersection. Improvements at the Rio del Mar/SR 29 intersection necessary to make the intersection right-in/right-out only. Close Theresa Avenue from Los Altos to Eucalyptus (approx. 140') and construct improvements to create a pedestrian/bicycle corridor.	NAP110029	21-T08-060	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
Napa	NVTA	NVTA- Vine Transit Bus Maintenance Facility	NVTA's transit services arm- Vine Transit has a need for a new transit maintenance yard. The present facility at 720 Jackson Street just north of downtown has an inadequate number of bus maintenance bays and does not have adequate parking spaces or all of Vine's vehicles and lacks space for a modern bus wash. NVTA has purchased an 8 acre site in south Napa County and proposes constructing a transit maintenance yard. When completed, the facility will include - Parking for up to 100 transit vehicles of various sizes, Administration Building. Modern Bus Washer, Maintenance Building with up to 8 bays, 75 parking spaces for employees and visitors. The new facility will improve reliability on current operations, allow for the service and charging of current and future electric vehicles, and provide for service expansion.	NAP170003	21-T01-002	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled

Regional/Multi-County	WETA	Ferry Service - Berkeley	WETA: Includes development of new ferry service, the acquisition of vehicles and the development and construction of a new terminal in the Berkeley area of Alameda County.	MTC050027	21-T11-096	Non-Exempt (N/A) - N/A	2030
Regional/Multi-County	MTC	Freeway Performance Initiative (FPI)	Regionwide: Design, implement and maintain ramp metering, Traffic Operation Systems (TOS), and other Freeway Performance Initiative (FPI) projects on major congested freeways throughout the region.	REG090003	21-T06-048	Non-Exempt (N/A) - N/A	Multiple Years
Regional/Multi-County	BART	BART: Railcar Procurement Program	Fund the replacement of all existing 669 railcars for BART when the cars reach the end of their useful life and procure new railcars. Project also references RTP IDs 240182, 240196, and 21132. Project is related to REG050020. Costs for an additional 60 cars are included in SCL110005 and costs for an additional 23 cars are included in BRT030001 for a total of 873 cars.	REG090037	21-T01-002	Non-Exempt (N/A) - N/A	2040
Regional/Multi-County	BART	BART Transbay Core Capacity Improvements	BART: Systemwide: Implement a multi-pronged effort to address capacity issues in the Transbay corridor and is in coordination with the BART Metro Program project. The project elements are: Communication-based train control (CBTC) system to safely enable closer headways and allow BART to operate more frequent service (12 minute frequencies) Expansion of the rail car fleet by 306 vehicles to add cars to existing trains and operate more frequent trains Added traction power substations to allow more frequent service. Project also references 17-10-0016	REG170017	21-T11-106	Non-Exempt (N/A) - N/A	2030
Regional/Multi-County	BAIFA	ALA/CC-80 and Bay Bridge Approach Express Lanes	Alameda/Contra Costa counties: On I-80 from the Carquinez Bridge to Powell and the Bay Bridge Approaches (I-80, I-580, I-880 and Toll Plaza): Convert HOV lanes to express lanes. Work includes but is not limited to installation of gantries, tolling/traffic monitoring equipment and systems (hardware/software), signage, electrical, communications and fiber, lighting, and restriping, as well as police observation areas for enforcement.	VAR170003	21-T12-116	Non-Exempt (N/A) - N/A	2030
Regional/Multi-County	MTC	Freeway Performance Program: SR-84	Alameda & San Mateo Counties: Along the Dumbarton Corridor: Deliver operational strategies to improve traffic operations along the SR-84 Dumbarton Corridor, including adaptive ramp metering, advanced technologies, arterial/transit priority signal upgrades, higher vehicle occupancy strategies, and bicycle access improvements along the Dumbarton Corridor. The freeway performance program (FPP) is a comprehensive operations program that diagnoses key transportation problems, assesses and recommends specific mitigations, and implements recommended mitigations within available resources and partnership support. More specifically, major transportation corridors are analyzed and effective operational strategies for congestion mitigation and demand management are identified and prioritized. FPP delivers cost-effective operational strategies (such as adaptive ramp metering, and HOVs, advanced technologies, arterial/transit priority signal upgrades, higher vehicle occupancy strategies, and bicycle access) that complement and support the successful implementation of other regional and local transportation programs, including incident management strategies, Integrated Corridor Management (ICM) strategies, Connected Vehicles, and the Regional Express Lane Network. It also looks to implement person throughput strategies and policy changes called for in the Managed Lanes Implementation Plan. Overall, the FPP planning and capital projects aim to better manage and operate Bay Area freeways, arterials, and transit systems.	VAR170023	21-T06-049	Non-Exempt (N/A) - N/A	2030
Regional/Multi-County	MTC	SR 37 Interim Project - Sears Point to Mare Island	Solano and Sonoma Counties: SR-37 between the Sears Point/SR 121, and Mare Island: Implement a high occupancy vehicle (HOV) lane, implement tolling. This project will improve traffic flow and peak travel times, and increase vehicle occupancy (the number of people moved per vehicle). This project provides an incentive to increase multiple occupant vehicle use during peak periods. Currently there is no incentive for a bus route on SR 37 because of the substantial delays and there are no current transit routes using SR 37. The Napa Bus Feasibility Study identified a demand for bus service through the corridor, and this project would allow transit operators to implement bus service on SR 37. Other State funds are SB170 funds. Other Federal funds are NHPP	VAR210004	21-T06-035	Non-Exempt (N/A) - N/A	2030
Regional/Multi-County	SMART	SMART Rail and Pathway (Phase 2)	Marin and Sonoma Counties: Sonoma County Airport Station to Windsor: Extend rail and pathway (includes freight rail); Petaluma North at Corona Rd: Construct infill station (includes freight rail gauntlet tracks); McInnis to Smith Ranch in San Rafael, Hanna Ranch Rd. to S. Rowland Blvd. in Novato, Lakeville to Payran in Petaluma, Southpoint in Petaluma to Penngrove at Main St, Rohnert Park at Golf Course to Southwest Santa Rosa at Bellevue, Southwest Santa Rosa to Santa Rosa SMART Station (Joe Rodota Trail to 3rd St), San Miguel Rd. to Airport Blvd. in Santa Rosa: Construct multi-use pathway. Project also references RTP IDs 21-T11-201 and 21-T08-060. Other Federal funds are FRA PTC funds.	VAR210005	21-T11-113	Non-Exempt (N/A) - N/A	2030
San Francisco	SFMTA	SF Muni Third St LRT Phase 2 - New Central Subway	Extend the Third Street Light Rail line into a new subway generally in a north-south alignment under Fourth Street to Market, then under Geary to Stockton, and under Stockton to Clay Street. Includes procurement of four LRVs.	SF-010037	21-T10-083	Non-Exempt (N/A) - N/A	2025
San Francisco	TBJPA	Transbay Terminal/Caltrain Downtown Ext: Ph. 2	San Francisco: From Fourth/Townsend to Salesforce Transit Center: Extend Caltrain /High Speed Rail to Downtown San Francisco (DTX) Extend Caltrain rail service from 4th St/Townsend St in San Francisco to Salesforce Transit Center in downtown San Francisco, including two new stations: Phase 2 of the Transbay Transit Center program is the extension of the Caltrain commuter rail service from its current San Francisco terminus at Fourth and Townsend Streets to a new underground terminus beneath the Salesforce Transit Center building. Plan Bay Area 2050 RTP ID: 21-T11-110	SF-050002	21-T11-110	Non-Exempt (N/A) - N/A	2030
San Francisco	SFMTA	Historic Streetcar Extension to Fort Mason	San Francisco: From Fisherman"s Wharf through National Park Service lands in Aquatic Park to Fort Mason: This proposed extension of historic streetcar service would extend the proposed E-line or the current F-line service from Fisherman"s Wharf through National Park Service lands in Aquatic Park and Fort Mason, using the historic railway tunnel between the foot of Van Ness Avenue and the Fort Mason Center. Environmental studies are now getting underway on this proposed project. Project has been funded for Alternatives Analysis and EIS only and no construction or operation schedule has been set.	SF-070003	21-T10-082	Non-Exempt (N/A) - N/A	2030

San Francisco	SFMTA	Geary Bus Rapid Transit	San Francisco: Along the Geary corridor between 34th Avenue and Market Street (including Geary Boulevard and Geary and O'Farrell streets): Design and implement transit performance and safety improvements. Scope elements include dedicated transit-only lanes, upgraded bus stops with amenities, new and upgraded traffic signals, upgraded corridor communication systems, pedestrian bulbs, traffic calming, and other pedestrian safety and accessibility measures. The Geary BRT project will be delivered in two phases. The first phase, the Geary Rapid Project, includes the Geary corridor between Market and Stanyan streets. Major scope elements include side-running transit-only lanes, bus and pedestrian bulbs, removal of the Steiner pedestrian overcrossing, introduction of new signalized pedestrian crossings, and a lane reduction along the Geary Expressway between Scott and Gough streets. The second phase, the Geary Boulevard Improvement Project, includes Geary Boulevard between Stanyan Street and 34th Avenue in the Richmond district. Major scope elements include side-running transit-only lanes, bus bulbs, traffic signal upgrades, and pedestrian safety measures. The projects will be coordinated with SF Public Utilities Commission-sponsored water and sewer upgrades as well as SF Public Works-sponsored roadway re-paving to minimize construction impacts to the community.	SF-070004	21-T10-079	Non-Exempt (N/A) - N/A	2030
San Francisco	SF DPW	Harney Way Roadway Widening	San Francisco: Harney Way from US 101 to Jamestown: Improvements include right-of-way engineering, land acquisition for future widening of roadway, design, landscaping and sidewalk improvements, roadway construction, and traffic signal improvements. Project will acquire land on the East side of Harney Way between Executive Park Boulevard East and Executive Park Boulevard West. Widening project will accommodate two additional mixed flow lanes and two exclusive bus rapid transit lanes between US 101 and Jamestown. (Segment F.b.) Project is phased	SF-090004	21-T07-056	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
San Francisco	SFMTA	Light Rail Vehicle Procurement	SFMTA: Fleet-wide: Procure 219 light rail vehicles with an option for an additional 45 vehicles to replace existing fleet and expand service. The contract with Siemens calls for an array of replacement (151) and expansion vehicles (113). State-of-the-art vehicles will be equipped with innovative safety features, improved passenger amenities and modern information systems. $16.8M of funding for vehicles to serve Central Subway accounted for in TIP ID SF-010037 (Central Subway Project).	SF-090012	21-T01-002	Non-Exempt (N/A) - N/A	2040
San Francisco	SFMTA	Transit Center in Hunters Point	Muni:Transit Center in Hunters Point Construct 10 bays, Low-level platform, Operator restroom, bus shelters, platform communications and monitoring network (signals, closed circuit TVs, etc.), sidewalks and roadway, Electrical ductbank for MUNI power, lighting for transit stations	SF-090016	21-T10-063	Non-Exempt (N/A) - N/A	2040
San Francisco	SFMTA	Geneva Harney BRT Infrastructure: Central Segment	SFMTA: Bus rapid transit facilities from Executive Park/Harney Way under US 101 to SF/Daly City line on Geneva Avenue. Includes pedestrian/bicycle treatments and special bus shelters/landscaping/art for identity.	SF-090020	21-T10-080	Non-Exempt (N/A) - N/A	2040
San Francisco	SFMTA	Geneva Harney BRT Infrastructure - Eastern Segment	SFMTA: Bus rapid transit facilities from Executive Park/Harney Way to Hunters Point Transit Center via Candlestick/Hunters Pt. Shipyard development. Includes pedestrian/bicycle treatments and special bus shelters/landscaping/art for identity.	SF-090023	21-T10-080	Non-Exempt (N/A) - N/A	2040
San Francisco	SF DPW	Hunters Pt Shipyard and Candlestick Pt Local Roads	In San Francisco: Hunters Point Shipyard and Candlestick Point: Build new local streets to support multi-modal mixed use development. Includes roadway, streetlights, streetscape, traffic signals, overhead signs, sidewalks, curbs, and gutters. The project is phased.	SF-110006	21-T10-063	Non-Exempt (N/A) - N/A	Not Modeled
San Francisco	SFCTA	Treasure Island Congestion Pricing Program	San Francisco: Treasure Island: Implement Congestion Pricing Program on Treasure Island including parking pricing and tolling of vehicles entering and exiting Treasure Island as a TDM toll for planned redevelopment of Treasure Island. Does not show $500k in Regional PDA Plng (included in REG110014) and $5,500,000 in Federal ATCMTD	SF-110049	21-T10-092	Non-Exempt (N/A) - N/A	2040
San Francisco	SF DPW	SF- Better Market Street Transportation Elements	In San Francisco: Phase 1: Market St, from 5th Street to 8th Street; Future Segments: from Octavia to 8th Street and from 5th Street to Fremont Street: improve roadway, including resurfacing, sidewalk improvements, way-finding, lighting, landscaping, transit boarding islands, transit connections, traffic signals, transportation circulation changes and utility relocation and upgrade. The project also includes installation of the F Loop, which will improve efficiency of the historic streetcar F Line.	SF-130001	21-T08-060	Non-Exempt (N/A) - N/A	2020
San Francisco	SFCTA	Treasure Island Pricing Mobility Improvements	San Francisco: On Treasure Island: This project will deliver mobility improvements associated with the Treasure Island Congestion Pricing Program. Multi-modal mobility improvements include transit capital, operating & maintenance and bicycle & pedestrian improvements.	SF-130005	21-T10-092	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
San Francisco	SFCTA	HOV/HOT Lanes on U.S.101 and I-280 in SF	San Francisco: On US 101 from SF/SM County line to I-280 interchange and on I-280 from US 101 interchange to 6th Street offramp: Convert a mixed traffic lane in each direction to HOV to enhance carpool and transit operations during peak periods in order to complement HOV lanes through San Mateo county and/or as part of a potential/demonstration congestion charging program in SF and project develop for converting to HOT lanes	SF-130008	21-T12-116	Non-Exempt (N/A) - N/A	2030
San Francisco	SFCTA	SF Downtown Congestion Pricing	San Francisco: In the downtown area: Implementation of a demonstration value pricing (tolls and incentives) program in the San Francisco downtown area.	SF-130017	21-T10-091	Non-Exempt (N/A) - N/A	2030
San Francisco	SFCTA	Quint-Jerrold Connector Road	San Francisco: From Oakdale Avenue to Jerrold Avenue: SF has proposed the Quint-Jerrold Connector Road as alternate access route between Oakdale and Jerrold Avenues and across the Caltrain tracks. The project is to be coordinated with Caltrain's Quint Street Bridge Replacement project which closed Quint Street through access beneath the Caltrain tracks at that location. The Bridge Replacement project replaced the existing bridge structure with a berm, which would facilitate the potential future siting of a Caltrain Oakdale Station.	SF-150008	21-T07-056	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled

San Francisco	Port of SF	Mission Bay Ferry Terminal	San Francisco: At the eastern terminus of 16th St: Construct new ferry landing to service San Francisco Mission Bay and Central Waterfront as a part of the Bay area ferry transit system. The Mission Bay Ferry Landing will serve 350,000 annual weekday passengers plus 125,000 people traveling to special events each year. The new ferry landing will enable critical Transbay and regional ferry service to and from the fastest growing neighborhood of San Francisco and the East and North Bays. It will also provide a direct regional link to the new 550-bed University of California Mission Bay hospital campus and approved 18,000-seat Golden State Warriors arena. The landing is projected to open for revenue service between 2020 and 2022, adding vital regional transit capacity within the next five years that will alleviate current overcrowding, serve planned future growth and provide resiliency in the event of an earthquake, BART or Bay Bridge failure or other unplanned event. Service will be provided by San Francisco Bay's two ferry operators-the Water Emergency Transit Agency and Golden Gate Bridge and Highway District-with weekday morning and evening peak commute service linked from the downtown Ferry Building plus direct service for an estimated 80 annual special events at the arena.	SF-170001	21-T11-097	Non-Exempt (N/A) - N/A	2030
San Francisco	SF DPW	HOPE SF Street Network - Sunnydale and Potrero	Includes new and realigned street networks throughout the two remaining HOPE SF sites (Sunnydale and Potrero), including traffic calming pedestrian and bike network, and transit/shuttle stops.	SF-170013	21-T07-056	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
San Francisco	WETA	WETA: Electric Vessels and Related Infrastructure	WETA: Fleetwide: Support the purchase/construction of all-electric vessels and related charging infrastructure. This project supports medium sized routes using all-electric battery powered vessels. This project supports TIP ID SF-170001	SF-190008	21-T01-002	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
San Francisco	SFCTA	US 101 Doyle Drive Availability Payments	San Francisco: US 101 (Doyle Drive) from Lombard Street/Richardson Avenue to Route 1 Interchange: Availability payments for roadway replacement/rehabilitation project SF-991030	SF-190011	21-T01-006	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
San Francisco	SFMTA	SFMTA - Core Capacity Program	SFMTA: Along the K, J and M-Line Corridors: Design and implement high priority route improvements from the Muni Forward Program. Project includes a combination of transit signal priority, transit-only lanes, stop consolidation, and complementary facility and pedestrian improvements. Included in the award are a set of targeted improvements to two key rail corridors: the J and M-Lines and design for the K-line.	SF-190012	21-T10-084	Non-Exempt (N/A) - N/A	2040
San Francisco	SFCTA	Hillcrest Road Improvement Project	In the City of San Francisco on Yerba Buena Island, from the intersection of Hillcrest Road & Forest Road to 0.25 miles west, north of the I-80 on-ramp. Construct a widened roadway and retaining walls including 8-ft shoulders, a Class II bike lane, and width to accommodate a future multi-use path.	SF-230211	21-T08-060	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
San Francisco	SFMTA	I-280 Ocean/Geneva Interchange Improve. at Balboa	San Francisco: Implement interchange improvements that may include intersection geometry changes, traffic signal changes, and Intelligent Transportation System (ITS) elements in the Balboa Park Station area, including the I-280 Northbound Geneva Ave and I-280 Southbound Ocean Ave off-ramps, to improve traffic circulation and safety for pedestrians & bicyclists. The project will coordinate with Caltrans, SFMTA, and SFPW.	SF-250201	21-T06-016	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
San Mateo	Redwood City	Blomquist Street Extension	Redwood City: On Blomquist Street from Maple Street to Bair Island Road: Extend roadway across Redwood Creek. Project may be phased based on developer funding.	SM-090007	21-T07-056	Non-Exempt (N/A) - N/A	Not Modeled
San Mateo	San Carlos	US101/Holly St I/C Mod and Bike/Ped Overcrossing	San Carlos: At Holly St/ US-101 Interchange: Widen east bound to north bound ramp to two lanes and eliminate north bound to west bound loop and construct a grade-separated multipurpose path that connects the east side of Highway 101 to the west	SM-090008	21-T06-027	Non-Exempt (N/A) - N/A	2030
San Mateo	CCAG	Improve US 101 operations near Rte 92	San Mateo: At the US 101/SR 92 interchange: Improve traffic flow, safety and increase mobility by minimizing traffic conflict locations and improving peak-period travel times along US 101 and SR 92 within project limits.	SM-090014	21-T06-027	Non-Exempt (N/A) - N/A	2030
San Mateo	Redwood City	Redwood City Ferry Service	SF Bay Area: Between Redwood City and San Francisco/Oakland: Environmental clearance and design of ferry transit service	SM-110002	21-T11-098	Non-Exempt (N/A) - N/A	2030
San Mateo	SSF	US 101/Produce Avenue Interchange Improvements	On Route US 101 in San Mateo County, in the City of South San Francisco (PM 21.3/21.7). Reconstruction and reconfiguration of the interchange, as follows: Extend Utah Avenue to the west over US 101 to connect with San Mateo Avenue and provide access to southbound US 101 on-/off-ramps at Produce Avenue construct new sidewalks and Class 2 bike lanes on both sides of the east-west local street connection' remove some of the non-standard features at this location, and provide new ramp configurations at Produce Avenue provide more direct access to US 101 to better accommodate land use and employment changes and help separate freeway bound traffic from the surrounding local streets.	SM-110003	21-T06-027	Non-Exempt (N/A) - N/A	2030
San Mateo	CCAG	US101 Managed Lanes: Santa Clara Co-S of Grand Ave	San Mateo County: On US 101 between 2 miles south of the Santa Clara County Line (P.M. 50.6 in SCL) and 0.3 mi south of Grand Avenue Interchange (SM 21.8): Install Express Lanes. Utilize existing auxiliary lanes where possible and restore auxiliary lanes where needed for operations. SMCTA is co-sponsoring project.	SM-150017	21-T12-116	Non-Exempt (N/A) - N/A	2025
San Mateo	Pacifica	Manor Drive Overcrossing and Milagra On Ramp	In Pacifica: Hwy 1 and Manor Drive I/C: Widen the existing overcrossing over Hwy 1 at Manor Drive and install traffic signals to better facilitate traffic. The project will also look at an on ramp option at Milagra Dr.	SM-170004	21-T06-030	Non-Exempt (N/A) - N/A	2030
San Mateo	San Mateo	US 101/Peninsula Avenue Interchange Improvements	San Mateo: US-101 at Peninsula Ave and East Poplar Ave: Convert a partial interchange to a full interchange by adding new southbound on- and off-ramps and closing the southbound on- and off-ramps at East Poplar Avenue. The Project will improve safety by facilitating the closure of the Poplar on and off ramps which have a higher than average accident rate. It will improve local circulation for all modes in the project area by converting what is currently a partial interchange to a full interchange. Eliminates the circuitous travel patterns from S/B 101 to east of 101. Improves access into north San Mateo and south Burlingame residential and business destinations. Improves bicyclist and pedestrian circulation within the project limit.	SM-170011	21-T06-027	Non-Exempt (N/A) - N/A	2030

San Mateo	Caltrain	Peninsula Corridor Electrification Expansion	Caltrain: Electric Multiple Unit (EMU) fleet: Expand fleet through procurement of an additional 40 vehicles. This will build on the initial procurement of 96 EMUs through the Peninsula Corridor Electrification Project, which is fully funded and underway. This includes minor modifications to lengthen some station platforms to accommodate 8-car EMU's as well as wayside bike improvements.	SM-190002	21-T11-107	Non-Exempt (N/A) - N/A	2040
San Mateo	SamTrans	SamTrans Express Bus Service	San Mateo, San Francisco and Santa Clara Counties: On the US-101 Corridor between 1) Sunnyvale and San Bruno BART station, 2) Foster City and San Francisco, 3)Redwood City and San Francisco, and 4) San Mateo and San Francisco: Implement a network of four express bus routes. The launch of express bus service is envisioned to occur in conjunction with the opening of the managed lane on US-101 in San Mateo County. The project entails procuring a fleet of Electric buses, and related charging infrastructure to run the service, as well as associated bus stop and park-and-ride lot improvements. Other State funds are LCTOP	SM-190003	21-T12-119	Non-Exempt (N/A) - N/A	2030
San Mateo	CCAG	US-101 Managed Lanes North of I-380	San Mateo and San Francisco counties: On US-101 from I-380 to logical termini near the SM/SF County Line: Install managed lane (HOV or Express Lane) in each direction. SMCTA is co-sponsoring the project. Alternatives include (minimum) converting inside travel lane in each direction to managed lane and maintaining standard shoulder widths to the extent feasible plus outside widening to accommodate auxiliary lanes as necessary or (maximum) adding a lane in each direction and modifying under/over crossings and overheads of existing structures where necessary. Post Miles are SM 19.2/26.1 and SF 0.0/0.5.	SM-190009	21-T12-116	Non-Exempt (N/A) - N/A	2030
San Mateo	Millbrae	Widen Millbrae Avenue	Millbrae: Millbrae Avenue between Rollins Road and US101 Southbound On Ramp: Widen roadway/overpass and resurface the intersection of Millbrae Avenue and Rollins Road. Repairs include: AC overlay with ancillary work including pavement grinding, full depth asphalt repairs, adjusting utility frames and grates, install new sidewalk, replacing pavement markings and traffic signal detection devices including additional striping for class 2/4 bike trail for future connections to Old Bayshore Highway.	SM-210001	21-T07-056	Non-Exempt (N/A) - N/A	Not Modeled
San Mateo	CCAG	US 101/SR 92 Interchange Direct Connector Project	The project proposes to create a dedicated connection between State Route (SR) 92 and US 101 express lanes. This new connection would operate like the express lanes recently opened on US 101 in San Mateo County. Currently, there is no existing High Occupancy Vehicle (HOV) direct connector between US 101 express lanes and SR 92 that might provide incentives for carpool or bus use.	SM-250201	21-T06-027	Non-Exempt (N/A) - N/A	2040
Santa Clara	VTA	BART - Berryessa to San Jose Extension	San Jose: Six miles from Berryessa Station in north San Jose to Santa Clara: Extend BART by constructing 4 new stations, a tunnel through downtown San Jose, and a new maintenance / storage yard in Santa Clara. The project constructs new track and dedicated guideway, power systems, signal systems, and purchases new vehicles. The project also includes upgrades to the existing BART system, that are required to extend operations to San Jose/Santa Clara. Other State funds are TIRCP. PBA2050 ID is 21-T11-109	BRT030001	21-T11-109	Non-Exempt (N/A) - N/A	2030
Santa Clara	VTA	Eastridge to BART Regional Connector (EBRC)	In Santa Clara County, in the City of San Jose. This project will extend the existing Capitol Light Rail (LR) system by 2.4 miles from Alum Rock LR Station to Eastridge Transit Center. This extension will include an elevated rail station at Story Road with a pedestrian overcrossing, and a ground level station at the Eastridge Transit Center. Also, includes installation of two traction power substations to power the light rail system.	SCL050009	21-T10-087	Non-Exempt (N/A) - N/A	2030
Santa Clara	VTA	SR 152 New Trade Corridor	Santa Clara/ San Benito counties: SR152 between US101 and SR156: Complete PA&ED for new alignment of SR152 between US101 and SR156 in Santa Clara and San Benito counties, widening US 101 from Monterey Street to the SR 25/US 101 Interchange, modifying the existing SR 152/ SR 156 Interchange, and evaluating "corridor management" strategies for potential traffic users and roadway pricing.	SCL090016	21-T06-042	Non-Exempt (N/A) - N/A	Not Modeled
Santa Clara	Santa Clara Co	Montague Expwy Widening - Trade Zone-Great Mall	In Santa Clara County: Widen Montague Expressway to 8 lanes between Trade Zone and Great Mall Blvd: Designate new lanes between Trade Zone and Great Mall Blvd as HOV lanes.	SCL090017	21-T07-056	Non-Exempt (N/A) - N/A	2030
Santa Clara	VTA	SR 85 Express Lanes	Santa Clara County: On SR 85 carpool lane from US 101 in San Jose to US 101 in Mountain View including the US 101/SR 85 HOV direct connectors and approaches: Implement roadway pricing. Convert the existing HOV lanes on SR 85 in both directions from US 101 in South San Jose to US 101 in Mountain View to Express Lanes, including the US 101/SR 85 HOV direct connectors in South San Jose, add a second Express Lane in both directions between SR 87 and I-280, and add an auxiliary lane on SR 85 NB from existing South De Anza Boulevard on-ramp to Stevens Creek Boulevard off-ramp. The Silicon Valley Express Lanes Phase 3 project includes the conversion of carpool lanes to express lanes on SR-85 from SR237/Grant Road to the US 101/SR-85 Interchange in Mountain View including the existing US101/SR-85 carpool lane-to-carpool lane direct connector ramps. Deliver milestones reflect phase 4 of project.	SCL090030	21-T12-116	Non-Exempt (N/A) - N/A	2030
Santa Clara	VTA	Santa Clara County - US 101 Express Lanes	In Santa Clara County: Implement roadway pricing on US 101 carpool lane. Convert existing US 101 HOV lanes in both directions from Cochrane Avenue to the San Mateo County Line to Express Lanes, including the US 101/SR 85 HOV direct connectors in Mountain View, add a second Express Lane in both directions from Cochrane Road to SR 85 in San Jose and from Blossom Hill Road to Fair Oaks Avenue, convert the second HOV lanes in both directions from Shoreline Boulevard to south of Oregon Expressway to Express Lanes, and add auxiliary lanes at various locations. Construct new Express Lanes from Cochrane Ave to East Dunne Ave in Morgan Hill. The Silicon Valley Express Lanes Phase 3 project includes the conversion of single carpool lanes to express lanes on US101 from near SR-237 to SR-85 in Mountain View and the conversion of double carpool lanes to double Express Lanes on US101 from the US101/SR-85 interchange in Mountain View to near the San Mateo County line in Palo Alto.	SCL110002	21-T12-116	Non-Exempt (N/A) - N/A	2025
Santa Clara	San Jose	San Jose - Autumn Street Extension	In San Jose: Autumn St between Julian Street and San Carlos Street: widen, partially realign, and extend Autumn Street between Coleman and Park Avenue, approximately 1.1 miles.	SCL110006	21-T07-056	Non-Exempt (N/A) - N/A	2050

List of 2025 TIP Projects by County and Air Quality Status

Santa Clara	San Jose	US 101/Old Oakland Road Interchange improvements	Oakland Rd from Commercial St to US 101: Widen roadway including the overcrossing to 8 lanes Commercial St from Oakland Rd to Berryessa Rd: Widen to add turn lanes Commercial St from Berryessa Rd to Mabury Rd: Extend roadway: US 101 on-ramps and off ramps: Widen to 3 lanes Various locations in area: modify signals	SCL190001	21-T06-028	Non-Exempt (N/A) - N/A	Not Modeled
Santa Clara	VTA	US 101/Zanker Road-Skyport Drive-N. Fourth St. Imp	San Jose: US101 at Zanker Rd/Skyport Dr./N. 4th St: Construct a new overcrossing over US 101 connecting Zanker Rd to Skyport Dr-N. Fourth St to create a new north-south corridor parallel to N. First St and modify existing US 101 on and off-ramps. Consolidate northbound US 101 ramps from Old Bayshore Blvd. to Brokaw Road/North First Street to new ramps at Bering Drive.	SCL190007	21-T06-028	Non-Exempt (N/A) - N/A	2030
Santa Clara	Milpitas	Calaveras Boulevard Improvements	Milpitas: Calaveras Blvd. (SR-237) overpass at UPRR tracks from Abel St to Town Center Blvd: Widen from 4 to 6 lanes and modify signing, striping and signals	SCL190009	21-T07-056	Non-Exempt (N/A) - N/A	2040
Santa Clara	VTA	US 101/Buena Vista Avenue Interchange Improvement	Gilroy: At Buena Vista Ave. overcrossing at US 101: Provide southbound on-ramp flyover structure to accommodate a braided ramp with exist. CHP Station Facility off-ramp, auxiliary lanes and bike/pedestrian facilities on the new overcrossing.	SCL190010	21-T06-028	Non-Exempt (N/A) - N/A	2030
Santa Clara	VTA	SR 17 Congestion Relief in Los Gatos	Los Gatos: On both direction of SR 17 from Lark Ave to south of SR 9 interchange and along SR-17 area: Operational improvements including modifying the SR17/SR9 off-ramps into signalized T intersections, widening SR-17, implementing advance transportation technology, and installing traffic signal control systems, traveler information systems and ramp meters.	SCL190014	21-T06-032	Non-Exempt (N/A) - N/A	2030
Santa Clara	Caltrans	SCL-SM I-280 Pavement Preserv. and HOV Extension	Santa Clara and San Mateo Counties: On I-280 from Foothill Blvd(PM 11.5 in Santa Clara County) to 0.5 mile north of Sand Hill Rd(PM R2.1 in San Mateo County): Pavement rehabilitation On SB I-280 from near Magdelena Ave south 3300 ft to existing HOV lane: Extend HOV lane	SCL190034	21-T06-016	Non-Exempt (N/A) - N/A	2025
Santa Clara	San Jose	Julian and St. James Couplet Conversion	San Jose: Along Julian St from Market St to 3rd St, St James St from Market St to 4th St, 3rd St from Julian St to St. John St: Convert 1-way to 2-way traffic to improve roadway functionality and safety for all roadway users and to improve neighborhood livability. Project would include: 1. Restriping the street for two-way traffic (one lane in each direction), 2. New and modified signals to accommodate two-way traffic and improve signal responsiveness for people walking and bicycling, 3. Streetlights (new pedestrian-scale lighting and conversion of existing lights to smart, energy efficient lighting) 4. Amenities for livability, traffic calming and complete streets, including street trees, wayfinding information, refurbishing non-functional fountains as planters, green backed bicycle sharrows, bike racks, accessible ramps, and high-visibility/decorative crosswalks.	SCL210026	21-T08-060	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	2030
Santa Clara	Milpitas	South Milpitas Blvd Extension and Bridge	Milpitas: S. Milpitas Blvd over Penitencia Creek connecting to Tarob Ct: Extend roadway and construct bridge. The vehicular bridge is part of the Metro Area Specific Plan circulation infrastructure plan to provide vehicular, bicycle and pedestrian connectivity between Metro developments, Milpitas BART Station, Great Mall and surrounding residential developments.	SCL210035	21-T07-056	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
Santa Clara	VTA	US 101/SR 25/Santa Teresa Boulevard Extension	Gilroy: Santa Teresa Boulevard from just north of the existing terminus at Castro Valley to the US 101/SR 25 Interchange: Extend roadway including bike lanes in both directions and reconstruct the Santa Teresa Boulevard/Castro Valley Road Intersection.	SCL230201	(blank)	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
Santa Clara	San Jose	Story Keyes Complete Streets	The Story-Keyes Complete Streets Project spans 2.3 miles from 3rd Street to King Road, serving a regional commercial hub and multiple MTC Priority Development Areas. The project adds raised bikeways, protected intersections, transit boarding islands, wayfinding, micromobility stations, green stormwater infrastructure, and pedestrian-scale lighting and other improvements for bicyclists, pedestrians, and transit riders. Bus-only lanes are a potential element on the wider Story Road.	SCL230210	21-T08-060	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
Santa Clara	Gilroy	Tenth Street Bridge at Uvas Creek	The project will construct a new bridge over Uvas Creek to connect two segments of Tenth Street. It will include two vehicular traffic lanes, a median, buffered bicycle lanes, and sidewalks on both sides. Tenth Street and Uvas Park Drive will be raised on the approach embankments. The project includes a breezeway bridge to allow users of the Uvas Creek Levee Trail to pass unimpeded under Tenth Street. To accommodate the realignment of Tenth Street and improve safety, the curb returns and driveway at Gilroy High School will be reconstructed to match grades and connect sidewalks. A roundabout will also be constructed at Tenth Street/Uvas Park Drive. Tenth Street improvements will include sidewalks, bikeways, crosswalks, restriping, signing, curb-and-gutter, storm drain, lighting, and repaving.	SCL250204	21-T07-056	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
Solano	Fairfield	Fairfield/Vacaville Hannigan Station Improvements	Fairfield: Capitol Corridor: Project includes 800-foot passenger platform, covered passenger waiting areas, train/bus passenger transfer area including bus passenger transfer facility, park & ride lot, overcrossing and pedestrian undercrossing, traveler information kiosk.	SOL030002	21-T11-115	Non-Exempt (N/A) - N/A	2025
Solano	Dixon	Parkway Blvd/UPRR Grade Separation	Dixon: Parkway Blvd from Valley Glen Dr. to Pitt School Rd.: Construct new 4 lane roadway ad overcrossing at UPRR & Porter Rd connecting the southeast to the southwest side of town. The overpass will connect to a future 4-lane roadway with both pedestrian and bicycle access. Project to also include permanent closure of the nearby at-grade railroad crossing on Pitt School Road. Scope of work includes right-of-way acquisition, environmental processing, underground utilities, drainage, barricades and fencing for at-grade closure, reconstruction of existing roadways and widening of shoulders to accommodate the new overpass.	SOL050009	21-T07-056	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
Solano	STA	I-80/I-680/SR 12 Interchange Improvements	Fairfield: I-80/I-680/Route 12 IC: Improve widen I-80 and I-680 as well as improve the connections from westbound I-80 to I-680 and SR12 (West) directly connect northbound I-680 and SR12 (West) connect the I-80/Red Top Road interchange with Business Center Drive and construct or improve interchanges at SR12 (West)/Red Top Road, I-80/Red Top Road, I-80/Green Valley Road, and I-680//Red Top Road. A third eastbound lane would be added to SR12 (East) from the Chadbourne Road on ramp to the Webster Street off ramp.	SOL070020	21-T06-015	Non-Exempt (N/A) - N/A	2040

Solano	Solano County	Redwood-Fairgrounds Dr Interchange Imps	Solano County: I-80/Redwood St. I/C and SR 37/Fairgrounds Dr. I/C: Implement I/C and safety improvements Fairgrounds Dr. between Redwood St. and SR 37 (2.1 lane miles): Remove left turn center lane and widen to add one lane in each direction. Add bike lanes on each side of the road for the entire length of the project and a transit improvements near SR37 to compliment STA's Solano Express expansion plans. Project is phased: Bike lanes, bus stop improvements, and intersection signalization improvements are scheduled be completed within the TIP period, expansion elements are scheduled to be completed after 2030	SOL090015	21-T06-015	Non-Exempt (N/A) - N/A	2030
Solano	MTC	Solano I-80 Managed Lanes	Solano County: I-80 from Red Top Rd to I-505: Convert existing HOV to Managed Lane I-80 from Air Base Parkway to I-505: Construct new Managed Lanes by widening to add an express lane in each direction. BATA Project Savings are for non-federally participating BAIFA and STA project elements.	SOL110001	21-T12-116	Non-Exempt (N/A) - N/A	2025
Solano	STA	Jepson: Walters Rd Ext - Peabody Rd Widening	Solano County: Jepson Parkway: upgrade and link a series of existing local two- and four-lane roadways (as well as construct an extension of an existing roadway under one alternative) to provide a four- to six-lane north-south travel route for motorists who face increasing congestion when traveling between jurisdictions in central Solano County. Remaining segments to construct are: Vanden from Peabody to Leisure Town Walters Road Extension Leisure Town from Vanden to Alamo Leisure Town from Alamo to Orange. One EIR/EIS provides environmental clearance for the remaining segments.	SOL110004	21-T07-056	Non-Exempt (N/A) - N/A	2030
Solano	STA	Jepson: Leisure Town Road Phase 1B and 1C	Vacaville: Leisure Town Road from Elmira Road to south side of Ulatis Creek: (Phase 1B funded) widen to 4 lanes with center median; add west linear setback, multiuse sidewalk, two new signal installations, and a new sewer junction structure; along with storm drain improvements, as well as hydrant and utility relocations. Leisure Town Road from south side of Ulatis Creek to Horse Creek: (Phase 1C unfunded) widen to 4 lanes, with west side setback landscaping and multiuse sidewalk, median, dependent on developer timing and funding. Phase project to comply with budget.	SOL110006	21-T07-056	Non-Exempt (N/A) - N/A	2030
Solano	Fairfield	Fairfield Transportation Center - Phase 3	In Fairfield: Fairfield Transportation Center: 3rd parking structure of 600 or more spaces at the site and construction of direct bus access, multi-use trail, as well as other ped and bike access improvements.	SOL110007	21-T10-093	Non-Exempt (N/A) - N/A	Not Modeled
Sonoma	SCTA	US 101 Marin/Sonoma Narrows (Sonoma)	Marin and Sonoma Counties: From SR37 in Novato to Old Redwood Highway in Petaluma: convert expressway to freeway Between Lakeville Highway and East Washington Street: Construct NB auxiliary lane, and widen to 6 lanes for HOV lanes. Programming in SON070004 is for MSN project in Sonoma County. For Marin project programming, see MRN050034. Earmark programmed on SON070004 for Sonoma County. Includes T-21 Demo #1340 (#3.1M of $5.6M), SAFETEA-LU HPP Earmark #1767 ($375K of $400K), SAFETEA-LU HPP Earmark #3763 ($50K of $500K), SAFTEA-LU HPP Earmark #3762 ($2,662K of $15M).	SON070004	21-T06-029	Non-Exempt (N/A) - N/A	2040
Exempt Projects							
Alameda	ACE	ACE Track Improvements.	ACE: From Stockton to San Jose: Corridor improvements for signaling, grade crossing, track and other cost associated	ALA010056	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation or reconstruction of track structures, track,	Not Modeled
Alameda	San Leandro	SR 185- E. 14th St/ Hesperian Blvd/150th Ave	San Leandro: 150th/E. 14th/Hesperian: Additional Northbound left turn lane from Hesperian Blvd. to E. 14th St, additional Eastbound left turn lane from E.14th St. to 150th Ave and additional Southbound lane on E. 14th from Hesperian to 150th Ave. Other roadway improvements to improve traffic circulation and reduce delay time.	ALA050002	21-T07-056	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Alameda	ACTC	I-80 Gilman Interchange Improvements	Berkeley: On Gilman Ave at I-80: Reconfigure interchange. The dual roundabout will provide appropriate traffic control for all intersections within the I-80 Gilman Interchange area. The roundabout on the east side of the interchange will have a combination of two and one lanes as appropriate to maximize throughput based on forecast traffic volumes. It includes an exit and entrance for the Eastshore Highway (frontage road) on both sides, an entrance to the eastbound I-80 on-ramp, and an exit from the I-80 eastbound off-ramp. Also, a bypass lane from the off-ramp is provided for the southbound movement to the Eastshore Highway. The west roundabout, similar to the east roundabout, will have a combination of one and two travel lanes, as appropriate. It contains an entrance and exit to the West Frontage Road on the south side, an entrance to the I-80 westbound on-ramp, and an exit from the I-80 westbound off-ramp. EARMARK- HBRR- #1744 I-80. The bicycle/ pedestrian components of the full project include a new overcrossing structure dedicated to pedestrians and bicyclists plus segments of Class I Trail and Class IV bikeway that provide access to/from the overcrossing. The construction will be delivered in 2 phases. Phase 1 includes the construction of the new bicycle/pedestrian overcrossing over I-80. Phase 2 includes the construction of the double roundabout and roadway access to and from the roundabouts connecting surrounding facilities.	ALA050079	21-T09-061	Exempt (40 CFR 93.127) - Changes in vertical and horizontal alignment	Not Modeled
Alameda	Alameda County	Fruitvale Ave Roadway Bridge Lifeline	Alameda County: Fruitvale Roadway Bridge: Retrofit bridge to a lifeline facility and provide vital access between City of Alameda and City of Oakland in the event of a major earthquake	ALA090023	21-T01-004	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Alameda	BART	BART: Fare Collection Equipment	BART: Systemwide: Acquire and install fare collection equipment.	ALA090065	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of operating equipment for vehicles (e.g.,	Not Modeled
Alameda	ACTC	Alameda County Safe Routes to Schools	In Alameda County: Countywide: Safe Routes to Schools Program including education and outreach efforts in various elementary, middle, and high schools (grades K-12), along with ridesharing and project development activities. Includes cycle 4 ATP-funded, "Alameda County School Travel Opportunities Program" to bring education and encouragement activities to 70 new schools that have not previously had SR2S program.	ALA110033	21-EN09-132	Exempt (40 CFR 93.126) - Other - Grants for training and research programs	Not Modeled
Alameda	Oakland	Lake Merritt to Bay Trail Bike/Ped Bridge	Oakland: Over Embarcadero and UPRR tracks under I880 between the Estuary and Lake Merritt along the Channel: Construct ADA accessible bicycle pedestrian bridge. Project includes bike ped connection to adjacent trails. (Other State are Coastal Conservancy Funds)	ALA130003	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled

Alameda	Alameda County	Alameda Co-Various Streets and Roads Preservation	Unincorporated Alameda County: 164th Ave from Foothill Blvd to Liberty Street, Foothill Blvd from 164th Ave to John Dr, Stanley Blvd from Isabel Ave to CL, Bruns Rd from Kelso Rd to County LL, Kelso Rd from Mountain House Rd to County LL, Grove Way from Tanglewood to Redwood Rd, Lake Chabot Rd from Fairmont to Quail Ave, A Street from Knox St to Hayward City Limit, Liberty Street from Fairmont Dr to 170th Ave, Vasco Rd from Dalton Ave to Landfill Entrance: Rehabilitate pavement including key cutting, milling, base repairs, asphalt concrete placement, pedestrian ramps, curb, gutter, signing and striping.	ALA130018	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Alameda	MTC	West Oakland Link	In Oakland: In the vicinity of the East Span of the San Francisco-Oakland Bay Bridge: The West Oakland Link bike/ped path will connect the communities of West Oakland, Oakland, and other East Bay cities to the new East Span of the San Francisco Oakland Bay Bridge. The trail will is part of the regional Bay Trail.	ALA130030	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	ACTC	I-80/Ashby Avenue Interchange Improvements	Alameda County: I-80/Ashby IC: Reconstruct the Interchange. The proposed interchange elements include construction of a new bridge to replace the existing bridge and reconstruction of the interchange, construction of a new stand-alone bike & pedestrian overcrossing structure over the I-80 and provide access to Bay Trail from 65th Street, relocate frontage road, construct signal, ramp metering, lighting and landscaping. The bike & pedestrian overcrossing may be advanced as Phase 1. Cost for bike Ped elements is estimated at roughly $40M, June 2021.	ALA170002	21-T09-061	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Alameda	Oakland	Oakland - 14th Street Safe Routes in the City	Oakland: On 14th St between Brush St and Oak St: Reduce travel lanes from four (4) to two (2) add Class IV protected bicycle lanes separated from travel by curbs and parked cars pave bike lane where necessary implement transit boarding island improve pedestrian facilities including pedestrian refuges, marked crossings, retimed signals and implement storm drain rain gardens.	ALA170043	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	ACE	ACE Fixed Guideway (Capitalized Maintenance)	ACE: Along ACE Corridor: Capitalized Maintenance payments required to operate along Host Railroad's corridor. Capitalized Maintenance payments will go to the Host Railroad for annual track and signal maintenance costs.	ALA170048	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Operating assistance to transit agencies	Not Modeled
Alameda	Alameda	Central Avenue Safety Improvements	Alameda: On Central Ave from Main St to Sherman St: Implement multimodal street improvements including reduction from 4 to 3 lanes, a center turn lane, bike lanes, a 2-way separated bikeway adjacent to 3 schools, roundabouts including at Central/Fourth/Ballena with OBAG3 funding, Central/Third/Taylor and Central/Main/Pacific, curb extensions, pedestrian refuge islands, rectangular rapid-flash beacons, new crosswalks and street trees/rain gardens. This Central Avenue project creates a comprehensive multimodal street between Main Street/Pacific Avenue and Encinal Avenue/Sherman Street, which is 1.7 miles in length and runs through the center of town. Central Avenue connects the Naval Air Station (NAS) Alameda PDA, a ferry terminal, a second proposed ferry terminal, various AC Transit bus lines, commercial and residential areas, the City's largest municipal park, Washington Park, and students biking and walking to/from several neighborhood/charter/magnet schools with an estimated enrollment of 5,000 students. Caltrans jurisdiction covers the east end totaling 0.75 miles as SR-61. The San Francisco Bay Trail covers the west totaling 0.75 miles. The project will achieve the following goals: -Allows for a safer street within a neighborhood heavily concentrated with schools, and includes a center turn lane, which the Federal Highway Administration deems has substantial safety benefits when reducing travel lanes from four to three -Constructs bike lanes or a cycle track compared to only 12 percent that is currently with a bike/pedestrian path -Makes it easier and safer for people to walk across Central Avenue with new traffic lights, curb extensions, pedestrian refuge islands, rectangular rapid fire beacons and new crosswalks at key intersections - Improves the streetscape with street trees, gateway features and rain gardens -Improves bicycle and pedestrian access along the San Francisco Bay Trail and -Provides accessible curb ramps and six accessible on-street parking spaces.	ALA170049	21-T07-056	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Alameda	Oakland	Fruitvale Alive Bike/Ped Gap Closure	In Oakland: On Fruitvale Ave between Alameda Ave and E. 12th: Install class 4 cycle tracks and landscaped buffers, widen sidewalks, improve pedestrian crossings, add pedestrian scale lighting, reconfiguring/removing auxiliary and slip lanes to increase safety no road diet.	ALA170051	21-T08-060	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Alameda	MTC	I-880 Integrated Corridor Management - Central	Alameda County: I-880 Corridor from Davis Street in San Leandro to Whipple Road in Union City: Building on the ICM work being done in the northern segment of the I-880 corridor, the I-880 ICM Central Alameda Project will identify how existing and planned incident management strategies and operations can be better coordinated and integrated across networks and jurisdictional boundaries in the central segment of the I-880 Corridor. Phase I: Along San Leandro Blvd and Washington Ave from West Juana Ave and Lewelling Blvd: Implement an integrated corridor management system	ALA170057	21-T07-057	Exempt (40 CFR 93.126) - Safety - Traffic control devices and operating assistance other than	Not Modeled
Alameda	Caltrans	GL: Alameda and Marin Counties - TOS-Mobility	Alameda and Marin Counties: Various Locations: Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 and 40 CFR Part 93.127 Table 3 categories - Safer non-Federal-aid system roads, Shoulder improvements, traffic control devices and operating assistance other than signalization projects, Intersection signalization projects at individual intersections, Pavement marking demonstration, Lighting improvements, Emergency truck pullovers, Interchange reconfiguration projects Includes ramp metering and TOS Elements on I-580, I-680 and I-880 in Alameda County and US-101 in Marin County	ALA170060	21-T06-048	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	Oakland	Lakeside Family Streets	Oakland: On Harrison St between 20th Street and 27th Street, and along Grand Ave from west of Harrison to east of Bay Place: Install cycle track, parking protected bikeways and protected intersection. On Harrison between Grand and 27th St: implement parking protected bikeway and sidewalk extension. The project includes crosswalk enhancements, install/upgrade of ADA compliant curb ramps, and intersection improvements.	ALA170063	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Hayward	Hayward - Main Street Complete Street	Hayward: On Main Street between Mc Keever and D Street: reduce roadway from 4 to 3 lanes (Road Diet with center turn lane), add bulb-outs (curb extensions) at intersections, add Class II green bike lanes for visibility, improve ADA access with new curb ramps, new sidewalks, create on-street parking opportunities that provide door zone protection for bicyclists, and resurface roadway and restripe. AC Transit routes will continue to operate on Main Street and accommodations for the transit stops will be provided along the street.	ALA170065	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled

Alameda	Berkeley	Southside Complete Streets and Transit Improvement	Berkeley: Various locations south of UC Berkeley: Construct two-way cycle tracks, signal modifications, transit improvements, loading zone modifications, pedestrian safety improvements, and pavement rehabilitation. Project includes two-way cycle tracks on Dana St from Dwight Way to Bancroft Way, on Bancroft from Milvia St to Piedmont Ave, and on Fulton St from Dwight Way to Bancroft Way, and the associated signal modifications on Dana St, Bancroft Way, and Fulton St; transit improvements on Bancroft Way from College Ave to Shattuck Ave including a dedicated bus lane; commercial and passenger loading zone and disabled placard blue zone improvements throughout the project area; pedestrian safety improvements at various intersections including protected pedestrian crossing phases, high-visibility crosswalks, refuge islands, new and upgraded ADA curb ramps, and intersection modifications at Bancroft Way/Fulton St; and pavement rehabilitation on Dana St between Dwight Way and Bancroft Way, on segments of Bancroft Way between Piedmont Ave and Milvia St, and on Fulton St between Dwight Way and Bancroft Way.	ALA170067	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	Alameda	Clement Avenue Complete Streets	Alameda: On Clement Avenue between Broadway and Grand St: Create a comprehensive multimodal street between Broadway and Grand Street, which is 1.2 miles in length and at a gateway location for the city in the Northern Waterfront PDA making it easier to connect to Fruitvale BART, Oakland and beyond. The project will maximize the efficiency of the Miller-Sweeney Bridge, which is one of only five ways on/off the island, and will transform this 48-50 foot street from industrial railroad blight to a best practices multimodal corridor.*Complete Street Project*1) Bikeway-Installs Class IV bikeway Provides bike boxes with green pavement Installs bike signals at the Park Street/Clement Avenue intersection,2) Walkway-Widens sidewalks at locations narrowed by utility poles and trees to provide a continuous accessible path of travel Upgrades curb ramps to ensure compliance with the Americans with Disabilities Act Installs high visibility marked crosswalks, rectangular rapid flashing beacons and curb extensions,3) Safety-Improves lighting at marked crosswalks along the corridor,4) Railroad Remnants-Removes the abandoned railroad tracks down the center of the street and the remaining railway signs. Resurfaces the pavement at the railroad track removal area,5) Parking-Installs accessible on-street parking spaces Requires parking restrictions at key intersections to increase visibility and to allow for improved turning radii for trucks Removes parking at pinch points to provide a continuous path of travel where the sidewalk width is less than 36 inches,6) Driveways-Improves driveways to reduce vehicle encroachment into the sidewalk,7) Truck Access-Provides adequate travel lane widths, turning radii and loading zones for deliveries, and8) Streetscape-Installs street trees, bike racks, gateway features and wayfinding signs.	ALA170073	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Alameda	Alameda Grand St Pavement Rehab and Safety Imps	Alameda: Grand Street, Shore Line Drive to Otis Drive (0.3 miles): Resurface project street; perform minor maintenance repair to curbs, gutters, culverts, and curb ramps; install Class IV bikeway; install Rectangular Rapid Flash Beacon (RRFB) and marked crosswalks; enhance transit stops. This project helps protect and maintain city street surfaces, improve safety and mobility for all users and improve storm water surface drainage.	ALA170074	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Alameda	Fremont	Centerville Complete Streets of Relinquished SR84	Fremont: Thornton Ave (San Pedro Drive/Dondero Way to Fremont Blvd), Fremont Blvd (Alder Ave to Mattos Dr) and Peralta Blvd (Fremont Blvd to Sequoia Rd): Convert the "Phase 1" portions of the relinquished SR 84 in Fremont into multimodal complete streets, with narrower lanes, curb extensions, reduced curb radii, ADA curb ramp upgrades, buffered bike lanes and improved sidewalks, intersections and ped crossing facilities, pavement rehabilitation, landscape / streetscape improvements, the addition of on-street parking between Thornton Avenue and Bonde Way, and left turn pockets. On Peralta Blvd (Fremont Blvd to approx. 0.1 miles east): Reduce lanes from two in each direction to one.	ALA170076	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	ACE	ACE: Railcar Midlife Overhaul	ACE: System-wide: Perform midlife overhaul of existing ACE railcars to extend useful life. The railcars being rehabilitated are approaching 20 years of service. Overhauling these railcars will increase the life of each car by over 25 years.	ALA170079	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation of transit vehicles	Not Modeled
Alameda	ACTC	7th Street Grade Separation East	Oakland: 7th St and rail tracks between I-880 and Maritime St in the Port of Oakland: Reconstruct the existing 7th St substandard underpass on an adjacent alignment, rail tracks, and other rail infrastructure at the Union Pacific Railroad (UPRR) tracks that maximizes the operation of the Port's overall roadway system to provide traffic management benefits. No through lanes will be added. The existing multi-use path along 7th Street (part of the Bay Area trail) will be improved and brought up to standard. Due to the delay in PFIP funding availability, Alameda CTC is planning on requesting LONP to align it with other funds programmed in FY 22/23, pending Caltrans's guidance.	ALA170085	21-T07-055	Exempt (40 CFR 93.127) - Changes in vertical and horizontal alignment	Not Modeled

Alameda	Albany	San Pablo Ave and Buchanan St Pedestrian Imps.	Albany: San Pablo/Portland intersection: Install Rapid Flashing Pedestrian Beacons. Taylor St./Buchanan Street intersection: Install a Pedestrian Hybrid signal. Marin Avenue and Buchanan Street merge: Realign merging roadways and the create a pocket park within the new realignment. The project will be delivered in three phases: Phase I scope includes Brighton to Portland and will be delivered in FY 2023-24. Detailed Phase I Project (CIP No. 24001) elements include: Pedestrian refuge areas at Garfield Avenue, and Portland Avenue. High visibility crosswalks at Brighton Avenue, Garfield Avenue, Castro Street and Portland Avenue. Pedestrian signals at Brighton Avenue. New ADA compliant curb ramps at Brighton Avenue, Garfield Avenue, Castro Street, and Portland Avenue. New rapid flashing pedestrian beacon at Castro and Portland Avenue. Pedestrian safety improvements at Clay Street, including high visibility crosswalks and pedestrian refuge island, has been incorporated into the Alameda CTC's San Pablo Safety and Bus Bulb Improvements (ALA230009). Phase II of the San Pablo Pedestrian Improvements Project is at Washington Ave and will include full signal installation and curb ramp improvements for the Washington Avenue intersection. This work has also been incorporated into Alameda CTC's aforementioned project/TIP. Phase 3 is for Buchanan Ave and would include improved signage and high visibility crosswalks at the Solano Avenue/Buchanan Avenue intersection, the Pierce Buchanan intersection, and the Taylor/Buchanan intersection, and realignment of the Buchanan/Marin intersection to improve traffic flow.	ALA170088	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	Alameda County	Alameda County Complete Street Improvements	Alameda County: Various locations: Bicycle and ped safety improvements including a bridge replacement to accommodate sidewalk installation along Meekland Avenue from West Blossom Way to East Lewelling Blvd in the Cherryland Community with ADA curb ramp upgrades, rain gardens and landscape trees, new drainage inlets, and utility relocation. Add new location East Lewelling Blvd from Meekland Ave to E.14th street with Class II Buffered bike lanes, Class IV Bikeway, and sidewalk. Add new location Anita Avenue from Somerset Ave to Castro Valley Blvd with new sidewalk, RRFB, Bulb-Outs, Enhanced crosswalks	ALA190019	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Pleasanton	I-680/Sunol Interchange Improvements	Pleasanton: At the I-680/Sunol Blvd Interchange. Add 3 new traffic signals at the on/off ramps and at Castlewood Dr.; add 2 new on-ramp lanes (1 multipurpose and 1 HOV); add new protected bike facilities; add a paved pathway for pedestrians and bicyclists; add a new protected intersection at Arlington Rd/ Sunol Blvd.; and widen the bridge on I-680 over Sunol Blvd. to accommodate lane acceleration, sound walls, and lane striping. Widening is limited to the ramp and no additional lanes will be added to the mainline of either roadway.	ALA190020	21-T06-021	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Alameda	Alameda County	Niles Canyon Trail, Phase I	Alameda County: In the vicinity of SR-84 between Niles District and Palomares Road (Phase I): Construct multi-Use trail. The multi-use trail will serve walkers and bikers users who seek to both recreate and commute through Niles Canyon between the Niles District and the Town of Sunol. The Niles trail project includes three phases between the following geographic limits: Phase I - The District of Niles near Vallejo Mill to Palomares Road Phase II - Palomares Road to Brightside railroad yard Phase III - Brightside railroad yard to the railroad station within the Town of Sunol. Phases II and III will be added to future TIP listings if needed. Total cost of all three phases is approximately $105M (2019 $)	ALA190021	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Alameda County	E14th St/Mission Blvd Corridor Improvements	Alameda County: Along E14th St/Mission Blvd between I-238 and Hayward City limits: Construct streetscape improvements for continuity along corridor. Project includes new sidewalks, intersection bulb-outs, Class IV bikeways, landscaping, bus boarding islands, pavement resurfacing. No general purpose automobile travel lanes will be added or removed.	ALA190022	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Union C Transit	Union City Transit: COVID-19 Emergency Transit Ops	Union City Transit: Systemwide: Capital, planning and operating assistance related to the coronavirus public health emergency including administrative leave removal of health and safety hazards, such as additional vehicle and facilities cleanings costs associated with shutting down and/or restarting service materials like hand sanitizer, gloves, soap, and cleaners emergency protective gear relevant to the emergency temporary service, that is not part of regular service, provided in response to the emergency and essential delivery services.	ALA190027	21-T01-001	Exempt (40 CFR 93.126) - Safety - Emergency relief (23 USC 125)	Not Modeled
Alameda	Union C Transit	Union City Transit Electric Bus Procurement	Union City Transit: Fleet: Replace existing buses with zero-emission battery-electric buses. Union City Transit (UCT) has fourteen (14) compressed natural gas (CNG) heavy-duty transit buses that have exceeded and/or are nearing end of useful life and are eligible for replacement beginning in 2020, 2022, and 2024. The vehicles are requiring expensive repairs to components that are at the end of useful life. Instead of constantly investing in new components, UCT is seeking funding to migrate its fleet towards zero-emission vehicles. The fourteen (14) UCT vehicle stalls will require modification in order to accommodate vehicle charging, this will be an expansion within the existing facilities without increasing the parking footprint. This project will familiarize Union City Transit with electric vehicles in advance of future procurements to replace its remaining four (4) CNG heavy-duty transit buses by 2028 and to ultimately convert the entire fixed-route and demand-response fleets by 2030.	ALA190029	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Alameda	Oakland	Oakland 7th Street Connection Improvements	Oakland: 7th St between Mandela Parkway and Martin Luther King Jr. Way: Implement complete streets improvements that reduce vehicle travel lanes and installs protected bicycle lanes, traffic signal upgrades curb ramps, accessibility enhancements, transit boarding islands, pedestrian refuge islands, sidewalk repairs, and new carbon-capturing street trees. Closes a critical gap for people walking, biking, and connecting to transit between West Oakland and Downtown. The project will also install a road diet between Mandela and Adeline(currently 4 lanes 2 in each direction, after project 2 lanes, 1 each way) and between Adeline and MLK Jr. (currently 6 lanes, 3 in each direction with turn lanes under I-980, after project 4 lanes, 2 in each direction). This project is being coordinated with the HSIP 9 project (H9-04-022) at the 7th/Filbert intersection.	ALA210001	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled

Alameda	Oakland	East Oakland Neighborhood Bike Routes	Oakland: Various Streets and Roads in East Oakland: Construction bicycle improvements including construction of four Class III bicycle boulevards in East Oakland Neighborhood bike routes on 81st Avenue, 85th Avenue, 64th Avenue/Arthur Street, and Hamilton Street/Rudsdale Street/D Street/Royal Ann Street in East Oakland. Project implements roadway and intersection improvements including new curb ramps, high visibility crosswalks, neighborhood traffic circles, speed humps, pavement markings, wayfinding signage, roadway repaving, and signal timing modifications. Neighborhood bike routes on four corridors in East Oakland to make crossing arterials safer and more comfortable, linking residents to schools, parks, transit, grocery stores and other community destinations.	ALA210002	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	ACE	ACE Capital Access Fee	ACE: Along ACE Corridor: Capital Lease payments required to operate along Host Railroad's corridor.	ALA210008	21-T01-001	Exempt (40 CFR 93.126) - Mass Transit - Operating assistance to transit agencies	Not Modeled
Alameda	ACE	ACE Revenue Vehicle Communication Equipment	ACE: Fleetwide: Replace and upgrade ACE on-board communication equipment , including geolocation systems, radios, computers, and passenger information and communication equipment.	ALA210009	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of operating equipment for vehicles (e.g.,	Not Modeled
Alameda	AC Transit	AC Transit: Purchase 9 60ft Articulated Fuel Cell	AC Transit: Articulated Bus Fleet: Replace (9) Van Hool Articulated Diesel Buses that are at the end of its useful life with (9) Articulated Fuel Cell Buses.	ALA210011	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Alameda	AC Transit	AC Transit: Purchase 50 40-ft Diesel Buses	AC Transit: Diesel bus fleet: Replace 41 30ft 2006 Buses and 20 40ft 2008 Buses with 50 40ft Diesel Buses	ALA210012	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Alameda	Fremont	Fremont Blvd/Walnut Ave Protected Intersection	Fremont: At the intersection of Fremont Boulevard and Walnut Avenue: Construct a new protected intersection including removal of existing right turn slip lanes, elevated/extended curb returns, high visibility crosswalks, intersection lane reconfiguration, and traffic signal replacement. The project will also install new video-based traffic and bicycle detection at the various approaches. The project will connect to existing elevated/separated Class IV bikeways and sidewalks along Walnut Avenue and Fremont Boulevard, connecting nearby high-density residential complexes to nearby commercial centers, job centers, recreational destinations, social services, and high-quality transit (Fremont BART station).	ALA210014	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	Fremont	Fremont Blvd-Grimmer Blvd Protected Intersection	Fremont: At the Fremont/Grimmer and Fremont/Eugene intersections: Construct protected intersections, as well as elevated bikeway between the two intersections along Fremont Boulevard including removal of existing right turn slip lanes, elevated/extended curb returns, high visibility crosswalks, intersection lane reconfiguration, and traffic signal replacement. The project will also install new video-based traffic and bicycle detection at the various approaches. The project will connect to a proposed Class I multipurpose trail (currently under design) along Grimmer Boulevard, connecting nearby high-density residential complexes to nearby commercial centers, job centers, recreational destinations, and high-quality transit (future Irvington BART station).	ALA210015	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	AC Transit	Tempo Quick Build Transit Lane Delineation	Oakland: On International Blvd between 14th Ave and Durant Ave: Enhance the existing median bus lane for AC Transit BRT by adding safety features such as signage and delineators to increase motor and pedestrian safety.	ALA210017	21-T10-073	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	Fremont	Sabercat Trail: Irvington BART to Ohlone College	Fremont: Starting at Blacow Rd, crossing Osgood Rd, across I-680 to Sabercat Historical Park: Create a safe and convenient Class 1 multi-use bicycle and pedestrian path. Bike/Ped Trail at Blacow Road with an overhead structure at BART and UPRR tracks, crossing Osgood Road with a protected intersection. The trail will cross Caltrans property and I-680 with a bicycle/pedestrian overcrossing (BPOC) and tie into the existing trail in Sabercat Historical Park forging a critical link in Fremont's city-wide cycling and pedestrian network, enhancing connectivity through and to the Irvington District. The "other state" funding includes AB 74 State Funds received through the Natural Resources Agency, AB 179 State Funds received through the Department of Parks and Recreation, and AB 179 State Funds received through the Department of Transportation. Phase 1 of the project will improve the existing trail in Sabercat Historical Park. Phase 2 is the trail extension over I-680 and to Osgood Road.	ALA210019	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Fremont	I880 Innovation Bridge and Trail (EBGW Reach 6)	Fremont: Along Fremont Blvd and Kato Rd, along Agua Caliente Creek and over I-880: Construct Class 1 multi-use trail and overcrossing. The Interstate (I)-880 Innovation Bridge and Trail Project is located within the Innovation District in the City of Fremont. The Project represents the southernmost segment of the East Bay Greenway (EBGW) regional trail. The Project consists of the following components: 1. An approximately 3,300-foot Class I multi-use trail along Fremont Boulevard and the west side of Kato Road 2. An approximately 310-foot bridge approach ramp along the west side of Kato Road 3. An approximately 850-foot bicycle and pedestrian bridge crossing over I-880 (Post Mile 2.6/2.9) from Kato Road on the east, to Landing Parkway on the west 4. An approximately 315-foot approach ramp and an approximately 540-foot Class I multi-use trail adjacent to the northern boundary of the Agua Caliente Creek (Alameda County Flood Control Channel - Line F) maintenance road connecting to Fremont Boulevard and 5. A mid-block traffic signal at Fremont Boulevard connecting the Project to the San Francisco Bay Trail (SF Bay Trail). PBA 2050 ID is 21-T08-060	ALA210020	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	ACTC	Rail Safety Enhancement Program: Phase A (RSEP-A)	Alameda County: Various at-grade rail crossings: Implement safety improvements. The improvements include full pedestrian treatments (automatic gates, swing gates, channelizing railing and sidewalks), replace crossing panels and median islands, fencing, lighting, signage and striping lighting. The improvements and locations were developed from a crossing analysis approved by ACTC to advance safety and reduce impacts throughout Alameda County. RSEP-A will implement the near-term upgrades at 28 crossings and 2 trespass areas.	ALA210022	21-T07-055	Exempt (40 CFR 93.126) - Safety - Railroad/highway crossing	Not Modeled
Alameda	Oakland	73rd Ave Active Connections to Transit	Oakland: On 73rd Ave between MacArthur and Coliseum BART (Hawley Street): Implement bus boarding bulbs, bus stop improvements, buffered bike lanes, crossing improvements, signal improvements On Hegenberger between International and Hawley Street: extend sidewalks	ALA210025	21-T09-061	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	MTC	Bay Bridge Forward I-80/ Powell I/C Transit Access	Emeryville: At the I-80/Powell Street interchange: Proposed transit access improvements to this interchange include providing bus queue jump lanes, exclusive bus-only turn lanes, transit signal priorities, new and/or improved bus stops at the interchange vicinity. PBA2050 ID is 21-T06-049.	ALA210027	21-T06-049	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled

Alameda	Emeryville	40th Street Transit and Multi-Modal Enhancements	Emeryville: Part 1 Project Limits - On 40th Street between IKEA Entrance signal and Adeline Street: Implement multi-modal improvements. Part 2 Project Limits - On Shellmound Street between IKEA Entrance signal and Christie Avenue: Implement multi-modal improvements. The multi-modal concept design for 40th Street and Shellmound Street in Emeryville includes the following design features for the length of the corridor: 1. A 10-12 ft wide, two-way separated (Class IV) bikeway is integrated into the design of the street on the north-side of 40th Street and west-side of Shellmound Street. The bikeway is typically at roadway grade, separated from the adjacent bus-only lane by a 4-ft wide raised side median. The bikeway is raised to sidewalk level through the bus hub areas. 2. Transit-only Lanes. Near intersections, buses will share the dedicated lane with right-turning vehicles. 3. Multimodal Intersection Improvements. Increase pedestrian and bicycle safety/comfort using the following: enhanced crosswalks striping of advance stop bars curb extensions on cross-streets phasing bike signal heads a protected intersection approach for cyclists (where feasible) bike boxes and green-backed sharrows and striping of dashed green pavement markings where two-way separated bikeway crosses through intersections and driveways. 4. Transit Stop Locations and improvements. Project will reduce underutilized transit stops to further improve the overall travel time for buses. All other bus stops are proposed to remain at their current near or far-side locations. Typical improvements on the north-side are 9 ft wide, 120 ft long transit passenger (bus boarding) areas. Typical improvements on the south-side of 40th Street and west-side of Shellmound Street are 13 ft shared sidewalk/ passenger (bus boarding) areas. The transit passenger areas are directly accessible from the sidewalk and fitted with amenities such as a shelter, benches, trash receptacle, and lighting. 5. 40th Street Bus Hub Area between San Pablo Avenue and Adeline Street: Includes continuation of the two-way separated bikeway on the northside of the street to Adeline Street, dedicated bus-only lanes, and dedicated bus boarding areas with enhanced transit passenger environment. Both Part 1 and 2 will be implemented as part of the same construction contract.	ALA210029	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	MTC	Regional Planning Activities and PPM - Alameda	Alameda: Regional Planning Activities and Planning, Programming and Monitoring (PPM). Prior year funding was programmed on ALA170007	ALA210031	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning activities conducted pursuant to titles 23 and 49 U.S.C	Not Modeled
Alameda	Pleasanton	West Las Positas Blvd Multimodal Reconstruction	Pleasanton: On West Las Positas Blvd. between Hopyard Road and the Iron Horse Trail. This project will reconstruct a 1.4 mile segment of a larger planned 3.8 mile reconstruction of West Las Positas Blvd. to provide high-quality multimodal facilities along the corridor by replacing the degrading roadway and reconfiguring it from a 6-lane section to a 4-lane section with expanded pedestrian pathways and elevated cycle tracks, landscaped buffers, intersection safety improvements, new parking accommodation, and a new stabilizing roadway subbase.	ALA210032	21-T09-061	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Union C Transit	Union City Transit EV Charging Infrastructure	Union City ZEB Infrastructure Set-Aside. Electric Vehicle Charging Infrastructure. Union City Transit requires charging infrastructure for the sixteen (16) electric vehicles that have begun deliveries through the end of 2024. These funds will assist in acquisition and installation of the necessary equipment to support an increasingly electrified fleet of vehicles for the purpose of providing public transit.	ALA210201	(blank)	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Alameda	BART	DT Berkeley BART Station Elevator Modernization	Berkeley: At the Downtown Berkeley BART Station: Modernize two (2) station elevators to replace/upgrade critical components of the elevator to utilize the latest technology increase performance and reliability improve safety to the latest applicable standards and update aesthetics.	ALA230001	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Alameda	Fremont	I-880/Decoto Road Interchange Modernization	Fremont: At the I-880/Decoto Road interchange: Reconstruct the existing interchange to include a new Class I trail and a dedicated bus lane in both directions of travel through the interchange. The proposed interchange modernization project will provide transit priority lanes and improve bicycle and pedestrian access through the interchange, while maintaining traffic operations within the I-880/Decoto Road interchange. The transit only lanes will be on the inside lanes in both eastbound and westbound directions, and it will extend between the project's eastern limit at the Decoto Road/Cabrillo Court intersection and the project's western limit at the southbound I-880 off-ramp. The proposed multi-purpose path will extend along the north side of Decoto Road through the interchange within the same limit.	ALA230002	21-T07-056	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Alameda	Fremont	I-680/Mission Boulevard Interchange Modernization	Fremont: I-680/Mission Blvd: Redesign the interchange to reduce the steep grade of the southbound off-ramp onto Mission Boulevard and incorporate a separated bicycle and pedestrian path along Mission Boulevard through the interchange. The current southbound off ramp has a grade in excess of 8%.	ALA230003	21-T08-060	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Alameda	BART	Hayward Fleet Maintenance Facilities	BART: At the Hayward Maintenance Complex: Expand the Hayward Maintenance Complex to accommodate rail vehicles and the tire fleet for maintenance and repair. General site improvements will satisfy the current drainage standards, security and system integration requirements, and safety. Located in southern Alameda County, the HMC is one of four revenue vehicle maintenance complexes in the BART system. This expansion is intended to support the new fleet preventative maintenance and BART extension to San Jose. The cost estimate is in 2022 dollars.	ALA230005	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Alameda	Oakland	Reconnecting the Town (RAISE)	Oakland: On Broadway between 2nd Street and 11th Street and 20th Street and West Grand Avenue; Martin Luther King Jr. Way between 2nd Street and 14th Street; and 7th Street between Brush Street and Mandela Parkway: Implement transit only lanes (Broadway), upgrade existing bikeway (MLK Jr. Way), road diet, new traffic signals, lighting, and bulbouts, and other infrastructure safety improvements and ADA upgrades for people walking and biking. All corridors will install fiber-optic cable to extend the existing ITS network.	ALA230006	21-T10-073	Exempt (40 CFR 93.126) - Safety - Traffic control devices and operating assistance other than	Not Modeled

Alameda	ACTC	East Bay Greenway MM Phase 1 Lake Merritt-Bayfair	Alameda County: Along the BART alignment following parallel arterial roadways from Lake Merritt BART Station to Bayfair BART Station: Construct a regional trail facility comprised of Class I and Class IV bikeway facilities that would span approximately 10.6 miles, traversing East Oakland, and San Leandro. The project will run along city streets including E. 10th St., E. 8th St., E. 12th St., San Leandro Streets, San Leandro Blvd., and E 14th St. Along E 14th St., the project also includes pedestrian safety improvements, bus stop improvements, and placemaking elements. Road diet segments are included and intersections will be modified at various locations for enhanced bicycle and pedestrian safety.	ALA230007	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	ACTC	San Pablo Avenue Bus/Bike Lanes	Oakland, Emeryville, and Berkeley: Along San Pablo Avenue from 16th Street in Downtown Oakland to Heinz Street: Install pedestrian crossing improvements and dedicated bus lanes and bike lanes	ALA230008	21-T10-077	Exempt (40 CFR 93.126) - Safety - Traffic control devices and operating assistance other than	Not Modeled
Alameda	ACTC	San Pablo Ave Safety Enhancements Improvements	Berkeley and Albany: San Pablo Avenue in Berkeley and Albany from Heinz St to the Contra Costa County line: Install bus bulbs and pedestrian/bicycle crossing improvements	ALA230009	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	ACTC	San Pablo Ave Parallel Bike Improvements	Berkeley and Albany: Various locations along bicycle boulevard/neighborhood bikeway routes parallel to San Pablo Avenue: Install bicycle improvements including crossing safety, speed/volume control measures, wayfinding, and other elements.	ALA230010	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	AC Transit	AC Transit: D6 Construct Hydrogen Fueling Infrastr	AC Transit: AC Transit Division 6: Construct hydrogen fueling infrastructure for fuel cell electric buses. ZEB Infrastructure Set-Aside Program.	ALA230201	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Construction or renovation of power, signal, and	Not Modeled
Alameda	LAVTA	LAVTA and CCCTA Hydrogen Fueling Stations	LAVTA and CCCTA: Facilities in Livermore and Concord: Design and construct two hydrogen fueling stations and maintenance infrastructure at existing County Connection and LAVTA maintenance facilities to accommodate the fueling of hydrogen fuel-cell electric heavy-duty transit buses in support of the I-680 Express Bus Program. The County Connection fueling station at its existing maintenance facility at 2477 Arnold Industrial Way in Concord will support up to 50 vehicles. The LAVTA fueling station at its existing maintenance facility at 875 Atlantis Court in Livermore will accommodate up to 120 FCEBs to facilitate the agency's complete conversion to procuring all FCEBs by 2029. The LAVTA facility will also accommodate future fleet growth and ensure scalability of clean-fuels transition and help catalyze broader FCEB manufacturing and uptake in California. Other Federal funds are Carbon Reduction Program funds.	ALA230202	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Construction or renovation of power, signal, and	Not Modeled
Alameda	Newark	Old Town Streetscape and Complete Streets	The Project will improve access, safety, and connections for pedestrians, bicyclists, and transit users, while also serving as a catalyst for private investment in buildings and uses within the Old Town PDA. The Project reduces the number of travel lanes on Thornton Avenue, freeing up space for wider sidewalks and bicycle lanes, where there are currently none. Additional safety and connectivity improvements include new high visibility crosswalks, curb extensions, bus stop amenities, and landscaping to improve the convenience and comfort of alternative travel modes. The Project is a key part of the City of Newark's Old Town Specific Plan's coordinated land use, economic development, and transportation strategy to inspire reinvestment and revitalization.	ALA230203	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	Alameda County	Upper San Lorenzo Creekway Trail	The Upper San Lorenzo Creekway project will install a new 8.1 mile bicycle and pedestrian trail in central Alameda County. The project includes direct connections to Bay Fair, Hayward, and Castro Valley BART stations and Don Castro Regional Recreation Area.	ALA230205	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	AC Transit	Fruitvale Corridor Transit Signal Priority (TSP) P	The Fruitvale Corridor Project will improve transit operations on its most productive bus routes – Lines 20 and 21. The project will consist of installing TSP signal improvements and associated equipment. Fruitvale Avenue is a major transit corridor, carrying 3,100 riders per day with service ranging from every 15 minutes to every 5 minutes across 4 AC Transit lines – 14, 39, 20, and 21. Furthermore, Fruitvale BART is a major hub for 15 AC Transit lines, connecting Alameda and Fruitvale to the greater Oakland and Bay Area region. To further build upon the foundation of this corridor, AC Transit seeks to install 25 TSP signal improvements and associated controllers, radios, phase selectors, cable and other associated equipment at every signalized intersection along Fruitvale Avenue between MacArthur Blvd and E 9th as well as San Leandro St leading into Fruitvale BART, and E 12th St into 29th Ave. These signals would be operational to match AC Transit's 7 days a week service with a priority for improving transit speeds during peak hours where passenger loads and delay are the highest. Project will also include system testing and planning efforts.	ALA230206	21-T10-073	Exempt (40 CFR 93.126) - Mass Transit - Construction or renovation of power, signal, and	Not Modeled
Alameda	Berkeley	Addison Street Bicycle Boulevard Extension	In Berkeley on Addison Street from Bolivar Drive to the east side of Sacramento Street and on Addison Street from Milvia Street to Oxford Street, install Class I, III, and IV bicycle facilities, two traffic circles, a traffic diverter, RRFB and refuge median, PHB, signage, pavement rehab, and striping. The Addison Street Bicycle Boulevard project will provide a safe, low-stress east-west bicycle connection in Berkeley, filling a 1.5-mile gap in the city's existing bicycle boulevard network. The project will serve a central role in the City's bicycle network, meets public demand for safe, low stress bicycle routes, and is in an area of high demand for bicycling in Berkeley. In addition to filling a gap in Berkeley's Bicycle Boulevard network and improving destination connectivity, anticipated project outcomes include higher rates of bicycling and walking, lower rates of GHG emissions and vehicle miles traveled (VMT), improved safety outcomes on the corridor, and reduced transportation costs for Berkeley residents, particularly those living in disadvantaged communities along and adjacent to the Addison Street corridor.	ALA230207	21-T08-060	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Alameda	Berkeley	Washington Elementary and Berkeley High SR2S	Crossing improvements at thirteen intersections in Downtown Berkeley around Washington Elementary and Berkeley High Schools, and school frontages on Milvia Street and McKinley Avenue. The project will improve bike and pedestrian safety outcomes for Berkeley public school students walking and bicycling to school in direct response to safety concerns that have been documented by the community.	ALA230208	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled

Alameda	AC Transit	AC Transit: Training and Education Center (TEC) Mo	These funds are for the retrofit of the current Training and Education Center to enable it to become both a bus maintenance and a classroom/laboratory facility. Also there funds workforce development activities.	ALA230209	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Alameda	AC Transit	AC Transit: Purchase 42 40ft Urban Fuel Cell Buses	AC Transit: 42 Fuel Cell Buses: Purchase buses to meet State mandate of ZEBs in AC Transit's fleet.	ALA230210	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Alameda	AC Transit	MacDonald Avenue Transit Signal Priority - Phase 1	MacDonald Avenue Transit Signal Priority Project Phase 1 - This project will install Transit Signal Priority (TSP) equipment along MacDonald Avenue in Richmond. The project will also include traffic signal upgrades, signal communication, and signal timing coordination. In addition, bus stops along the corridor will be improved through relocation, consolidation, installation of bus bulbs/islands.	ALA230211	21-T10-073	Exempt (40 CFR 93.127) - Intersection signalization projects at individual intersections	Not Modeled
Alameda	AC Transit	Foothill Corridor Planning Study	This planning study is to provide service and design alternative to reduce congestion delay and improve bus operations. The potential improvements include bus lanes, queue jumps, and sidewalk bulb outs, new traffic signals or other traffic controls.	ALA230212	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Alameda	AC Transit	AC Transit: Purchase 23 40ft Urban Buses - Diesel	Purchase replacement diesel buses	ALA230213	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Alameda	LAVTA	LAVTA Bus Bay Rehabilitation	Rehabilitation of one bus bay in the Rutan maintenance shop to convert it so it can be used to maintain zero-emission hydrogen fuel-cell electric buses.	ALA230214	21-T01-001	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Alameda	BART	Dublin/Pleasanton Access Improvements	Project will fully separate pedestrian, cyclist, and vehicle access infrastructure at Dublin/Pleasanton BART mobility hub (D/P Hub) by constructing 0.35-mile Class 1 two-way cycle-track and adding 0.15-mile ADA-compliant sidewalk, raised crosswalk, 21,500 sqft landscaping/stormwater management; installing 29 pedestrian-scale lights, new seating, wayfinding and art; replacing/upgrading 129 underpass lights; and adding 66 secure bike parking spaces and ebike charging. The project will vastly improve pedestrian and bicycle access to the D/P Hub, connect to existing segments of the Iron Horse Trail, and improve the active access connection between Dublin and Pleasanton across I-580.	ALA230215	21-T03-009	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Oakland	Bancroft Avenue Greenway	The Bancroft Avenue Greenway project will provide a two-mile, low-stress, separated multi-use path that enhances alternate, affordable and safer mobility to East Oaklanders of most ages to essential places such as schools, parks, food markets and critical services at the Eastmont Town Center. Most importantly, this proposed Class I Path will become a destination in of itself, a car-free corridor conceived by and to belong to existing disadvantaged communities (DAC), addressing deficiencies in the active transportation network, serving as the much-needed neighborhood connector to transit hubs, and meeting an important community need for aesthetically-pleasing, natured-filling open spaces for community building, affordable recreation and physical activity. Construct two miles of separated multi-use path, 112 ADA ramps, 60 wayfinding signs, 30 regulatory signs, 22 benches, 24 trash receptacles, pedestrian scale lighting throughout the corridor, 179 new trees, landscaping, and irrigation.	ALA230216	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	AC Transit	AC Transit: Purchase 24 40ft Urban Diesel Buses	Purchase replacement buses to keep the District’s fleet in state of good repair.	ALA230217	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Alameda	AC Transit	Purchase 23 60ft Artic Fuel Cell Buses	Purchase buses to meet State mandate of ZEBs in AC Transit's fleet.	ALA230218	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Alameda	AC Transit	AC Transit: Rehabilitate Maintenance Bays for ZEBs	Rehabilitate, retrofit and upgrade maintenance bays for safety and proper ventilation to work on ZEBs.	ALA230219	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Alameda	Fremont	Fremont Boulevard/Walnut Avenue Bikeway Project	The project will construct elevated bikeways and protected intersections along Fremont Boulevard from Country Drive to Mission View Drive and along Walnut Avenue from Paseo Padre Parkway to Fremont Boulevard. The project will provide bike/ped connections within and between the City's Downtown/City Center PDA, the Irvington Transit PDA, and other destinations. The project will be implemented in two phases: Phase 1 on Walnut Ave and Phase 2 on Fremont Blvd.	ALA230220	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Fremont	East Bay Greenway (Irvington to Fremont BART)	The project proposes to construct a segment of the East Bay Greenway Regional Trail, extending from Irvington District to Fremont Central Park, as well as a new Class I trail connection between the East Bay Greenway Trail to the Fremont BART station. Complete street improvements along the project corridors, including elevated bikeways, protected intersections, traffic signal upgrade, ADA curb ramps, sidewalk repair/replacement, storm drain modification, pavement rehabilitation, and landscaping.	ALA230221	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Livermore	I-580/Vasco Road Interchange Replacement	Livermore: The project will remove the existing overcrossing and replace it with a wider and taller bridge and reconstruct the on and off ramps and will include new traffic signals and safety elements. The proposed bridge will include 9 travel lanes and Class VI bicycle and pedestrian facilities. The project will enhance operations and safety for all modes of travel along Vasco Road, provide connectivity for bicyclist and pedestrian through the interchange corridor, and accommodate the future Valley Link. This Project is not anticipated to induce traffic nor VMT; the bridge widening and additional lanes to be added are primarily within the interchange limits, focusing on solving the interchange’s operational and safety concerns with existing uncontrolled loop ramp configurations and adding complete street improvements. The Project is not adding arterial capacity to Vasco Road that deviates from the City’s General Plan, and we are consistent with the existing approach on Vasco Road.	ALA230222	21-T06-019	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled

Alameda	Oakland	OakPARK+	Implement various parking and transportation demand management programs in Oakland including: expanding demand-responsive parking pricing to all metered areas, piloting the installation of parking sensors in high-value metered spaces to efficiently collect occupancy data, implementing all-week retail-friendly metered parking, adding 500 new metered parking spaces, and creating a permanent Universal Basic Mobility Program.	ALA230223	21-T07-057	Exempt (40 CFR 93.126) - Other - Transportation enhancement activities (except rehabilitation and	Not Modeled
Alameda	Alameda County	Lower San Lorenzo Creekway Trail	The Lower San Lorenzo Creekway Trail project will install approximately. 2.5 miles of primarily Class 1 bicycle and pedestrian trail facility in central Alameda County. The project includes direct connections to the San Francisco Bay Trail.	ALA230224	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Alameda	Parking Pricing And Curb Management Strategies	Alameda's Demand-Based Parking Pricing and Curb Management in Business Districts and Ferry Terminals Project is a package of strategies that includes: 1) implement demand-responsive parking pricing in paid parking spaces; 2) create more space for short-term parking, loading, and ADA parking; 3) guide people straight to underutilized off-street parking; and 4) introduce and improve paid parking at ferry terminals.	ALA230225	21-T07-057	Exempt (40 CFR 93.126) - Other - Transportation enhancement activities (except rehabilitation and	Not Modeled
Alameda	LAVTA	LAVTA Atlantis Facility	Design-engineering, project-management, and related technical support for construction of LAVTA's Atlantis Facility, including hydrogen fueling infrastructure and Fuel Cell Electric Bus (FCEB) maintenance needs.	ALA230226	21-T01-001	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Alameda	Dublin	Village Parkway Complete Streets Improvements	The project is located in City of Dublin on Village Parkway from Amador Valley Boulevard to Kimball Avenue/north city limit. Construct streetscape elements, transforming the segment to a pedestrian and bike-friendly roadway incorporating complete street elements, median islands, bulbouts, high visibility crosswalks, bicycle facilities, and ADA upgrades.	ALA230227	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	LAVTA	AVLs for Replacement Vehicles	Purchase 12 Automatic Vehicle Locator (AVL) Systems for replacement buses.	ALA230228	21-T01-001	Exempt (40 CFR 93.126) - Mass Transit - Purchase of operating equipment for vehicles (e.g.,	Not Modeled
Alameda	LAVTA	LAVTA: Purchase Fareboxes	Purchase Fareboxes for 12 replacement vehicles	ALA230229	21-T01-001	Exempt (40 CFR 93.126) - Mass Transit - Purchase of operating equipment for vehicles (e.g.,	Not Modeled
Alameda	LAVTA	Replace (8) 40' Buses-Hybrid	Purchase 8 40' Hybrid replacement vehicles	ALA230230	21-T01-001	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Alameda	LAVTA	Replace (4) 40' Buses-Fuel Cell	Replace four 40' Hybrid buses with 4 40' Fuel Cell Buses	ALA230231	21-T01-001	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Alameda	LAVTA	LAVTA: Radios	Purchase Radios for 12 replacement buses	ALA230232	21-T01-001	Exempt (40 CFR 93.126) - Mass Transit - Purchase of operating equipment for vehicles (e.g.,	Not Modeled
Alameda	ACTC	Jackson Street Parallel Bike Improvements	The project consists of multi-use pathway improvements along the east side of Jackson Street within the University of California Village, between Buchanan St and 8th Street, parallel to San Pablo Avenue. This project is being delivered separately from the remainder of San Pablo Parallel Bike Improvements (ALA230010) due to utility and adjacent development conditions.	ALA230233	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	BART	BART Police Department Headquarters Project	Relocation of BART administrative headquarters with the Zone 1 patrol to an existing office building with tenant improvements. The five-story building and adjacent parking lot, formerly used for commercial office space, occupy 1.36 acres on two parcels. The building consists of 86,875 square feet of office space and a subterranean parking garage consisting of approximately 75 parking spaces. Building access is from Broadway, and the site is directly adjacent to 19th Street BART Station entrance at Broadway and 20th Street. The project includes tenant improvements for all five-stories to include features unique to police such as holding cells, armory, evidence room, etc. Improvements to the plumbing, electrical, HVAC, and fire protection systems may be needed as part of the tenant improvement. The project may also include structurally retrofitting the existing building, upgrading the existing perimeter fencing, security gate, and improving the existing parking lot. One floor, or portion thereof, of the building may be utilized by BART staff other than BART Police. The new BART Police Headquarters will be designed and built under a progressive design-build method, with an anticipated completion date of August 2026.	ALA230234	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Alameda	Alameda County	ACPWA Safety Action Plan	Develop a Safety Action Plan that focuses specifically on improving safety within the realm of transportation in the communities of unincorporated Alameda County. This Plan will evaluate and address various aspects of transportation safety, including road safety, pedestrian and bicycle safety, and public transit safety.	ALA250201	21-T07-058	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	Livermore	East Avenue Corridor ATP Implementation 202222	The project will implement roadway safety improvements along East Avenue and include bike lanes, sidewalk, crossing enhancements, lighting. signing and striping.	ALA250202	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	San Leandro	MacArthur Blvd/Superior Ave Roundabout	The project will install a roundabout at the intersection of MacArthur Blvd and Superior Ave. The scope of work consists clearing and grubbing, excavation, removal of asphalt and concrete, and installation a roundabout, new concrete sidewalk, curb ramp, curb & gutter, signage and striping trench drain, and planting of landscaping, shrubbery and trees	ALA250203	21-T08-060	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Alameda	San Leandro	Dutton Ave Roadway Reconstruction	The project will reconstruct the roadway of Dutton Ave from E 14th St to MacArthur Blvd. The scope of the project include pedestrian improvements such as new sidewalks, ADA curb ramps, high visibility crosswalks.	ALA250204	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Hayward	High Injury Network Supplemental Planning	Develop a Speed Management Plan and a High Injury Network Safety Plan that will supplement the City's Local Road Safety Plan. The Speed Management Plan will evaluate existing speeds and develop strategies for speed management. The High Injury Network Safety Plan will develop and identify projects along these areas/corridors: Downtown Area, A Street, B Street, Hesperian Boulevard, Jackson Street, Mission Boulevard, and Tennyson Road.	ALA250205	21-T07-058	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	San Leandro	Lake Chabot Road Erosion Repair	The Lake Chabot Road Erosion Repair will repair eroded slopes due to January 2023 storms. The project includes excavation, clearing and grubbing, removal of existing rock slope protection and concrete v-ditch. The project will install structural backfill and concrete, soldier piles, and new rock slope protection at two locations along Lake Chabot Road.	ALA250206	21-T01-003	Exempt (40 CFR 93.126) - Safety - Emergency relief (23 USC 125)	Not Modeled

Alameda	Hayward	Tennyson Road Neighborhood Improvements	Multimodal improvements to Tennyson Road from Hesperian Boulevard to Mission Boulevard - for pre-environmental planning/scoping	ALA250207	21-T09-061	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Alameda	Livermore	BPMP - Local bridges preventive maintenance 202219	Bridge Preventive Maintenance for 19 local bridges at various locations in the City of Livermore. See attached Attachment A. The BPMP has been submitted to Caltrans and is being reviewed and processed. Match funds will be from SB1 Gas Tax.	ALA250208	21-T01-004	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Alameda	Newark	Thornton Ave Alternate Route Corridor Pavement Reh	Pavement rehabilitation of Thornton Avenue from I880 to Olive Street (Phase 1) and pavement rehabilitation of Thornton Avenue from Ash to Spruce Street (Phase 2). Each phase will also include improvements to the existing bicycle facilities and other safety improvements. Both phases will be implemented as part of one contract.	ALA250209	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Alameda	Livermore	Greenville Road/I-580 Interchange 199149	The project will construct new interchange at I-580/Greenville Road to replace the existing interchange at Northfront and Southfront roads and construct on and off ramps, new traffic signals and safety elements and pedestrian and bicycle facilities.	ALA250210	21-T06-019	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Alameda	Alameda	Lincoln Ave/Marshall Way/Pacific Ave Corridor Imp	Project is located on Lincoln Avenue/Marshall Way/Pacific Avenue between Alameda Point at Main Street/Central Avenue and Broadway. Identified as a high priority for safety and mobility improvements. Project includes road diet - going from four to three travel lanes with a center turn lane and bike lanes - as well as a roundabout at Lincoln Avenue/Fifth Street/Marshall Way, flashing beacons, pedestrian/bicycle signals, modernized traffic signals, crosswalk improvements, school frontage improvements, stormwater gardens, street trees, disabled parking and loading zones, improved lighting and bus stop enhancements. The concept will likely be phased in over time, as street sections are resurfaced and constructed with grant funding. Project web page: https://www.alamedaca.gov/LincolnMarshalPacific	ALA250211	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	Alameda	Oakland Alameda Water Shuttle	Project is beginning as a two-year pilot water shuttle project between west Alameda and Jack London Square in Oakland. Alameda is lead, and WETA is operator, with service starting summer 2024. It falls under WETA's authority for operating on the Bay. The project includes leasing one pontoon boat and adding ADA-accessible ramp upgrades to the existing docks, and operations for two years. The shuttle service will be free for the pilot. If successful and additional funding is found, service will continue beyond the pilot period, and the vessel power will be electrified and dock-side charging will be added. Web page: www.alamedaca.gov/watershuttle	ALA250212	21-T01-001	Exempt (40 CFR 93.126) - Mass Transit - Operating assistance to transit agencies	Not Modeled
Alameda	Livermore	Airway Blvd Bridge BR 33C019 at Arroyo Las Positas	The project will replace the existing culverts with a free span bridge to improve creek flow conveyance, mitigate flood risk and include safety elements and pedestrian and bicycle facilities.	ALA250213	21-T01-004	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	ACTC	East Bay Greenway MM Phase 1 Hayward	East Bay Greenway Multimodal Phase 1 Hayward Segment will construct an active transportation facility on the west side of the BART and Union Pacific Railroad corridors to connect the Hayward and South Hayward BART stations through Downtown Hayward. Project improvements will include Class I pathways, Class IV separated bikeways, pedestrian crossing enhancements, bus stop upgrades, raised medians, protected intersections, new and upgraded traffic signals, safety lighting, curb ramp upgrades, and opportunities for stormwater treatment features, street trees, and amenities. In addition, the project will also review and recommend pedestrian-scale improvements along Mission Boulevard. The project forms a segment of the East Bay Greenway Multimodal (Phase 1) which focuses on implementing near-term safety and multimodal access improvements.	ALA250214	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Alameda	Oakland Alameda Estuary Bridge	Design and construct a moveable bicycle/pedestrian bridge across the Oakland Estuary between Alameda's west end and Oakland's Jack London Square. A PID will be completed by mid-2024. The project will create a safe, accessible, and convenient all ages/all abilities facility, where currently the only existing biking/walking facility is a two-way, three-foot-wide, shared-use pathway in the Posey Tube (SR 260) adjacent to vehicles traveling 45 miles per hour or more. This narrow path has inadequate passing space for bicyclists and pedestrians and is not Americans with Disabilities Act (ADA) compliant. The project will reduce the barrier effect of the Oakland Estuary on bicycle and pedestrian travel between western Alameda and downtown Oakland; improve multimodal connectivity between the two cities; encourage mode shift away from single-occupant motor vehicle cross estuary trips; provide a no-cost estuary crossing to better serve equity priority and disadvantaged communities in western Alameda, downtown Oakland and Oakland Chinatown; and increase resilience to climate change and improve disaster recovery for Alameda residents. The project will address a major deficiency on State Route (SR) 260 which does not provide standard, adequate bicycle and pedestrian access between two adjacent metropolitan areas, will close a major gap in the Regional San Francisco Bay Trail network, and will meet the estimated demand for bicycling and walking trips across the estuary. Project web page: www.estuarybridge.org	ALA250215	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	AC Transit	AC Transit: Purchase 10 40ft Zero-Emission Buses	Purchase 10 40ft Zero-Emission Buses	ALA250216	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled

Alameda	Emeryville	The Emeryville Loop	The Emeryville Loop project will provide safe, low-stress biking and walking routes to work and shopping destinations in central Emeryville and install new designated transit lanes. The project closes a major gap in the City's existing active transportation network by providing a new pedestrian connection on Powell Street between Christie Avenue and Shellmound Street. Today, wide multilane arterial roadways that funnel high traffic volumes on and off I-80 pose barriers to people biking, walking, and rolling in the project area. This project will create separation between moving car traffic and people using active modes along high-stress arterials (Powell Street, Christie Avenue, Shellmound Street) and provide intersection improvements to make the arterial crossings safer and more comfortable. The project includes construction of new two-way Class IV separated bikeway facilities on high-stress arterial roadways, construction of new sidewalk to close a gap in the existing walking network, widened sidewalk, the installation of protected intersections at (4) major four to six lane arterial intersections, one new midblock crossing, and dedicated transit lanes. These countermeasures will create a safer, low-stress environment for people biking, walking, and rolling.	ALA250217	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Livermore	Bluebell Drive Bridge at Arroyo Las Positas 202426	The project will replace the existing bridge with a free span bridge to improve creek flow conveyance and include safety elements and pedestrian and bicycle facilities.	ALA250218	21-T01-004	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Alameda	San Leandro	Bancroft Ave and Williams St Bicycle Corridor Imp	The project will consist of installing raised class IV bike lanes along Bancroft Ave from E 14th St to north City limit, installing a class IV bike lanes along Williams St from San Leandro Blvd to Neptune Dr. Other components of the projects include traffic signal modifications, installation of RRFB, new .sidewalks, driveways, curb and gutter, bus islands and bus shelters	ALA250219	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Livermore	Heather Lane Bridge COLV005 at Arroyo Las Positas	The project will replace the existing culverts with a free span bridge to improve creek flow conveyance, mitigate flood risk and include safety elements and pedestrian and bicycle facilities.	ALA250220	21-T01-004	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Alameda	Livermore	Bluebell Drive Bridge at Altamont Creek 33C0192, 2	The project will rehabilitate or replace the existing culvert with a free span bridge to improve creek flow conveyance, mitigate flood risk and include safety elements and pedestrian and bicycle facilities.	ALA250221	21-T01-004	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	San Leandro	Lake Chabot Road Stabilization	The project will install stabilization improvements of 240' and 350' linear feet at two segments of roadway along Lake Chabot Road due to slope depression and slope erosion. Installation of class II AB, HMA, structural backfill and concrete, soldier piles, ground anchor, concrete piling.	ALA250223	21-T08-060	Exempt (40 CFR 93.126) - Safety - Emergency relief (23 USC 125)	Not Modeled
Alameda	Livermore	Holmes Street Bridge 33C0426 at Arroyo Mocho, 2024	The project will replace the existing bridge with a free span bridge to improve creek flow conveyance, mitigate flood risk and include safety elements and pedestrian and bicycle facilities.	ALA250224	21-T01-004	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Alameda	Livermore	Isabel Ave and Portola Ave I-580 Interchange 20233	The project will widen the Isabel interchange and the Portola overcrossing by two lanes and construct on and off ramps, new traffic signals and safety elements and pedestrian and bicycle facilities.	ALA250225	21-T06-019	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Alameda	Livermore	Stanley Blvd at Isabel Connector Ramp 202133	The project will implement safety improvements and include curb extensions, crosswalks, ramps, and signal improvements.	ALA250226	21-T07-056	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	AC Transit	AC Transit: Paratransit Van Replacement	AC Transit: Paratransit fleet: Amortized cost of replacing vans used for AC Transit paratransit service. Vans are operated and replaced by paratransit contractor. FTA funds programmed annually in lieu of programming for replacing vans at end of their useful life. Provide funding for contracted paratransit services for the EB Consortium paratransit service.	ALA990052	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of support vehicles	Not Modeled
Contra Costa	Contra Costa County	Vasco Road Safety Improvements	Contra Costa County: Construction of safety improvements along Vasco Road, a designated inter-regional route, from Walnut Blvd to the Alameda/Contra Costa County line. Beginning approximately 3 miles north of the County line, the completed Phase 1 of the project constructed approximately 1 mile of concrete median barrier and closed a gap in a truck climbing lane/passing lane. Phase 2 of the project will continue the concrete median barrier in the northerly direction through the existing 3-lane segment for approximately 1.5 miles. The existing roadway will be widened to provide the necessary width to construct the median barrier while maintaining the current number of travel lanes. As in Phase 1, associated signing, striping, turn pockets, retaining walls, drainage improvements, wildlife mitigation, bridge widening, and barrier end-treatments will be constructed as needed. Phase 2 will be completed when adequate funding is located.	CC-050030	21-T07-056	Exempt (40 CFR 93.126) - Safety - Truck climbing lanes outside the urbanized area	Not Modeled
Contra Costa	Brentwood	Lone Tree Way Undercrossing	Brentwood: On Lone Tree Way at the UPRR track: Construct a grade separation underpass consisting of four travel lanes crossing under the railroad. Construct a concrete bridge structure, relocate numerous existing wet and dry utilities, high pressure gas lines, storm water pump station, retaining walls and landscaped parkway. CIP 336-3134.	CC-070013	21-T07-056	Exempt (40 CFR 93.126) - Safety - Railroad/highway crossing	Not Modeled
Contra Costa	ECCTA	ECCTA: Transit Bus Replacements	Tri-Delta Transit: 12 MY 1997 Transit Buses 7 MY 1998 Transit Buses 3 MY 2001 Transit Buses 20 MY 2001 Gillig Low Floors 1 MY 2003 Cutaway Van 1 MY 2006 Cutaway Van 4 MY 2010 Dodge Minivans 2 MY 2007 Chevrolet Minivans 6 45' over the road coaches 25 Ford cutaway DR vans 4 45' OTR coaches: Replace vehicles Clipper II Digital Comm Equip and 30 MDT terminals Procure equipment FY21 8 40-ft diesel buses FY23 30 DR cutaway buses.	CC-070092	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Contra Costa	CCTA	SR 239 - New State Highway Study	Contra Costa County: SR 239 between SR4 in Brentwood and I-205 in Tracy: Conduct environmental and design studies to create a new alignment for SR239 and develop corridor improvements from Brentwood to Tracy.	CC-110066	21-T06-044	Exempt (40 CFR 93.126) - Other - Planning activities conducted pursuant to titles 23 and 49 U.S.C	Not Modeled

Contra Costa	Danville	San Ramon Valley Blvd Improvements	Danville: San Ramon Valley Blvd from the Town Limits (south end, south of Ridgeland Circle) to Hartz Avenue (north end): Improvements consists of pavement slurry seal, pavement rehabilitation (dig-out repairs and overlay), pavement striping, ADA curb ramp upgrades, utility frame adjustments, replacing traffic signal devices, drainage inlet repairs, concrete sidewalk and bus stop repairs and traffic calming devices. Section 1 - Town Limits (south of Ridgeland Circle) to Sycamore Valley Road: Consists of pavement dig-out repairs, slurry seal, and pavement restriping. Restriping includes Class IIB bicycle lanes and high-visibility pavement markings. Section 2 - Sycamore Valley Road to Hartz Avenue: Pavement digout-repairs and pavement overlay, pavement restriping. Restriping includes Class IIB bicycle lanes and high-visibility pavement markings.	CC-170001	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Contra Costa	San Ramon	Iron Horse Trail Bike and Pedestrian Overcrossing	San Ramon: At the intersections of Bollinger Canyon Road and the Iron Horse Trail: Construct bicycle/pedestrian overcrossings. This work includes construction of the overcrossings, utility work, stormwater mitigation, ADA compliance, and landscape restoration.	CC-170014	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	San Pablo	Giant Road Pavement Rehabilitation	San Pablo: Giant Rd between Brookside Drive and Miner Avenue: Rehabilitate street pavement with an overlay and slurry seal, upgrade curb ramps to current ADA standards, replace striping, and eliminate sidewalk hazards.	CC-170031	21-T08-060	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Contra Costa	Antioch	Antioch - L Street Pathway to Transit	In Antioch, construct concrete curb, gutter, sidewalk, dwys & ADA curb ramps, minor median island modifications, pavement micro-surfacing & ped safety flashing beacons on L St from Lemontree Way to Sycamore Dr and from 10th St to terminus of L St at Antioch Marina Circle. Re-striping to provide a Class II bike lane on L St from 10th St to Antioch Marina Circle & Class III bike route from Lemontree Way to Sycamore Dr. All work is w/in City ROW. Future Ph 2 includes traffic signals upgrades & new bus shelters.	CC-170035	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	Concord	Concord Willow Pass Road Repaving SR2T	Concord: On Willow Pass Road (WPR) between Galindo Street and San Vincente Drive: Rehabilitate the pavement and repair damaged sidewalk, curb and gutter. Include an option to extend paving to Landana Drive) Existing curb ramps will be replaced to meet current ADA standards Pavement will be milled 4" and backfilled with 4" of hot mix asphalt (HMA) with a CIR section from Galindo St to San Vincente Drive (with a bid alternative to extend the work to Landana Drive) This pavement rehabilitation method will retain the existing grade of the pavement and will not cause excessive cross slope. The pavement base failure areas will be dug out after the milling and prior to placement of HMA wearing course. This project is combined with the Willow Pass Road Safe Routes to Transit Improvements. This project closes two sidewalk gaps and enhances an uncontrolled multi-lane pedestrian crossing on Willow Pass Road in eastern Concord. The sidewalk gap closures will provide ADA-compliant access to multi-family housing, bus stops, markets, Wren Elementary School and other amenities. The project includes the replacement and relocation of an outdated pedestrian warning system with a pedestrian hybrid beacon across Willow Pass Road at San Vincente Drive to connect residences to these amenities. A separate project will install a new rectangular rapid flashing beacon (RFFB) on Willow Pass Road at Ashdale Drive. The project will provide ADA-compliant access to multi-family housing, bus stops, markets, Wren Elementary School and other amenities. The project will include striping and signage for a Class IV cycle track on the north side of WPR from Parkside Drive to Landana Drive. To accommodate the cycle track, westbound travel lanes will be reduced from 2 to 1 from Landana Drive to Farm Bureau Road and some on-street parking from Farm Bureau Road to Parkside Drive is to be removed. The project includes bioretention, adjustment of traffic signals, grading, and landscaping to conform the improvements.	CC-170037	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Contra Costa	Pittsburg	Pittsburg BART Pedestrian and Bicycle Connectivity	Pittsburg: On California from Railroad to Harbor, Adjacent to SR4 from Railroad to Bliss Ave parking Lot, on Railroad from Delta DeAnza Trail to BART Station: construct Class I bikeways and associated imps. On Railroad from California to 17th: Construct Class II buffered bike path. Includes construction of multiuse Class I bikeways and Class II buffered bikeways, California Street and trail lighting, Railroad Avenue Street lighting, trail lighting along Bliss Avenue, intersection corner treatments, crosswalk treatment, modified driveways, benches, wayfinding and service information signage, traffic street light improvements, bioretention basin and water quality features, irrigation, and landscaping improvements.	CC-170040	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	Pittsburg	City of Pittsburg Pavement Improvements	Pittsburg: On West Leland Rd from Woodhill Rd to Railroad Ave and on Loveridge Rd from Buchanan Rd to Pittsburg-Antioch Highway: Rehabilitate roadway. Rehabilitation may include crack sealing, base repairs, patch paving, milling, geosynthetics, as well as thin and thick asphalt concrete overlays. Federally participating sections include West Leland Rd from S Broadway to Serrano Way, West Leland Rd from Crestview Dr to Railroad Ave, and Loveridge Rd from Pittsburg-Antioch Highway to SR-4. Federally non-participating sections include West Leland Rd from Woodhill Dr to S Broadway, West Leland Rd from Serrano Way to Crestview Dr, and Loveridge Rd from SR-4 to Buchanan Rd.	CC-170042	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Contra Costa	Concord	Downtown Corridors Bike/Pedestrian Improvements	Concord: Various locations on multiple corridors connecting Downtown Concord to regional transit, senior housing, and low income communities: Make bicycle and pedestrian safety improvements including 1. relocate crosswalks, install high-visibility crosswalk markings, add pedestrian-oriented lighting, extend curbs and improve curb ramps, and widen a portion of sidewalk in a key location on Salvio Street and Broadway St, 2. install new bicycle facilities on Oak Street, upgrade portions of Salvio Street to full bicycle lanes, and close a bicycle facility gap on Grant Street by installing a contraflow lane, and 3. build on related city projects to add bicycle lanes on Grant Street and shared lane markings to Salvio Street near Todos Santos Plaza.	CC-170050	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Contra Costa	Martinez	Alhambra Avenue Downtown Resurfacing	Martinez: Alhambra Avenue from Marina Vista Avenue to Jones Street in the Downtown PDA: Resurface pavement with a 3" grind and overlay including base failure repairs, crack sealing, upgrade curb ramps to current ADA, adjust utility covers, and restriping	CC-170059	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled

Contra Costa	BART	Concord BART Station Modernization	Concord: In and around the Concord BART Station: Make capacity, access, placemaking, and state-of-good repair, improvements based on BART's 2016 Station Modernization Plan. Station improvements will focus on addressing state-of-good repair issues, improving station lighting, improving passenger circulation, expanding bicycle access, reducing fare evasion, and adding new architectural finishes, wayfinding, and public art to enhance customer experience, sense of safety, and placemaking.	CC-170060	21-T11-115	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Contra Costa	CCTA	Innovate680:Coordinated Adaptive Ramp Metering Ph1	Contra Costa County: on NB I-680 between Alcosta Blvd to Olympic Blvd: Implement Coordinated Adaptive Ramp Metering	CC-170062	21-T07-057	Exempt (40 CFR 93.126) - Safety - Traffic control devices and operating assistance other than	Not Modeled
Contra Costa	Contra Costa County	Treat Boulevard Corridor Improvements	Contra Costa County: Implement bicycle infrastructure and pedestrian enhancements along Treat Boulevard between North Main Street and Jones Road in unincorporated Walnut Creek. Improvements include creating buffered bicycle lanes and a mixed-use path, existing crosswalk enhancements, closing three free right-turn lanes, eliminating a traffic bottle-neck, signal relocations, and signal improvements.	CC-190012	21-T08-060	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Contra Costa	CCTA	Bay Area MOD	CCTA: In the I680 Corridor and surrounding communities: Develop an integrated and scalable platform & application (app) aimed at reducing traffic congestion. The Bay Area MOD app will be a one-stop shop to assist travelers with mobility choices by seamlessly connecting multiple forms of shared and active transportation. The Bay Area MOD will provide real-time multi-modal trip planning options based on a user?s origin and destination. The app will include a uniform payment system and offer incentives based on time of day and mode in an effort to incentivize and reward desired travel behaviors. Other Federal Funds are ATCMTD.	CC-190018	21-T03-009	Exempt (40 CFR 93.126) - Other - Grants for training and research programs	Not Modeled
Contra Costa	EBRPD	SF Bay Trail Point Molate	EBRPD: Along the shoreline connecting the bike/pedestrian trail over the Richmond-San Rafael bridge to the Point Molate Beach Park in the City of Richmond: Construct SF Bay Trail segment. Most of this segment of Bay Trail will be constructed within a 1.1 mile easement donated to EBRPD from Chevron Corporation, granting access to shoreline previously closed to the public. The project proposed to construct 1.25 miles of Bay Trail, highlight some of the rich history within the project area, and restore and enhance portions of the SF Bay shoreline for better species habitat and public enjoyment.	CC-190019	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	Contra Costa County	North Bailey Road Active Transportation Corridor	Contra Costa County: On Bailey Road between Willow Pass and Canal Roads in unincorporated Bay Point: Narrow the four travel lanes and median to accommodate a separated two-way cycle track on the west side of Bailey Road, expand sidewalks on both sides of Bailey Road and install a landscaped buffer zone along the curb for enhanced pedestrian and bicyclist safety. Installation of a new traffic signal, ADA-compliant curb ramps, expanded sidewalks, and crosswalk enhancements will improve accessibility for all modes of active transportation.	CC-210001	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	Lafayette	Lafayette Town Center Pathway and Bike Station	Lafayette: Between the BART station and downtown: Construct bicycle and pedestrian improvements including a new modular, self-park bike station at the south entrance of the Lafayette BART station, as well as a new pedestrian-oriented plaza and shared-use pathway to improve the connection between the south entrance and downtown Lafayette.	CC-210004	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	Richmond	Richmond 13th Street Complete Streets Imps	Richmond: Along 13th St from Harbour Way to Costa Ave: Implement complete streets improvements including protected bicycle facilities, various pedestrian improvements, and a road diet with traffic striping and pavement markings.	CC-210007	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Contra Costa	ECCTA	ECCTA Hydrogen Fueling Maint Infrastructure Upgrad	ECCTA: Maintenance facility: Upgrade infrastructure needed for the safe maintenance of fuel cell electric buses in the same facility as diesel buses. Maintenance facility upgrades include upgrade electrical including lighting, upgrade ventilation including HVAC, fans and roof vents, install gas detection and alarm systems, install rolling fire doors, wall off/enclose the mezzanine and entryway into older structure of maintenance facility. RTPID 21-T07-057	CC-210008	21-EN08-131	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Contra Costa	Caltrans	Central Ave I-80 Undercrossing Ped/Bike Improve	Richmond: On Central Ave crossing I-80 between San Joaquin St/Jacuzzi St and San Luis St/Pierce St: Improve ped/bicycle access with wider sidewalks, new sidewalk-level bikeways, crossing improvements, ped lighting, and fencing.Improvements include reconstructing wider sidewalks, new sidewalk-level bikeways, curb ramp modifications for new bikeways, improved ADA access, high-visibility crosswalk markings, green bikeway intersection markings, signage. The project will relocate existing electrical systems, add lighting underneath the freeway undercrossing, replace fencing between sidewalks and freeway abutments, railing between freeway columns adjacent to the new bikeways. This will improve pedestrian, bicycle comfort, safety, mobility while significantly reducing the level of stress for all users by providing a dedicated bikeway and wider walkway.The project improves access to adjacent neighborhoods that have high density housing, a variety of local and regional retail businesses, grocery stores including Pacific East Mall, El Cerrito Plaza, Costco, El Cerrito High School. It will increase access to jobs via regional transit, including the El Cerrito Plaza BART Station, AC Transit?s Rapid Bus, Transbay L Route at Central Ave and San Pablo Ave, and Route 80 (Claremont District/El Cerrito Plaza BART) on Pierce St and Central Ave. It will improve regional trail and park access including the San Francisco Bay Trail, Ohlone Greenway, and Richmond's Central Park.	CC-210011	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	CCTA	East Bay Integrated Transit Plan	Contra Costa County. The ITP will include a countywide study of transit services and travel markets to advance strategic coordination among bus transit operators in Contra Costa and between bus transit operators and BART. The study will inform the development of an ITP to be executed by CCTA and the Contra Costa bus transit operators, and included in larger regional transit integration plans. The Study will identify obstacles and opportunities for countywide transit service coordination and define certain routes/service areas for regional, subregional, and community transit operations (i.e., express, feeder service to BART, First/Last Mile to transit hubs). It will consider integrated fares, signal priority, improved access to park-and-ride locations, shared mobility hubs, integration with the Mobility-on-Demand multi-modal trip planning application, connection protection, ITS/capital projects, wayfinding, real-time information, scheduling coordination.	CC-210012	21-T10-093	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled

Contra Costa	San Ramon	San Ramon Transit Center - Shared Mobility Hub	San Ramon: At San Ramon Transit Center/Bishop Ranch Business Park: Implement multi-modal mobility improvements. The San Ramon Transit Center is located in the City's PDA, adjacent to the Iron Horse Regional Walking/Biking Trail and within the Bishop Ranch Business Park. Project includes improvements consistent with MTC's Shared Mobility Hub grant. The project includes the installation of new electric message boards alerting transit riders with real time transit messages, local/regional transit news and local updates transit center amenities adding more bike lockers, bike fix-it stations rehabilitating existing pavement and providing improved access for the public through ADA compliant upgrades and improved way finding and updating amenities. The overall sustainability of the transit center will be further enhanced with the addition of storm water treatment area that will accommodate run off from approximately 75% of the hub.	CC-210013	21-EN09-132	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	MTC	Regional Planning Activities and PPM - CC County	Contra Costa County: Countywide: Regional Planning Activities and Planning, Programming and Monitoring (PPM). Prior year funding was programmed on CC-170004	CC-210014	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning activities conducted pursuant to titles 23 and 49 U.S.C	Not Modeled
Contra Costa	WCCTA	WestCat 45-foot Over the Road Coach Replacement	WestCAT: 45-foot over the road coach subfleet: Replace two vehicles past their useful life	CC-210015	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Contra Costa	ECCTA	ECCTA: Hydrogen Fueling Station	ECCTA: At the ECCTA maintenance facility located at 801 Wilbur Avenue, Antioch, CA 94509: Design and construction of a stand-alone hydrogen fueling station with the capacity to fuel up to 30 fuel cell electric buses	CC-210017	21-EN08-131	Exempt (40 CFR 93.126) - Mass Transit - Purchase of office, shop, and operating equipment for	Not Modeled
Contra Costa	CCCTA	CCCTA Electric Bus Charging Infrastructure	CCCTA: At the Arnold Industrial Way Facility: ZEB Infrastructure Set-Aside Funds for Electric Bus Charging Infrastructure	CC-210201	(blank)	Exempt (40 CFR 93.126) - Mass Transit - Construction or renovation of power, signal, and	Not Modeled
Contra Costa	EBRPD	Martinez Bay Trail Gap Closure	East Bay Regional Parks District: Along the Carquinez Loop Trail and SF Bay Trail in the vicinity of Berrellesa St: Close a 0.5 mile gap by constructing a shared-use path along with crossing improvements	CC-230001	21-T01-003	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	CCTA	CCTA - Countywide Smart Signals	The project will develop, manage, and implement Intelligent Transportation System (ITS) initiatives such as upgrading the existing legacy systems, providing interconnectivity throughout Contra Costa County signal systems and enhance the sharing of real-time information between agencies and the public. A unified signal technology and communication system throughout the County will enable the region to prepare for emerging transportation technologies and future Smart Cities initiatives. The project includes cloud-based Transit Signal Priority (TSP) technologies to promote transit usage reducing delay and transit times for transit vehicles. The traffic signal upgrades also include video analytics that provides ability to Identify "near miss" situations and take proactive approach to prevent future occurrences. Other State funds are LPP	CC-230202	21-T07-057	Exempt (40 CFR 93.126) - Safety - Traffic control devices and operating assistance other than	Not Modeled
Contra Costa	Pittsburg	Pittsburg's Delta de Anza Multimodal Trail Safety	The Pittsburg's Delta De Anza Multimodal Trail Safety Improvements Project will implement a series of critically needed safety and operational enhancements to the Delta De Anza Trail within the communities of Bay Point, Pittsburg, and Antioch. Within these communities, 35 at-grade crossing exist on the Delta De Anza Trail. In coordination with Contra Costa County, City of Antioch, East Bay Regional Park District, and EBMUD, the City of Pittsburg will design, and construct the following improvements: 1) Delta de Anza Trail Crossing Intersections - Install raised crosswalks, rapid rectangular flashing beacons, high-visibility crosswalks, lighting, wayfinding signage, and green bike lanes; 2) Delta de Anza Trail improvements - Install landscaping, lighting, trail pavement, fencing, and other improvements consistent with the City's Living Green Gardens for sustainability.	CC-230203	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	Richmond	McBryde Avenue Safe Routes to Parks	The project will create a safe and comfortable walking and biking route from an existing bike route on 37th Street, through the San Pablo Ave PDA, and across I-80 to Wildcat Canyon Regional Park. Improvements include resurfacing, a road diet from 4 to 2 vehicles lanes with a center turn lane and bike lanes, traffic signal modifications, curb ramps, curb extensions, high visibility crosswalks, sidewalk gap closures, traffic calming, and street trees.	CC-230204	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Contra Costa	Richmond	Bayview to BART	The project will create a safe and comfortable walking and biking route connecting the Del Norte BART station to the San Francisco Bay Trail. It capitalizes on existing multi-use paths, ties in to El Cerrito's Transit Oriented Development Complete Streets Projects, and will improve conditions around parks and schools. The project will build Class II bike lanes on Potrero Ave and Class IV protected bike lanes on the Bayview Ave overpass over I-580. Locations include S 51st St, Bayview Ave, Ells St, Ells Path, Cypress Path, Cypress Ave, S 47th St, S 49th St, Potrero Ave in Richmond.	CC-230205	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	Walnut Creek	Walnut Creek Safe Routes to School Infrastructure	This project consists of infrastructure improvements that enhance safety and close gaps in the existing sidewalk network for pedestrian and bicyclists in the vicinity of schools and along known walking and bicycling routes to schools.	CC-230206	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	Pinole	Bay Trail Gap Closure at Tennent Avenue	This project closes a 600 foot gap in the San Francisco Bay Trail linking the communities of Hercules, Pinole, and unincorporated Contra Costa County. Furthermore, this refines the crossing locations of a heavily traveled Union Pacific tracks improving safety for pedestrians and bicyclists.	CC-230207	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	CCTA	Contra Costa Countywide Safe Routes to School	The Contra Costa Countywide Safe Routes to School Program will expand upon three subregional programs known as Street Smarts Diablo Region (SSDR), Street Smarts San Ramon Valley Program (SSSRVP), and Contra Costa Health Services (CCHS) Safe Routes to School Program to offer bicycle and pedestrian safety awareness education and encouragement to include every K-12 public school in Contra Costa County. The program will be available to serve all 170,000 students attending each of the 274 elementary, middle, and high schools within Contra Costa County's 18 school districts. The program will be offered annually to all schools.	CC-230208	21-T09-061	Exempt (40 CFR 93.126) - Other - Grants for training and research programs	Not Modeled
Contra Costa	Concord	Galindo Street Multimodal Corridor Project	On Galindo St. between Salvio St. and Clayton Rd; a new Class I bike path on the east side of the roadway. The segment between Salvio St. and Concord Blvd. is proposed to have a 10-foot-wide Class I shared bike/ped path. The segment between Concord Blvd. and Clayton Rd. is proposed to have a 12-foot-wide Class I path. The proposed Class I path will be separated from the street varying from 2 to 7 feet. The project includes vertical delineators on existing Class II bike lane on Clayton Rd. from Galindo St. and Grant St. to convert into a Class IV bike lane. RTIP ID 21-T08-060.	CC-230209	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled

Contra Costa	Lafayette	Connecting Lafayette: Downtown Pathways and School	The project would result in a Class I multi-use facility along School Street, a pathway along Topper Lane, and construction of a sidewalk along a segment of St. Mary's Road in Lafayette, CA.	CC-230210	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	Concord	Willow Pass Road Bike Lane Connection	Concord: Along Willow Pass Rd from Parkside Dr to Landana Dr and on Parkside Dr from Willow Pass Rd to Salvio St: Construct a protected Class IV cycle track along Willow Pass Road and Class II bicycle lanes on Parkside Drive. Install RRFBs and green conflict markings at a key intersection. It further fills a gap in the bicycle network that connects with planned and funded Downtown corridor improvements and ultimately provides a bikeway connection from the neighborhoods along the Willow Pass Road to the BART station. The project provides vital bicycle and pedestrian connections to multiple schools, a regional trail (Contra Costa Canal Trail), a regional train station (BART), and Downtown Concord. There are several healthcare centers, offices, churches, and multi-family housing units located along the corridor. Over seventy-five percent of students at Mt. Diablo High, Olympic Continuation High, and Wren Avenue Elementary qualify for Free or Reduced Price Meals. Both schools enroll students from the low-income census tract encompassing downtown Concord (0601332800). The project further connects to several ongoing projects that are improving bicycle and pedestrian facilities in the downtown, allowing residents and students to access key downtown destinations and routes leading to the BART station. A portion of this project is also a part of the Safe Routes to Transit Program (SR2T). This project will create an "all ages and abilities" network enabling children and families to safely and confidently walk and bicycle to school.	CC-230211	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	CCCTA	CCCTA - Transit Corridors Study	The Transit Corridors Study will analyze four major corridors in County Connection's core service area and identify options to improve speed and reliability of buses. The study will assess current conditions, including operations, existing infrastructure, and ridership; gather passenger and community feedback; and develop recommendations for capital improvements that would reduce delays and travel time and ultimately enhance the customer experience.	CC-230212	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Contra Costa	Contra Costa County	San Pablo Ave Complete Streets/Bay Trail Gap Closu	Contra Costa County: Unincorporated Rodeo/Crockett: Implement a road diet and construct a Class I shared-use path along San Pablo Avenue from Pacific Ave to Pomona Street in unincorporated communities of Rodeo and Crockett. Project closes a 3.2-mile gap of the San Francisco Bay Trail.	CC-230213	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Contra Costa	Contra Costa County	Pacifica Avenue Safe Routes to School	Contra Costa County: Reconfigure roadway with 2,400 feet of two-way cycle track, 400 feet of new sidewalk, 500 feet of widened sidewalk, narrower travel lanes, bulb-outs, and 3 new raised crosswalks on Pacifica Avenue in unincorporated Bay Point.	CC-230214	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	San Pablo	San Pablo's Safe Mobility	The Broadway-El Portal Safe Routes (BESR) Project will construct a 1.25-mile, separated & protected, 2-way bicycle "cycletrack," & Safe Routes to School (SR2S) improvements between this cycletrack and Lake Elementary, Bayview Elementary and Helms Middle School. Additional pedestrian & transit improvements included in the BESR project are bus boarding islands—to facilitate safe transit usage that is safely integrated with the cycletrack—and an enhanced bicycle connection to an unincorporated neighborhood in Contra Costa County. Project will also include additional cycle track improvements to link SR2S improvements to the Contra Costa Community College transit center with cycletrack improvements to Mission Bell Drive, Moraga Road, Castro Road, and Campus Drive. This project also includes non-infrastructure components for safe routes to school. These non-infrastructure components will be carried out by Contra Costa Health Services. CC Health Services' $24K contribution is reflected under the "Other Local" fund line.	CC-230215	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	CCCTA	CCCTA - Replace 22' Vehicles	CCCTA: Fleet: Replace 15 22' paratransit vehicles	CC-230216	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Contra Costa	CCCTA	CCCTA - Replace 40' Buses	CCCTA: Fleet: Replace 10 40' diesel buses	CC-230217	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Contra Costa	CCCTA	CCCTA - Replace Paratransit Vans	CCCTA: Fleet: Replace 3 paratransit vans	CC-230218	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Contra Costa	Pittsburg	Pittsburg Center Smart City Pilot	This project consists of implementing smart city technologies 1/4 mile transportation grid surrounding the Pittsburg Center BART station with connected technologies such as adaptive streetlights, connected traffic signals, and digital/static wayfinding signage. These upgrades will help encourage transit use, encourage walking and bicycling by creating safer and more complete streets, alleviate traffic, and attract local businesses.	CC-230219	21-T07-057	Exempt (40 CFR 93.126) - Safety - Traffic control devices and operating assistance other than	Not Modeled
Contra Costa	CCTA	Martinez Amtrak Shared Mobility Hub	Project includes improvements to the Martinez Amtrak Station to enhance the facility to a shared mobility hub, including reconfigure surface parking lot to a transit center; improve passenger pick up drop off area; install signage/wayfinding; and bike/ped improvements at the Amtrak Station and the streets around the Amtrak Station.	CC-230220	21-T08-060	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Contra Costa	Walnut Creek	Ygnacio Valley Road Fiber Infrastructure	This project will install fiber optic communication infrastructure and technologies on Ygnacio Valley Road between I-680 & Oak Grove Road	CC-230221	21-T07-057	Exempt (40 CFR 93.126) - Other - Transportation enhancement activities (except rehabilitation and	Not Modeled
Contra Costa	Martinez	Downtown Martinez Parking Technology Upgrades	Complete upgrade to the parking technology in downtown Martinez. Removal of individual meters and installation of multi-space parking kiosks that accept credit card and RFID payments. Installation of new wayfinding signage to better direct motorists to available parking.	CC-230222	21-T07-057	Exempt (40 CFR 93.126) - Other - Directional and informational signs	Not Modeled
Contra Costa	Orinda	Lamorinda Smart Signal System Project	This project will enable the City of Orinda to upgrade the region of Lamorinda which includes the cities of Lafayette, Moraga and Orinda to a smart signal system that can: synchronize signals with each other and optimize traffic flow to smooth congestion; prioritize transit and emergency vehicles as needed; reduce emissions; use video detection and analytics to proactively identify "near miss" situations (for vehicles, bicycles, and pedestrians) and report those back to a traffic management center to aid in efforts to reach countywide Vision Zero goals; and facilitate the exchange of real-time information that will be essential to support future emerging technologies included connected and automated vehicles.	CC-230225	21-T07-057	Exempt (40 CFR 93.127) - Intersection signalization projects at individual intersections	Not Modeled

Contra Costa	Danville	Danville - Townwide Traffic Signal Modernization	The Townwide Traffic Signal Modernization/ITS project in the Town of Danville will modernize its traffic signal network, including replacing the Town's aging traffic signal hardware, vehicular detection systems, and communications infrastructure. It would improve bicycle, pedestrian, and vehicular safety; air quality and GHG emission reductions; connectivity; and reduce travel time.	CC-230226	21-T07-057	Exempt (40 CFR 93.127) - Intersection signalization projects at individual intersections	Not Modeled
Contra Costa	CCTA	Concord Smart Signals Project	The Concord Smart Signals Project will upgrade traffic signals to a smart signal system within the City of Concord to help reduce congestion and emissions, prioritize transit and emergency vehicles, and protect vulnerable road users.	CC-230227	21-T07-057	Exempt (40 CFR 93.127) - Intersection signalization projects at individual intersections	Not Modeled
Contra Costa	San Ramon	Crow Canyon Iron Horse Trail Bike-Ped Crossing	Design a new bicycle and pedestrian overcrossing to convey the Iron Horse Trail traffic over Crow Canyon Road.	CC-230228	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	CCTA	Bollinger Canyon Rd Shared Mobility Hub	Shared Mobility Hub (SMH) at Bollinger Canyon Rd is one of the stops for the future I-680 Express Bus. The SMH includes elements such as enhanced bike/pedestrian facilities, bike chargers, connection to the Iron Horse Trail, transit signal priority, WiFi, real time traveler information, and bus bays.	CC-230229	21-T12-122	Exempt (40 CFR 93.127) - Bus terminals and transfer points	Not Modeled
Contra Costa	CCTA	Antioch Bike Garden	The Antioch Bike Garden project will build a one-of-a-kind facility for teaching bicycle and pedestrian safety education to encourage the use of pollution-free transportation. Using small scale modern streetscape design elements, this unique facility will be built in the City of Antioch's Prewett Park and will provide healthy, fun, outdoor recreation in a safe, vehicle-free environment. Learning stations throughout the course will aid group instruction and allow for self-guided education.	CC-230230	21-T02-008	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	CCTA	L Street Pathway to Transit – Bicycle and Pedestri	The project includes Phase 2 improvements on L Street between 9th Street and Sycamore Drive in the City of Antioch, about 0.5-mile section. These improvements include new sidewalks under the railroad tracks and along the fairground, installing ADA compliant curb ramps, re-striping to allow for multi-modal facilities between 9th Street and Sycamore Drive, improving multimodal safety and operations along the corridor, and intersection improvements including traffic signal modifications at 10th Street, E18th Street and Sycamore Drive. Other improvements include new bus stops and bus shelters, trail access and connection to bike facilities and sidewalks. "L" Street is on a Tri-Delta Transit bus route that serves and connects the PDA and the Equity Priority Area and serves Contra Costa County low and moderate housing development around "J" Street. "L" Street terminates at the entrance to the existing multi use Delta Trail/waterfront promenade which connects and serves the Antioch Amtrak Station.	CC-230231	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	CCTA	SF Bay Trail Gap Closure: Martinez Intermodal Stat	The Martinez Intermodal Station - Crockett Bay Trail Gap Closure Project will close a 0.5-mile gap in the 23-mile Carquinez Strait Scenic Loop Trail (CSSLT) and the 500-mile San Francisco Bay Trail. This project will construct a portion of the San Francisco Bay Trail that will connect Carquinez Regional Shoreline property on Carquinez Scenic Drive via an easement on the Union Pacific (UP) Railroad right-of-way to the existing public at-grade crossing at Berrellesa Street, then continuing north on Berrellesa Street to the existing San Francisco Bay Trail on the north end of the street.	CC-230232	21-T01-003	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	CCTA	Richmond Street Complete Streets Improvement	The project will improve Richmond Street, a minor arterial, to provide safe and accessible pedestrian connections between El Cerrito's residential neighborhoods to the El Cerrito del Norte and Plaza BART Stations, schools, civic and recreational destinations, commercial districts, and the City's San Pablo Avenue Priority Development Area (PDA). The project will improve access and safety for all modes of travel by rehabilitating the pavement; installing high-visibility crosswalks, roadway safety lighting, and rapid rectangular flashing beacons at uncontrolled crosswalks; installing enhanced traffic signing, green pavement markings, and signs to enhance the existing shared-lane bike facility (which complements the low-stress Ohlone Greenway, just 1-3 blocks West); installing painted tear-drop medians and in-fill streets trees for traffic calming; implementing safety upgrades at the Elm/Key/Hill Streets traffic signal; installing ADA compliant curb ramps; and repairing/replacing non-conforming sidewalk. Upgrades to the vehicle signal loop detection to enhance bike detection at the four signalized intersections within the project limits are proposed as part of the separate countywide CCTA Smart Signals project.	CC-230233	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Contra Costa	CCTA	Moraga Road and Canyon Road Complete Streets	The Moraga Road and Canyon Road Complete Streets Project will be implemented along Moraga Road between St Mary's Road and Moraga Way, and Canyon Road between Moraga Way and Sanders Drive, within the PDA in Downtown Moraga. Based on conceptual plans, the project scope is currently estimated to add 1233 LF new sidewalks, replacing/repairing 1872 LF nonconforming sidewalks, installing 14 ADA-accessible curb ramps, 12 Solar-powered Rectangular Rapid Flash Beacons (RRFBs), intersection timing with leading pedestrian intervals, 4 median pedestrian crossing noses, 4600 LF enhanced Class II bike lanes with buffer zones, pavement renovation, 25 street trees along new sidewalk, 3 new bus stop shelters with people-friendly benches and solar-power-compacted garbage bins, speed feedback signs, and other necessary improvements. The improvements will tie into previously constructed and future projects providing continuous safe routes for the residents of outlying rural areas connecting low-income residents to the schools and services within Moraga and provide improved access to active transportation modes.	CC-230234	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	CCCTA	CCCTA Replace (10) 40ft Urban Buses	Replace 10 40 ft diesel buses that have reached the end of their useful life.	CC-230236	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled

Contra Costa	Moraga	St. Mary's Road Multimodal Safety Improvement Proj	The Project will construct a three-way signal-controlled intersection at the St. Mary's Rd/Rheem Blvd intersection, a designated left-turn pocket with optional traffic signal at the St. Mary's Rd/Bollinger Canyon Rd intersection, and modifications to roadway alignment. Rheem Blvd will be widened in order to construct a Class II bike lane, which will connect to a Class I shared-use path along St. Mary's Rd.	CC-250201	21-T08-060	Exempt (40 CFR 93.127) - Intersection signalization projects at individual intersections	Not Modeled
Contra Costa	El Cerrito	El Cerrito BART to Bay Trail Connection	Connect El Cerrito Plaza BART Station and the San Francisco Bay Trail. The project will evaluate & implement multiple on- and off-street alignment alternatives to implement all ages and abilities bikeways between these two endpoints. Potential treatments include separated bicycle facilities, protected intersections, signalized and flashing beacon crossing treatments, and protected vehicle-bicycle phasing to enhance safety.	CC-250202	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	ECCTA	ECCTA: Comprehensive Operational Analysis	The purpose of this project is to perform a comprehensive operational analysis of ECCTA's mobility services and redesign its transit system. The new mobility network should harmonize with Contra Costa Transportation Authority's Integrated Transit Plan, the Countywide Transportation and Mobility Hub Plans as well as the Metropolitan Transportation Commission's various regional plans to recapture current and future ridership in the region.	CC-250203	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Contra Costa	Contra Costa County	Kirker Pass Road Southbound Truck Climbing Lane	Contra Costa County: Install an additional truck climbing lane in the southbound direction of Kirker Pass Road starting 1,200 south of Nortonville Road to Concord City Limit and provide intersection improvements at the south Hess Road intersection in unincorporated Concord.	CC-250204	21-T09-061	Exempt (40 CFR 93.126) - Safety - Truck climbing lanes outside the urbanized area	Not Modeled
Contra Costa	Contra Costa County	Pacheco Boulevard Improvements	Contra Costa County: Widen roadway, add shoulders, add bicycle and pedestrian improvements, realign curves and install roadway modifications along 5.1 miles of Pacheco Boulevard from Blum Road to Morello Avenue in unincorporated Pacheco.	CC-250205	21-T08-060	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Marin	GGBHTD	Golden Gate Bridge Seismic Retrofit, Phase 3B	This project would retrofit the Golden Gate Bridge to withstand a maximum credible earthquake (magnitude Richter of 8.3) occurring on the nearby San Andreas or Hayward Faults. Seismic retrofit construction has been divided into three phases: Phase 1 includes implementation of seismic retrofit measures to the north approach viaduct and implementation of environmental mitigation measures. Phase 2 includes implementation of seismic retrofit measures to the south viaduct, south anchorage housing, Fort Point Arch, pylons S1 and S2, and utility modifications throughout the south approach structures. Phase 3 includes implementation of seismic retrofit measures to the suspension bridge, south pier and fender, north pier, north anchorage, and pylon N1. Earmarks: HBB SAFETEA earmark $50M (for first year see MRN970016)	MRN050018	21-T01-005	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Marin	GGBHTD	Golden Gate Bridge-Suicide Deterrent SafetyBarrier	Conduct environmental analysis, engineering studies and preliminary engineering to determine alternatives and feasibility for a physical suicide deterrent system on the Golden Gate Bridge. Construct suicide deterrent system. Project includes wind-retrofit. Other State funds are Proposition 63 funds.	MRN050019	21-T01-007	Exempt (40 CFR 93.126) - Safety - Safer Non-Federal-Aid system roads	Not Modeled
Marin	GGBHTD	GGBHTD: Facilities Rehabilitation	GGBHTD: Systemwide: As part of the District's Maintenance and Operating Facilities Program, this project will ensure that District facilities are properly maintained to achieve optimum performance and will achieve the maximum economic useful life from existing fixed assets including, but not limited to roofs, HVAC systems, air compressors and parts cleaners.	MRN050025	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Marin	GGBHTD	GGBHTD - Transit Systems Enhancements	GGBHTD: Systemwide: systems, technology and communication enhancements to transit fleet and facilities.	MRN130015	21-T01-002	Exempt (40 CFR 93.126) - Other - Transportation enhancement activities (except rehabilitation and	Not Modeled
Marin	GGBHTD	GGBHTD Ferry Major Components Rehab	GGBHTD: Systemwide: Rehabilitate and replace major ferry components including navigation systems, onboard monitoring and alarm systems, interior components, boarding apparatus, hull, lifesaving equipment, propulsion systems and other ferry components. Prior funding for this program is programmed on MRN030011. $2.2M in FY17 funds are FTA Passenger Ferry Grant Program funds	MRN150014	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation of transit vehicles	Not Modeled
Marin	MCTD	MCTD: Replace Paratransit Vehicles	MCTD: FY17- 3 local 22ft paratransit cutaway gasoline vehicles: Replace contractor owned vehicles FY20- 16 local 22ft 2015 Starcraft paratransit cutaway gasoline vehicles: FY25- Replace 5 paratransit cutaway vehicles	MRN170003	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Marin	MCTD	MCTD: Replace Paratransit Vehicles with Vans	MCTD: 6 vehicles: Replace 5 local 22ft paratransit cutaway gasoline vehicles with accessible vans and purchase a third vehicle as a non-revenue support vehicle; FY2025 funds are for 3 vehicles	MRN170004	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Marin	GGBHTD	San Rafael Transit Center Relocation	San Rafael: San Rafael Transit Center: The SMART extension will bisect the existing transit center, eliminate Platform C, reduce the facility's transit capacity, and affect the long-term efficiency and operability of the facility. Phase 1 of the project will analyze three previously identified potential long-term alternatives and a no-build alternative, include an option to assess the possibility of additional alternatives, conduct community outreach and environmental clearance, and provide preliminary engineering design. When SMART commences service on their Initial Operating Segment in 2017, the SRTC will be operating in an interim condition which will limit the fiscal and operational efficiency of transit services. Phase 2 will complete final design and construction of the permanent San Rafael Transit Center. 21-T-01-002	MRN170013	21-T01-002	Exempt (40 CFR 93.127) - Bus terminals and transfer points	Not Modeled
Marin	Various	GL: Marin County - TOS-Mobility	Marin County: Various Locations: Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 and 40 CFR Part 93.127 Table 3 categories - Safer non-Federal-aid system roads, Shoulder improvements, traffic control devices and operating assistance other than signalization projects, Intersection signalization projects at individual intersections, Pavement marking demonstration, Lighting improvements, Emergency truck pullovers, Interchange reconfiguration projects Includes ramp metering and TOS elements on various locations along 101 in Marin County	MRN170018	21-T06-048	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Marin	Marin County	Marin City Pedestrian Crossing Improvements	Marin County: In the Marin City area of unincorporated Marin County: Improve pedestrian accessibility and safety with new curb ramps. The new curb ramps are at the following locations- 3 at Terners Drive @ Driveway entrances to multi-family housing closest to Donahue, 4 at Terners Drive @ Terrace Way, 4 at Terners Drive @ Terrace Drive, 2 at Flemings Court @ Terrace Drive, 2 at Donahue Street @ Sherwood Drive, and 4 at Bay Vista Circle @ Donahue Street & Sherwoood Drive	MRN190015	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled

Marin	MCTD	MCTD - Bus Stop Improvements	MCTD: Systemwide: Improve accessibility by installing wheelchair landing pads and other passenger amenities at multiple bus stop locations in the county.	MRN210002	21-T10-093	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Marin	MTC	Regional Planning Activities and PPM - Marin	Marin County: Countywide: Regional Planning Activities and Planning, Programming and Monitoring (PPM). Prior year funding was programmed on MRN170001	MRN210003	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning activities conducted pursuant to titles 23 and 49 U.S.C	Not Modeled
Marin	MCTD	MCTD: Replace Demand Response Vans	MCTD: Demand response vans: Replace 4 vehicles that are beyond their useful life	MRN210007	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Marin	MCTD	MCTD ZEB Charging Infrastructure	MCTD: At the 3010/3020 Kerner Parking Facility: Prepare the site for ZEB charging infrastructure	MRN210201	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Construction or renovation of power, signal, and	Not Modeled
Marin	San Rafael	San Rafael 2nd and 4th Street Intersection Improve	This project improves access to the non-conventional multi-legged intersection at the City's westerly gateway where two major arterial roadways meet a frontage road and residential streets. The intersection is difficult to navigate by motorists, bicyclists, and pedestrians. This project reconfigures the intersection and improves the traffic signal to extend the Cross Marin Bikeway while improving access and safety for pedestrians. These intersection enhancements are complementary to the Third Street improvement project, which includes a Class IV cycletrack along Second Street that is currently under construction. Project includes Demolition, concrete work including sidewalks, curb ramps, and realigning curbs, traffic signal modifications/upgrades, street safety lighting, pavement work, landscape, signage, striping, bicycle improvements, and transit stop	MRN230201	21-T08-060	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Marin	MCTD	MCTD - Transit Corridor Improvements	This project will evaluate and make improvements to high ridership transit corridors in Marin County. Proposed improvements include enhanced passenger information, upgraded amenities at bus stops and transit priority improvements to make transit service faster, more reliable, and more accessible to riders. Target corridors are: - 4th Street, San Rafael - Lincoln Ave, San Rafael - South Novato Blvd, Novato	MRN230202	21-T10-093	Exempt (40 CFR 93.126) - Safety - Traffic control devices and operating assistance other than	Not Modeled
Marin	Corte Madera	Paradise Drive Complete Streets	The project includes multimodal enhancements with a new 8' wide shared-use path for pedestrians and bicyclists along the 1700' corridor. Additionally, the project will include new and improved crosswalk, including lighted signs or a Rectangular Rapid Flashing Beacon, near the Upland Circle intersection. To accommodate the new bike and pedestrian improvements and to reduce high vehicular travel speeds along the corridor, the road will be resurfaced and vehicle travel lanes will be narrowed down to 10 feet with a striped shoulder. New signs and striping will be added for additional safety and traffic calming purposes. Paved on-street parking will be included for residents and visitors of Ring Mountain Open Space. The road will be raised to protect against flooding and future sea level rise.	MRN230204	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Marin	San Rafael	Canal Neighborhood Active Transportation Enhanceme	Pedestrian enhancements, bicycle boulevard treatments, and transit stop upgrades on 20 streets in the Canal neighborhood	MRN230207	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Marin	San Rafael	San Rafael Canal Crossing	Non-motorized bridge between Canal Street in San Rafael's Canal neighborhood and Third Street in San Rafael.	MRN230208	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Marin	MCTD	Fixed Route EV Charging and Maintenance Facility	MCTD: San Rafael: Construct new electric bus facility	MRN230209	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Construction of new bus or rail storage/maintenance	Not Modeled
Marin	Marin County	E Sir Francis Drake Bikeway Gap Closure	Corridor study and preliminary engineering for Bikeway gap closure along East Sir Francis Drake Boulevard between Remillard Park in Larkspur and I-580 overcrossing	MRN230210	21-T07-058	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Marin	MCTD	MCTD- Onboard Technology	Marin Transit will replace on board AVL and fare collection equipment.	MRN230211	21-T01-001	Exempt (40 CFR 93.126) - Mass Transit - Purchase of operating equipment for vehicles (e.g.,	Not Modeled
Marin	Corte Madera	Central Marin Regional Pathway Gap Closure	Construction of Class I pathway, 2-way protected Class IV cycle track, and enhanced pedestrian/bike crossings at two uncontrolled crossings, including at a Highway 101 on/off ramp.	MRN230212	21-T12-128	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Marin	GGBHTD	Golden Gate Bridge Seismic Retrofit, Ph: 1-3A	San Francisco /Marin Counties: Golden Gate Bridge This project would retrofit the Golden Gate Bridge to withstand a maximum credible earthquake (magnitude Richter of 8.3) occurring on the nearby San Andreas or Hayward Faults. Seismic retrofit construction has been divided into three phases: Phase 1 includes implementation of seismic retrofit measures to the north approach viaduct and implementation of environmental mitigation measures. Phase 2 includes implementation of seismic retrofit measures to the south viaduct, south anchorage housing, Fort Point Arch, pylons S1 and S2, and utility modifications throughout the south approach structures. Phase 3 includes implementation of seismic retrofit measures to the suspension bridge, south pier and fender, north pier, north anchorage, and pylon N1. Earmarks: 05 Appropriation (5M$) HPP #429 ($8.8M) and HBB SAFETEA earmark ($50M) partial, last three years in MRN050018.	MRN970016	21-T01-005	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Napa	NVTA	NVTA: Replace Rolling Stock	NVTA: Fleetwide: Replace rolling stock for fixed-route, paratransit, and community shuttle fleet.	NAP090005	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Napa	NVTA	NVTA Equipment Replacement and Upgrades	NVTA: Napa Vine service area: Replacement and upgrades to transit equipment and existing facilities	NAP090008	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of office, shop, and operating equipment for	Not Modeled
Napa	Napa	SR-29 Bicycle and Pedestrian Undercrossing	Construct a Class 1, ADA-compliant, paved multi-use path under Highway 29 on the north side of Napa Creek within City of Napa limits. Project will include site work, paving, construction of earth-retaining walls, construction of fences, and planting.	NAP130004	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Napa	NVTA	Napa Valley Vine Trail Calistoga-St. Helena Seg.	In Napa County: Design and construction of the Calistoga-St. Helena Napa Valley Vine Trail Segment, multi-use trail from Calistoga to St. Helena.	NAP150003	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled

Napa	Saint Helena	Main Street St. Helena Pedestrian Improvements	Saint Helena: Along Main Street (SR29) from Adams Street to Pine Street: Replace and upgrade pedestrian facilities. The project will include the removal and replacement of approximately 1,100 linear feet of sidewalk, curb ramps, construct crosswalk enhancements, tree removal and replacement, landscape irrigation, sewer and water lateral replacement, and installation of street light electrical.	NAP170005	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Napa	American Canyon	Green Island Road Class I	American Canyon: Green Island Rd from Paoli Loop to Commerce Blvd: Construct approximately 4,200 LF of new Class 1 multi-use trail to accommodate cyclists and pedestrians, and to encourage non-vehicular modes of transportation, and as required by local, regional and State Complete Streets policies. Improvements include sidewalks and Class I bike facilities such as the Napa Valley Vine Trail. The City of American Canyon enjoys an ideal location among three major goods movement corridors: Highways 29, 37, and 80 near three international airports and Union Pacific Railroad. Within the City, the Green Island Industrial District (GRID) is a regional agricultural employment center (with 30+/- logistics centers and over 1,227 employees) that provides industrial space for wineries and international farm to table agricultural distributors. These industrial users include food service/processing facilities such as Biagi Brothers (finished agricultural product trucking), Sutter Home Wines (wine), Barry Callebaut (chocolate), Mezzetta Foods (vegetables), and Wallaby Yogurt (dairy products). As a whole, the Project will benefit the City and Napa Valley, which is a critical economic engine for the region. The Project will also serve to connect high-density housing in the American Canyon PDA to economic opportunities in the Green Island Industrial Area. The Project will serve to improve traffic circulation, benefit the City's commercial/industrial users, and foster the economic vitality of the City. The Project will also enhance Napa PCAs by supporting local agricultural uses.	NAP170006	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Napa	Napa	Silverado Trail Five-Way Intersection Improvements	City of Napa: At the intersection of Silverado Trail, Third St, Coombsville Rd, and East Ave: Construct roundabout to improve operations that will result in increased safety, reduced driver delay, reduced congestion, and improved overall level of service. Additionally, the purpose of this project is to improve the safety and accessibility for all users by including bicycle facilities and pedestrian facilities that meet ADA requirements. Caltrans will be the implementing agency for the project.	NAP170009	21-T07-056	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Napa	NVTA	Imola Park n Ride and Express Bus Stop Improvement	Napa County: At the Caltrans owned and operated park and ride at SR 29 and Imola Avenue: Make improvements including in-line passenger loading and alighting at the Imola Ave on/off ramps, improved pedestrian facilities that connect the ramps directly to the park and ride, and safety improvements, such as improved lighting and signal improvements. The facility improvements will also include long-term bicycle parking in the park and ride lot. These facility improvements are specifically designed to improve frequency, reduce running times and improve accessibility for the two highly productive ridership bus routes: the Route 29 Express to the El Cerrito Del Norte BART station and the Route 11X to the Vallejo Ferry Terminal. Currently, the Routes depart from the Soscol Gateway Transit Center in the center of Napa, a significant distance east of the SR29 Corridor. Relocating the stop to the Imola Park and Ride will reduce running time for each route by 20 minutes since the bus routes will not need to divert across downtown Napa and return back to the highway.	NAP190006	21-T12-118	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Napa	MTC	Napa Valley Forward: Safety and Operational Imp.	Napa: SR-29 Up Valley Corridor: Implement safety and operational improvements for a multimodal corridor. Provide operational and safety improvements at 3 intersections along the up valley SR 29 corridor at the intersections of Rutherford/SR 29 and Oakville Cross Road/SR 29. The improvements will relieve the significant traffic congestion along the corridor prevalent during peak commute periods and during the weekends. The intersection improvements will improve safety and corridor operations and also greatly improve bicycle and pedestrian access. The purpose of this project is to enhance multimodal safety, comfort and access and to efficiently manage traffic congestion for both residents, employees, and visitors in Napa Valley. Design will include multimodal assessment to determine level and quality-of-service for vehicle, bicycling, walking and transit modes. The corridor serves to two Communities of Concern in Napa County and the corridor is served by regional transit Routes 10 and 10X.	NAP190007	21-T07-056	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Napa	MTC	Regional Planning Activities and PPM - Napa	Napa County: Countywide: Regional Planning Activities and Planning, Programming and Monitoring (PPM). Prior year funding was programmed on NAP170001	NAP210001	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning activities conducted pursuant to titles 23 and 49 U.S.C	Not Modeled
Napa	Napa Valley Vine Trail	Napa Valley Vine Trail - Yountville to St Helena	Napa County: Parallel to Highway 29 from Madison Street in Yountville to Pratt Avenue in St. Helena: Design and construct a 10 mile long, Class 1 multiuse path within the unincorporated County and City of St. Helena. The Napa Valley Vine Trail alignment for the unincorporated segment would start at the intersection of Highway 29 at Madison Street and generally follow the alignment of the Napa Valley Wine Train tracks and the Caltrans Highway 29 right-of-way to the St. Helena City Limit. In St. Helena, the alignment would be along Highway 29, Mitchell, Oak, Adams, the Napa Valley Wine Train (NVWT), and Pratt Avenue. The project would close a gap in the NVVT between the 12.5-mile segment south of Yountville and the nine-mile segment north of Pratt Avenue.	NAP230201	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Napa	NVTA	SR-29 American Canyon Operational & Multimodal Imp	Complete the environmental document for the SR 29 operational and multimodal improvements through American Canyon, including intersection improvements and complete streets facilities.	NAP230202	21-T01-001	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Napa	Napa	Complete Streets Improvement Plan (Jefferson SS4A)	Develop a Complete Streets Improvement Plan for the Jefferson Street Corridor. Plan will identify opportunities for multimodal (bike/ped/auto/transit) safety and connectivity improvements along the Jefferson Street corridor, which is identified as a part of the City of Napa's High-Injury Network. Project funding is all for planning use.	NAP250201	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled

Napa	Napa	Napa Planning and Demonstration Activities (SS4A)	SS4A Planning and Demonstration Activities. Develop a Complete Streets Improvement Plan for Redwood Road. Plan will identify opportunities for multimodal safety and connectivity improvements along Redwood Road, which is identified as a part of the City of Napa's High-Injury Network. Conduct emergency response time technology demonstration activities and enforcement technology activities. Project funding is for planning and demonstration activities only.	NAP250202	21-T08-060	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Regional/Multi-County	BART	BART-Elevator Renovation Program	BART: 61 locations system-wide: Renovate or rehabilitate elevators	ALA190014	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Regional/Multi-County	BART	BART Train Control Renovation	BART: Systemwide: Rehabilitate existing core system train control equipment that is over 30 years old and is near the end of its useful life. The funds requested for fiscal year 2005 will be used to replace speed command functions of the existing train control system.	BRT030004	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Regional/Multi-County	BART	BART: Traction Power System Renovation	BART: Systemwide: Replace obsolete elements and subsystems of the traction power system to maintain and improve reliability and safety. Additional components of this project for fiscal years 2006-2008 include:1. Purchase & install 9 Sub Stations to replace Substations that are currently approaching the end of their useful life. 2. Install 4.5 Route Miles of 2 circuits of 34.5 kV Cables. 3. Purchase & install 20 more Negative Grounding Devices. 4. Purchase & install 150 more Multi-Purpose Relays, which will be installed on DC Circuit Breakers that will be replaced in more than 5 years. These relays have a number of features that will significantly reduce the severity & damage to the substations that have electrical faults. This will significantly reduce the time for & the cost of repairs to the aging equipment & thus enable reliable train service to be provided until all the Substations are replaced. 5. Replace / rehabilitate other parts as necessary on existing substations to enable them to remain in reliable service until the Substations can be replaced.	BRT030005	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Regional/Multi-County	BART	BART: Rail, Way and Structures Program	BART: Systemwide: Replace worn out mainline rail and make other timely reinvestments in way including, but not limited, to civil structures and all track subsystems.	BRT97100B	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation or reconstruction of track structures, track,	Not Modeled
Regional/Multi-County	MTC	Bay Area Commuter Benefits Program	San Francisco Bay Area: Region wide: Implement the Bay Area Commuter Benefits Program. Senate Bill 1128, codified in California Government Code 65081, authorizes the Bay Area Air Quality Management District and the Metropolitan Transportation Commission to jointly continue the Bay Area Commuter Benefits Program. Employers subject to the program are required by law to register via the program website, select a commuter benefit, and offer the benefit to their employees.	MTC050001	21-EN09-132	Exempt (40 CFR 93.126) - Air Quality - Continuation of ride-sharing and van-pooling promotion	Not Modeled
Regional/Multi-County	MTC	Regional Streets and Roads Program	SF Bay Area: Regionwide: Regional Streets and Roads Program including providing assistance to Bay Area agencies to implement and maintain computerized pavement management system (PMS), implementing PTAP (Pavement Technical assistance program), updating regional Needs etc.	REG090039	21-T01-003	Exempt (40 CFR 93.126) - Other - Planning activities conducted pursuant to titles 23 and 49 U.S.C	Not Modeled
Regional/Multi-County	WETA	WETA: Ferry Channel and Berth Dredging	WETA: Various service areas: Regularly scheduled dredging to remove silt build-up that would otherwise keep ferries from operating from Vallejo ferry basin, Harbor Bay Channel and other WETA service areas.	REG090054	21-T11-095	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation or reconstruction of track structures, track,	Not Modeled
Regional/Multi-County	WETA	WETA: Ferry Major Component Rehab/Replacement	WETA: Fleetwide: Rehabilitate and/or replacement major ferry components including shafts, propellers, navigation systems, onboard monitoring and alarm systems, interior components, boarding apparatus, hull, lifesaving equipment and other components. Ferry vessels are required to undergo periodic haul-out and rehabilitation work to remain in working order over their 25-year life.	REG090057	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation of transit vehicles	Not Modeled
Regional/Multi-County	WETA	WETA: Fixed Guideway Connectors	WETA: This project includes rehabilitating and replacing the floats and gangway systems that allow the passengers to get from the vessels to the terminals (extension of the fixed guideway in the marine environment). This project will also replace existing passenger loading facilities (ramps), floating barges, piers and hydraulic systems.	REG090067	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Regional/Multi-County	ACE	ACE Positive Train Control	ACE: System-wide: PTC is an advanced train control system, utilizing sensors on trains, switches, tracks and signalized crossings, to allow for automated collision prevention, improved manual accident prevention, and improved headways.	REG110044	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Construction or renovation of power, signal, and	Not Modeled
Regional/Multi-County	MTC	Toll Bridge Maintenance	Region-wide: Seven state-owned toll bridges: routine maintenance of bridge facilities	REG130001	21-T01-005	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Regional/Multi-County	MTC	Toll Bridge Rehabilitation Program	Bay Area: On 7 state-owned toll bridges: Rehabilitation program	REG130002	21-T01-005	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Regional/Multi-County	MTC	Regional Communications Infrastructure Upgrade	This project encompasses (1) highway operations equipment and the associated communications infrastructure (2) critical freeway and incident management functions and (3) transportation management center resources needed to actively operate and maintain both equipment and all these critical freeway and incident management functions. The program consists of a variety of activities, including the developing a robust and reliable regional communications network throughout the region improving access to comprehensive and accurate asset inventory information, evaluation of the effectiveness of existing hardware and systems, supporting proactive equipment life cycle planning, and enhancing communications connectivity along the 880 corridor.	REG170002	21-T07-053	Exempt (40 CFR 93.126) - Safety - Traffic control devices and operating assistance other than	Not Modeled
Regional/Multi-County	MTC	511 Carpool and Vanpool Programs	SF Bay Area: Regionwide: Operate Carpool and Vanpool Programs [formerly known as '511 Regional Rideshare Program']. Earlier funding is included under REG090042. Toll credits applied in lieu of match non-federal funds are non-participating	REG170003	21-EN09-132	Exempt (40 CFR 93.126) - Air Quality - Continuation of ride-sharing and van-pooling promotion	Not Modeled
Regional/Multi-County	MTC	Climate Initiatives Education and Outreach	Bay Area: Regionwide: Program designed to reduce greenhouse gas emissions and vehicle miles traveled through education and encouragement programs Program elements include: Bay Area Bike Mobile, the ECO2School program, the Family Biking Workshops program, and Bike to Work Day.	REG170006	21-EN09-132	Exempt (40 CFR 93.126) - Other - Grants for training and research programs	Not Modeled

Regional/Multi-County	MTC	511 Next Gen	SF Bay Area: Regionwide: The 511 program offers free multi-modal traveler information services via multiple dissemination platforms, including the federally dedicated 511 number, on the web and mobile devices at 511.org, and on regional information displays and electronic and wayfinding signage. The program also serves as the primary source for travelers and media during major disruptions and regional emergencies. In addition to supporting numerous MTC and partner initiatives, the program coordinates with many agencies and businesses for transportation information during regional events. The system aims to benefit travelers and to support effective management of the transportation system. The program intends to evolve with changes in technology and customer expectations, while maintaining information accuracy and reliability. Given the public's increasing reliance on private sector services for traveler information, 511 will focus on its strength as a data provider and leverage relationships with private sector traveler information providers in order to increase their dissemination of 511 traffic and transit data. Future program plans include reduction of real-time and trip planning features on the 511 phone and on a re-designed 511.org. Other Federal Funds are Work Zone Data Exchange (WZDx) Demonstration Discretionary Grant	REG170013	21-T07-050	Exempt (40 CFR 93.126) - Other - Directional and informational signs	Not Modeled
Regional/Multi-County	MTC	Regional Planning - PDA Implementation	SF Bay Area: Regionwide: : Planning Assistance to support transportation investments and improve their performance in priority development areas. The goal is to fund comprehensive planning and technical assistance in Priority Development Areas that will result in intensified land uses around public transit hubs and bus and rail corridors in the region.	REG170016	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning activities conducted pursuant to titles 23 and 49 U.S.C	Not Modeled
Regional/Multi-County	MTC	Clipper 2.0 Fare Payment System	SF Bay Area: Regionwide: The Clipper card provides seamless use of public transit across the Bay Area's roughly two dozen transit systems, thereby eliminating a key barrier for new riders of public transit and making fare payment far more convenient for riders. In addition to standard fares, Clipper can be used by seniors, youth, disabled and certain college student riders for discounted transit rates. Launched ten years ago as one of the first smart card transit payment systems in the United States, Clipper is now used by close to 800,000 transit riders a day across all of the region's transit systems and is starting to show its age. The current software design precludes customers from adding value to their cards in real time via a mobile app and fare adjustments are time consuming and costly. Age also brings with it more frequent system failures and the need to replace equipment, yet many Clipper components are now obsolete. To keep pace with the Bay Area's growing reliance upon public transit, it's clear that it's time for an upgrade to Clipper 2.0.	REG170022	21-T07-057	Exempt (40 CFR 93.126) - Mass Transit - Purchase of office, shop, and operating equipment for	Not Modeled
Regional/Multi-County	MTC	TCP Financing Repayment Obligations	SF Bay Area: Regionwide: Repayment of principal balance and interest costs associated with securitization of future FTA formula fund apportionments. Principal balance is approximately $1B, with interest cost in the $300M-$500M range, to be paid back through FY35.	REG170023	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Regional/Multi-County	MTC	Regional Planning Activities and PPM - MTC	Regional: Regional Planning Activities and Planning, Programming and Monitoring (PPM). Prior year funding programmed on REG170001	REG210001	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning activities conducted pursuant to titles 23 and 49 U.S.C	Not Modeled
Regional/Multi-County	MTC	Priority Conservation Area Grant Implementation	Regionwide: Administration of the Priority Conservation Area (PCA) grant program, which funds the planning, design, and implementation of projects that improve access to priority habitats, open spaces, and recreational opportunities. Toll credits will be used in lieu of match for STP funds.	REG210201	(blank)	Exempt (40 CFR 93.126) - Other - Planning activities conducted pursuant to titles 23 and 49 U.S.C	Not Modeled
Regional/Multi-County	Caltrain	Caltrain Mini-High Platform Improvements	Caltrain: Systemwide: Install mini-high platforms at 13 stations to improve ADA Access and reduce dwell times at stations. Work will include installation of the precast platforms and modifications as needed to the existing infrastructure as needed to accommodate the installation. Grounding and bonding will be required at all of the stations within the areas that will be electrified. Upgraded stations include: Bayshore, Burlingame, Hayward Park, Belmont, California Avenue, San Antonio, Lawrence, Tamien, Capitol, Blossom Hill, Morgan Hill, San Martin, Gilroy	REG210202	17-10-0026	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Regional/Multi-County	MTC	Bay Trail Planning and Technical Assistance	SF Bay Area: Regionwide: Bay Trail Equity Strategy, Design Guidelines, Strategic Plan, Data Strategy, Needs Assessment/Ops and Maintenance Plan, and Technical Assistance. RTP ID is 21-T08-060. Toll credits will be used in lieu of match.	REG230201	(blank)	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Regional/Multi-County	MTC	Regional Mapping and Wayfinding	SF Bay Area: Regionwide: The goal of the Regional Mapping and Wayfinding Project is to design and deploy a fully harmonized suite of maps, signs and transit information in all Bay Area transit locations — from individual bus stops to major hubs like the Salesforce Transit Center, the Eastridge Transit Center or the El Cerrito Del Norte BART station — and to provide practical, predictable guidance to the walkable destinations, local shuttles and the like that extend from these transit stops.	REG230202	21-T03-009	Exempt (40 CFR 93.126) - Mass Transit - Construction of small passenger shelters and information	Not Modeled

Regional/Multi-County	MTC	Regional ITS Architecture	The Bay Area Regional ITS Architecture (RITSA) is the blueprint for Intelligent Transportation Systems (ITS) project coordination and integration in the San Francisco Bay Area. The Bay Area ITS Architecture is available online at https://itsbayarea.mtc.ca.gov. It is periodically upgraded and maintained by the Metropolitan Transportation Commission (MTC) on behalf of region's stakeholders. The purpose of the Architecture is to accurately represent the region's existing and future use of information, technology, and automated systems to improve safety and efficiency for travelers and the agencies providing transportation services across all modes. The system also maintains inventory of mobility projects and services that benefit travelers in the region. Bay Area RITSA follows the national Architecture Reference for Cooperative and Intelligent Transportation (ARC-IT) framework and is maintained to comply with the latest ARC-IT version. Changes to the system is made based on Bay Area stakeholders' input. Some other smaller updates were also addressed at that time. The Bay Area RITSA facilitates ITS planning and aids in coordinated ITS project development, procurement, and delivery. The Architecture website provides access to comprehensive information about the ITS in the region, including project-specific data. Agencies in the Bay Area that implement ITS projects using Federal transportation funds are required to be consistent with the Bay Area ITS Architecture (pursuant to 23 CFR 940.9 and 940.11). It provides all the components required by the FHWA Final Rule and FTA Policy for regional ITS architectures.	REG230203	(blank)	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Regional/Multi-County	MTC	Regional Vision Zero/Safety Prog Coord-Outreach	Support regional work by coordinating Vision Zero workshops and peer exchanges and develop a data-driven outreach campaign to help change traffic safety culture in the region. Workshops would bring outside knowledge to a forum to share best practices with our regional partners and bring up the level of knowledge of best practices throughout the region. Peer Exchanges would provide the opportunity for our regional leaders to share their knowledge, experiences, and successes with regional partners. Develop a data-driven outreach campaign which would use the work that went into developing our Regional Vision Zero Action Plan to identify a key issue that is affecting our region and develop an effective outreach campaign to address that issue.	REG230205	21-T09-061	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Regional/Multi-County	MTC	Active Transportation Technical Assistance	SF Bay Area: Regionwide: Provide technical assistance to local agencies for active transportation policies and projects to spur implementation of Complete Streets Policy and the AT Network, while securing additional ATP funding. TA support includes: scoping projects for grant applications, writing and reviewing grant applications, complete Streets Policy implementation, designing All Ages and Abilities facilities, preparing active transportation projects for construction. Toll credits will be used in lieu of match.	REG230206	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Regional/Multi-County	BART	BART Variable Parking Pricing	Variable Parking Pricing will better manage parking demand and deliver vehicle miles traveled (VMT) reduction, air quality improvements, and greenhouse gas (GHG) reduction benefits. Applied correctly when facilities are full, parking price increases encourage use of alternative (e.g. non-automobile) modes of access to BART. Parking is then efficiently used only by those who most need it. The current parking pricing software only supports one parking price per station, preventing BART from lowering or raising prices in response to temporal (time of day, day of week, or seasonal) variations in demand. New software will allow BART to maximize ridership by implementing these price variations and provide the ability to extend parking pricing to evenings and weekends.	REG230207	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Construction or renovation of power, signal, and	Not Modeled
Regional/Multi-County	MTC	Incident Management Program	SF Bay Area: Regionwide: The purpose of the program is to deploy projects that manage congestion by preventing and/or addressing incidents that occur along Bay Area corridors and arterials. The Incident Management program also utilizes operational and management tools, including advanced transportation management technologies and systems, to enhance mobility and safety.	REG230208	21-T07-053	Exempt (40 CFR 93.126) - Other - Transportation enhancement activities (except rehabilitation and	Not Modeled
Regional/Multi-County	BART	Link21 - Phase 1: Program Development	The BART transbay tube connecting San Francisco and the East Bay reached its operational capacity before the 2020 pandemic, and requires periodic renovation. The nine-county Bay Area is the center of a megaregion, from Monterey County to the northern San Joaquin Valley to Placer County northeast of Sacramento. This 21-county megaregion supports the fifth largest economy in the world, and is increasingly dependent on its rail network, including the BART transbay crossing. BART and its rail partners are engaged in planning for a new transbay rail crossing within the context of the mega-regional rail network. The project is currently in Planning phase.	REG250201	21-T11-112	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Regional/Multi-County	Caltrain	Caltrain: Signal/Communication Rehab. & Upgrades	Caltrain: Systemwide: The signal and communications rehabilitation and upgrades program includes a wide range of work to maintain Caltrain?s existing signal and communications systems in a state of good repair. Signal system rehabilitation and replacement includes: signal control and associated software control programs wayside signals signal wires, conduits, pull boxes signal support structures signal house structures and signal house components crossing mechanisms, including arms, lights, signs, foundations, auditory warning devices switch machines various wayside detectors to safeguard the rail infrastructure and any other necessary components for the signal system to function correctly. Communications rehabilitation and replacement includes existing systems such as: modems communications land lines, including fiber optic cables land line interfaces antennas switches radios software and other necessary communications related hardware. The modification of communications equipment may occur along the Caltrain corridor, at existing base stations located at surrounding mountain tops and the Central Administrative Office, on train consists, and maintenance vehicles, as well as other stationary equipment located along the Caltrain right-of-way.	SM-050041	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Construction or renovation of power, signal, and	Not Modeled

Regional/Multi-County	Caltrans	GL: Highway Safety Improvement Program	GL: Safety Imprv - Highway Safety Improvement Program: Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 and Table 3 categories - Railroad/highway crossing, Safer non-Federal-aid system roads, Shoulder improvements, traffic control devices and operating assistance other than signalization projects, Intersection signalization projects at individual intersections, Pavement marking demonstration, Truck climbing lanes outside the urbanized area, Lighting improvements, Emergency truck pullovers.	VAR170002	21-T01-007	Exempt (40 CFR 93.126) - Safety - Highway Safety Improvement Program implementation	Not Modeled
Regional/Multi-County	Caltrans	GL: Pavement Resurfacing/Rehab SHS - Highway Maint	GL: Pavement Resurf/Rehab State Highway System - Highway Maintenance. Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 and Table 3 categories - Pavement resurfacing and/or rehabilitation.	VAR170004	21-T01-006	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Regional/Multi-County	Caltrans	GL: Safety Improvements - SHOPP Mobility Program	SF Bay Area: Various Locations: Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 and Table 3 categories - Railroad/highway crossing, Safer non-Federal-aid system roads, Shoulder improvements, traffic control devices and operating assistance other than signalization projects, Intersection signalization projects at individual intersections, Pavement marking demonstration, Truck climbing lanes outside the urbanized area, Lighting improvements, Emergency truck pullovers	VAR170005	21-T01-006	Exempt (40 CFR 93.126) - Safety - Traffic control devices and operating assistance other than	Not Modeled
Regional/Multi-County	Caltrans	GL: Pavement Resurf./Rehab - SHOPP Roadway Presv.	Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 categories - Pavement resurfacing and/or rehabilitation, Emergency relief (23 U.S.C. 125), Widening narrow pavements or reconstructing bridges (no additional travel lanes)	VAR170006	21-T01-006	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Regional/Multi-County	Caltrans	GL: Safety Imprv. - SHOPP Collision Reduction	Regionwide: Various Locations: Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 and Table 3 categories - Railroad/highway crossing, Safer non-Federal-aid system roads, Shoulder improvements, traffic control devices and operating assistance other than signalization projects, Intersection signalization projects at individual intersections, Pavement marking demonstration, Truck climbing lanes outside the urbanized area, Lighting improvements, Emergency truck pullovers	VAR170007	21-T01-007	Exempt (40 CFR 93.126) - Safety - Guardrails, median barriers, crash cushions	Not Modeled
Regional/Multi-County	Caltrans	GL: Emergency Repair - SHOPP Emergency Response	Regionwide: Various Locations: Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 categories - Repair damage caused by natural disasters, civil unrest, or terrorist acts. This applies to damages that do not qualify for Federal Emergency Relief funds or to damages that qualify for federal Emergency Relief funds but extend beyond the Federally declared disaster period	VAR170008	21-T01-006	Exempt (40 CFR 93.126) - Other - Repair of damage caused by natural disasters, civil unrest, or	Not Modeled
Regional/Multi-County	Caltrans	GL: Safety Improvements - SHOPP Mandates	Regionwide: Various Locations: Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 and Table 3 categories - Railroad/highway crossing, Safer non-Federal-aid system roads, Shoulder improvements, traffic control devices and operating assistance other than signalization projects, Intersection signalization projects at individual intersections, Pavement marking demonstration, Truck climbing lanes outside the urbanized area, Lighting improvements, Emergency truck pullovers	VAR170009	21-T01-006	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Regional/Multi-County	Caltrans	GL: Bridge Rehab and Reconstruction - SHOPP	Regionwide: Various Locations: Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 categories - Widening narrow pavements or reconstructing bridges (no additional travel lanes).	VAR170010	21-T01-004	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Regional/Multi-County	Caltrans	GL: Shoulder Imprv - SHOPP Roadside Preservation	Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 categories - Fencing,Safety roadside rest areas	VAR170011	21-T01-006	Exempt (40 CFR 93.126) - Other - Plantings, landscaping, etc	Not Modeled
Regional/Multi-County	Caltrans	GL: Bridge Rehab/Recon. - Local Hwy Bridge Program	GL: Local Bridge Rehab/Recon. - Local Highway Bridge Program(HBP) or Highway Bridge Replacement and Rehabilitation (HBRR) Projects. Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 categories - Widening narrow pavements or reconstructing bridges (no additional travel lanes).	VAR170012	21-T01-004	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Regional/Multi-County	Caltrans	GL: Railroad-Highway Crossing	GL: Railroad/Highway Crossings. Projects are consistent with 40 CFR 93.126 Exempt Tables 2 categories - Railroad/highway crossing	VAR170017	21-T01-006	Exempt (40 CFR 93.126) - Safety - Railroad/highway crossing	Not Modeled
Regional/Multi-County	MTC	Bike Share Capital Program	SF Bay Area: Regionwide: Coordinate planning, outreach, policy and information sharing for bikeshare and micromobility programs. Fremont, Richmond, and Marin and Sonoma Counties, along the SMART Corridor: Various Locations: Implement bike sharing. Richmond will receive $1,024,000, Fremont will receive $659,000 and SCTA/TAM will receive $826,000. MTC will receive $75,000 to administer the grant.	VAR170024	21-EN09-132	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Regional/Multi-County	MTC	GL: Lifeline Transportation Program Cycle 5 and 6	SF Bay Area: Region-wide: 5307 Lifeline set-aside from FY17 and FY18 Large and Small UA. Various 5307 Lifeline projects in large and small urbanized areas. Project is consistent with 40 CFR Part 93.126 Exempt Table 2	VAR170025	21-T01-001	Exempt (40 CFR 93.127) - Bus terminals and transfer points	Not Modeled
Regional/Multi-County	Caltrans	GL: Pvmt Resurf/Rehab State Hwy Sys - SHOPP Minor	GL: Pavement Resurf/Rehab State Hwy System - SHOPP Minor. Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 and Table 3 categories - Railroad/highway crossing, Safer non-Federal-aid system roads, Shoulder improvements, traffic control devices and operating assistance other than signalization projects, Intersection signalization projects at individual intersections, Pavement marking demonstration, Truck climbing lanes outside the urbanized area, Lighting improvements, Emergency truck pullovers, Pavement resurfacing and/or rehabilitation, Emergency relief (23 U.S.C. 125), Widening narrow pavements or reconstructing bridges (no additional travel lanes)	VAR190001	21-T01-006	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Regional/Multi-County	MTC	GL: Transit Operating Assistance	GL - SF Bay Area: Region-wide: Transit Operating Assistance	VAR190006	21-T01-001	Exempt (40 CFR 93.126) - Mass Transit - Operating assistance to transit agencies	Not Modeled
Regional/Multi-County	MTC	GL: Transit Preventive Maintenance	GL - SF Bay Area: Region-wide: Transit Preventive Maintenance	VAR190007	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation of transit vehicles	Not Modeled
Regional/Multi-County	Caltrans	GL: Recreational Trails Program	Grouped Listing: Regionwide: Projects with US Recreational Grant Program Funds. Projects are consistent with 40 CFR Part 93.126, 127, 128, Exempt Tables 2 & 3	VAR190009	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Regional/Multi-County	MTC	GL: FTA 5311 Rural Area FY21-FY24	GL: FTA Section 5311 Rural Area Program, Non-ITS portion. Projects include capital and operating assistance. Projects consistent with 40 CFR Part 93.126 Exempt Table 2	VAR210001	21-T01-001	Exempt (40 CFR 93.126) - Mass Transit - Operating assistance to transit agencies	Not Modeled
Regional/Multi-County	Caltrans	GL: Fed Lands Highways Pgm-Tribal Transport Pgm	SF Bay Area: Various Locations: Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 categories - Safer non-Federal-aid system roads, Shoulder improvements, Pavement resurfacing and/or rehabilitation, Bicycle and Pedestrian Facilities	VAR210002	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled

Regional/Multi-County	MTC	GL: Transit ADA Operating Support	SF Bay Area: Region-wide: Transit ADA operating support	VAR210003	21-T01-001	Exempt (40 CFR 93.126) - Mass Transit - Operating assistance to transit agencies	Not Modeled
Regional/Multi-County	MTC	Technical Assistance Mobility Hub Pilot Program	SF Bay Area: Regionwide: Mobility hubs provide highly visible intermodal connections that encourage transit trips and first/last mile biking and connections, especially when co-located with other	VAR210006	21-EN09-132	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Regional/Multi-County	MTC	Bay Bridge Forward Preliminary Engineering	SF Bay Area: Various bridge corridors and corridor approaches: Conduct preliminary engineering and planning studies to advance Bay Bridge Forward projects into delivery. Project include, but not limited to transit priority projects (near-term, Blue Ribbon accelerated actions, and mid-term improvements), high occupancy vehicle lane strategies and policies, integrated bridge corridor operations and dynamic transit routing, technology and operational improvements, active transportation, bike share, commuter parking, first and last mile solutions, and other multi-modal/demand management/pricing strategies.	VAR210007	21-T06-049	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Regional/Multi-County	MTC	I-880 Optimized Corridor Operations	Alameda and Santa Clara Counties: Along the I-880 corridor: Implement near-term strategies to integrate and optimize corridor operations, including data sharing platform and system integration. The I-880 corridor serves an integral role in the Bay Area transportation network by connecting Alameda County and Santa Clara County/Silicon Valley. The goal of this project is to develop and implement strategies to integrate the various existing and planned ITS/operational infrastructure to improve the corridor operational performance. The existing ITS/operational infrastructure includes adaptive ramp metering, express lanes, incident management, and others. The project may also evaluate opportunities to integrate operations with key parallel arterials.	VAR210008	21-T06-049	Exempt (40 CFR 93.126) - Safety - Traffic control devices and operating assistance other than	Not Modeled
Regional/Multi-County	MTC	GL: FTA Section 5310 Program FY20 - FY23	SF Bay Area: Region-Wide: Enhanced Mobility for Seniors and Persons with Disabilities Program Lump Sum Listing. Project include Vehicle replacements, minor expansion & office equip. Consist with 40 CFR Part 93.126	VAR210201	17-10-0027	Exempt (40 CFR 93.126) - Mass Transit - Operating assistance to transit agencies	Not Modeled
Regional/Multi-County	Caltrans	GL: PROTECT Planning Studies	Bay Area: Various Location: Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 and Table 3 categories - Planning activities conducted pursuant to titles 23 and 49 U.S.C. Other State funds are PTA.	VAR230201	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning activities conducted pursuant to titles 23 and 49 U.S.C	Not Modeled
Regional/Multi-County	Caltrain	Fencing for Caltrain Right of Way	The Fencing for Caltrain Right of Way project, implemented in phases, will install approximately 90.4 miles of winglets onto Caltrain fencing along the railroad Corridor as part of a series of safety improvement intended to increase safety, including suicide prevention. The Caltrain Corridor serves the counties of San Francisco, San Mateo, and Santa Clara.	VAR230202	21-T01-002	Exempt (40 CFR 93.126) - Safety - Fencing	Not Modeled
Regional/Multi-County	GGBHTD	GGBHTD ZEB Infrastructure	GGBHTD: In San Rafael: Design, Purchase and Installation of ZEB Infrastructure	VAR230203	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Construction or renovation of power, signal, and	Not Modeled
Regional/Multi-County	MTC	Mobility Hubs-Parking Management Planning and TA	The goal of the Mobility Hubs and Parking Management Planning programs are to assist jurisdictions, transit agencies and county transportation agencies in developing a hub plans or parking management plans. Jurisdictions, transit agencies and county transportation agencies are eligible to receive planning grants through a competitive process. MTC anticipates recommending grant awards to the Commission for approval in June 2023. In addition, for the Mobility Hubs and Parking Management capital projects, MTC will provide design and evaluation technical assistance to help project sponsors meet the objectives of the program.	VAR230204	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Regional/Multi-County	MTC	Priority Production Area Pilot Program	SF Bay Area: Regionwide: Planning Assistance to support infrastructure investments, policies, or programs to improve the performance of Priority Production Areas, clusters of industrial businesses well-served by the region's goods movement network. The goal is to fund comprehensive planning and technical assistance in Priority Production Areas that will result in increased economic development investments and protection from competing land uses.	VAR230205	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Regional/Multi-County	MTC	Transportation Electrification Planning Program	Given the increased urgency to reduce GHG emissions and advance the Plan Bay Area 2050 transportation electrification strategy, MTC developed a program that will invest in infrastructure and planning to accelerate electrification of the light-duty transportation sector. The Transportation Electrification Planning Program will focus on three main components: 1) A.Public Fleet Electrification Planning, 2) Local Transportation Electrification Action Planning and 3) Regional Program Planning.	VAR230206	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Regional/Multi-County	BART	Electric Vehicle Charging at BART Stations	Install roughly 200 Level-2 charging ports at four BART stations.	VAR230207	21-EN08-131	Exempt (40 CFR 93.126) - Other - Transportation enhancement activities (except rehabilitation and	Not Modeled
Regional/Multi-County	MTC	GL: Bus Accelerated Infrastructure Delivery	The Bus Accelerated Infrastructure Delivery (BusAID) effort serves to fund the delivery of near-term (quick-build) transit priority projects in "hotspot" locations throughout the Bay Area. The intent is to maximize travel time savings and service	VAR230208	21-T10-093	Exempt (40 CFR 93.126) - Other - Transportation enhancement activities (except rehabilitation and	Not Modeled
Regional/Multi-County	GGBHTD	GGBHTD - Zero Emissions Bus Replacement	Purchase of seven zero emission buses to replace existing diesel engine buses.	VAR230209	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled

San Francisco	SFMTA	SFMTA:Train Control & Trolley Signal Rehab/Replace	SFMTA: Systemwide: ATCS Wayside/Central Train Control & Rail/Bus Signal Systems Rehab/Replace Program includes but is not limited to (1) Final cutover of the new Advanced Train Control System (ATCS), remove the old signal system, and replace critical wayside equipment including station controllers, axle counters, and loop cables (2) Replace the UPS that provides power to the Central Control portion of the ATCS (3) Replace subway motor generators at Van Ness Station,	SF-050024	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation or reconstruction of track structures, track,	Not Modeled
San Francisco	SFCTA	Yerba Buena Island (YBI) Ramp Improvements	San Francisco: Existing on and off ramps at the Yerba Buena Island (YBI) interchange at US I-80: Reconst ramps On the west side of the Island: Rehabilitate existing deficient bridges. Neither element is included as part of the current San Francisco-Oakland Bay Bridge (SFOBB) East Span Seismic Safety Project. Funds programmed after FY19 are for elements that do not change roadway capacity. $18M in Other Federal are RAISE funds	SF-070027	21-T01-004	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
San Francisco	SFMTA	Oakdale Caltrain Station	San Francisco: Oakdale near Palou: Planning, preliminary engineering, and environmental work for a new Caltrain commuter-rail station at Oakdale Avenue to accommodate transit needs of a newly developing Bayview/Waterfront/Hunters	SF-090011	21-T11-115	Exempt (40 CFR 93.126) - Other - Planning activities conducted pursuant to titles 23 and 49 U.S.C	Not Modeled
San Francisco	SFMTA	SFMTA: Paratransit Vehicle Replacements	SFMTA: Paratransit service across San Francisco: preserve service and replace 84 paratransit vehicles	SF-090035	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
San Francisco	WETA	WETA: Replace Ferry Vessels	WETA: All existing ferry vessels for WETA: Replace vessels when they reach the end of their useful life of 25 years	SF-110053	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
San Francisco	Port of SF	Cargo Way and Amador Street Improvements	In San Francisco: On Cargo Way from Jennings to 3rd Street and Amador Street from Illinois Street to 2,300 ft. east: design and construct a complete street project, including road resurfacing, separated bike lane on Cargo Way, expanded sidewalks, greening, and reduce stormwater run-off.	SF-170012	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
San Francisco	BART	Embarcadero Stn: New North-Side Platform Elevator	San Francisco: At the north end of the Embarcadero BART/Muni Station: Purchase and install a new vertical elevator. A glass enclosed cab and hoistway are envisioned to be used for visual transparency and an emergency stop will be provided at the Muni platform. This project meets the OBAG goal of Transit expansion, reliability and access improvements, is in a PDA, increases Core Capacity and is included in MTC's Bay Area Core Capacity Transit Study. $1,172,942 for this project is included in VAR170025 for Lifeline Cycle 6.	SF-170016	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of office, shop, and operating equipment for	Not Modeled
San Francisco	SFMTA	SFMTA: Motor Coach Mid-Life Overhaul	SFMTA: Existing Motor Coach and Trolley Coach Mid-life overhauls. SFMTA has started the Fleet Replacement program since 2013 and these vehicles have reached the midpoint of its life expectancy. A midlife overhaul program is critical to sustain the reliability and service availability of the vehicles. Taking the midlife overhaul opportunity, this allows SFMTA to keep the onboard electronic systems up-to-date. The general scope of work is to include the propulsion system, traction motors, onboard battery system, destination signs, flooring, seats, pneumatic system, electrical systems, interiors and	SF-170018	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation of transit vehicles	Not Modeled
San Francisco	SFMTA	SFMTA: Rehab Historic Streetcars	SFMTA: Fleet of historic streetcars: Rehabilitate vehicles. SFMTA operates a fleet of Presidents' Conference Committee streetcars (PCC) and other vintage streetcars 21 hours per day, 365 days a year. The PCCs carries approximately 20,000	SF-170021	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation of transit vehicles	Not Modeled
San Francisco	TIMMA	Treasure Island Ferry Terminal Landside Imprvmnts	San Francisco: On Treasure Island at the new Treasure Island Intermodal Terminal on Avenue of the Palms between Clipper Cove Way and California Ave: Construct land-side improvements including shelters and public restrooms.	SF-190006	21-T10-092	Exempt (40 CFR 93.126) - Mass Transit - Construction of small passenger shelters and information	Not Modeled
San Francisco	SFCTA	Yerba Buena Island Multi-Use Pathway	San Francisco: On Yerba Buena Island along Hillcrest Rd and Treasure Island Rd: Build new multi-use path connecting the Bay Bridge East Span Bike Landing on YBI to the future Bay Bridge Skyway on West Span and to the Ferry Terminal on	SF-210001	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Francisco	MTC	Regional Planning Activities and PPM - SF County	San Francisco County: Countywide: Regional Planning Activities and Planning, Programming and Monitoring (PPM). Prior year funding was programmed on SF-170002	SF-210004	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning activities conducted pursuant to titles 23 and 49 U.S.C	Not Modeled
San Francisco	SFMTA	Central Embarcadero Safety Project	The Project expands on recent quick-build safety measures along The Embarcadero, between Bryant Street and Broadway, on the Vision Zero High Injury Network. It includes curb, utility, and other changes to extend and improve the waterside protected bikeway; shorten and improve crosswalks; and add real-time messaging/wayfinding for parking and special events.	SF-230201	21-T09-061	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Francisco	SFMTA	29 Sunset Improvement Project	The San Francisco Municipal Transportation Agency (SFMTA) 29 Sunset Improvement Project aims to improve the performance (travel time and reliability) of and passenger experience (including improved safety for pedestrians accessing the bus) on the Muni 29 Sunset bus route such as optimization of stop locations; improvements to stops, such as expanded waiting areas and, in some cases, transit bulbs; and implementation of transit signal priority.	SF-230202	21-T10-068	Exempt (40 CFR 93.126) - Mass Transit - Construction of small passenger shelters and information	Not Modeled
San Francisco	Caltrain	San Francisco RailyardsTOC Implementation Strategy	The project will develop a Transit Oriented Communities Implementation Strategy (TOC Strategy) plan for the major mixed-use transit-oriented development at the 20-acre Caltrain 4th and King railyard. The project includes public engagement and neighborhood planning to develop strategies that reflect local priorities; assess how to create more housing by removing barriers to housing in surrounding neighborhoods; identify infrastructure needs required to enhance multimodal connectivity between the neighborhood and TOD, including bicycle and pedestrian access.	SF-230203	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled

San Francisco	SFMTA	SFMTA Facility Development -- Battery Electric Bus	San Francisco: ZEB Infrastructure Set-Aside SFMTA is preparing a RFP for an Environmental Consultant for CEQA and NEPA for its bus yards 949 Presidio Ave.-- Presidio Yard, 2301 Stockton St. -- Kirkland Yard, 1301 Cesar Chavez -- Islais Creek Yard. The $6,312,271 in funding will be used for planning, inreach and outreach, and preparation of CEQA and NEPA documents to prepare these yards for next steps for improvements, including installing infrastructure to operate BEBs to meet CARB's 2040 deadline.	SF-230204	21-EN08-131	Exempt (40 CFR 93.126) - Mass Transit - Construction or renovation of power, signal, and	Not Modeled
San Francisco	SFMTA	Muni Forward Five-Minute Network Corridor Planning	The Five-Minute Network is part of the SFMTA's next generation of Muni Forward transit priority capital projects. The most intensive improvements will focus on the network of high-ridership corridors with capacity to support combined five-minute headways or better, that serve major regional destinations and transit hubs, referred to as a "Five-Minute Network." Improvements would also be made to routes that provide critical connections to the Five-Minute Network.	SF-230205	21-T10-068	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
San Francisco	SFMTA	Bayview Multimodal Community Corridor	The Bayview Community Multimodal Corridor project will improve pedestrian and bicycle safety and access by providing a comfortable multimodal route and supportive programs. The project includes 9 raised crosswalks, 3 raised intersections, over 0.5 mile of protected bikeway, 3 protected intersections, 7 bulbouts, 11 curb ramps, 125 feet of widened sidewalk, 13 speed humps/cushions, 2 transit boarding islands.	SF-230206	21-T02-008	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Francisco	SFMTA	Western Addition Safe Streets	The Western Addition Community Safe Streets Project (the Project) will improve traffic safety outcomes and increase connectivity in the Western Addition. The project will deliver core safety improvements identified in the Western Addition Community Based Transportation Plan (WA CBTP) and implement speed management strategies throughout the neighborhood to reduce crashes and help San Francisco achieve its Vision Zero goals of zero traffic deaths.	SF-230207	21-T02-008	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
San Francisco	Port of SF	POSF-MTC Parking Management Pilot	Purchase and installation 28 multi-space meters that would be managed and maintained by SFMTA. The project will reduce local congestion caused by drivers by searching for parking without the benefit of real-time meter occupancy information; reduce delays to transit caused by local congestion, improving transit reliability and increasing transit	SF-230208	21-T07-057	Exempt (40 CFR 93.126) - Other - Transportation enhancement activities (except rehabilitation and	Not Modeled
San Francisco	SFMTA	Pay or Permit Parking Program Expansion	This project uses FHWA funds to purchase parking paystations to expand SFMTA's Pay or Permit Parking Program, which charges a fee to visitors to park on streets in residential neighborhoods to increase parking availability and reduce congestion.	SF-230209	21-T07-057	Exempt (40 CFR 93.126) - Other - Transportation enhancement activities (except rehabilitation and	Not Modeled
San Francisco	SFMTA	Howard Streetscape Improvement Project	San Francisco: Implement safety improvements on Howard Street from 4th to 11th Streets, which is on San Francisco's Vision Zero High Injury Network. The project will remove a westbound vehicle lane, construct a two-way protected bikeway, upgraded bike and vehicle signals, bulb-outs and raised crosswalks, new midblock crosswalks, and improved curb management. Also included are public realm improvements such as landscaped medians, decorative pavement, cultural district signs and plaques, and additional streetlights.	SF-230210	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
San Francisco	SFMTA	Third Street Dynamic Traffic Signal Optimization	The Third Street Dynamic Traffic Signal Optimization Project seeks to improve and advance the SFMTA goals of safety and reliability, equity, access, and climate through the implementation of smart technology traffic signals. The technology includes a new traffic detection system and a demand based adaptive signal priority central traffic software. These technology solutions respond to real time needs of multimodal traffic flow to move the most people safely through the diverse Third Street corridor.	SF-230212	21-T10-068	Exempt (40 CFR 93.126) - Safety - Traffic control devices and operating assistance other than	Not Modeled
San Francisco	SFMTA	SF Muni Rail, Way & Structures Program	SFMTA: Systemwide: Design and replacement of trackway, tunnel, and related systems serving the light rail and cable car lines as part of a regular replacement program and to mitigate excessive noise and vibration. The program seeks to rehabilitate and repair existing track work, including replacement and tamping of ties and ballast and installation of guardrail, enhance system safety and reliability, while reducing the need for excessive maintenance. This program is divided into 10 year segments, and work is ongoing on various phases of the program.	SF-95037B	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation or reconstruction of track structures, track,	Not Modeled
San Francisco	SFMTA	SFMTA: Cable Car Vehicle Renovation Program	SFMTA: Cable car fleet: Overhaul and reconstruct the cable car fleet to maintain system reliability and productivity. Project is phased. Currently each car is unique and parts must be fabricated for each individual car. One goal of the renovation program is to start to standardize major vehicle components. Minor overhauls are scheduled every 15 years, major overhauls at 30-35 years and reconstruction at 60-70 years. At any one time, a total of four cars may be undergoing renovation. Reconstruction takes 18 months, major overhaul takes 9 months, and a minor overhaul takes 6 months.	SF-970073	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation of transit vehicles	Not Modeled
San Francisco	SFMTA	SFMTA Overhead Line Recon and Traction Power Prog	SFMTA: Systemwide: Design and construction of Muni Trolley Poles, Overhead Contact System, and Rail Traction Power improvements that provides power to Muni, based on evaluation of the Muni Track and Traction Power Condition Assessment, which serves light rail and trolley coach lines. The projects included in this program are designed to reduce operational problems, reduce maintenance and increase system reliability, provide flexibility in addressing acute needs, and address areas of chronic service outages or emergency repairs.	SF-970170	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled

San Francisco	SFMTA	Cable Car Traction Power & Guideway Rehab	SFMTA: On the Cable Car system: Includes various guideway and infrastructure repair and improvement projects. Covers all street components of the Cable Car system, such as pulleys, switches and turntables. Replace track curves, frogs, sheaves, Barn 12KV, switchgear, DC Motor, mechanical, HVAC, and infrastructure upgrade for the space to comply with latest codes and ADA compliance. Because this is an ongoing program, projects are in varying stages of conceptual design, design, and construction.	SF-99T002	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation or reconstruction of track structures, track,	Not Modeled
San Mateo	Caltrain	Caltrain Electrification	The Electrification Program will electrify the 52-mile Caltrain Commuter line from San Francisco to Tamien. The project includes the following activities: (1) an Environmental Assessment / Environmental Impact Report (EA/EIR) (2) the design and installation of approximately 150 single track miles of overhead contact system (OCS) that will distribute power to the electrically-powered locomotives or electric multiple unit (EMU) trainsets (3) the design and construction of two traction power substations and eight autotransformer stations to deliver the 25kV, 60Hz, single-phase, alternating current to the OCS (4) the design and installation of enhancements to the signaling and grade crossing control systems to make the system compatible with electrification and to provide for future operations service levels and (5) the integration of the Electrification System and Signaling modifications. (6) The development of specifications and the procurement of 98 EMUs.	SF-010028	21-T11-101	Exempt (40 CFR 93.126) - Mass Transit - Construction or renovation of power, signal, and	Not Modeled
San Mateo	Caltrain	Caltrain Systemwide Track Rehab and Related Struct	Caltrain: Systemwide: Track Rehabilitation and Related Civil Structure program includes a wide range of track and civil structure projects to maintain these existing assets in a state of good repair. Track rehabilitation work under this program includes rehabilitation and replacement of track and track structure such as switches and switch components, rail lubricators, rail components, eliminate jointed track with welded rail, rail surfacing, rail grinding, replacement of ties and ballast, sub-grade undercutting, placement of asphalt underlay to rehabilitate track subgrade, replacement of existing paved street crossings with new crossing panels. Civil structure rehabilitation and replacement under this program includes existing bridge and bridge components such as foundations, piers, abutments, girders, stringers, deck structures	SM-03006B	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation or reconstruction of track structures, track,	Not Modeled
San Mateo	Redwood City	US 101 / Woodside Interchange Improvement	Redwood City: Route 101 from 0.5 mile south of Route 101/84 Separation to Maple Street Overcrossing and on Seaport Boulevard and Route 84 from Route 101/84 Separation to Spring Street: Widen Woodside Road to six lanes (three in each direction) plus turn pockets, reconstruct all ramp connections between Woodside Road and US 101, construct direct-connect flyover ramps connecting to Veterans Boulevard, and construct additional pedestrian and bicycle facilities throughout the Project area and improve local intersections on Woodside Road and Seaport Boulevard. The Project would not change the alignment or operations of US 101.	SM-050027	21-T06-027	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
San Mateo	CCAG	SM Countywide ITS Improvements - SSF Segment	San Mateo County, City of South San Francisco: County-wide: ITS improvements at various locations in the County. The South San Francisco Expansion will extend the San Mateo County Smart Corridor north to include the Alternate Routes located in the City of South San Francisco. The Smart Corridor Implementation South San Francisco Expansion project	SM-070002	21-T07-057	Exempt (40 CFR 93.126) - Safety - Traffic control devices and operating assistance other than	Not Modeled
San Mateo	East Palo Alto	US 101 University Ave Interchange Improvements	E. Palo Alto: On University Ave across US 101 btw Woodland Ave and Donahoe St: Add bike lanes and a pedestrian lane and modify the NB and SB off-ramps to eliminate pedestrian/bicycle conflicts and improve the traffic operations. Project will	SM-070006	21-T09-061	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	CCAG	San Mateo County SR2S Program	San Mateo County: Countywide: Provide modularized safe routes to school programs and projects that focuses on education, encouragement, evaluation and enforcement components to all interested schools.	SM-110022	21-EN09-132	Exempt (40 CFR 93.126) - Other - Grants for training and research programs	Not Modeled
San Mateo	San Mateo	SR92/El Camino Real (SR82) Ramp Modifications	San Mateo: At the SR92/El Camino Real (SR82) interchange: Modify existing on/off ramps to improve the ingress and egress of the interchange. The overall project cost is estimated to be nearly $10 million. Due to funding availability, the project could be divided into phases: Phase I would be to build the westbound modifications, and Phase II would be to build the eastbound modifications. Includes required follow up landscaping.	SM-110047	21-T06-048	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled

San Mateo	SF City/County	Southern Skyline Blvd. Ridge Trail Extension	Construct a new 6-10 foot wide multi-modal (hiking, biking and equestrian use) wildland trail constructed on the east side of state route 35 "Upper Skyline Blvd" between the intersection of highway 92 and highway 35 southward approximately 6 miles to the SFPUC Peninsula Watershed property boundary with the Golden gate National Recreation Area Phleger Estate. The trail surface will be a combination of native materials and amended/improved materials. The major engineering requirement will be construction of 1000 feet of engineered retaining walls to support the trail tread where the alignment will cross three steep gulches in the northerly portion of the alignment. Three permanent restrooms, trailhead improvements, parking area and trail furniture will also be included in the project.	SM-130031	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	San Mateo County	Hwy 1 Congestion & Safety Improvements	San Mateo County: Highway 1 between Pacifica in the north and Half Moon Bay in the south (approximately 7 miles): Install various improvements such as raised medians, left turn lanes, acceleration lanes, pedestrian crossings, bike	SM-170001	21-T06-030	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
San Mateo	San Mateo	East Hillsdale Boulevard Ped/Bike Overcrossing	City of San Mateo: Over US 101 at the US 101/Hillsdale Boulevard Interchange: Construct pedestrian and bicycle overcrossing	SM-170006	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	Caltrain	Caltrain TVM Rehab and Clipper Functionality	Caltrain: Systemwide: Refurbish existing TVM machines and incorporate Clipper functionality that both issue new cards and allow customers to add value in real time. This project will provide each station with a minimum of one dedicated clipper functional ticket vending machine on each station platform. This project will also replace and upgrade clipper card readers (or CID readers) at Caltrain stations as part of the MTC?s Clipper upgrade project.	SM-170010	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of office, shop, and operating equipment for	Not Modeled
San Mateo	Half Moon Bay	Half Moon Bay - Poplar Complete Streets	Half Moon Bay: Phase 1 on Poplar St from Main St to Hwy 1: Implement complete street improvements including full depth pavement reconstruction, curb and gutter, crosswalk enhancements, sidewalks and bicycle lanes to approximately 900 lineal feet of road. Phase 2 will construct improvements from Hwy 1 to Railroad Avenue subsequent to phase 1 completion	SM-170013	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	San Bruno	Huntington Transit Corridor Bike/Ped Improvements	San Bruno: On Huntington Ave from San Bruno Ave to Herman St : Implement pavement preservation and bike/ped facilities including the following: construction of a two-way cycle track along the northbound side of Huntington Avenue, a sharrow will be placed in the rightmost lane going southbound along with designated bike route signage Huntington Avenue will receive a slurry sealed treatment along the entire project area installation of streetscape improvements such as pedestrian scale lighting, landscaping and/or public art.	SM-170017	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	Belmont	Belmont Pavement Preservation	Belmont: The proposed pavement repair and rehabilitation improvements include digouts, crack sealing, slurry sealing, thermoplastic striping and pavement markings at the following eight locations: Chula Vista from Alameda de las Pulgas to Ralston Avenue 6th Avenue from Ralston Avenue to Hill Street 6th Avenue from Emmett Avenue to Harbor Boulevard Cypress Avenue from Laurel to Middle Road Dale View from Hiller to Old Country Road Elmer from Ralston Avenue to	SM-170043	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
San Mateo	Portola Valley	Portola Valley Street Preservation	Portola Valley: Westbridge Drive (approximately Alpine Rd to Cervantes Rd) Alpine Road (approximately Willowbrook Dr. to Nyland Gate) Alpine Road (approximately Ladera to 200' N/O Hillbrook Dr) Corte Madera Rd (approximately Alpine Rd to Portola Rd). Pavement preservation including pavement grinding, base repair, slurry seal, thermoplastic traffic striping and pavement markings, and other misc work related to road resurfacing	SM-170044	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
San Mateo	CCAG	ITS Improvements in San Mateo County Northern Citi	San Mateo County: In San Mateo County Northern Cities Daly City, Brisbane, and Colma along the US 101 corridor to the SF County line, and on I-280 from I-380 to the San Francisco County Line: Continue the ITS improvement implementation efforts of City/County Association of Governments of San Mateo County (C/CAG), California Department of Transportation	SM-170046	21-T07-057	Exempt (40 CFR 93.126) - Safety - Traffic control devices and operating assistance other than	Not Modeled
San Mateo	San Carlos	Brittan Ave. Widening	San Carlos: At the intersection of Brittan and Industrial Road: Widen sections of both roadways near the intersection, adding a turning median on Brittan Avenue to the west of the intersection, adding a left turn lane on eastbound Brittan Avenue, and adding a second left turn lane on southbound and northbound Industrial Road	SM-190001	21-T07-056	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
San Mateo	Redwood City	Roosevelt Ave Quick-build Traffic Calming	Redwood City: Along Roosevelt Ave: Install quick-build improvements to implement the approved, traffic calming plan with features to reduce speeding, enhance crossings, and address overall traffic safety including RRFBs, bulb-outs, a roundabout, high-visibility and raised crosswalks, bicycle-friendly speed humps, advance yield signage, splitter island, wayfinding signage for the Peninsula Bikeway, travel lane reduction, and opportunities for landscaping, seating, bike racks,	SM-210002	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled

San Mateo	San Bruno	San Bruno Transit Corridor Ped Connection Ph4	San Bruno: At the intersection of San Bruno Ave and Green Ave: Implement enhancements to improve pedestrian connectivity including installing curb extensions and accessible curb ramps. The Transit Corridor Pedestrian Connection Project aims to improve pedestrian connectivity within the City's Transit Corridor Area by enhancing the streets directly adjacent to the downtown core of San Bruno.	SM-210003	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	Burlingame	Burlingame - Broadway Grade Separation	Burlingame: Broadway Ave at the Caltrain ROW: Grade separate Broadway from the Caltrain tracks, reconstruct the Broadway Caltrain station to meet current standards (eliminating the existing hold-out rule that currently prohibits north and south bound trains from passing through the station at the same time), the relocate and reconfigure parking from the west to the east side of the tracks, a new pedestrian and bicycle access crossing in proximity to Carmelita Avenue, and the grade separation of an existing at-grade pedestrian/bicycle access at Morrell Avenue within close proximity to the existing crossing.	SM-210004	21-T11-103	Exempt (40 CFR 93.126) - Safety - Railroad/highway crossing	Not Modeled
San Mateo	San Mateo	Delaware Street Safe Routes to School Corridor	San Mateo: Delaware St from 19th Ave to Pacific Blvd: Implement bicycle and pedestrian improvements including Class IV separated bike lanes and bicycle boulevard, upgrade pedestrian facilities, and connections to existing facilities. The Delaware Street Safe Routes to School Corridor is a high-priority project identified in the City's 2020 Bicycle Master Plan	SM-210006	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	Burlingame	Burlingame Ped Safe Routes and Mobility Imp	Burlingame: Various locations near schools and transit, target approximately 22 locations: Implement quick build pedestrian safety improvements including installation of high-visibility crosswalks, advance pavement markings, striped bulb-outs, red curbing, and RRFBs.	SM-210007	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	SSF	South San Francisco East of 101 Transit Expansion	South San Francisco: Various locations including on Oyster Point Blvd between Veterans Blvd and Eccles Ave, Gateway Blvd between Oyster Point Blvd and E Grand Ave, and E Grand Ave between Gateway Blvd and Haskins Way: Install 11 new bus stops and upgrade 2 existing stops, enhance sidewalk and crosswalk.	SM-210008	21-T10-093	Exempt (40 CFR 93.126) - Mass Transit - Construction of small passenger shelters and information	Not Modeled
San Mateo	Burlingame	Burlingame Square Caltrain Station Mobility Hub	Burlingame: At the intersection of California Drive and Burlingame Avenue, adjacent to the Burlingame CalTrain Station: Implement streetscape improvements that enhance safety and accessibility including seating areas, bicycle racks, pedestrian-scale lighting and traffic signal improvements, sidewalk improvements, and pedestrian level wayfinding to help	SM-210009	21-T03-009	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	Millbrae	Millbrae Transit Center MicroMobility Hub Pilot	Millbrae: Near the Millbrae Transit Center, in a City-owned parking lot: Install new local mobility hub including providing approximately a 5 bike-share, e-bikes station, bike racks, wayfinding signs, site amenities such as shaded waiting area and plantings, and ADA improvements. This area will help bridge first-and last-mile gaps.	SM-210010	21-T03-009	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	Millbrae	Park Blvd, San Anselmo Ave and Sta. Teresa Wy Imps	Millbrae: Along San Anselmo Ave, Park Blvd, and Santa Teresa Way: Installation of traffic calming, pedestrian and bicycle improvements. Installation will include new striped bulbouts, reflective flexible posts, and re-striping of the crosswalk. The project will also include installation of green-backed sharrows, signage, and striping updates to integrate a new Class 3	SM-210011	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	Daly City	Southgate Ave and School St Safety Improvements	Daly City: Southgate Ave from St. Francis Blvd to Sullivan Ave and School Street from Junipero Serra Blvd to Mission St: Safety improvements including would install edgelines, painted bulb-outs and high-visibility crosswalks to increase	SM-210012	21-T09-061	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
San Mateo	MTC	Regional Planning Activities and PPM - San Mateo	San Mateo County: Countywide: Regional Planning Activities and Planning, Programming and Monitoring (PPM). Prior year funding was programmed on SM-170002.	SM-210013	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning activities conducted pursuant to titles 23 and 49 U.S.C	Not Modeled
San Mateo	SamTrans	SamTrans Bus Replacement	SamTrans: Bus Fleet: Replace buses that have reached the end of their useful life. This project will procure 135 transit buses to replace an equal number of 2009 Gillig buses that have reached the end of their useful life.	SM-210014	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
San Mateo	SamTrans	SamTrans Paratransit Vehicle Replacements	SamTrans: Paratransit vehicle fleet: Replace vehicles that have reached the end of their useful life. Vehicles to be replaced between FY2022 and FY2024 include: FY22--21 cutaway buses, FY24--14 minivans, FY24--9 cutaway buses.	SM-210015	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled

San Mateo	SamTrans	SamTrans South Base BEB Charging Infrastructure	SamTrans: South Base: Install electrical charging Infrastructure including design and construction of charging infrastructure and bus charging bays, procurement and installation of 37 overhead pantograph charging dispensers, and design and construction of essential power distribution networks.	SM-210201	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Construction or renovation of power, signal, and	Not Modeled
San Mateo	Burlingame	Rollins Road Bicycle and Pedestrian Improvement	Burlingame: Rollins Road north of Broadway to Millbrae City limit near Adrian Road: Implement Road Diet; Striping and Signage; Pedestrian Crossing Improvement; ADA corner ramp and Bulb-out installation; separate Class IV bikeway; median installation and rectangular rapid flashing beacons. The existing multilane roadway is 64-ft wide curb to curb, with 10-ft ROW on each side, consisting of four vehicle travel	SM-230201	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	Colma	El Camino Real Complete Streets Mission-Arlington	El Camino Real Complete Street Project (Segment B) is a component of a larger El Camino Real (ECR) Improvement Project. The improvements on ECR Segment B include construction of new accessible sidewalks, bicycle facilities, along	SM-230202	21-T08-060	Exempt (40 CFR 93.127) - Intersection signalization projects at individual intersections	Not Modeled
San Mateo	Menlo Park	Middle Avenue Pedestrian and Bicycle Undercrossing	Construct a grade separated pedestrian and bicycle crossing of the Caltrain railroad in the vicinity of Middle Avenue in the City of Menlo Park.	SM-230203	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	Redwood City	Roosevelt Avenue Traffic Calming project	Installation of traffic calming measures on Roosevelt Avenue between Alameda de las Pulgas and El Camino Real including a road diet near the Upton St intersection	SM-230204	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
San Mateo	SMCTA	19th Avenue/Fashion Island Blvd	The 19th Avenue/Fashion Island Boulevard Complete Street Class IV Bikeway (Bikeway) is located along 19th Avenue/Fashion Island Boulevard between the City of San Mateo and City of Foster City. The proposed mile long new bikeway extends between the Hayward Park Caltrain Station in City of San Mateo and the Bridgepointe Parkway shopping	SM-230205	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	SSF	School St/Spruce Ave and Hillside Blvd Safety Imps	Project improvements will provide students and other residents with safe active transportation modes on busy Hillside Boulevard and on Spruce Avenue/School Street through placement of a traffic signal, high visibility cross walks, ADA compliance improvements, curb ramps, bulb-outs, and drainage improvements.	SM-230206	21-T08-060	Exempt (40 CFR 93.127) - Intersection signalization projects at individual intersections	Not Modeled
San Mateo	San Mateo County	Bay Road Complete Street Rehabilitation	The Project is a joint effort with the City of Redwood City to make improvements within the Project limits for all road users who use or cross Bay Road, between 5th Avenue and 15th Avenue/Spring Street. The Project will include pedestrian crossing improvements, new bicycle facilities, new ADA-compliant curb ramps, traffic stripings and markings, pavement repairs, improved transit facilities, and green infrastructure.	SM-230207	21-T08-060	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
San Mateo	Pacifica	Sharp Park PDA Improvements	The Sharp Park PDA Pedestrian Improvement Project will close sidewalk gaps, improve sidewalk to above ADA standards, install new ADA compliant driveways and corner curb ramps, install curb and gutter to improve storm water management, remove and replace failed pavement, slurry seal, and install bicycle and pedestrian striping along Paloma Avenue, Carmel Avenue and Santa Maria Avenue from Francisco Boulevard to Beach Boulevard.	SM-230208	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	Caltrain	Caltrain Railcar Replacement	Procurement of high-performance EMUs to replace diesel locomotive trains and enhance the speed, capacity, safety, and reliability of Caltrain, the primary commuter rail service for millions of residents in the San Francisco Bay Area. The Project will enable Caltrain to eliminate diesel service originating and terminating on the main transit link between the major employment centers of San Francisco and San Jose, reducing emissions and noise pollution in the equity priority communities along the corridor. The Project will advance the US Department of Transportation goal of transitioning to a cleaner and more energy-efficient future, and forms part of a larger formal electrification initiative at Caltrain (PCEP).	SM-230209	21-T11-101	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
San Mateo	SamTrans	El Camino Real Mid-County Multimodal Corridor Plan	The El Camino Real Mid-County Plan will integrate SamTrans' transit priority capital improvement vision with local visions for bicycle facilities, pedestrian improvements, parking, and/or general-purpose travel lanes along El Camino Real (CA State Route 82), in the cities of San Mateo, Belmont, and San Carlos. This will result in comprehensive conceptual level designs, developed in partnership with cities and local communities, for improving transit performance. The proposed plan will build on the conceptual	SM-230210	21-T12-119	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled

San Mateo	Woodside	Woodside Road Bike and Ped Improvements E of I-280	This project would provide bike and ped safety enhancements on Woodside Rd between I-280 and Alameda de las Pulgas. Improvements would likely include green bike lane markings, bike lane buffer, vehicle speed reduction through signage and striping changes, and potentially other traffic calming and bike safety measures. The project is within Caltrans right of way. The Town has been awarded $800,000 in Community Project Funding through the efforts of Congresswoman Anna Eshoo.	SM-230211	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	San Mateo County	Santa Cruz Ave/Alameda de las Pulgas Complete St	The work to be done consists, in general, of reducing the number of travel lanes by constructing bicycle and pedestrian improvements, which include concrete islands, bulb-outs, and curb ramps. It also involves the removal of damaged sidewalk, roadway, and miscellaneous concrete, as well as the re-alignment of the curb line, gutter, sidewalk, and driveway. Additionally, the project includes drainage improvements with the placement of new storm drains, utility adjustments, removal of old striping and markings, restriping, traffic signal light modifications, creation of protected	SM-230212	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
San Mateo	Atherton	Alameda de las Pulgas Traffic and Safety Imps	Traffic safety improvements on Alameda de las Pulgas including but not limited to removal of a mid-block pedestrian activated signal and crossing between Mills Avenue and Camino al Lago, signalization of the Camino al Lago intersection, geometric modification and signalization of the Atherton Avenue intersection, green infrastructure and drainage improvements, curb ramps, complete streets, slurry seal (if within the budget) and signing, striping and pavement markings.	SM-230214	21-T08-060	Exempt (40 CFR 93.127) - Intersection signalization projects at individual intersections	Not Modeled
San Mateo	Belmont	Ralston Avenue Segment 4	A complete streets project focusing on circulation, safety, pedestrian and bicycle improvements along Ralston Avenue between Alameda de las Pulgas to the western City limit at Christian Drive. Improvements to sidewalk, crosswalks, ramps, pavement, and bicycle facilities will be done as part of the project to improve mobility and safety for all modes of transportation. The design is based on the Ralston Avenue Corridor Study and Improvement Plan which was adopted in August 2014. The project has a conceptual design and needs detailed PSE and Construction funding.	SM-250202	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	SSF	South Linden Grade Separation Project	This Project will raise the railroad between Colma Creek Bridge in South San Francisco, CA and the I-380 overcrossing in San Bruno, CA, with grade separation structures at South Linden Avenue in South San Francisco and Scott Street in San Bruno. South Linden Avenue will be partially lowered and reconstructed with pedestrian and bicycle access and safety improvements. At the Scott Street crossing, motor vehicle access will be closed and a pedestrian and bicycle undercrossing will be constructed.	SM-250203	21-T11-103	Exempt (40 CFR 93.127) - Changes in vertical and horizontal alignment	Not Modeled
San Mateo	Belmont	Alameda de las Pulgas Corridor Improvements	A multi-agency regional transportation improvement project involving cities of Belmont, San Carlos, and two School Districts (Sequoia Union High School and San Carlos School District) along the Alameda de Las Pulgas (ADLP) and San	SM-250204	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	VTA	VTA: Standard and Small Bus Replacement	VTA: Fleetwide: Standard and Small Bus Replacement	SCL050001	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Santa Clara	VTA	VTA: Rail Replacement Program	VTA: Rail Replacement Program throughout the Light Rail system (no rail expansion).	SCL050002	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation or reconstruction of track structures, track,	Not Modeled
Santa Clara	San Jose	Bay Trail Reach 9 & 9B	San Jose: From the existing San Francisco Bay Trail/Highway 237 Bikeway Trail to the Bay Trail designated parking spaces (adjacent to the publicly accessible Marriott Hotel property) design and construct 1.1 miles of commuter/transportation trail with construction and environmental documents to describe the installation of asphalt-	SCL050082	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	San Jose	San Jose: Los Gatos Creek Reach 5 Underpass	In San Jose: Los Gatos Creek Trail between Auzerais Ave and Montgomery/Bird Ave: Construct Los Gatos Creek Trail (Reach 5b/c). Construction documents will cover trail underpasses beneath railway bridge and San Carlos St bridge, ramping system leading to underpasses, development of new paved trail leading to Montgomery Ave.	SCL110029	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	VTA	VTA Track Intrusion Abatement	VTA: Various locations along trackway: Take steps to prevent track intrusion into light rail trackway at intersections and locations currently subject to trespassing. Planned improvements include installation of fencing, barriers, signage, flashing signs, and pavement markings at locations identified and approved by VTA's Safety Committee.	SCL150008	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation or reconstruction of track structures, track,	Not Modeled
Santa Clara	VTA	I-280/Winchester Blvd Interchange Improvement	San Jose: I-280/Winchester Interchange: Construct new off-ramp from northbound I-280 would connect to Winchester Boulevard via Tisch Way. The new off-ramp would diverge from the current northbound I-280 off-ramp to Stevens Creek	SCL150014	21-T06-017	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled

Santa Clara	VTA	VTA: Paratransit Vehicle Procurement	VTA: Paratransit Fleet: Procure vehicles and associated equipment for paratransit services.	SCL170005	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Santa Clara	Sunnyvale	Sunnyvale SNAIL Neighborhood Improvements	Sunnyvale: Various locations: Add bulbouts, create new bicycle lanes and bicycle boulevards. The project will enhance bike lanes, add green bike lanes, create new bicycle lanes/routes and boulevards. The project will also add high visibility crosswalks and install crosswalk warning system at selected locations in Sunnyvale's SNAIL and San Miguel Neighborhoods. SRTS improvements will be constructed for Columbia Middle School and San Miguel Elementary School.	SCL170017	21-T08-060	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Santa Clara	Sunnyvale	Bernardo Avenue Bicycle Underpass	Sunnyvale: Between North and South Bernardo Avenue under the Caltrain tracks: Construct bicycle underpass. Bernardo Avenue is a two lane collector roadway that is located in the western portion of the City of Sunnyvale. It stretches from Homestead Road in the south near Cupertino and Middlefield Road in the north near Mountain View. It serves as a major	SCL170020	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	Sunnyvale	Peery Park "Sense of Place" Improvements	Sunnyvale: In Peery Park Specific Area on Potrero Avenue from Maude Avenue to Central Expwy: Install sidewalks, pedestrian improvements, crosswalk improvements, ADA compliant curb ramps and possible curb extensions to reduce pedestrian crossing distances.	SCL170023	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	San Jose	San Jose Pavement Maintenance	San Jose: Various roadways including - Cherry Av from Almaden Ex to Branham Ln, Fruitdale Av from Bascom Av to Southwest Ex, Lean Av from Blossom Hill Rd to Chynoweth Av, Meridian Av from Camden Av to Blossom Hill Rd, Naglee Av from Forest Av to The Alameda, O'Toole Av from Montague Ex to Brokaw Rd, Piedmont Rd from Landess Av to Penitencia Creek Rd, Pine Av from Hicks Av to Bird Av, Santa Teresa Blvd from Bernal Rd to City Limit (3,000 feet south of	SCL170044	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Santa Clara	VTA	VTA: Non-Revenue Vehicle Procurement	VTA: Systemwide: Acquire non-revenue vehicles to replace existing units that have reached the end of their useful life. This ongoing program schedules the acquisition of Non-Revenue Vehicles to replace existing units that have high mileage, have had a history of mechanical failures, or have been decommissioned because of mechanical failures which were not	SCL170047	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of support vehicles	Not Modeled
Santa Clara	San Jose	W San Carlos Urban Village Streets Improvements	San Jose: West San Carlos St between I-880 and McEvoy St: Implement safety improvements including median islands, ADA curbs ramps, flashing beacons, enhanced crosswalks, curb extensions, green infrastructure, traffic signal modifications and bike racks	SCL170061	17-07-0001	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Santa Clara	VTA	I-280 Soundwalls - SR-87 to Los Gatos Creek Bridge	San Jose: On I-280 between SR 87 and Los Gatos Creek Bridge: Construct soundwalls. Ambient noise level decibels affecting pre-existing residential areas adjacent to I-280 in accordance with Streets and Highways Code Section 215.5 on I-280.	SCL170064	21-T07-056	Exempt (40 CFR 93.126) - Other - Noise attenuation	Not Modeled
Santa Clara	VTA	Hwy. Transp Operations System/FPI Phase 1 & 2	Santa Clara County: At various locations: Implement Transportation Operations System/Freeway Performance Initiative projects which includes freeway ITS infrastructure, arterial management, incident management, emergency preparedness, and operations and maintenance of ITS infrastructure.	SCL190003	21-T07-056	Exempt (40 CFR 93.126) - Safety - Traffic control devices and operating assistance other than	Not Modeled
Santa Clara	VTA	I-280/Wolfe Road Interchange Improvement	Cupertino: I-280 at Wolfe Rd interchange: Replace existing overcrossing structure, modify existing on-ramps and and off-ramps, modify existing local street intersections and upgrade bicycle and pedestrian facilities, construction auxiliary lanes, retaining walls, and soundwalls as needed.	SCL190011	21-T06-017	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Santa Clara	VTA	US 101/San Antonio Rd/Charleston/Rengstorff IC Imp	Mountain View and Palo Alto: US 101/San Antonio I/C: Reconstruct to a full interchange At the US 101/Charleston/Rengstorff interchange: Modify on- and off-ramps Between interchanges: Add new auxiliary lane to improve overall traffic operations and local circulation for all modes	SCL190012	21-T06-028	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Santa Clara	VTA	US 101/SR 25 Interchange - Phase 1	Unincorporated southern Santa Clara County south of Gilroy: at the US 101 and SR 25 interchange: Reconstruct the interchange at a location just north of the existing interchange. The improvements would include a new, widened bridge to convey SR 25 over US 101. It would also improve ramps for all traffic movements between US 101 and SR 25. The	SCL190013	21-T06-028	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Santa Clara	VTA	VTA: HVAC Replacement	VTA: At various facilities system-wide: Replace heating, ventilation and cooling equipment including four rooftop units at Guadalupe Division, two rooftop units at Chaboya Division, five rooftop units at Cerone Division, ten rooftop units at River Oaks Division. New equipment will be integrated into Energy Management System (EMS).	SCL190026	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of office, shop, and operating equipment for	Not Modeled
Santa Clara	San Jose	Willow-Keyes Complete Streets Improvements	San Jose: Along Willow St from LeLong St to Graham Ave, Graham Ave from Willow St to Sherman St, and Goodyear/Keyes St from Sherman St to 3rd St: Construct bicycle and pedestrian safety improvements including road diets	SCL190028	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	San Jose	Better Bikeway San Jose - San Fernando Street	San Jose: On San Fernando St from Almaden Blvd to 11th St: Construct bicycle and pedestrian safety improvements including bicycle signals, transit boarding islands, and dutch-style protected intersections.	SCL190029	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled

Santa Clara	Mountain View	Rengstorff Ave Grade Separation	Mountain View: At the intersection of Rengstroff Ave and the Caltrain right-of-way: Grade separate Caltrain at Rengstorff Avenue in Mountain View by lowering Rengstorff Avenue under the Caltrain tracks, constructing a bike/pedestrian bridge over Rengstorff parallel to the Caltrain bridge, and including bike/pedestrian improvements on Rengstorff under Caltrain.	SCL190032	21-T11-103	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Santa Clara	VTA	VTA: Guadalupe Steam Rack Improv & Liner Replace	VTA: At Guadalupe Division: Replace existing steam rack (light rail) track with a new liner system and overhead roof structure. The liner system will feature more efficient collection of steam water and the roof structure will be long and wide enough to reduce the unnecessary collection and treatment of rain water.	SCL190053	21-T01-001	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Santa Clara	VTA	US 101/SR 152/10th Ramp and Intersection Imp.	Gilroy: US-101/SR-152/10th St Interchange: Widen the existing bridge, modify existing on- and off-ramp upgrade local roadways to current standards to improve local circulation. Implement "Complete Streets" element" to improve bicycle and pedestrian connectivity.	SCL210002	21-T06-048	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Santa Clara	Campbell	SR 17 Southbound/Hamilton Ave. Off-Ramp Widening	Campbell: Southbound Route 17 at Hamilton Ave: Widen off-ramp to improve operations. Add sharrows, green bike lane markings, ADA curb ramps, straighten west leg crosswalk, modify traffic signal at the Hamilton/Salmar intersection.	SCL210003	21-T06-048	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Santa Clara	VTA	VTA Rail Substation Rehab/Replacement	VTA: Light Rail System. Replacement of Traction Power Substation (TPSS) #11 located near Ohlone / Lick Spur and TPSS along Tasman West and Tasman East lines.	SCL210006	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Construction or renovation of power, signal, and	Not Modeled
Santa Clara	Mountain View	Mountain View - Stierlin Rd Bike-Ped Improvements	Mountain View: Along Stierlin Road from Central Expressway (opposite Mountain View Transit Center), Central Avenue and Shoreline Boulevard: Implement bicycle and pedestrian improvements including a) Class IV protected bike lanes on Shoreline Boulevard south of Middlefield Road to Montecito Avenue, b) traffic calming and pedestrian improvements on Central Avenue and Stierlin Road, including bulbouts, high-visibility crosswalks, pedestrian and street lighting improvements, midblock raised crossing and speed hump, c) green-backed sharrows on Stierlin Road between Windmill Park Lane/Wright Avenue and Washington Street and Class II bike lanes on Stierlin Road slip ramp, d) protected intersection at Shoreline Boulevard/Montecito Avenue-Stierlin Road, and e) Pedestrian activated midblock crossing on Shoreline Boulevard adjacent to the Safeway Shopping Center.	SCL210012	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	San Jose	En Movimiento - Quick Strike Improvements	San Jose: Various locations in East San Jose: Build bike boulevard corridors that will provide safe and comfortable connections to existing and planned transit, as well as many popular destinations. The En Movimiento Quick Build Network project aims to provide bike and pedestrian improvements to East San Jose as envisioned in the En Movimiento Transportation Plan. The proposed network consists of eight bike boulevard corridors that will provide safe and comfortable connections to existing and planned transit, as well as many popular destinations. The project will serve East San Jose, one of our more under-resourced communities. The proposal calls for bike boulevard and pedestrian treatments including traffic circles, traffic diverters, high visibility crosswalks, pedestrian bulb-outs, wayfinding/signage, and chicanes-speed humps.	SCL210015	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	San Jose	San Jose Downtown Bikeways - Quick Strike	San Jose: Various locations in the downtown area (project limits include 3rd St from St. James to Keyes, 4th St from Julian to Reed, San Salvador St from 4th to 10th, 2nd St from Reed to Keyes, and Taylor/Mabury from 21st to Lenfest): Enhance existing facilities to become a connected network of Class IV (Separated) and Class III (Bike Boulevard) all-ages-and abilities. The Downtown Bikeways project will take downtown bikeways from temporary to permanent, adding more robust protection to the downtown bicycle network in San Jose and filling network gaps. This project will build on the success of the Better BikewaySJ project. After 3 years of interim design, the plastic bollard protection shows wear, and is frequently blocked by non-compliant parking and loading vehicles. This project will add surface concrete curbs, which will help keep the lanes clear, and make the street design more understandable for all users.	SCL210016	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	VTA	VTA Electronic Locker Upgrade and Replacement	VTA: At VTA park and ride lots, Light Rail Stations and Transit Centers: Replace 189 bicycle lockers (135 long-term rental lockers and 54 electronic lockers retrofitted in 2009/2010) located at VTA park and ride lots, Light Rail Stations and Transit Centers with new, Wi-Fi enabled, electronic lockers. The lockers VTA is replacing are 20 to 30 years old and have physically decayed to be inoperable, insecure, and must be replaced to provide service. Replacement will permit VTA to serve more customers and provide real-time availability and advance reservation capabilities. The project will fund outreach to current rental locker customers and marketing to highlight the improved bike lockers and encourage their use.	SCL210017	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	Saratoga	Blue Hills Elementary Pedestrian Crossing at UPRR	Saratoga: Parallel to Fredericksburg Dr and Guava Ct and the Union Pacific Railroad Vasona Branch: Reopen and construct an at-grade bike/ped crossing connecting Fredericksburg Dr. and Guava Ct, which provides pedestrian connectivity to Lido Way. The project proposes to construct a 10-foot wide walkway over the UPRR Vasona Branch tracks within the existing 20-foot wide City access easement. An ADA-Compliant landing will be provided at both ends and center	SCL210018	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled

Santa Clara	VTA	SR 237/Lawrence Expressway/Carribean Dr IC Imp	Sunnyvale: SR-237/Lawrence Expressway/Carribean Dr Interchange: Modify interchanges to relieve congestion and improve traffic operations including modifing on and off ramps, upgrading local roadways to current standards, enhancing roadway safety, and implementing Complete Street element and improving bicycle/pedestrian connectivity. Plan Bay Area 2050 : 21-T06-043	SCL210019	21-T06-043	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Santa Clara	San Jose	SR 87/Capitol Expressway/Narvaez Ave. IC Imp	San Jose: SR 87/Capitol Expressway interchange: Modify the existing interchange with standard northbound on and off ramps that connect directly to Capitol Expressway instead of Narvaez Avenue. Improvements include adding a signalized	SCL210020	21-T06-040	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Santa Clara	VTA	US 101/Ellis Street Interchange Improvement	Mountain View: US 101/Ellis Street Interchange Modify: Modify interchange. Plan Bay Area 2050 RTP TIP 21-T06-028	SCL210021	21-T06-028	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Santa Clara	Campbell	Campbell PDA Enhancements	Campbell: Various streets in the vicinity of the Campbell PDA including Campbell Ave, Civic Center Dr, and Orchard City Dr: pedestrian and bicycle safety improvements including accessibility ramps, curb extensions, intersection reconfiguration, sidewalks, traffic signal modification, signs, striping	SCL210024	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Santa Clara	Mountain View	Mountain View Mobility Hub Pilot	Mountain View: At the Mountain View Transit Center: Implement multi-modal enhancements including upgrading the existing bike storage room with new racks and utility upgrades (These improvements would allow for a public/private operation that would provide more accessible daily use and include marketing to increase usage), micro-mobility park-and-charge, charging ports for bikes and scooters (including access to grid power and data feeds), bicycle fix-it stations, mobility information kiosks, reconfiguration of western portion of Caltrain lot to provide new loading areas for TNCs and car-	SCL210025	21-EN09-132	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	Mountain View	Mountain View Shoreline Blvd Pathway Improvements	Mountain View: Adjacent to Shoreline Blvd from Wright Ave to Villa St: Reconstruct a pathway connection to connect neighborhoods and the Transit Center and Downtown. Project scope includes removal of the existing pathway, installation of a new ADA-compliant bicycle and pedestrian pathway, curb, gutter, curb ramps, stairs, pathway lighting, landscaping,	SCL210027	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	VTA	SR-17 Bike/Ped Trail and Wildlife Crossing	Santa Clara County: SR-17 South of Los Gatos: Construct a separate Highway 17 wildlife undercrossing at a top roadkill hotspot on the eastern slope of the Santa Cruz Mountains, up to 5.4 miles of related directional fencing, and a multi-use	SCL210028	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	MTC	Regional Planning Activities and PPM - Santa Clara	Santa Clara County: Countywide: Regional Planning Activities and Planning, Programming and Monitoring (PPM). Prior year funding was programmed on SCL170001	SCL210029	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning activities conducted pursuant to titles 23 and 49 U.S.C	Not Modeled
Santa Clara	VTA	N 1st/Tasman EB Track Switch Mod - TSP Enhancement	San Jose: At the Champion station In the vicinity of the North First St and Tasman Dr intersection: Modify the eastbound trackway circuit to trigger the eastbound transit signal priority (TSP) service calls earlier with the goal of reducing delays for eastbound light rail vehicles.	SCL210030	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Construction or renovation of power, signal, and	Not Modeled
Santa Clara	Cupertino	Cupertino Stevens Creek Blvd Class IV Bike Lanes	Cupertino: On Stevens Creek Blvd between Wolfe and Hwy 85: Convert existing Class II bike lanes to Class IV bike lanes. Improvements include installing pre-cast concrete vertical curbs, in-line floating bus stops and associated drainage improvements, traffic signal modifications with bicycle phasing, revised signage and striping, and removal of crosswalk	SCL210034	21-T07-056	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	VTA	SR 237 Westbound On-Ramp at Middlefield Rd.	Mountain View: Along Middlefield Rd from Logue Dr to 400 feet south of the eastbound SR 237 off-ramp: Improve traffic operations and enhance safety and implement Complete Streets improvements coordinated with other City of Mountain View improvements for enhanced bicycle and pedestrian access and safety.	SCL230001	21-T06-043	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Santa Clara	Santa Clara	De La Cruz/Lick Mill/Scott Blvds Bicycle Lanes	Santa Clara: On three corridors (De La Cruz Blvd: Montague Expressway to Trimble Road, Lick Mill Blvd: Tasman Drive to Montague Expressway, and Scott Blvd: Calabazas Creek Trail to Saratoga Avenue): Complete traffic analyses, public outreach, design, and construction of bicycle facilities . The project will enhance safety, improve mobility, and reduce vehicle emissions by implementing high priority bicycle projects identified in the Santa Clara Bicycle Plan Update 2018.	SCL230202	(blank)	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	VTA	Cerone Operations Command and Control Center	VTA: At Cerone Bus Operating Division: Construct a new Operations Command and Control Center (OCC) Theater that would include Bus and Light Rail Workstations displaying the entire VTA Bus and Light Rail System in real time. The new OCC would support SCADA, Information Technology, and Telecommunications Rooms with staff offices for both the OCC facility and field staff. The new facility would also include a Training Center and Situation Room.	SCL230203	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Construction of new bus or rail storage/maintenance	Not Modeled
Santa Clara	Morgan Hill	Monterey Road Traffic, Bicycle, and Pedestrian Imp	The project consists of slurry sealing the roadway, which will include localized pavement repairs and crack sealing for preventative maintenance; new thermoplastic striping for buffered bicycle lanes and green colored pavement treatment enhancements for the existing Class II bicycle facilities at intersections, conflict points, and their approaches; complete	SCL230204	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	Santa Clara	Central Santa Clara Bicycle and Pedestrian Improve	Construct 36 curb ramps,12 curb bulb-outs, 50 feet of new sidewalk, 2 new traffic signals, 2 new Pedestrian Hybrid Beacons, 2 new Rectangular Rapid Flashing Beacons, upgrade 2 existing traffic signals, install10 streetlights, 5,000 ft of fiber optic cable, and over 5,000 ft of Class II & III bike lanes.	SCL230205	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled

Santa Clara	Los Altos	N San Antonio Rd Complete Streets Project	Streetscape project along N San Antonio Rd from Foothill Expressway to El Camino Real. Includes Class IV protected bikeways, pedestrian enhancements, enhanced crossings, median landscaping, median curb reconstruction, resurfacing treatment.	SCL230206	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	San Jose	White Road Complete Streets Safety Improvements	This project will install 3 new traffic signals along the corridor to improve pedestrian accessibility to bus stops, schools, and retail, and reducing one of the longest stretches without a controlled crossing on the corridor from 2700' to 1700'). In addition, this project will improve safety for people walking and biking through protected intersections, new crosswalks, high visibility crosswalks, lane reduction, slip lane removal, and protected bike lanes.	SCL230207	21-T08-060	Exempt (40 CFR 93.127) - Intersection signalization projects at individual intersections	Not Modeled
Santa Clara	San Jose	Jackson Ave Complete Streets	The Jackson Avenue Complete Streets Project will provide transit, bicycle, and pedestrian enhancements along Jackson Avenue, a multilane corridor that runs parallel to I-680 in East San José. This project will improve safety, travel options, and access for underserved communities. Project may include new signals and intersection channelization	SCL230208	21-T08-060	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Santa Clara	San Jose	Signalized Intersections Pedestrian Safety Improve	This project seeks to improve existing traffic signals at 3 signalized intersections in San Jose: Reed & Seventh, First & Virginia, and Dana and Naglee. Improvements include addition of protected left turns, upgrading existing equipment to the latest standards (additional signal heads, accessible pedestrian push button signals, video	SCL230209	21-T09-061	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Santa Clara	Mountain View	Moffett Boulevard Complete Streets	Repaving and installation of Class II bike lanes and Class IV protected bikeways between Middlefield Road and the northern terminus of Moffett Boulevard (Clark Road), a sidewalk gap closure between Stevens Creek Trail and Leong Drive, and intersection improvements at Moffett Boulevard/State Round 85, pending Caltrans approval consistent with the	SCL230211	21-T08-060	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Santa Clara	Mountain View	Middlefield Road Complete Streets	Repaving of Middlefield Road between Moffett Boulevard and Whisman Road and new Class IV protected bikeways, between Moffett Boulevard and Bernardo Avenue, consistent with the City of Mountain View's Bicycle Transportation Plan.	SCL230212	21-T08-060	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Santa Clara	Mountain View	El Camino Real/El Monte/Escuela Intersection Imps	Removal of the existing slip lane, installation of high visibility crosswalks, Class IV protected bikeways, green dashed conflict zones, and green bike boxes (pending Caltrans approval) and consistent with the City of Mountain View's El Camino Streetscape Plan	SCL230213	21-T08-060	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Santa Clara	VTA	Transit Reliability Imp and Performance System	VTA: Provide transit signal priority (TSP) capabilities throughout Santa Clara County at all traffic signals buses operate through, which are currently managed by four different and incompatible control systems. The project takes advantage of approaches used on the Internet of Things (IoT) with remote virtualized servers monitoring and controlling traffic signals through standardized communication protocols. These remote virtualized servers utilize the real-time tracking of buses to	SCL230214	21-T10-064	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Santa Clara	VTA	Wheels on the Bus – Real-Time Data (RTD)	A feasibility study to evaluate technologies capable of collecting and disseminating real-time use data for VTA's front-mounted bus bike racks and interior mobility device securement equipment. The desired technology should provide real-time information to VTA internal stakeholders and customers. The project will evaluate the integration of this real-time data	SCL230215	21-T10-064	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Santa Clara	VTA	Monterey Road Transit Lane	VTA: In San Jose: Implement a road diet and install a dedicated bus lanes and protected bicycle lanes on Monterey Road in San Jose from the intersection with Keyes Rd/1st St to Ford Rd to improve transit travel times while improving safety for	SCL230216	21-T10-064	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Santa Clara	VTA	Expand Cerone Bus Yard for Electric Vehicles	VTA: In San Jose: Define additional modifications and engineering work to expand bus charging capacity at Cerone Bus Yard.	SCL230218	21-EN08-131	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Santa Clara	VTA	Expand Chaboya Bus Yard for Electric and Fuel Cell	VTA: In San Jose: Modifications and engineering work required at Chaboya Bus Yard to increase operational efficiency and installation of zero emission bus infrastructure, both electric and hydrogen, as well as servicing of articulated vehicles.	SCL230219	21-EN08-131	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Santa Clara	Santa Clara	Anna Dr Neighborhood Flood Protection	The project will upsize the existing storm drain system in the Anna Drive neighborhood east of San Tomas Aquino Creek to meet current flood protection requirements.	SCL230220	21-T08-060	Exempt (40 CFR 93.126) - Other - Plantings, landscaping, etc	Not Modeled

Santa Clara	VTA	Bascom Avenue Complete Street (I-880 to Hamilton)	VTA: In Santa Clara County: Construct community-identified complete streets and safety improvements on a three-mile stretch of Bascom Avenue in Santa Clara County. Conceptual designs were developed by the Bascom Avenue Complete Streets Study. When completed, the project will close sidewalk gaps, improve crossings, add new controlled pedestrian crossings, add a Class IV separated bikeway and transit islands, construct a raised median, and add street trees and lighting safety enhancements.	SCL230221	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	Santa Clara Co	Santa Clara Co Circ and Mobility Element Update	The General Plan Transportation Chapter (Circulation and Mobility Element) was last prepared and adopted in 1995. Since then, there have been significant changes in land use, housing and employment, travel behaviors and preferences, and the types of technologies we have access to today. County Goals and Policies in the existing	SCL230222	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Santa Clara	Los Gatos	Highway 17 Bicycle and Pedestrian Overcrossing	The Highway 17 Bicycle & Pedestrian Overcrossing Project proposes to construct a separate bicycle and pedestrian bridge over Highway 17 on Blossom Hill Road between Roberts Road West and Roberts Road East (just south of the existing Blossom Hill Road Bridge) to provide a new Class I facility for bicyclists and pedestrians, and to construct separated bike and ped approach trails on both sides of the new bridge.	SCL230223	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	Saratoga	Citywide Master Plan for Bikeways and Sidewalks	This project proposes to create a master plan for bikeways and sidewalks in the City of Saratoga. The master plan will identify and prioritize locations for new bikeways and sidewalks and opportunities for gap closure. This project will improve	SCL230224	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Santa Clara	VTA	Transit Center Park and Ride and Bus Stop Rehab	VTA: In Santa Clara County: Rehabilitate and repair transit centers and park and ride lots as outlined in VTA's condition assessment, as well as rehabilitate and improve various bus stops.	SCL230225	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Santa Clara	VTA	Facilities Maintenance Equipment Program	VTA: In Santa Clara County: Replace essential shop and other maintenance equipment that has reached the end of its useful life.	SCL230226	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Santa Clara	Gilroy	Safe Routes to School - Christopher High School	Construct a Class I multi-use trail approximately 6,500 linear feet in length	SCL230227	21-T09-061	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	VTA	Homestead Road Safe Routes to School	Homestead Road is a major east-west corridor that spans from Santa Clara University to Foothill Expressway traversing multi-jurisdictions including unincorporated Santa Clara County, Caltrans and the cities of Santa Clara, Cupertino, Sunnyvale, and Los Altos. This corridor is a local connection for three public schools, including West Valley Elementary School, Cupertino Middle School, and Homestead High School. The project upgrades pedestrian and bicycle infrastructure on Homestead Road between Foothill Expressway and Hollenbeck Avenue/Stelling Road. Improvements include bike paths, separated bike lanes, widened sidewalks, high-visibility crosswalks, curb ramps, and pedestrian and bicycle detection upgrades. This project will make it easier for K-12 students to travel to and from these	SCL230228	21-T09-061	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	Sunnyvale	Pedestrian and SRTS Imps in SNAIL and Braly Corner	Pedestrian and Safe Routes to School improvements at 3 intersections in SNAIL & Braly Corners neighborhoods. Intersections are Gail Ave/Gladiola Dr by Braly Elementary School, Borregas Ave/Hemlock Ave, and Borregas Ave/Duane Ave near Columbia Middle School. The improvements will include high visibility crosswalks, signing and roadway	SCL230229	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	VTA	Safety Enhancements at Grade Crossings	VTA: In Santa Clara County: Install pedestrian gates at several crossings along the light rail corridors, including automatic pedestrian gates, swing gates and railings, minor civil improvements, and related signal modifications as necessary.	SCL230230	21-T10-086	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Santa Clara	VTA	Light Rail Station Rehabilitation FY24-FY25	VTA: In Santa Clara County: Rehabilitate/renovate 4-6 existing light rail stations, including upgrading/repairing existing finishes, wind screens, benches, trash containers, signage, ADA accessibility, and lighting.	SCL230231	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Santa Clara	VTA	Fiber Optics Replacement Program	VTA: In Santa Clara County: Replace the fiber optic network on Tasman West between Whisman and Baypointe light rail stations.	SCL230232	21-T07-057	Exempt (40 CFR 93.126) - Other - Transportation enhancement activities (except rehabilitation and	Not Modeled
Santa Clara	VTA	Guadalupe Elevator and Escalator Drainage Improvem	VTA: In San Jose: Install bio-retention filter system for elevator and sump pump drainage.	SCL230233	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Santa Clara	VTA	Guadalupe 2nd Entrance	VTA: In Santa Clara County: Analyze the feasibility of options and develop a preliminary alignment for the recommended option for a second light rail entrance to the Guadalupe Yard from North First Street.	SCL230234	21-T01-007	Exempt (40 CFR 93.126) - Mass Transit - Rehabilitation or reconstruction of track structures, track,	Not Modeled
Santa Clara	VTA	Access Controls & CCTV Capability Expansion	VTA: In Santa Clara County: Procure and install cameras, access control hardware devices, SANs for video, as well as cabling and network infrastructure.	SCL230235	21-T07-057	Exempt (40 CFR 93.126) - Other - Transportation enhancement activities (except rehabilitation and	Not Modeled
Santa Clara	Sunnyvale	City of Sunnyvale Stevens Creek Trail Extension	Extension of Stevens Creek Trail (Class 1 bike and ped facility) in Sunnyvale from Remington Drive to Fremont Avenue.	SCL230236	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled

Santa Clara	San Jose	San Fernando Street Mobility Hubs	This project will complete the design, environmental clearance, and construction of two small-scale mobility hubs on San Fernando Street in Downtown San José: one Urban District Hub and one Pulse Hub. Each hub includes a long-term	SCL230237	21-T08-060	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Santa Clara	VTA	Audio Frequency Train Activated Circuit (AFTAC) Re	VTA: In Santa Clara County: Assessment, engineering, and construction to address reliability concerns for the Audio Frequency Train Activated Circuit (AFTAC) on the Vasona line.	SCL230238	21-T07-057	Exempt (40 CFR 93.126) - Mass Transit - Purchase of operating equipment for vehicles (e.g.,	Not Modeled
Santa Clara	VTA	Advanced Passenger Management Project	VTA: In Santa Clara County: Implement new hardware/software and applications that will help VTA paratransit customers have a safer and more enjoyable trip. Project proposes cognitive technologies to advance the Human Machine Interaction (HMI) capabilities of the Video Analytics platform.	SCL230239	21-T07-057	Exempt (40 CFR 93.126) - Mass Transit - Construction or renovation of power, signal, and	Not Modeled
Santa Clara	Palo Alto	Meadow Drive & Charleston Road Grade Separation	The project provides for the planning, design, and construction of the grade separations at the existing at grade crossings on Meadow Drive and Charleston Road in the Caltrain Rail Corridor. The project will provide improvements to accommodate bicycles, pedestrians, and vehicular movement at the crossings	SCL230240	21-T11-103	Exempt (40 CFR 93.126) - Safety - Railroad/highway crossing	Not Modeled
Santa Clara	Palo Alto	Churchill Avenue Grade Separation Project	Churchill Avenue Grade Separation Project provides for the planning, design, and construction of the grade separation at the existing at grade crossing on Churchill Avenue in the Caltrain Rail Corridor. The project will provide improvements to accommodate bicycles, pedestrians, and vehicular movement at the crossing.	SCL230241	21-T11-103	Exempt (40 CFR 93.127) - Changes in vertical and horizontal alignment	Not Modeled
Santa Clara	MTC	SR-237 Adaptive Ramp Metering Implementation	Santa Clara County: SR-237 from US-101 to I-880 adaptive ramp metering implementation. The Adaptive Ramp Metering (ARM) Implementation program offers a cost-effective path to upgrade traditionally ramp-metered congested corridors, enhancing corridor-level system management to improve corridor operational improvements.	SCL230242	21-T06-049	Exempt (40 CFR 93.126) - Other - Transportation enhancement activities (except rehabilitation and	Not Modeled
Santa Clara	Palo Alto	Palo Alto SS4A Safety Action Plan	Through collaboration with diverse stakeholders, equity analysis, and consideration of low-cost, high-impact strategies citywide, the Palo Alto Safe Streets for All Action Plan will chart a path forward to enhance safety and mobility in Palo Alto. Palo Alto has a high proportion of vulnerable road users, with over 9% of commuters traveling by bike and over 40% of	SCL250201	21-T09-061	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Santa Clara	Saratoga	Village to Hakone Gardens Walkway Project	This project will create a walkway along State Route 9 from downtown Saratoga, "Saratoga Village," to Saratoga's traditional Japanese garden, Hakone Gardens. The walkway will require a soldier pile retaining wall along the PCC sidewalk for the first 350 feet. The remaining 450 LF of walkway will be constructed from asphalt concrete.	SCL250202	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	Santa Clara	Santa Clara Vision Zero Plan	Development of a City of Santa Clara Vision Zero Plan through a comprehensive traffic safety analysis. The project will include community engagement events, countermeasure recommendations, and other potential opportunities to increase	SCL250203	21-T09-061	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Santa Clara	San Jose	I-880/Montague Expwy. Interchange Improvements	Improve interchange at I-880/Montague Expressway. construct Partial Clover interchange at I-880 and Montague Expressway, including improvements on Montague. This project will provide complete street improvements.	SCL250205	21-T06-025	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Santa Clara	VTA	Palo Alto Avenue Grade Separation Project	The project provides for the planning, design, and construction of the grade separations at the existing at-grade crossings on Palo Alto Avenue/Alma Street along the Caltrain Rail Corridor. The project will provide improvements to accommodate	SCL250206	21-T11-103	Exempt (40 CFR 93.127) - Changes in vertical and horizontal alignment	Not Modeled
Solano	SolTrans	SolTrans: Bus Replacement (Alternative Fuel)	SolTrans: Eight 45' MCI commuter coaches: Replace vehicles as they reach their useful life.	SOL090034	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Solano	STA	Solano Safe Routes to School Program	Solano County: Countywide: Education & Encouragement events, includingBicycle Rodeo Equipment & Education Materials, Walk & Roll Encouragement events, marketing, walking school bus program, and program coordination through	SOL110019	21-T09-061	Exempt (40 CFR 93.126) - Other - Transportation enhancement activities (except rehabilitation and	Not Modeled
Solano	Fairfield	Fairfield-Suisun Intercity/Local Bus Replacement	Fairfield: Systemwide: Replace four (4) local/intercity buses that have exceeded their expected useful life.	SOL110041	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Solano	Solano County	Suisun Valley Bicycle and Pedestrian Imps	Solano County: At Mankas Corner: Construct staging area with bicycle and pedestrian improvements and a Class II Bike Path on Rockville Road (from Rockville Trails Park to Fairfield City Limit), Suisun Valley Road (from Fairfield City Limit to Napa County Line), Mankas Corner Road (from Fairfield City limit to Suisun Valley Road), Abernathy Road (from Suisun	SOL130007	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Solano	Caltrans	Rio Vista SR12 Pavement Rehab and Intersection Imp	Solano County: SR12 from Currie Rd to the County Line: Rehabilitate roadway Rio Vista: At SR12/Church Rd. Intersection: Improve safety and operational efficiency. Add Standard Shoulders, EB Left Turn Lane, WB Acceleration Lane (720 ft) and Deceleration Lane (300 ft), Remove Trees in Clear Recovery Zone	SOL150003	21-T01-003	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Solano	Vallejo	Vallejo Bay Trail / Vine Trail Gap Closure	The Bay Trail/Vine Trail Gap Closure Project is the culmination of a multiyear feasibility study that investigated and evaluated multiple routes to close the gap between the Bay Trail to the south and the Bay Trail and Napa Vine Trail in	SOL170008	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Solano	STA	Solano Mobility Call Center	Solano County: County-wide: Operate call center featuring in-person assistance for customers related to transit, commuting, and mobility services, including ADA, Clipper, and ride matching, among others	SOL170009	21-T01-001	Exempt (40 CFR 93.126) - Mass Transit - Operating assistance to transit agencies	Not Modeled
Solano	Fairfield	Grange Middle School SR2S and PavementPreservation	Fairfield: On E. Tabor Ave between Dover Ave and Clay Bank Rd, and on Sunset Ave between E. Tabor and Travis Blvd: Implement pedestrian & bicycle safety improvements and pavement maintenance improvements including the installation of colored and stamped crosswalks, the installation of rapid flashing beacons, traffic signal modifications, the replacement	SOL170010	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled

Solano	Vacaville	Vaca Valley/I505 Multimodal Improvements	Vacaville: On Vaca Valley Parkway at E Monte Vista Ave and I-505 ramps: Install roundabouts and construct bicycle/pedestrian facilities over I-505 connecting to existing facilities and ADA improvements. The project limits are east of the north I-505 ramps and west of E Monte Vista Ave.	SOL170013	21-T07-056	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Solano	Suisun City	New Railroad Avenue Pavement Rehabilitation	Suisun City: Railroad Ave from Sunset Ave to Birchwood Ct: Rehabilitate roadway on eastbound lanes Railroad Ave from Sunset Ave to Marina Blvd: Restripe existing Class 2 bicycle lanes on both sides of street, including buffer depending on	SOL170014	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Solano	Solano County	Solano County Roadway Preservation	Solano County: On Midway Road from Interstate 80 to approximately 200 feet west of Porter Road: Place asphalt overlay.	SOL170015	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Solano	Solano County	Solano County Farm to Market Phase 3	Solano County: Abernathy Road from Rockville Road to Mankas Corners Road (1.6 miles), Suisun Valley Road from Ledgewood Road to the Fairfield City Limit (2.4 miles), Rockville Road from Suisun Valley Road to Abernathy Road (1.7 miles) and Mankas Corners Road from Abernathy Road to the Fairfield City Limit (0.6 miles): Construct a total of 6.3 miles	SOL170016	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Solano	STA	SolanoExpress Bus Electrification	Solano County: Countywide: Purchase electric over-the-road coaches for long-haul SolanoExpress routes. Original specs called for 13 electric buses, since costs have risen, the amount of buses purchases might be fewer than originally proposed.	SOL190002	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Solano	F-S Transit	Fairfield - Electric Bus Fleet and Infrastructure	Fairfield: Systemwide: Purchase Zero-emission vehicles (ZEVs), charging and electrical infrastructure upgrades, vehicle maintenance facility expansion and upgrades, and associated equipment to maintain and operate ZEVs. Project will use a combination of local, state, and federal funding sources.	SOL190003	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Solano	STA	Solano Regional Transit Improvements - TIRCP 2020	STA: Systemwide: Network Integration Planning (Real-time Transit Coordination Equipment and SolanoExpress Bus Rapid Transit Implementation and Electrification Plan) At Fairfield Transportation Center, Sacramento Valley Station, Suisun-Fairfield Amtrak Station, Walnut Creek BART Station, Vallejo Transit Center: In-Line Charging Infrastructure At the Vacaville Transit Center: Bike/ped connection and access improvements, transit signal prioritization improvements, ticketing improvements for SolanoExpress At the Fairfield-Vacaville Hannigan Train Station: Train station parking lot improvements, bike/ped connection and access improvements and At the Fairfield Transportation Center: West Texas St pedestrian connection, new SolanoExpress stop at westbound I-80 and West Texas St	SOL190023	21-T10-093	Exempt (40 CFR 93.126) - Mass Transit - Construction or renovation of power, signal, and	Not Modeled
Solano	STA	I-80/I-680/SR 12 Interchange Phase 2A	Solano County: I-80/I-680/SR-12 Interchange: Complete the construction of the I-80 connection to SR 12W that was started with the Construction Package 1. The existing eastbound SR 12W to eastbound I-80 connector will be removed. A new two-lane highway alignment and bridge structure for the eastbound SR 12W to eastbound I-80 will be constructed that meets the design requirements for future project phases. The new bridge structure will be designed to accommodate a future connector to southbound I-680. The project will construct the off-ramp from eastbound SR 12W to Green Valley Road. A braided ramp connection for eastbound I-80 to Green Valley Road and southbound I-680 will also be constructed.	SOL190024	21-T06-015	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Solano	Caltrans	Solano WB I-80 Cordelia Truck Scales	Solano County: WB I-80: Relocate Truck Scales facility 0.7 mile east from its current location. Create braided off-ramp connection and new entrance ramp connection to/from Westbound I-80 to address safety issues caused by short on-ramps leading to traffic congestion and increased risk of rear-end accidents. Create direct access to the facility from westbound State Route 12 (East). The new facility will expand capacity with seven covered inspection areas (old facility has four),	SOL190025	21-T07-055	Exempt (40 CFR 93.127) - Truck size and weight inspection stations	Not Modeled
Solano	Fairfield	Fairfield - Cadenasso Drive Paving	Fairfield: On Cadenasso Dr from west of Magellan Road to Beck Ave: Pavement preservation including using hot mix asphalt, ADA Ramp Upgrades, adjusting utilities to grade (manholes, valve boxes, monuments), add striping/pavement markings. There will also be an additive bid alternate (with local funds) for 2.5 inch mill and overlay w/fabric for Auto Mall Pkwy.	SOL210001	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Solano	Vacaville	Vacaville Pavement Preservation	Vacaville: Various Streets and Roads including Merchant St from I-80 to Camelia Way, Alamo Dr from Butcher Rd to Edgewood Dr, Alamo Dr from Buck Ave to West Monte Vista Ave, West Monte Vista from Alamo Dr to Orchard Ave, and Fruitvale from Orchard Ave to City Limits: Pavement preservation including resurface pavement, stripe, ADA improvements	SOL210002	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Solano	Vacaville	Vacaville: Electric Bus Charging Infrastructure	Vacaville: System-wide: Implement core infrastructure improvements to support the charging of a 100% Zero Emissions Bus fleet. California law mandates zero emission vehicles for future replacements. Vacaville is actively participating in an	SOL210003	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Solano	Vacaville	Vacaville: Electric Bus Fleet	Vacaville: Fleetwide: Procure 10 electric zero-emission buses in an effort to transition to an all electric fleet.	SOL210004	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Solano	Vacaville	Vacaville: Transit Building Expansion	Vacaville: Transit building: Construct addition to existing Transit building, adding offices and storage areas.	SOL210005	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled

Solano	STA	Solano Connected Mobility Implementation Plan	Solano County: Countywide: Develop a countywide Connected Mobility Implementation Plan to address how Solano reacts to the recommendations of Blue Ribbon Task Force	SOL210006	21-T10-093	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Solano	Vallejo	Vallejo Ferry Mobility Hub Improvement	Vallejo: In the public areas in front of the Vallejo Ferry Terminal all on the west side of Mare Island Way from the Ferry Terminal Building to the entrance of Parking Lot E: Implement mobility hub improvements based on community	SOL210007	21-EN09-132	Exempt (40 CFR 93.126) - Mass Transit - Construction of small passenger shelters and information	Not Modeled
Solano	MTC	Regional Planning Activities and PPM - Solano	Solano County: County-wide: Regional Planning Activities and Planning, Programming and Monitoring (PPM). Prior year funding was programmed on SOL170001	SOL210008	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning activities conducted pursuant to titles 23 and 49 U.S.C	Not Modeled
Solano	Fairfield	Fairfield West Texas Street Complete Streets	Fairfield: Along West Texas St between Beck Ave and Pennsylvania Ave: Modernizes a relinquished highway to improve conditions for bicyclists and pedestrians traveling including implementing a road diet. The corridor is a primary route of local and regional significance, providing access to key community destinations including a major transit hub, downtown, a park, government services, and schools. As a Class II bike route, bicyclists share the curb lane of the 5 lane roadway with fast-moving traffic. Sidewalks are narrow and not buffered from the roadway pedestrians often cross at unmarked and unsafe locations because there are too few marked crossings. Although facilities for walking and biking exist, they are insufficient. This proposed road diet will reduce lanes for motorist and upgrade facilities for bicyclist and pedestrians. Class II bike routes will be upgraded to Class IV separated bikeways and a landscaped street buffer will be installed, marked	SOL210009	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Solano	Vallejo	Vallejo Springs Rd Pavement Preservation	Vallejo: On Springs Rd from Humboldt St. to Maywood Dr: Pavement preservation including developing and implementing a water pollution program, traffic control for street closures and detours, surveying and staking for proposed grades, remove and replace curb, gutter, sidewalk, and curb ramps, cold-milling removal of asphalt concrete, hot-mix asphalt paving, lowering and raising of existing utilities, recycling disposed materials, pavement striping, signage, relocating utilities, Capital Improvements shall include demolition, and all ancillary work associated with the work, completed in place as shown on the drawings and specifications. This project is part of an exchange of federal funds (OBAG2-SSM) from SOL170008.	SOL210010	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Solano	Vallejo	Sacramento Street Road Diet - Phase II	This project will deliver a road diet on Sacramento Street between Tennessee and Frisbee Streets. The road diet will reduce the travel lanes from 4 lanes to 2 lanes with a center turn lane and add buffered bikes lanes in both directions. The project will also bring all curb ramps along this stretch into compliance with high visibility crosswalks and slurry seal the roadway to preserve the pavement and create a blank canvas for the restriping of the roadway including red curbs and bus boxes at the Soltrans bus stops along this stretch. The Project includes the PE, Environmental	SOL230201	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Solano	Benicia	East Fifth Street PDA - Affordable Housing Streets	The City of Benicia owns a vacant piece of land in the Eastern Gateway neighborhood that it intends to sell for the purpose of affordable housing development. This property has two street frontages and the City owns significant excess right of way	SOL230202	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Solano	Fairfield	Travis Safe Routes to School and Transit	Class I trail connecting Hannigan train station with three schools and Travis Air Force Base. Existing Markeley Lane alignment upgraded with a bidirectional Class IV cycle track.	SOL230203	21-T09-061	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Solano	Solano County	Solano 360 Transit Center Phase 1	Construct a Rideshare Parking lot as the first phase of the Transit/North Parking Center which will serve as a bus hub within Solano 360 with access to the County fair, and local & regional transit stops. Amenities include exterior lighting, EV charging stations, vegetated medians, and perimeter fencing. A 2-lane roadway with left turn lane, parkway landscaping,	SOL230204	21-T10-093	Exempt (40 CFR 93.127) - Bus terminals and transfer points	Not Modeled
Solano	Fairfield	Linear Park Node 4 Safe Routes to School Improveme	Complete construction of Linear Park Node 4 to include widening of the existing eight foot wide Class I off-street pathway to twelve feet, installation of pathway lighting & security cameras, and landscaping. Other State funds are AB178 state budget earmarks.	SOL230205	21-T09-061	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled

Solano	Fairfield	East Tabor and Tolenas Sidewalks	In Fairfield:On East Tabor Street construct new sidewalk on the north side across the railroad tracks to connect the ends of the existing sidewalk and close the sidewalk gap. Project also includes minimal roadway widening to place the sidewalk in the correct alignment, construction of curb and gutter, revised traffic striping to add class 2 bike lane, and improvements as needed for bikes to use the new pedestrian crossing across the railroad tracks. On Tolenas Avenue (east side) the sidewalk will be widened from 4 feet to 6 feet, minimum. Non-participating work includes costs to modify an existing private property access and parking lot to facilitate the new sidewalk installation alignment adjacent to UPRR right-of-way.	SOL230206	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Solano	STA	Bike Trail Pedestrian Improvements	Bike Trail Pedestrian Improvements at three (3) trail crossings, Arlene Drive west of Arlene Way; Briarwood Drive south of Florence Drive; and Fruitvale Road between Ridgewood Drive and Parkridge Drive: Install crosswalks; Rapid Rectangular Flashing Beacons (RRFBs), and associated signing and striping.	SOL230207	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Solano	Suisun City	Park N Ride Parking Lot EV Station Installation	Project is to install three (3) Type-2 EV charging stations and one (1) Type-3 EV charging stations for a total installation of four (4) new EV charging stations in the City's Park N Ride Parking Lot. The Project Scope of Work will include: all necessary electrical underground work and electrical updates, including panel upgrades, that are required to provide the necessary infrastructure to the new EV charging stations; parking facility upgrades required to meet the current ADA	SOL230208	21-EN08-131	Exempt (40 CFR 93.126) - Air Quality - Continuation of ride-sharing and van-pooling promotion	Not Modeled
Solano	Vallejo	Vallejo Bluff Trail Project	Project proposes constructing 1.97 miles of Class I bike/ped path along SR29 under I80 between Sequoia Ave. and Sequoia Ave (east and west of I80) and another leg of the trail up the bluff above I80 and the Carquinez Bridge connecting	SOL250201	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Sonoma	Sonoma County	Replace Hauser Bridge over Gualala River 20C0240	In Sonoma: Bridge No.20C0240,Hauser Road Bridge over South Fork Gualala River, 5 Mi east of Seaview Road. Replace existing one-lane bridge with a new two-lane bridge	SON110025	21-T01-005	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Sonoma	Santa Rosa	Jennings Ave Bike-Ped RR Crossing Corridor	Santa Rosa: At Jennings Ave and SMART railroad tracks: Construct a bicycle and pedestrian crossing. An at grade crossing at this location would be designed to be ADA compliant and would include to the best available practices in the industry to provide appropriate warning devices in compliance with federal and State regulations. It would include gate	SON150003	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Sonoma	Santa Rosa	US 101 Hearn Ave Interchange	Santa Rosa: US 101/Hearn Avenue over-crossing/interchange: Replace the US 101/Hearn Avenue over-crossing/interchange with a new over crossing/interchange including bike lanes, sidewalks, and re-aligned ramps to US 101.	SON150006	21-T06-029	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Sonoma	SCTA	Highway 116/121 Intersection Improvement Project	Sonoma County: Southwest of the City of Sonoma at the intersection of State Routes 116, and 121, and Bonneau Road: Improve intersection of State Routes 116 (PM 46.5/46.8) and 121 (PM 6.5/R7.0), and Bonneau Road. Project proposes to reduce congestion at intersection by installing either a roundabout or traffic signal. Other components of project would	SON150009	21-T07-056	Exempt (40 CFR 93.127) - Intersection signalization projects at individual intersections	Not Modeled
Sonoma	Petaluma	Petaluma: Transit Yard & Facilities Improvements	Petaluma: Transit Yard and Facility: Improvements to the Transit Yard and Facility to enhance security and maintain a state of good repair, including pavement repair and upgrades, video surveillance system, office security, yard lighting, ADA	SON170005	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Sonoma	SCTA	Sonoma County - County-Wide SRTS Program	Implement an ongoing Safety and Education Program in schools in Sonoma County, while encouraging schools to lead their own ongoing programs, with a goal of increasing active or shared modes of transportation to school.	SON170009	21-EN09-132	Exempt (40 CFR 93.126) - Other - Grants for training and research programs	Not Modeled
Sonoma	Santa Rosa	Highway 101 Bicycle and Pedestrian Overcrossing	Santa Rosa: Over Highway 101 in the vicinity of the Santa Rosa Junior College and the Coddingtown Mall: Construct a Class I shared-use ADA accessible bicycle and pedestrian bridge, which includes a 16-foot wide structure over the highway and accessible ramps	SON170012	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Sonoma	Sonoma County	Crocker Bridge Bike and Pedestrian Passage	Sonoma County: On existing north piers of Crocker Bridge: Construct a Class 1 bicycle and ped facility. The new Class I facility would remove a significant active transit barrier for two disadvantaged neighborhoods and provide a direct multi-	SON170014	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Sonoma	Petaluma	Petaluma AVL Equipment	Petaluma: Systemwide: Purchase and maintain AVL system equipment for fixed route vehicle.	SON170017	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of operating equipment for vehicles (e.g.,	Not Modeled

Sonoma	Sebastopol	Bodega Avenue Bike Lanes and Pavement Rehab	Sebastopol: On Bodega Ave between Pleasant Hill Ave and Jewell Ave: Add approximately 0.7 miles of Class II bike lanes On Bodega Ave between Pleasant Hill Ave and High St: Rehabilitate pavement. Included are new sidewalks to effect several sidewalk gap closures, plus a section of shoulder repair to ensure sufficient pavement width. There are also	SON170021	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Sonoma	Healdsburg	Healdsburg Avenue Complete Streets Improvements	Healdsburg: On Healdsburg Ave from Powell Ave to Passalaqua Rd: Construct complete streets improvements for all modes of travel including pedestrians, bicyclists, motorist, transit riders including reducing travel lanes from 5 to 3, adding bikes lanes, bus turn-outs, street parking, lighting, landscaping, LID, sidewalks, ped ramps, etc.	SON170024	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Sonoma	Son Co TA	Joe Rodota Trail Bridge Replacement	Sonoma County: On the Joe Rodota Trail near the City of Sebastopol: Remove and replace two deteriorating bicycle and pedestrian bridges. Work includes installing two temporary bridges before the removal and replacement of the existing bridges, drilling new concrete piers and constructing new bridge abutments and retaining walls, lifting and placing two prefabricated bridges, and paving asphalt to match the bridge approaches	SON170025	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Sonoma	SantaRosa Bus	Santa Rosa CityBus: Electric Bus Replacement	Santa Rosa CityBus: Replace diesel powered local transit buses with electric and purchase/install supporting charging infrastructure. FY17 and FY18 awards will each support the replacement of 2 buses (4 total), the FY21 award will assist in the replacement of 6 buses as well as supporting electric bus charging infrastructure, and the FY23 award will assist in replacing 6 buses and further supporting charging infrastructure.	SON170026	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Sonoma	SantaRosa Bus	Santa Rosa Transit Mall Roadbed Rehabilitation	Santa Rosa: At the Transit Mall (2nd St between Santa Rosa Ave and B St): Rehabilitate the 500ft, two-lane roadbed in the multi-transit operator (Santa Rosa CityBus, Sonoma County Transit, Golden Gate Transit, Mendocino Transit, Greyhound) Santa Rosa Transit Mall to address service disruptions, operational safety issues, and pedestrian hazards resulting from failing pavement, and will re-establish safe, accessible crossing facilities for pedestrian circulation. Project will remove top layers of roadbed materials and replace with newly rehabilitated roadway and new striping for pedestrian access. The federal awarded funding fill be transferred from FHWA to FTA for the grant award.	SON210001	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Reconstruction or renovation of transit buildings and	Not Modeled
Sonoma	Cotati	Cotati Downtown-Civic Center Connectivity Safety	Cotati: Various locations in Downtown and Civic Center: Pavement preservation and bicycle and pedestrian safety improvements. The Project rehabilitates La Plaza (inner hub street) and West Sierra Avenue and includes striping for a class 3 bike lane with buffer hatching and green bike paint at the intersections, and enhanced pedestrian crossings. The Project enhances connectivity of the City's centrally located La Plaza park and Downtown to the Community Demonstration Farm and Civic Center by repaving and restriping La Plaza and West Sierra Avenue to calm traffic and provide safe bicycle and pedestrian routes. The Project also enhances access of these points of interest from the Cotati train station and bus stations and to the west of town via the East School Street tunnel underneath Highway 101. The Civic Center includes a	SON210002	21-T09-061	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Sonoma	Sebastopol	SR 116 and Bodega Ave Pedestrian Improvements	Sebastopol: Various Locations: Construct ADA compliant ramps at four intersections along State Route 116, and pedestrian enhancements along Bodega Avenue at two uncontrolled crossings. The ADA compliant ramp work will take	SON210005	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Sonoma	Petaluma	Petaluma: Purchase 2 Replacement Fixed Route Buses	Petaluma: (2) 35' Battery Electric Buses: Purchase 2 Battery Electric 35' vehicles to replace (2) 35' 2007 Fixed Route Diesel buses that have expended their useful life. VIN # 15GGB271971077482 and VIN # 15GGB271071077483	SON210006	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Sonoma	MTC	Regional Planning Activities and PPM - Sonoma	Sonoma County: Countywide: Regional Planning Activities and Planning, Programming and Monitoring (PPM). Prior year funding was programmed on SON170002	SON210007	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning activities conducted pursuant to titles 23 and 49 U.S.C	Not Modeled
Sonoma	Rohnert Park	Southwest Boulevard Complete Streets	Rohnert Park on Southwest Boulevard between Commerce Boulevard and 300-feet east of Adrian Drive: Pavement rehabilitation lane reconfiguration; installation of new median and sidewalks; improvement of on-street bike facilities, crosswalks and bus stop; modifications of existing sidewalks and intersections; enhancement of existing soundwall other streetscape improvements (i.e. signage, landscaping).	SON210009	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Sonoma	Son Co TA	Sonoma County - West County Trail Gap Closures	Sonoma County: West County Trail at a 0.20 gap along Green Valley Rd and a 0.90-mile gap Occidental Rd: Construct Class I bike path segments to close gaps in the trail. The two Class I bike path segments will parallel Green Valley Road and Occidental Road. The construction work includes the following: earthwork, 8 feet wide asphalt pavement for the trail, drainage improvements, signage, and striping.	SON230001	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Sonoma	Sonoma County	Todd Road and Standish Avenue Intersection Improve	The project will install a traffic signal at the intersection of Todd Road and Standish Avenue/Ghilotti Avenue where Ghilotti Avenue will be realigned to make a 4-way intersection. The project includes installation of ADA compliant curb ramps, sidewalk extensions to make an existing bus stop more accessible and installation of Class II bicycle lanes on Todd Road.	SON230202	21-T01-003	Exempt (40 CFR 93.127) - Intersection signalization projects at individual intersections	Not Modeled
Sonoma	Santa Rosa	Highway 101 Hearn Avenue Multi-Use Pathway and Pav	This project will 1) install a Class I separated multi-use pathway along the South side of Hearn Avenue, connecting the existing SMART multi-use pathway at the western project limits with a planned multi-use pathway on the Hearn Avenue	SON230203	21-T01-003	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Sonoma	Rohnert Park	Hwy. 101 Bike/Ped Overcrossing at Copeland Creek	New Class 1 bicycle/pedestrian bridge spanning 850 -1000 feet in length crossing over the US 101 freeway. Project includes environmental document, preliminary engineering, design/PS&E and construction.	SON230204	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled

Sonoma	Healdsburg	Healdsburg: Grove Street Neighborhood Plan Impleme	Grove Street from Grant Street to Dry Creek Avenue in the City of Healdsburg adding curb, gutter, and sidewalk where missing to create continuous ADA compliant walkways. Includes connection and improvements to two public transit stops, LID water quality features, shade trees, and traffic calming measures. This segment of Grove Street runs parallel to a Class 1 bike facility, the Foss Creek Pathway, and has access points at both ends of the project and one in the middle.	SON230205	21-T01-003	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Sonoma	Santa Rosa	Downtown Connectivity to Support Housing Density	This project includes traffic and transit circulation, pavement, and multi-modal improvements needed to accommodate job and housing growth in the City core. Improving the pavement surface will provide increased ride quality in the travel lanes as well as the bike lanes which is a benefit for Transit, emergency responders, scooters, cyclists, and the motoring public.	SON230206	21-T01-003	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Sonoma	Petaluma	Petaluma Paratransit Replacements	Purchase five (5) paratransit cutaways. Replace (2) 2015 24' Gas Ford E450 Cut-Away Vans and one (1) 2015 Ford E350 22' Cut-Away van with three (3) 2023 Cut-Away Vans, 5-Year, Gas, and replace two (2) 2013 24' Gas Ford E450 Cut-Away	SON230207	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Sonoma	Petaluma	Petaluma: (3) 40' Battery Electric Buses	Petaluma: (3) 40' Battery Electric Buses: Purchase 3 Battery Electric 40' vehicles to replace (2) 35' 2007 Fixed Route Diesel buses and (1) 35' 1999 Fixed Route Diesel bus that have expended their useful life.	SON230208	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Sonoma	SCTA	SR 121 at 8th Street East Intersection Improvement	The proposed project would provide intersection improvements to address high commute volumes that result in insufficient gaps for left turns in and out of 8th St. E., inducing significant motorist delay and increased safety challenges. Additionally, the current intersection's lack of multi-modal facilities acts as a barrier for pedestrians, cyclists and other non-motorized users. Two alternatives are currently proposed: 1- construct a traffic signal at the subject intersection. This alternative would also construct Class II bike lanes and sidewalks along Route 121 and a Class I shared use path along 8th Street East and construct high visibility crossings and accessible pedestrian signals at the project intersection; 2- construct a modern roundabout at the subject intersection. This alternative would also construct Class II bike lanes along the approach roadways. At the intersection, this project would construct Class I shared use paths along 8th St. East and construct high	SON230209	21-T01-006	Exempt (40 CFR 93.127) - Intersection signalization projects at individual intersections	Not Modeled
Sonoma	Petaluma	Petaluma River Trail	The Petaluma River Trail is part of a larger regional vision for active transportation, connecting to and sharing alignments with the Great Redwood Trail/SMART Trail, Bay Area Ridge Trail, Bay Trail, and proposed Petaluma-Sebastopol Trail. Planned improvements include a paved multi-use trail with natural surface shoulders, viewing and seating areas, lighting, wayfinding, educational signage, and other trail amenities. The next phase of the project will focus on a key 0.5-mile gap	SON250201	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled

Appendix B

List of New Projects in the 2025 Transportation Improvement Program

List of New 2025 TIP Projects by County and Air Quality Status

County	Sponsor	Project Name	Project Description	TIP ID	RTP ID	Air Quality Description	Conformity Analysis Year
Non-Exempt Projects							
Alameda	Port of Oakland	Port of Oakland Green Power Microgrid	Plan, design, and install 145 chargers for battery-electric heavy duty trucks and cargo handling equipment in the Seaport; and 1 megawatt (MW) of solar panels; and up to 6.5 MW of battery storage; and associated substation upgrades. This project will support and accelerate the transition of heavy-duty equipment from diesel to zero emissions, in alignment with the Port's Seaport Air Quality 2020 and Beyond Plan – the Pathway to Zero Emissions.	ALA250222	21-T07-055	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
San Francisco	SFMTA	I-280 Ocean/Geneva Interchange Improve. at Balboa	San Francisco: Implement interchange improvements that may include intersection geometry changes, traffic signal changes, and Intelligent Transportation System (ITS) elements in the Balboa Park Station area, including the I-280 Northbound Geneva Ave and I-280 Southbound Ocean Ave off-ramps, to improve traffic circulation and safety for pedestrians & bicyclists. The project will coordinate with Caltrans, SFMTA, and SFPW.	SF-250201	21-T06-016	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
San Mateo	CCAG	US 101/SR 92 Interchange Direct Connector Project	The project proposes to create a dedicated connection between State Route (SR) 92 and US 101 express lanes. This new connection would operate like the express lanes recently opened on US 101 in San Mateo County. Currently, there is no existing High Occupancy Vehicle (HOV) direct connector between US 101 express lanes and SR 92 that might provide incentives for carpool or bus use.	SM-250201	21-T06-027	Non-Exempt (N/A) - N/A	2040
Santa Clara	Gilroy	Tenth Street Bridge at Uvas Creek	The project will construct a new bridge over Uvas Creek to connect two segments of Tenth Street. It will include two vehicular traffic lanes, a median, buffered bicycle lanes, and sidewalks on both sides. Tenth Street and Uvas Park Drive will be raised on the approach embankments. The project includes a breezeway bridge to allow users of the Uvas Creek Levee Trail to pass unimpeded under Tenth Street. To accommodate the realignment of Tenth Street and improve safety, the curb returns and driveway at Gilroy High School will be reconstructed to match grades and connect sidewalks. A roundabout will also be constructed at Tenth Street/Uvas Park Drive. Tenth Street improvements will include sidewalks, bikeways, crosswalks, restriping, signing, curb-and-gutter, storm drain, lighting, and repaving.	SCL250204	21-T07-056	Non-Exempt (40 CFR 93.101) - Non-Exempt - Not Regionally Significant Project	Not Modeled
Exempt Projects							
Alameda	Alameda County	ACPWA Safety Action Plan	Develop a Safety Action Plan that focuses specifically on improving safety within the realm of transportation in the communities of unincorporated Alameda County. This Plan will evaluate and address various aspects of transportation safety, including road safety, pedestrian and bicycle safety, and public transit safety.	ALA250201	21-T07-058	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	Livermore	East Avenue Corridor ATP Implementation 202222	The project will implement roadway safety improvements along East Avenue and include bike lanes, sidewalk, crossing enhancements, lighting. signing and striping.	ALA250202	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	San Leandro	MacArthur Blvd/Superior Ave Roundabout	The project will install a roundabout at the intersection of MacArthur Blvd and Superior Ave. The scope of work consists clearing and grubbing, excavation, removal of asphalt and concrete, and installation a roundabout, new concrete sidewalk, curb ramp, curb & gutter, signage and striping trench drain, and planting of landscaping, shrubbery and trees	ALA250203	21-T08-060	Exempt (40 CFR 93.127) - Intersection channelization projects	Not Modeled
Alameda	San Leandro	Dutton Ave Roadway Reconstruction	The project will reconstruct the roadway of Dutton Ave from E 14th St to MacArthur Blvd. The scope of the project include pedestrian improvements such as new sidewalks, ADA curb ramps, high visibility crosswalks.	ALA250204	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Hayward	High Injury Network Supplemental Planning	Develop a Speed Management Plan and a High Injury Network Safety Plan that will supplement the City's Local Road Safety Plan. The Speed Management Plan will evaluate existing speeds and develop strategies for speed management. The High Injury Network Safety Plan will develop and identify projects along these areas/corridors: Downtown Area, A Street, B Street, Hesperian Boulevard, Jackson Street, Mission Boulevard, and Tennyson Road.	ALA250205	21-T07-058	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	San Leandro	Lake Chabot Road Erosion Repair	The Lake Chabot Road Erosion Repair will repair eroded slopes due to January 2023 storms. The project includes excavation, clearing and grubbing, removal of existing rock slope protection and concrete v-ditch. The project will install structural backfill and concrete, soldier piles, and new rock slope protection at two locations along Lake Chabot Road.	ALA250206	21-T01-003	Exempt (40 CFR 93.126) - Safety - Emergency relief (23 USC 125)	Not Modeled
Alameda	Hayward	Tennyson Road Neighborhood Improvements	Multimodal improvements to Tennyson Road from Hesperian Boulevard to Mission Boulevard - for pre-environmental planning/scoping	ALA250207	21-T09-061	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Alameda	Livermore	BPMP - Local bridges preventive maintenance 202219	Bridge Preventive Maintenance for 19 local bridges at various locations in the City of Livermore. See attached Attachment A. The BPMP has been submitted to Caltrans and is being reviewed and processed. Match funds will be from SB1 Gas Tax.	ALA250208	21-T01-004	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Alameda	Newark	Thornton Ave Alternate Route Corridor Pavement Reh	Pavement rehabilitation of Thornton Avenue from I880 to Olive Street (Phase 1) and pavement rehabilitation of Thornton Avenue from Ash to Spruce Street (Phase 2). Each phase will also include improvements to the existing bicycle facilities and other safety improvements. Both phases will be implemented as part of one contract.	ALA250209	21-T01-003	Exempt (40 CFR 93.126) - Safety - Pavement resurfacing and/or rehabilitation	Not Modeled
Alameda	Livermore	Greenville Road/I-580 Interchange 199149	The project will construct new interchange at I-580/Greenville Road to replace the existing interchange at Northfront and Southfront roads and construct on and off ramps, new traffic signals and safety elements and pedestrian and bicycle facilities.	ALA250210	21-T06-019	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled

List of New 2025 TIP Projects by County and Air Quality Status

Alameda	Alameda	Lincoln Ave/Marshall Way/Pacific Ave Corridor Imp	Project is located on Lincoln Avenue/Marshall Way/Pacific Avenue between Alameda Point at Main Street/Central Avenue and Broadway. Identified as a high priority for safety and mobility improvements. Project includes road diet - going from four to three travel lanes with a center turn lane and bike lanes - as well as a roundabout at Lincoln Avenue/Fifth Street/Marshall Way, flashing beacons, pedestrian/bicycle signals, modernized traffic signals, crosswalk improvements, school frontage improvements, stormwater gardens, street trees, disabled parking and loading zones, improved lighting and bus stop enhancements. The concept will likely be phased in over time, as street sections are resurfaced and constructed with grant funding. Project web page: https://www.alamedaca.gov/LincolnMarshalPacific	ALA250211	21-T08-060	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Alameda	Alameda	Oakland Alameda Water Shuttle	Project is beginning as a two-year pilot water shuttle project between west Alameda and Jack London Square in Oakland. Alameda is lead, and WETA is operator, with service starting summer 2024. It falls under WETA's authority for operating on the Bay. The project includes leasing one pontoon boat and adding ADA-accessible ramp upgrades to the existing docks, and operations for two years. The shuttle service will be free for the pilot. If successful and additional funding is found, service will continue beyond the pilot period, and the vessel power will be electrified and dock-side charging will be added. Web page: www.alamedaca.gov/watershuttle	ALA250212	21-T01-001	Exempt (40 CFR 93.126) - Mass Transit - Operating assistance to transit agencies	Not Modeled
Alameda	Livermore	Airway Blvd Bridge BR 33C019 at Arroyo Las Positas	The project will replace the existing culverts with a free span bridge to improve creek flow conveyance, mitigate flood risk and include safety elements and pedestrian and bicycle facilities.	ALA250213	21-T01-004	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	ACTC	East Bay Greenway MM Phase 1 Hayward	East Bay Greenway Multimodal Phase 1 Hayward Segment will construct an active transportation facility on the west side of the BART and Union Pacific Railroad corridors to connect the Hayward and South Hayward BART stations through Downtown Hayward. Project improvements will include Class I pathways, Class IV separated bikeways, pedestrian crossing enhancements, bus stop upgrades, raised medians, protected intersections, new and upgraded traffic signals, safety lighting, curb ramp upgrades, and opportunities for stormwater treatment features, street trees, and amenities. In addition, the project will also review and recommend pedestrian-scale improvements along Mission Boulevard. The project forms a segment of the East Bay Greenway Multimodal (Phase 1) which focuses on implementing near-term safety and multimodal access improvements.	ALA250214	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Alameda	Oakland Alameda Estuary Bridge	Design and construct a moveable bicycle/pedestrian bridge across the Oakland Estuary between Alameda's west end and Oakland's Jack London Square. A PID will be completed by mid-2024. The project will create a safe, accessible, and convenient all ages/all abilities facility, where currently the only existing biking/walking facility is a two-way, three-foot-wide, shared-use pathway in the Posey Tube (SR 260) adjacent to vehicles traveling 45 miles per hour or more. This narrow path has inadequate passing space for bicyclists and pedestrians and is not Americans with Disabilities Act (ADA) compliant. The project will reduce the barrier effect of the Oakland Estuary on bicycle and pedestrian travel between western Alameda and downtown Oakland; improve multimodal connectivity between the two cities; encourage mode shift away from single-occupant motor vehicle cross estuary trips; provide a no-cost estuary crossing to better serve equity priority and disadvantaged communities in western Alameda, downtown Oakland and Oakland Chinatown; and increase resilience to climate change and improve disaster recovery for Alameda residents. The project will address a major deficiency on State Route (SR) 260 which does not provide standard, adequate bicycle and pedestrian access between two adjacent metropolitan areas, will close a major gap in the Regional San Francisco Bay Trail network, and will meet the estimated demand for bicycling and walking trips across the estuary. Project web page: www.estuarybridge.org	ALA250215	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	AC Transit	AC Transit: Purchase 10 40ft Zero-Emission Buses	Purchase 10 40ft Zero-Emission Buses	ALA250216	21-T01-002	Exempt (40 CFR 93.126) - Mass Transit - Purchase of new buses and rail cars to replace existing	Not Modeled
Alameda	Emeryville	The Emeryville Loop	The Emeryville Loop project will provide safe, low-stress biking and walking routes to work and shopping destinations in central Emeryville and install new designated transit lanes. The project closes a major gap in the City's existing active transportation network by providing a new pedestrian connection on Powell Street between Christie Avenue and Shellmound Street. Today, wide multilane arterial roadways that funnel high traffic volumes on and off I-80 pose barriers to people biking, walking, and rolling in the project area. This project will create separation between moving car traffic and people using active modes along high-stress arterials (Powell Street, Christie Avenue, Shellmound Street) and provide intersection improvements to make the arterial crossings safer and more comfortable. The project includes construction of new two-way Class IV separated bikeway facilities on high-stress arterial roadways, construction of new sidewalk to close a gap in the existing walking network, widened sidewalk, the installation of protected intersections at (4) major four to six lane arterial intersections, one new midblock crossing, and dedicated transit lanes. These countermeasures will create a safer, low-stress environment for people biking, walking, and rolling.	ALA250217	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	Livermore	Bluebell Drive Bridge at Arroyo Las Positas 202426	The project will replace the existing bridge with a free span bridge to improve creek flow conveyance and include safety elements and pedestrian and bicycle facilities.	ALA250218	21-T01-004	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Alameda	San Leandro	Bancroft Ave and Williams St Bicycle Corridor Imp	The project will consist of installing raised class IV bike lanes along Bancroft Ave from E 14th St to north City limit, installing a class IV bike lanes along Williams St from San Leandro Blvd to Neptune Dr. Other components of the projects include traffic signal modifications, installation of RRFB, new .sidewalks, driveways, curb and gutter, bus islands and bus shelters	ALA250219	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled

List of New 2025 TIP Projects by County and Air Quality Status

Alameda	Livermore	Heather Lane Bridge COLV005 at Arroyo Las Positas	The project will replace the existing culverts with a free span bridge to improve creek flow conveyance, mitigate flood risk and include safety elements and pedestrian and bicycle facilities.	ALA250220	21-T01-004	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Alameda	Livermore	Bluebell Drive Bridge at Altamont Creek 33C0192, 2	The project will rehabilitate or replace the existing culvert with a free span bridge to improve creek flow conveyance, mitigate flood risk and include safety elements and pedestrian and bicycle facilities.	ALA250221	21-T01-004	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Alameda	San Leandro	Lake Chabot Road Stabilization	The project will install stabilization improvements of 240' and 350' linear feet at two segments of roadway along Lake Chabot Road due to slope depression and slope erosion. Installation of class II AB, HMA, structural backfill and concrete, soldier piles, ground anchor, concrete piling.	ALA250223	21-T08-060	Exempt (40 CFR 93.126) - Safety - Emergency relief (23 USC 125)	Not Modeled
Alameda	Livermore	Holmes Street Bridge 33C0426 at Arroyo Mocho, 2024	The project will replace the existing bridge with a free span bridge to improve creek flow conveyance, mitigate flood risk and include safety elements and pedestrian and bicycle facilities.	ALA250224	21-T01-004	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Alameda	Livermore	Isabel Ave and Portola Ave I-580 Interchange 20233	The project will widen the Isabel interchange and the Portola overcrossing by two lanes and construct on and off ramps, new traffic signals and safety elements and pedestrian and bicycle facilities.	ALA250225	21-T06-019	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Alameda	Livermore	Stanley Blvd at Isabel Connector Ramp 202133	The project will implement safety improvements and include curb extensions, crosswalks, ramps, and signal improvements.	ALA250226	21-T07-056	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Contra Costa	Moraga	St. Mary's Road Multimodal Safety Improvement Proj	The Project will construct a three-way signal-controlled intersection at the St. Mary's Rd/Rheem Blvd intersection, a designated left-turn pocket with optional traffic signal at the St. Mary's Rd/Bollinger Canyon Rd intersection, and modifications to roadway alignment. Rheem Blvd will be widened in order to construct a Class II bike lane, which will connect to a Class I shared-use path along St. Mary's Rd.	CC-250201	21-T08-060	Exempt (40 CFR 93.127) - Intersection signalization projects at individual intersections	Not Modeled
Contra Costa	El Cerrito	El Cerrito BART to Bay Trail Connection	Connect El Cerrito Plaza BART Station and the San Francisco Bay Trail. The project will evaluate & implement multiple on- and off-street alignment alternatives to implement all ages and abilities bikeways between these two endpoints. Potential treatments include separated bicycle facilities, protected intersections, signalized and flashing beacon crossing treatments, and protected vehicle-bicycle phasing to enhance safety.	CC-250202	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Contra Costa	ECCTA	ECCTA: Comprehensive Operational Analysis	The purpose of this project is to perform a comprehensive operational analysis of ECCTA's mobility services and redesign its transit system. The new mobility network should harmonize with Contra Costa Transportation Authority's Integrated Transit Plan, the Countywide Transportation and Mobility Hub Plans as well as the Metropolitan Transportation Commission's various regional plans to recapture current and future ridership in the region.	CC-250203	21-T07-058	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Contra Costa	Contra Costa County	Kirker Pass Road Southbound Truck Climbing Lane	Contra Costa County: Install an additional truck climbing lane in the southbound direction of Kirker Pass Road starting 1,200 south of Nortonville Road to Concord City Limit and provide intersection improvements at the south Hess Road intersection in unincorporated Concord.	CC-250204	21-T09-061	Exempt (40 CFR 93.126) - Safety - Truck climbing lanes outside the urbanized area	Not Modeled
Contra Costa	Contra Costa County	Pacheco Boulevard Improvements	Contra Costa County: Widen roadway, add shoulders, add bicycle and pedestrian improvements, realign curves and install roadway modifications along 5.1 miles of Pacheco Boulevard from Blum Road to Morello Avenue in unincorporated Pacheco.	CC-250205	21-T08-060	Exempt (40 CFR 93.126) - Safety - Widening narrow pavements or reconstructing bridges (no	Not Modeled
Napa	Napa	Complete Streets Improvement Plan (Jefferson SS4A)	Develop a Complete Streets Improvement Plan for the Jefferson Street Corridor. Plan will identify opportunities for multimodal (bike/ped/auto/transit) safety and connectivity improvements along the Jefferson Street corridor, which is identified as a part of the City of Napa's High-Injury Network. Project funding is all for planning use.	NAP250201	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Napa	Napa	Napa Planning and Demonstration Activities (SS4A)	SS4A Planning and Demonstration Activities. Develop a Complete Streets Improvement Plan for Redwood Road. Plan will identify opportunities for multimodal safety and connectivity improvements along Redwood Road, which is identified as a part of the City of Napa's High-Injury Network. Conduct emergency response time technology demonstration activities and enforcement technology activities. Project funding is for planning and demonstration activities only.	NAP250202	21-T08-060	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
Regional/Multi-County	BART	Link21 - Phase 1: Program Development	The BART transbay tube connecting San Francisco and the East Bay reached its operational capacity before the 2020 pandemic, and requires periodic renovation. The nine-county Bay Area is the center of a megaregion, from Monterey County to the northern San Joaquin Valley to Placer County northeast of Sacramento. This 21-county megaregion supports the fifth largest economy in the world, and is increasingly dependent on its rail network, including the BART transbay crossing. BART and its rail partners are engaged in planning for a new transbay rail crossing within the context of the mega-regional rail network. The project is currently in Planning phase.	REG250201	21-T11-112	Exempt (40 CFR 93.126) - Other - Planning and technical studies	Not Modeled
San Mateo	Belmont	Ralston Avenue Segment 4	A complete streets project focusing on circulation, safety, pedestrian and bicycle improvements along Ralston Avenue between Alameda de las Pulgas to the western City limit at Christian Drive. Improvements to sidewalk, crosswalks, ramps, pavement, and bicycle facilities will be done as part of the project to improve mobility and safety for all modes of transportation. The design is based on the Ralston Avenue Corridor Study and Improvement Plan which was adopted in August 2014. The project has a conceptual design and needs detailed PSE and Construction funding.	SM-250202	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
San Mateo	SSF	South Linden Grade Separation Project	This Project will raise the railroad between Colma Creek Bridge in South San Francisco, CA and the I-380 overcrossing in San Bruno, CA, with grade separation structures at South Linden Avenue in South San Francisco and Scott Street in San Bruno. South Linden Avenue will be partially lowered and reconstructed with pedestrian and bicycle access and safety improvements. At the Scott Street crossing, motor vehicle access will be closed and a pedestrian and bicycle undercrossing will be constructed.	SM-250203	21-T11-103	Exempt (40 CFR 93.127) - Changes in vertical and horizontal alignment	Not Modeled

List of New 2025 TIP Projects by County and Air Quality Status

San Mateo	Belmont	Alameda de las Pulgas Corridor Improvements	A multi-agency regional transportation improvement project involving cities of Belmont, San Carlos, and two School Districts (Sequoia Union High School and San Carlos School District) along the Alameda de Las Pulgas (ADLP) and San Carlos Avenue Corridor. The corridor serves as the main thoroughfare for many residents of both Belmont and San Carlos. In addition, the corridor experiences heavy traffic congestion during peak hours during school pick-up and drop-off. The project proposes improved traffic circulation for all modes of transit, safety improvements, relief for peak hour traffic congestion, and installation of green infrastructure. Safety improvements will include new sidewalks, Class II bike lanes, a new signal at Carlmont Drive, and (3) mini roundabouts along the corridor. The innovative series of roundabouts will replace stop-controlled intersections, improve circulation, reduce delay, and allow safety for all modes to be greatly improved along the corridor.	SM-250204	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	Palo Alto	Palo Alto SS4A Safety Action Plan	Through collaboration with diverse stakeholders, equity analysis, and consideration of low-cost, high-impact strategies citywide, the Palo Alto Safe Streets for All Action Plan will chart a path forward to enhance safety and mobility in Palo Alto. Palo Alto has a high proportion of vulnerable road users, with over 9% of commuters traveling by bike and over 40% of public school students biking to school.	SCL250201	21-T09-061	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Santa Clara	Saratoga	Village to Hakone Gardens Walkway Project	This project will create a walkway along State Route 9 from downtown Saratoga, "Saratoga Village," to Saratoga's traditional Japanese garden, Hakone Gardens. The walkway will require a soldier pile retaining wall along the PCC sidewalk for the first 350 feet. The remaining 450 LF of walkway will be constructed from asphalt concrete.	SCL250202	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Santa Clara	Santa Clara	Santa Clara Vision Zero Plan	Development of a City of Santa Clara Vision Zero Plan through a comprehensive traffic safety analysis. The project will include community engagement events, countermeasure recommendations, and other potential opportunities to increase traffic safety. This project was awarded SS4A federal grant.	SCL250203	21-T09-061	Exempt (40 CFR 93.126) - Safety - Projects that correct, improve, or eliminate a hazardous location	Not Modeled
Santa Clara	San Jose	I-880/Montague Expwy. Interchange Improvements	Improve interchange at I-880/Montague Expressway. construct Partial Clover interchange at I-880 and Montague Expressway, including improvements on Montague. This project will provide complete street improvements.	SCL250205	21-T06-025	Exempt (40 CFR 93.127) - Interchange reconfiguration projects	Not Modeled
Santa Clara	VTA	Palo Alto Avenue Grade Separation Project	The project provides for the planning, design, and construction of the grade separations at the existing at-grade crossings on Palo Alto Avenue/Alma Street along the Caltrain Rail Corridor. The project will provide improvements to accommodate bicycles, pedestrians, and vehicular movement at the crossings.	SCL250206	21-T11-103	Exempt (40 CFR 93.127) - Changes in vertical and horizontal alignment	Not Modeled
Solano	Vallejo	Vallejo Bluff Trail Project	Project proposes constructing 1.97 miles of Class I bike/ped path along SR29 under I80 between Sequoia Ave. and Sequoia Ave (east and west of I80) and another leg of the trail up the bluff above I80 and the Carquinez Bridge connecting into the local street network in the Glen Cove Neighborhood at Clearview Drive. Project includes PE, ROW, PS&E, and Construction phases.	SOL250201	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled
Sonoma	Petaluma	Petaluma River Trail	The Petaluma River Trail is part of a larger regional vision for active transportation, connecting to and sharing alignments with the Great Redwood Trail/SMART Trail, Bay Area Ridge Trail, Bay Trail, and proposed Petaluma-Sebastopol Trail. Planned improvements include a paved multi-use trail with natural surface shoulders, viewing and seating areas, lighting, wayfinding, educational signage, and other trail amenities. The next phase of the project will focus on a key 0.5-mile gap between Soto/Bautista Way and the Petaluma Marina. Petaluma is divided by US-101 and an active railroad, both of which have limited crossing opportunities, especially for people traveling by foot and bike. This section of River Trail would create a new car-free connection that crosses underneath both facilities.	SON250201	21-T08-060	Exempt (40 CFR 93.126) - Air Quality - Bicycle and pedestrian facilities	Not Modeled

Appendix C

List of Regionally Significant Projects in Amended Plan Bay Area 2050

RTPID	Title	Scope	Regionally-Significant Elements[1]	Known Regionally-Significant Elements	Analysis Years[2]			
					2025	2030	2040	2050
21-T01-001	Operate & Maintain the Existing System | Baseline Public Transit Service Levels | Regional	This program includes funding to operate the Bay Area's baseline transit services. Improvements include operations, routine preventative maintenance, and investments to restore transit service hours to 2019 levels.	No					
21-T01-002	Operate & Maintain the Existing System | Public Transit Capital Assets | Regional	This program includes funding to maintain and replace the Bay Area's baseline transit capital assets. Improvements include vehicle rehabilitation or replacement; reconstruction or renovation of transit buildings and structures; and rehabilitation or reconstruction of track.	No					
21-T01-003	Operate & Maintain the Existing System | Local Streets & Roads | Regional	This program includes funding to operate and maintain the Bay Area's local streets and roads. Improvements include routine patching and pothole repair; sweeping and cleaning; signal operations; lighting; resurfacing and/or rehabilitation with no new capacity; preventative maintenance; striping improvements for bicycle and/or pedestrian facilities; and emergency repair.	No					
21-T01-004	Operate & Maintain the Existing System | Local Bridges | Regional	This program includes funding to operate and maintain the Bay Area's local bridges. Improvements include bridge rehabilitation, replacement or retrofitting with no new capacity.	No					
21-T01-005	Operate & Maintain the Existing System | Toll Bridges | Regional	This program includes funding to operate and maintain the Bay Area's seven state-owned toll bridges and generally implement the region's Toll Bridge Program. Improvements include toll bridge rehabilitation, replacement or retrofitting with no new capacity, and toll operations.	No					
21-T01-006	Operate & Maintain the Existing System | Highways | Regional	This program includes funding to operate and maintain the Bay Area's state highways and generally implement the State Highway Operation and Protection Program (SHOPP). Improvements include resurfacing and/or rehabilitation with no new capacity; preventative maintenance; striping improvements for bicycle and/or pedestrian facilities; and emergency repair.	No					
21-T01-007	Other Investments to Operate & Maintain the Existing System | Regional	This program includes funding to implement other programmatic investments to operate and maintain the Bay Area's transportation systems. This program generally implements county, transit agency and other local programs and initiatives to improve upon baseline transit conditions. Improvements include resurfacing and/or rehabilitation of local streets and roads; construction of new bus or rail storage/maintenance facilities; and modernization or minor expansions of transit structures and facilities outside existing right-of-way, such as stations or rail yards. Example investments include implementation of BART's Hayward Maintenance Complex, Electrical & Mechanical Infrastructure Program, Security Program, and Seismic Retrofit Program; Marin Transit's Operations & Maintenance Facility; VINE's Maintenance Facility; and the Caldecott Tunnel (Bore 1 & 2) Modernization.	No					
21-T02-008	Community-Led Transportation Enhancements in Equity Priority Communities | Regional	This program includes funding to implement transportation priorities identified by the Bay Area's Equity Priority Communities. Improvements could include lighting and safety measures; improvements to transit stations and stops; active transportation infrastructure; and subsidies for shared mobility, like bike share or car share.	No					
21-T03-009	Seamless Mobility Enhancements | Regional	This program includes funding to deploy a smartphone app for trip planning, payment and real-time passenger information, and to implement county, transit agency and other local station access and mobility programs and initiatives. Improvements include bus stop modernization; small passenger shelters and information kiosks; transfer centers; and station access improvements, including wayfinding signage.	No					
21-T04-010	Regional Transit Fare Policy | Regional	This program includes funding to implement a streamlined fare structure across the Bay Area's transit operators and replace operator-specific fare programs with an integrated regional fare structure and means-based fare discount.	No					
21-T04-011	Local Transit Fare Policy | Regional	This program includes funding to implement county, transit agency and other local programs and initiatives to implement discount transit fare programs. This program includes funding to implement VTA's Measure B Affordable Fare Program.	No					
21-T05-012	Per-Mile Tolling | Regional	This program includes funding to implement toll infrastructure, such as toll gantries, to collect per-mile tolls charged to vehicles on the Bay Area's congested freeway corridors with transit alternatives. Toll corridors include: I-80 (ALA, CC, SOL); I-238 (ALA); I-280 (SF, SM, SCL); I-380 (SM); I-580 (ALA); I-680 (ALA, CC, SCL); I-880 (ALA, SCL); US-101 (MRN, SF, SM, SCL, SON); SR-4 (CC); SR-17 (SCL); SR-24 (ALA, CC); SR-85 (SCL); SR-87 (SCL); SR-92 (SM); SR-237 (SCL); and SR-242 (CC).	Yes	I-80 (ALA, CC); I-238 (ALA); I-280 (SF, SM, SCL); I-580 (ALA); I-680 (ALA, CC, SCL); I-880 (ALA, SCL); US-101 (SF, SM, SCL); SR-4 (CC), SR-24 (ALA, CC); SR-237 (SCL); SR-242 (CC)		x	x	x
				I-80 (CC, SOL); I-380 (SM); I-580 (ALA); US-101 (MRN, SF, SCL, SON); SR-4 (CC); SR-17 (SCL); SR-85 (SCL); SR-87 (SCL); SR-92 (SM)			x	x
21-T06-013	Corridor & Interchange Improvements | I-80 | Contra Costa County	This program includes funding to implement interchange improvements at Central Ave, San Pablo Dam Rd and Pinole Valley Rd.	Yes	at San Pablo Dam Rd	x	x	x	x
21-T06-014	Corridor & Interchange Improvements | I-80 | San Francisco	This program includes funding to implement interchange improvements at Yerba Buena Island.	Yes	at Yerba Buena Island		x	x	x

RTPID	Title	Scope	Regionally-Significant Elements[1]	Known Regionally-Significant Elements	Analysis Years[2] 2025	2030	2040	2050
21-T06-015	Corridor & Interchange Improvements | I-80 | Solano County	This program includes funding to implement interchange improvements at I-680/SR-12, Redwood Pkwy and Lagoon Valley Rd.	Yes	at I-680/SR-12 (Package 2A)	x	x	x	x
				at I-680/SR-12 (Packages 3-5)			x	x
				at I-680/SR-12 (Packages 6-7)				x
21-T06-016	Corridor & Interchange Improvements | I-280 | San Francisco	This program includes funding to implement interchange improvements at the Balboa Park Station area.	Yes	at the Balboa Park Station area	x	x	x	x
21-T06-017	Corridor & Interchange Improvements | I-280 | Santa Clara County	This program includes funding to implement interchange improvements at Lawrence Expy/Stevens Creek Blvd, Winchester Blvd, Wolfe Rd, Saratoga Ave, SR 85/Homestead Rd, Bird Ave, and between 3rd St and 7th St; braided ramps between Foothill Expy and SR-85; and new HOV lanes between Magdalena Ave and the Santa Clara/San Mateo county line.	Yes	at Winchester Blvd; between 3rd St and 7th St; new HOV lanes between Magdalena Ave and the Santa Clara/San Mateo county line			x	x
21-T06-018	Corridor & Interchange Improvements | I-380 | San Mateo County	This program includes funding to implement interchange improvements at US-101 and El Camino Real and a new eastbound freeway lane between I-280 and El Camino Real.	Yes	new eastbound freeway lane between I-280 and El Camino Real			x	x
21-T06-019	Corridor & Interchange Improvements | I-580 | Alameda County	This program includes funding to implement Design Alternatives Assessments between the Bay Bridge Toll Plaza and SR-238; for interchange improvements at Hacienda Dr, Fallon Rd/El Charro Rd, Santa Rita Rd/Tassajara Rd, Greenville Rd, Isabel Ave/SR-84, First Street, and Vasco Rd; and funding for a planning study to scope interchange improvements at I-680.	Yes	at Hacienda Dr, Fallon Rd/El Charro Rd	x	x	x	x
21-T06-020	Corridor & Interchange Improvements | I-580 | Richmond-San Rafael Bridge	This program includes funding to implement improvements to east side bridge access. It also reserves funding to implement permanent recommendations based on the third eastbound freeway lane pilot project and the westbound bicycle/pedestrian path pilot project.	No					
21-T06-021	Corridor & Interchange Improvements | I-680 | Alameda County	This program includes funding to implement interchange improvements at Stoneridge Dr and Sunol Blvd.	Yes	at Stoneridge Dr			x	x
21-T06-022	Corridor & Interchange Improvements | I-680 | Contra Costa County	This program includes funding to implement interchange improvements at SR-4, as well as and new auxiliary lanes between Rudgear Rd and El Cerro Blvd and between Bollinger Canyon Rd and Alcosta Blvd.	Yes	at SR-4 (Phases 1-2)		x	x	x
				at SR-4 (Phase 4)		x	x	x
				at SR-4 (Phase 5); auxiliary lanes between Rudgear Rd and El Cerro Blvd; auxilary lanes between Bollinger Canyon Rd and Alcosta Blvd			x	x
21-T06-023	Corridor & Interchange Improvements | I-680 | Santa Clara County	This program includes funding to implement interchange improvements at Montague Expy, Alum Rock Ave and McKee Rd.	Yes	at Montague Expy			x	x
21-T06-024	Corridor & Interchange Improvements | I-880 | Alameda County	This program includes funding to implement interchange improvements between Oak St and Broadway, Whipple Rd and Industrial Pkwy, Winton Ave and A St, 23rd Ave and 29th Ave, and 42nd Ave and High St.	Yes	at 23rd Ave and 29th Ave		x	x	x
				at Whipple Rd and Industrial Pkwy; between Oak St and Broadway, Winton Ave and A St		x	x	x
21-T06-025	Corridor & Interchange Improvements | I-880 | Santa Clara County	This program includes funding to implement interchange improvements at Montague Expy.	No					
21-T06-026	Corridor & Interchange Improvements | US-101 | Marin County	This program includes funding to implement interchange improvements at I-580 and a new southbound HOV lane between Novato and the Sonoma/Marin county line ("Marin-Sonoma Narrows").	Yes	new southbound HOV lane between Novato and the Sonoma/Marin county line ("Marin-Sonoma Narrows")	x	x	x	x
				at I-580			x	x
21-T06-027	Corridor & Interchange Improvements | US-101 | San Mateo County	This program includes funding to implement interchange improvements at SR-92, 3rd Ave, Holly St, Peninsula Ave, Produce Ave, Sierra Point Pkwy, University Ave, Willow Rd, and Woodside Rd; and funding for a planning study to scope interchange improvements at Candlestick.	Yes	at Holly St, Peninsula Ave, Produce Ave		x	x	x
				at SR-92			x	x
21-T06-028	Corridor & Interchange Improvements | US-101 | Santa Clara County	This program includes funding to implement interchange improvements at SR-25, SR-237, Blossom Hill Rd, Buena Vista Ave, Ellis St, Mabury Rd/Taylor St, Mathilda Ave, Moffett Blvd, Montague Expy, Old Oakland Rd, Shoreline Blvd, Trimble Rd/De La Cruz Blvd/Central Expy, Zanker Rd/Skyport Dr/Fourth St, and between San Antonio Rd and Charleston Rd/Rengstorff Ave; and ramp metering improvements in Morgan Hill and Gilroy.	Yes	at SR-25, Blossom Hill Rd, Trimble Rd/De La Cruz Blvd/Central Expy	x	x	x	x
				at Buena Vista Ave, Zanker Rd/Skyport Dr/Fourth St		x	x	x
				at SR-237, Mabury Rd/Taylor St			x	x
21-T06-029	Corridor & Interchange Improvements | US-101 | Sonoma County	This program includes funding to implement interchange improvements at Arata Ln, Hearn Ave, ~~Railroad Ave~~, and Rainier Ave and new HOV lanes through Petaluma ("Marin-Sonoma Narrows").	Yes	at Arata Ln	x	x	x	x
				~~at Railroad Ave~~			~~x~~	~~x~~
21-T06-030	Corridor & Interchange Improvements | SR-1 | San Mateo County	This program includes funding to implement interchange improvements at Manor Dr and safety and operational improvements in Half Moon Bay and between Half Moon Bay and Pacifica.	Yes	at Manor Dr		x	x	x

RTPID	Title	Scope	Regionally-Significant Elements[1]	Known Regionally-Significant Elements	Analysis Years[2] 2025	2030	2040	2050
21-T06-031	Corridor & Interchange Improvements | SR-4 | Contra Costa County	This program includes funding to implement Integrated Corridor Mobility between I-80 and SR-160 and operational improvements between Port Chicago Hwy and San Marcos Blvd/Willow Pass Rd.	Yes	EB and WB operational improvements between Port Chicago Hwy and San Marcos Blvd/Willow Pass Rd		x	x	x
				Integrated Corridor Mobility between I-80 and SR-160			x	x
21-T06-032	Corridor & Interchange Improvements | SR-17 | Santa Clara County	This program includes funding to implement interchange improvements at SR-9.	Yes	at SR-9		x	x	x
21-T06-033	Corridor & Interchange Improvements | SR-24 | Contra Costa County	This program includes funding to implement interchange improvements at Camino Pablo and a new eastbound auxiliary lane between Wilder Rd and Camino Pablo.	Yes	new eastbound auxiliary lane between Wilder Rd and Camino Pablo			x	x
21-T06-034	Corridor & Interchange Improvements | SR-29 | Napa County	This program includes funding to implement interchange improvements at SR-221 ("Soscol Junction"), Lincoln Ave, Madison St, Trower Ave, and Airport Blvd ("Airport Junction"); operational and multimodal improvements between Napa Junction and American Canyon Rd; and new highway lanes between SR-37 and American Canyon.	Yes	at SR-221 ("Soscol Junction")	x	x	x	x
				at Airport Blvd ("Airport Junction")			x	x
				new highway lanes between SR-37 and American Canyon.				x
21-T06-035	Corridor & Interchange Improvements | SR-37 | Multiple	This program includes funding to implement new HOV lanes between Mare Island and Sears Point and toll infrastructure to collect tolls charged to westbound vehicles, as well as to implement express bus service between Novato and Vallejo (30 minute peak headways) and other transportation demand management strategies including park-and-ride facilities and bicycle and pedestrian enhancements.	Yes	new HOV lanes between Mare Island and Sears Point		x	x	x
21-T06-036	Corridor & Interchange Improvements | SR-37 | Solano County	This program includes funding to implement interchange improvements at Fairgrounds Dr.	Yes	at Fairgrounds Dr		x	x	x
21-T06-037	Corridor & Interchange Improvements | SR-84 | Alameda County	This program includes funding to implement interchange improvements at I-680; and new highway lanes between Ruby Hill Dr and I-680.	Yes	new highway lanes between Ruby Hill Dr and I-680	x	x	x	x
21-T06-038	Corridor & Interchange Improvements | SR-84 | Dumbarton Bridge	This program includes funding to implement the Gateway 2020 Study, including access improvements to the west side of the Dumbarton Bridge, and Dumbarton Corridor Transportation Studies at US-101, including phased implementation of near-term recommendations and environmental studies for long-term recommendations.	No					
21-T06-039	Corridor & Interchange Improvements | SR-85 | Santa Clara County	This program includes funding to implement interchange improvements at SR-237 and El Camino Real; auxiliary lane improvements between El Camino Real and SR-237; and a new eastbound auxiliary lane between SR-85 and Middlefield Rd.	No					
21-T06-040	Corridor & Interchange Improvements | SR-87 | Santa Clara County	This program includes funding to implement interchange improvements at Capitol Expy/Narvaez Ave and technology-based operational improvements between US-101 and SR-85.	No					
21-T06-041	Corridor & Interchange Improvements | SR-92 | Alameda County	This program includes funding to implement interchange improvements at Clawiter Rd/Whitesell St.	No					
21-T06-042	Corridor & Interchange Improvements | SR-152 | Santa Clara County	This program includes funding for a planning study to scope a new alignment between US-101 and SR-156.	No					
21-T06-043	Corridor & Interchange Improvements | SR-237 | Santa Clara County	This program includes funding to implement interchange improvements at SR-85, Great American Pkwy, Lawrence Expy/Caribbean Dr, Java Dr, Maude Ave, and Middlefield Rd; intersection improvements at El Camino Real/Grant Rd; a new westbound auxiliary lane between McCarthy to N 1st St; new eastbound auxiliary lanes between Mathilda Ave and Fair Oaks Ave; and new auxiliary lanes between Coyote Creek/Zanker Rd to N 1st St.	Yes	new eastbound auxiliary lanes between Mathilda Ave and Fair Oaks Ave; and new auxiliary lanes between Coyote Creek/Zanker Rd to N 1st St		x	x	x
				new westbound auxiliary lane between McCarthy to N 1st St			x	x
21-T06-044	Corridor & Interchange Improvements | SR-239 | Contra Costa County	This program includes funding for a planning study to scope a new alignment between Brentwood and Tracy.	No					
21-T06-045	Corridor & Interchange Improvements | SR-242 | Contra Costa County	This program includes funding to implement interchange improvements at Clayton Rd.	Yes	at Clayton Rd			x	x
21-T06-046	Corridor & Interchange Improvements | SR-262 | Alameda County	This program includes funding to implement interchange improvements at I-680 and new freeway lanes between I-680 and I-880.	Yes	at I-680; new freeway lanes between I-680 and I-880				x

RTPID	Title	Scope	Regionally-Significant Elements[1]	Known Regionally-Significant Elements	Analysis Years[2]			
					2025	2030	2040	2050
21-T06-047	Corridor & Interchange Improvements | New Freeway | Contra Costa County	This program includes funding to implement new freeway lanes and interchange improvements on SR-4/Vasco Rd between Balfour Rd and Vasco Rd and a new 2-lane expressway between Vasco Rd and Byron Hwy.	Yes	new freeway lanes and interchange improvements on SR-4/Vasco Rd between Balfour Rd and Vasco Rd; new 2-lane expressway between Vasco Rd and Byron Hwy			x	x
21-T06-048	Other Investments to Improve Interchanges & Address Highway Bottlenecks | Regional	This program includes funding to implement other programmatic investments to improve interchanges and address highway bottlenecks. This program generally implements county and other local programs and initiatives to programmatically implement highway improvements. Improvements include interchange modifications and minor lane additions or lane extensions of less than 1/4-mile (i.e., highway or freeway lane, auxiliary lane, or HOV lane). Example investments include implementation of VTA's Envision Highway Minor Projects.	Yes	Envision Highway Minor Projects (SCL)				x
21-T06-049	Bay Area Forward Program | Regional	This program includes funding to implement initiatives to maximize the efficiency of freeway and arterial systems through active traffic demand management and multi-modal strategies. Improvements include implementation of toll bridge corridor "forward" programs, adaptive ramp metering, adaptive signal timing with transit signal priority, bus on shoulder lanes, congestion pricing on toll bridge corridors, arterial first and last mile solutions, and shared mobility pilot deployments.	Yes	active traffic demand management, toll bridge corridor "forward" programs, adaptive ramp metering, adaptive signal timing with transit signal priority, bus on shoulder lanes, congestion pricing on toll bridge corridors	x	x	x	x
21-T07-050	511 Bay Area Program | Regional	This program includes funding to support the 511 Bay Area Program, which provides multi-modal traveler information.	No					
21-T07-051	All Electronic Tolling Program | Regional	This program includes funding to support the All-Electronic Tolling Program, which converts the seven state-owned toll bridges to Open Road Tolling. Improvements include procurement of a new toll system and overhead gantries, improvements to roadway infrastructure to allow for high-speed tolling, and support of a regional customer service center.	No					
21-T07-052	Carpool/Vanpool Program | Regional	This program includes funding to provide carpool-matching tools and encourage carpool behavior through outreach, education, rewards, incentives and new technology.	No					
21-T07-053	Connected Bay Area Program | Regional	This program includes funding to implement the Connected Bay Area Program, which improves and integrates system infrastructure and operations to manage the region's transportation network. Improvements include the Regional Communication Infrastructure Network, the Incident Management Program, and the Transportation Management Center & Communications.	No					
21-T07-054	Motorist Aid Services Program | Regional	The program includes funding to support the Freeway Service Patrol, Call Box programs and other motorist aid activities.	No					
21-T07-055	Minor Freight Improvements | Regional	This program includes funding to implement freight improvements throughout the Bay Area. This program generally implements programs that improve freight operations and support the Port of Oakland. Improvements include new weigh stations and rest areas and improvements to existing freight terminals and freight rail. Example projects include grade separation improvements at 7th Street at the Port of Oakland and improvements at the I-80 Westbound Truck Scales in Cordelia.	Yes	grade separation improvements at 7th Street at the Port of Oakland (ALA)		x	x	x
21-T07-056	Minor Roadway Improvements | Regional	This program includes funding to implement minor roadway improvements. This program generally implements projects exempt from regional air quality conformity, but it does include non-exempt local roadway widenings or extensions. Improvements include local road extensions or new lanes, and intersection improvements such as channelization and signalization. Example projects include improvements to Oakland Army Base, Quarry Lakes Pkwy (East-West Connector), Decoto Rd, Dublin Blvd, El Charro Rd, and Auto Mall Pkwy (ALA); Newell Dr and Airport Junction (NAP); implementation of Envision Expressway program, Calaveras Blvd, and Mary Ave (SCL); Hunters Point Shipyard and Candlestick Point local roads, Alemany Rd, and Treasure Island (SF); and Farmers Ln (SON).	Yes	Dougherty Rd (ALA); Laurel Rd, Lone Tree Way, San Ramon Blvd, Willow Pass Rd (CC); SR-29 (NAP); 10th St Bridge (SCL); Peabody Rd (SOL)	x	x	x	x
				Dublin Blvd-North Canyons Pkwy, Tassajara Rd, Union City Blvd (ALA); Brentwood Blvd, Camino Tassajara Rd, Crow Canyon Rd, E Cypress Rd, W Leland Rd (CC); Novato Blvd (MRN); Mary Ave, Montague Expy, Oakland Rd (SCL); Jepson Pkwy (SOL)		x	x	x
				Auto Mall Pkwy, Decoto Rd, El Charro Rd, Quarry Lakes Pkwy (ALA); Pittsburg-Antioch Hwy (CC); Newell Dr, Soscol Ave, Trower Ave (NAP); Brokaw Bridge, Calaveras Blvd, Lawrence Expy, San Thomas Expy, Envision Expy Program (SCL)			x	x
21-T07-057	Technology Improvements | Regional	This program includes funding to implement technology improvements on the Bay Area's transportation systems. This program generally implements county, transit agency and other local management systems' travel demand management and emissions reduction technologies programs and initiatives. Improvements include incident management; signal coordination; Intelligent Transportation Systems; Traffic Operations Systems/Congestion Management Systems; ramp metering; Computer-Aided Dispatch/Automatic Vehicle Location; fare media; construction or renovation of power, signal and communications systems; toll management systems; toll media; car and bike share; alternative fuel vehicles and facilities; parking programs; carpool/vanpool; ridesharing activities; information, marketing and outreach; and traveler information.	Yes	Intelligent Transportation Systems (SM)				x
21-T07-058	Planning/Program | Regional	This program includes funding to support regional and local planning programs and initiatives to support implementation of Plan Bay Area 2050. Investments include planning, research, technical assistance and program implementation. Example regional projects include support for Priority Development Area (PDA) planning and implementation; the Bay Area Preservation Pilot revolving loan fund; and the Housing Incentive Pool pilot program to incentivize the production of affordable housing.	No					
21-T07-059	Financing/Reserve for Major Capital Projects | Regional	This program includes funding for financing costs of major capital projects (e.g., Caltrain Downtown Extension) and a funding reserve for projects with cost overruns.	No					

RTPID	Title	Scope	Regionally-Significant Elements[1]	Known Regionally-Significant Elements	Analysis Years[2] 2025	2030	2040	2050
21-T08-060	Complete Streets Network | Regional	This program includes funding to implement a regional Complete Streets network with an emphasis on improvements near transit and in Equity Priority Communities. It also includes funding to implement county and local initiatives to support active transportation systems. Investments include new and extended bike and pedestrian facilities; minor bicycle and/or pedestrian facility gap closures; minor road diets (less than 1/4-mile); ADA compliance; landscaping; lighting; streetscape improvements; secure bike parking at transit stations; and support to local jurisdictions to maintain and expand car-free slow streets. Example projects include the Bay Trail (MUL), Bay Skyway (SF), Better Market Street (SF), East Bay Greenway (ALA), and Urban Greenways and Trails (ALA).	Yes	Fruitvale Ave, Shattuck Ave, Telegraph Ave (ALA); Benicia Rd, West Texas Rd (SOL); Petaluma Blvd (SON)	x	x	x	x
				El Camino (SM); SR-29/Sonoma Blvd (SOL)		x	x	x
				Military West (SOL)			x	x
				Bay Skyway (SF)				x
21-T09-061	Regional Vision Zero Policy through Street Design and Reduced Speeds | Regional	This program includes funding to implement and advance a regional Vision Zero policy, which includes implementation of slower highways and streets through street design and automated enforcement, and other programmatic investments to advance Vision Zero policies. This program generally implements regional, county and local programs to support Vision Zero initiatives; Safe Routes to Schools programs; and the Highway Safety Improvement Program. Improvements include railroad/highway crossing improvements; warning devices; shoulder improvements; traffic control devices other than signalization; guardrails, median barriers and crash cushions; pavement marking; fencing; skid treatments; lighting improvements; widening narrow pavements with no added capacity; changes in vertical and horizontal alignment; transit safety, communications and surveillance systems; truck climbing lanes outside urban areas; and emergency truck pullovers.	No					
21-T10-062	Multimodal Transportation Enhancements | AC Transit and WETA | Alameda Point	This program includes funding to implement improvements to existing transit service in the City of Alameda. Improvements include new bus service on Appezzato Pkwy with dedicated lanes (15 minute peak headways); new bus service between Fruitvale BART and Seaplane Lagoon (20 minute peak headways); new crosstown express bus service between Harbor Bay Ferry Terminal and Alameda Main St Ferry Terminal (20 minute peak headways); and new ferry service between Seaplane Lagoon and San Francisco Ferry Building (30 minute peak headways).	Yes		x	x	x	x
21-T10-063	Multimodal Transportation Enhancements | SFMTA | Southeast San Francisco	This program includes funding to implement transportation enhancements in the Candlestick/Hunters Point Shipyard project area, including improvements to existing bus service; new express bus service to downtown San Francisco; and multi-modal corridors of streets, transit facilities, pedestrian paths and dedicated bicycle lanes.	Yes				x	x
21-T10-064	Local Bus | Modernization | VTA | Systemwide	This program includes funding to implement improvements to existing bus service. Improvements include transit priority infrastructure; transit signal priority; bus lanes; queue jumps; stop improvements; faster fare collection equipment; off-board fare collection; all-door boarding; and software and hardware upgrades for improved headway management.	Yes					x
21-T10-065	Local Bus | Service Frequency Boost | AC Transit | Systemwide	This program includes funding to implement improvements to AC Transit's existing local bus service. Improvements include frequency upgrades (5-10 minute peak headways along routes 72/72M/72R, 18, 51A/B, 6, 20/21, 57, 40/40L, 97, 99, Tempo BRT, NL, F-local and F-Transbay) and local/rapid service on some routes.	Yes		x	x	x	x
21-T10-066	Local Bus | Service Frequency Boost | County Connection	This program includes funding to implement improvements to existing County Connection bus service, including frequency upgrades (15 minute peak headways) on routes feeding BART stations.	Yes				x	x
21-T10-067	Local Bus | Service Frequency Boost | NVTA	This program includes funding to implement improvements to existing Napa VINE regional/local bus service. Improvements include frequency upgrades (30 minute peak headways); expanded service hours (from 4am-12am); and Sunday service.	Yes				x	x
21-T10-068	Local Bus | Service Frequency Boost | SFMTA | Systemwide	This program includes funding to implement improvements to existing bus service, including Muni Forward transit priority improvements along Rapid and high-frequency transit corridors; transfer and terminal investments; street improvements in support of Vision Zero; route realignments; and frequency upgrades (4-8 minute peak headways on routes 14R, 22, 24, 29, 44, 45 and 55).	Yes				x	x
21-T10-069	Local Bus | Service Frequency Boost | VTA | Systemwide	This program includes funding to implement improvements to existing VTA bus service, including Measure B Frequent Core Network frequency upgrades (15 minute peak headways on routes 22, 23, 25, 26, 57, 60, 61, 64, 66, 68, 70, 72, 73 and 77).	Yes				x	x
21-T10-070	Local Bus | Service Frequency Boost | PDAs	This program includes funding to implement improvements to existing bus service in Priority Development Areas (PDAs) without existing high-frequency rail, ferry or bus service. Improvements include frequency upgrades (30 minute peak headways) and reorganization and/or expansion of bus routes.	Yes	ALA	x	x	x	x
				CC, MRN, NAP, SM, SCL, SOL, SON		x	x	x
21-T10-071	Local Bus | Service Frequency Boost | Sonoma County	This program includes funding to implement improvements to existing bus service, including frequency upgrades (15 minute peak headways on Santa Rosa City Bus routes 1, 2, 3, 4, 5, 6, 8, 9, 10 and 12; 30-80 minute peak headways on Sonoma County Transit routes 30, 40, 56 and 60; 30 minute peak headways on Golden Gate Transit route 72).	Yes		x	x	x	x
21-T10-072	Rapid Bus | Modernization | AC Transit | E 14th St/Mission St/Fremont Blvd	This program includes funding to implement new rapid bus service along E 14th St/Mission St/Fremont Blvd between the San Leandro and Warm Springs BART stations. Improvements include frequency upgrades (10 minute peak headways for Route 10 and 20 minute peak headways for Route 99), dedicated lanes and mobility hubs at BART stations.	Yes		x	x	x	x
21-T10-073	Rapid Bus | AC Transit | Modernization	This program includes funding to implement rapid transit improvements to existing bus service. Improvements include new rapid bus service; improved bus stops and stations; new/improved transit signal priority (including on-street and on-bus equipment); transit priority infrastructure; dedicated bus lanes; queue jumps; and frequency upgrades (5-12 minute peak headways on routes 18, 20/21, 40, 57, 97 and NL).	Yes	Foothill Blvd (40), Fruitvale Ave (20/21), Grand Ave (NL), Shattuck Ave/Martin Luther Kind Jr Way (18)	x	x	x	x
				Broadway, Hesperian Blvd (97), MacArthur Blvd/40th St (57/NL), Telegraph Ave			x	x

RTPID	Title	Scope	Regionally-Significant Elements[1]	Known Regionally-Significant Elements	Analysis Years[2]			
					2025	2030	2040	2050
21-T10-074	Rapid Bus | Modernization | VTA | El Camino Real	This program includes funding to implement rapid transit improvements to existing bus service along El Camino Real. Improvements include dedicated lanes, transit signal priority, improved stop infrastructure and new rolling stock.	Yes				x	x
21-T10-075	Rapid Bus | Contra Costa Co | Service Expansion | Antioch-Brentwood	This program includes funding to implement new bus service along SR-4 between Hillcrest eBART to Brentwood Intermodal Station. Improvements include frequency upgrades (20 minute peak headways), rapid transit improvements and a new park-and-ride facility.	Yes				x	x
21-T10-076	BRT | Modernization | AC Transit | 23rd St	This program includes funding to implement new BRT service along 23rd St from Hercules to Contra Costa College, Richmond BART and the Richmond Ferry. Improvements include high-frequency service (10 minute peak headways), queue jumps, transit signal priority, new vehicles, improved stops and possible bus-only lanes.	Yes			x	x	x
21-T10-077	BRT | Modernization | AC Transit | San Pablo Ave	This program includes funding to implement BRT improvements to existing bus service along San Pablo Ave from 20th St to Richmond Pkwy Transit Center. Improvements include frequency upgrades (5 minute peak headways), improved stop infrastructure, merging of local/rapid stops, dedicated lanes and transit signal priority.	Yes			x	x	x
21-T10-078	BRT | Modernization | SamTrans | El Camino Real	This program includes funding to implement BRT improvements to existing bus service along El Camino Real from Daly City BART to Palo Alto Caltrain Station. Improvements include frequency upgrades (15 minute peak headways), dedicated lanes (45% of route), transit priority infrastructure and transit signal priority.	Yes				x	x
21-T10-079	BRT | Modernization | SFMTA | Geary Blvd	This program includes funding to implement BRT improvements to existing bus service along Geary Blvd from Market St to 34th Ave. Improvements include frequency (5.5 minute peak headways), dedicated lanes, transit signal priority and peak express service.	Yes			x	x	x
21-T10-080	BRT | Modernization | SFMTA | Geneva Ave/Harney Way	This program includes funding to implement BRT improvements to existing bus service along Geneva Ave/Harney Way. Improvements include dedicated lanes, transit signal priority, high-quality stations and transit priority infrastructure.	Yes				x	x
21-T10-081	BRT | Modernization | SFMTA | Van Ness Ave	This program includes funding to implement BRT improvements to existing bus service along Van Ness Ave from Mission St to Union St. Improvements include dedicated lanes, transit signal priority, high-quality stations and transit priority infrastructure.	Yes		x	x	x	x
21-T10-082	Light Rail | Service Expansion | SFMTA | Historic Streetcar	This program includes funding to extend Muni's existing E-line or F-line service from Fisherman's Wharf to Fort Mason through the historic railway tunnel between Van Ness Ave and the Fort Mason Center. Improvements include two new stations.	Yes			x	x	x
21-T10-083	Light Rail | Service Expansion | SFMTA | to Chinatown ("Central Subway")	This program includes funding to extend Muni's existing T-line to Chinatown through the Central Subway. Improvements include light rail shuttles between Chinatown and Mission Bay (via the Mission Bay Loop) during peak periods and frequency upgrades (7 minute peak headways, 4-5 mins with shuttle).	Yes		x	x	x	x
21-T10-084	Light Rail | Service Frequency Boost | SFMTA | Muni Forward ("Core Capacity")	This program includes funding to implement improvements to Muni's existing N-line, F-line and E-line service. Improvements include the SFMTA Train Control Upgrade program, fleet expansion for light rail vehicles, Muni Forward transit priority infrastructure and frequency upgrades (N-line 4 minute peak headways, F-line 4 minute peak headways and E-line 12 minute peak headways).	Yes			x	x	x
21-T10-085	Light Rail | Grade Separations & Modernization | VTA | Downtown San Jose	This program includes funding to implement improvements to VTA's existing light rail service in Downtown San Jose. Improvements include grade separation to create a subway between Diridon Station and Civic Center Station and frequency upgrades (7.5 minute peak headways).	Yes					x
21-T10-086	Light Rail | Grade Separations & Modernization | VTA | North San Jose	This program includes funding to implement improvements to VTA's existing light rail service. Improvements include grade separations between Civic Center Station and Baypointe and frequency upgrades (7.5 minute peak headways).	Yes					x
21-T10-087	Light Rail | Service Expansion | VTA | to Eastridge	This program includes funding to extend VTA's existing Orange Line service from Alum Rock Station to the Eastridge Transit Center. Improvements include two new stations and elevated structures.	Yes			x	x	x
21-T10-088	Light Rail | Service Expansion | VTA | Stevens Creek Blvd	This program includes funding to implement new LRT service along Stevens Creek Blvd between De Anza College and Baypointe. Improvements include eight new stations, three-car trains and frequency upgrades (10 minute peak headways).	Yes					x
21-T10-089	Light Rail | Service Expansion | VTA | to Vasona	This program includes funding to extend VTA's existing Green Line service from Winchester Station to Vasona Junction. Improvements include two new stations, one infill station and three-car trains.	Yes				x	x

RTPID	Title	Scope	Regionally-Significant Elements[1]	Known Regionally-Significant Elements	Analysis Years[2]			
					2025	2030	2040	2050
21-T10-090	Automated People Mover | Service Expansion | VTA | Mineta San Jose International Airport Connector Automated People Mover	This program includes funding to implement a new automated people mover service between San Jose International Airport and Diridon Station (5 minute all-day headways).	Yes				x	x
21-T10-091	Congestion Pricing | Downtown San Francisco	This program includes funding to implement cordon-based congestion pricing for vehicles leaving and entering downtown San Francisco. Improvements include street improvements to support transit operations and cycling and pedestrian safety; frequency improvements on various Muni/SamTrans routes; transit signal priority; and dedicated bus lanes.	Yes			x	x	x
21-T10-092	Congestion Pricing | Treasure Island	This program includes funding to implement cordon-based congestion pricing for vehicles leaving and entering Treasure Island. Improvements include Muni bus frequency upgrades; free shuttles; a new ferry terminal; new ferry service between Treasure Island and the San Francisco Ferry Building (30 minute peak headways); and new AC Transit express bus service to Oakland (10 minute peak headways).	Yes				x	x
21-T10-093	Other Investments to Enhance Local Transit Frequency, Capacity & Reliability | Regional	This program includes funding to implement other programmatic investments to enhance local transit frequency, capacity and reliability. This program generally implements county, transit agency, and other local programs and initiatives to make bus and light rail travel faster and more reliable. Improvements include fleet and facilities expansions; transit corridor improvements; and transit station improvements. Example investments include implementation of SFMTA's bus and facility expansion (Core Capacity) and Parkmerced Transportation Improvements; and Santa Clara County's High-Capacity Transit Corridors program, SR-85 Corridor Improvements, and Downtown Coordinated Area Plan and Transit Center Improvements.	Yes	Brentwood Intermodal Transit Center (CC); SR-29/Imola Park and Ride, Transit Signal Priority (NAP); Fairgrounds Dr Park and Ride (SOL)	x	x	x	x
				Oakley Park and Ride (CC)		x	x	x
				Park and Rides (NAP)			x	x
21-T11-094	Ferry | Service Frequency Boost | GGBHTD | Larkspur-San Francisco	This program includes funding to implement new ferry service between Larkspur and San Francisco Mission Bay (80 minute peak headways); and improvements to existing ferry service between Larkspur and San Francisco, including frequency upgrades (20-25 minute peak headways).	Yes		x	x	x	x
21-T11-095	Ferry | Service Frequency Boost | WETA	This program includes funding to implement improvements to existing ferry service between the San Francisco Ferry Building and Alameda/Oakland, Harbor Bay, Vallejo, Richmond and South San Francisco, including frequency upgrades (15-30 minute peak headways).	Yes	Alameda/Oakland and Harbor Bay (ALA); Vallejo (SOL); South San Francisco (SM)	x	x	x	x
				Richmond (CC)		x	x	x
21-T11-096	Ferry | Service Expansion | WETA | Berkeley-San Francisco	This program includes funding to implement new ferry service between San Francisco and Berkeley, including a new terminal in Berkeley (30 minute peak headways).	Yes			x	x	x
21-T11-097	Ferry | Service Expansion | WETA | San Francisco Ferry Building-Mission Bay	This program includes funding to implement new ferry service between the San Francisco Ferry Building and Mission Bay, including a new terminal in Mission Bay (20 minute peak headways).	Yes			x	x	x
21-T11-098	Ferry | Service Expansion | WETA | Redwood City-San Francisco-Oakland	This program includes funding to implement new ferry service between Oakland, San Francisco and Redwood City, including a new terminal in Redwood City (30 minute peak headways).	Yes			x	x	x
21-T11-099	Ferry | Service Expansion | Private Service | Antioch-Martinez-Hercules-San Francisco	This program includes funding to implement new privately operated ferry service between San Francisco and Antioch, Martinez and Hercules, including new ferry terminals (2-5 peak trips per day).	Yes			x	x	x
21-T11-100	Hovercraft | Service Pilot | Private Service | Foster City-San Francisco	This program includes funding to implement new hovercraft service, as a pilot, between Foster City and San Francisco, including two basic hoverports (30 minute peak headways).	Yes		x	x	x	x
21-T11-101	Rail | Modernization & Electrification | Caltrain/High Speed Rail | San Francisco to San Jose	This program includes funding to implement improvements to the Caltrain/High-Speed Rail Corridor. Improvements include corridor electrification between San Francisco and Tamien station in San Jose and frequency upgrades (6 trains per hour per direction in peak).	Yes		x	x	x	x
21-T11-102	Rail | Modernization & Electrification | Caltrain/High Speed Rail | San Jose to Pacheco Pass	This program includes funding to implement improvements to the Caltrain/High-Speed Rail Corridor. Improvements include corridor electrification south of Tamien station in San Jose and grade separations and other modernization improvements that serve the dual purpose of connecting High Speed Rail to the Bay Area and improving the Caltrain system. Improvements could be on the Union Pacific right-of-way between San Jose and Gilroy when High Speed Rail reaches an agreement for purchase or use of that corridor, or potentially on the Pacheco Pass corridor when a full funding plan is developed for the High Speed Rail connection to the Central Valley.	Yes				x	x
21-T11-103	Rail | Grade Separations & Modernization | Caltrain/High Speed Rail	This program includes funding to implement improvements to the Caltrain/High-Speed Rail Corridor. Improvements include grade separations funded by Santa Clara County's Measure B and San Mateo County's Measure A, as well as future grade separations and other modernization improvements within the Bay Area's urban core that serve the dual purpose of connecting High Speed Rail to the Bay Area and improving the Caltrain system.	Yes				x	x
21-T11-104	Rail | New Station | BART | Irvington Station	This program includes funding to implement a new BART rail station at Irvington in Fremont, including a park-and-ride facility and complementary route changes to existing AC Transit bus service.	Yes			x	x	x

RTPID	Title	Scope	Regionally-Significant Elements[1]	Known Regionally-Significant Elements	Analysis Years[2] 2025	2030	2040	2050
21-T11-105	Rail | Service Frequency Boost | ACE | System	This program includes funding to implement improvements to existing ACE service between San Joaquin County and San Jose, including frequency upgrades (8 daily roundtrips).	Yes	5 daily roundtrips	x	x	x	x
				6 daily roundtrips		x	x	x
				7 daily roundtrips			x	x
				8 daily roundtrips				x
21-T11-106	Rail | Service Frequency Boost | BART | System ("Core Capacity")	This program includes funding to implement improvements to existing BART service, including frequency upgrades (12 minute peak headways).	Yes			x	x	x
21-T11-107	Rail | Service Frequency Boost | Caltrain | System	This program includes funding to implement improvements to existing Caltrain rail service between San Francisco and San Jose, including frequency upgrades (8 trains per hour per direction in peak).	Yes				x	x
21-T11-108	Group Rapid Transit | Service Expansion | Redwood City-Newark ("Dumbarton Rail")	This program includes funding to implement new group rapid transit service between Redwood City and Newark, including seven new stations (1 minute peak headways).	Yes				x	x
21-T11-109	Rail | Service Expansion | BART | to Santa Clara ("Silicon Valley Phase II")	This program includes funding to extend BART's existing Green Line and Orange Line rail services from Berryessa to Santa Clara, including four new stations and park-and-ride facilities.	Yes				x	x
21-T11-110	Rail | Service Expansion | Caltrain/High Speed Rail | to Downtown San Francisco ("DTX")	This program includes funding to extend Caltrain rail service from 4th St/Townsend St in San Francisco to the Salesforce Transit Center in downtown San Francisco, including two new stations.	Yes			x	x	x
21-T11-111	Rail | Service Expansion | Capitol Corridor | to Coast Subdivision ("South Bay Connect")	This program includes funding to implement improvements to existing Capitol Corridor rail service between Oakland and Newark/Fremont. Improvements include relocation of rail service between Oakland Coliseum and Newark from the Niles Subdivision to the Coast Subdivision, one new rail station, one new in-line intermodal bus facility, and enhanced park-and-ride facilities.	Yes			x	x	x
21-T11-112	Rail | Service Expansion | Oakland-San Francisco ("Link21")	This program includes funding to implement Link21, providing new transbay rail service between San Francisco and Oakland, including new stations in the East Bay and San Francisco (10 trains per hour per direction in peak).	Yes					x
21-T11-113	Rail | Service Expansion | SMART | to Windsor	This program includes funding to extend SMART rail service from the Sonoma County Airport in Santa Rosa to Windsor.	Yes			x	x	x
21-T11-114	Rail | Service Expansion | San Joaquin County-Dublin/ Pleasanton ("Valley Link")	This program includes funding to implement new rail service between San Joaquin Valley and the Dublin/Pleasanton BART station, including three new stations within Alameda County and three-car trains (12 minute peak headways).	Yes			x	x	x
21-T11-115	Other Investments to Expand & Modernize the Regional Rail Network | Regional	This program includes funding to implement other programmatic investments to expand and modernize the regional rail network. This program generally implements county, transit agency and other local programs and initiatives to make rail and ferry travel faster and more reliable. Improvements include fleet and facilities expansion; track and structures; train control; traction power; and stations or terminals. Example investments include BART's System Expansion and Capacity Improvements program, Transit Operations Facility, Bay Fair Connection, Rail Vehicle Replacement, and Capacity, Access and Parking Improvements program; Alviso Wetlands Doubletrack; Millbrae SFO Guideway improvements; and station improvements at Mountain View Transit Center, San Jose Diridon Station, and Redwood City Transit Center.	Yes	Oakley Amtrak Train Platform (CC)	x	x	x	x
				Hercules Train Station (CC); San Rafael Transit Center (MRN)		x	x	x
21-T11-201	Rail | New Station | SMART | North Petaluma Station	This program includes funding to implement a new SMART rail station at Corona Road in Petaluma, including a park-and-ride facility.	Yes			x	x	x
21-T11-202	*Rail | Service Expansion | SMART | to Healdsburg*	*This program includes funding to extend SMART rail service from Windsor to Healdsburg.*	*Yes*			*x*	*x*	*x*

RTPID	Title	Scope	Regionally-Significant Elements[1]	Known Regionally-Significant Elements	Analysis Years[2]			
					2025	2030	2040	2050
21-T12-116	Express Lanes | Regional	This program includes funding to implement express lanes through HOV lane conversions on I-80 (ALA, CC), I-280 (SCL), I-680 (CC), I-880 (SCL), US-101 (SCL), SR-4 (CC), SR-84 (ALA), SR-85 (SCL), SR-87 (SCL), and SR-92 (ALA); partial HOV lane conversions on I-80 (SOL), I-280 (SF), I-680 (CC), and US-101 (SF); freeway lane conversions on I-80 (SOL), I-280 (SCL), I-580 (ALA), I-680 (SCL), and I-880 (ALA); new lanes on I-80 (SOL), I-680 (ALA, CC), I-880 (ALA), and US-101 (SM); new dual lanes with HOV lane conversions on SR-85 (SCL); and new dual lanes on US-101 (SCL).	Yes	HOV lane conversions on US-101 (SCL), SR-85 (SCL); partial HOV lane conversions on I-80 (SOL); new dual lanes on US-101 (SCL)	x	x	x	x
				HOV lane conversions on I-80 (ALA, CC), I-680 (CC), I-880 (SCL), SR-4 (CC), SR-87 (SCL); partial HOV lane conversions on I-280 (SF), I-680 (CC), US-101 (SF); new lanes on I-680 (ALA), I-880 (ALA), US-101 (SM)		x	x	x
				HOV lane conversions on I-80 (ALA), I-280 (SCL), SR-84 (ALA), SR-92 (ALA); freeway lane conversions on I-80 (SOL), I-280 (SCL), I-580 (ALA), I-680 (SCL); new lanes on I-80 (SOL), I-680 (ALA); and new dual lanes with HOV lane conversions on SR-85 (SCL); new dual lanes on US-101 (SCL)			x	x
				freeway lane conversions on I-880 (ALA)				x
21-T12-117	Express Bus | Service Expansion | GGBHTD	This program includes funding to implement improvements to existing express bus service along US-101 and I-580, including frequency upgrades (20-40 minute peak headways on routes 4, 18, 27, 101, 40X and 56X).	Yes		x	x	x	x
21-T12-118	Express Bus | Service Expansion | NVTA	This program includes funding to implement express bus enhancements between Napa (Redwood Park-and-Ride) and the Vallejo Ferry Terminal. Improvements include bus-on-shoulder facilities.	Yes			x	x	x
21-T12-119	Express Bus | Service Expansion | SamTrans	This program includes funding to implement new express bus service along US-101 and I-280 (on express lanes where available) from Foster City, San Mateo and Burlingame to Downtown San Francisco; from San Mateo and Palo Alto to Western San Francisco; and from San Bruno to Sunnyvale. Improvements include park-and-ride facilities, ramp improvements and bus stop improvements (20 minute peak headways).	Yes			x	x	x
21-T12-120	Express Bus | Service Expansion | AC Transit | Transbay Corridor	This program includes funding to implement improvements to existing express bus service along I-80, I-580 and I-880 (on express lanes where available). Improvements include frequency upgrades (15 minute peak headways on routes F, O, P, J, V and L) and planning for express bus expansion throughout the inner East Bay.	Yes					x
21-T12-121	Express Bus | Modernization | I-80	This program includes funding to implement new express bus service along I-80 (on express lanes where available) between Vallejo and Downtown Oakland, including park-and-ride facilities (15 minute peak headways).	Yes			x	x	x
21-T12-122	Express Bus | Service Expansion | I-680	This program includes funding to implement new express bus service along I-680 (on express lanes where available) between Martinez and San Jose (20 minute peak headways). Improvements include bus-on-shoulder and park-and-ride facilities.	Yes			x	x	x
21-T12-123	Express Bus | Service Expansion | SFMTA | US-101 & I-280	This program includes funding to implement improvements to existing express bus service along US-101 and I-280 (on express lanes where available), including frequency upgrades (10 minute peak headways on routes 8BX and 14X).	Yes			x	x	x
21-T12-124	Express Bus | Modernization | US-101	This program includes funding to implement improvements to existing express bus service along US-101 between Novato and San Rafael, including bus-on-shoulder facilities.	Yes			x	x	x
21-T12-125	Express Bus | Service Expansion | SolTrans	This program includes funding to implement improvements to existing regional bus service. Improvements include frequency upgrades (15 minute peak headways), transit signal priority, adaptive signal timing and ramp metering.	No					
21-T12-126	Express Bus | Service Expansion | ReX (Basic) | Blue Line (San Francisco to San Jose)	This program includes funding to implement new express bus service along US-101, SR-85 and I-280 (on express lanes where available) between San Francisco (Salesforce Transit Center) and San Jose (Diridon Station). Improvements include high-frequency service (10 minute peak headways) and station area amenities like upgraded local bus stops, taxi/TNC loading zones, and improved bicycle/pedestrian infrastructure.	Yes		x	x	x	x
21-T12-127	Express Bus | Service Expansion | ReX (Basic) | Red Line (Oakland to Redwood City)	This program includes funding to implement new express bus service along I-580, I-238, I-880, SR-84 and US-101 (on express lanes where available) between Downtown Oakland (19th St BART Station) and Redwood City (Caltrain Station). Improvements include high-frequency service (10 minute peak headways) and station area amenities like upgraded local bus stops, taxi/TNC loading zones, and improved bicycle/pedestrian infrastructure.	Yes				x	x
21-T12-128	Express Bus | Service Expansion | ReX (Premium) | Green Line (Vallejo to SFO Airport)	This program includes funding to implement new express bus service along I-80, I-280 and US-101 (on express lanes where available) between Vallejo and San Francisco International Airport. Improvements include high-frequency service (10 minute peak headways); capital improvements such as in-line bus stations on freeways and arterials; and station area amenities like upgraded local bus stops, taxi/TNC loading zones, and improved bicycle/pedestrian infrastructure.	Yes			x	x	x
21-EN01-129	Sea Level Rise Adaptation Infrastructure | SR-37	This program includes funding to implement adaptation infrastructure along the SR-37 corridor from Novato to Vallejo. This program includes actions such as the elevation of critical infrastructure.	No					

RTPID	Title	Scope	Regionally-Significant Elements[1]	Known Regionally-Significant Elements	Analysis Years[2] 2025	2030	2040	2050
21-EN01-130	Sea Level Rise Adaptation Infrastructure | Regional	This program includes funding to implement adaptation infrastructure in locations that are forecasted to be permanently inundated with two feet of sea level rise by 2050, providing protection from king tides and storms. This program includes actions such as the elevation of critical infrastructure and implementation of ecotone levees, traditional levees, sea walls, and marsh restoration and adaptation. Examples of adapting critical transportation infrastructure include I-880 (ALA), SR-84 (ALA), I-580/US-101/SMART (MRN), BART (MUL), SR-237/VTA (SCL), and US-101 (SM).	No					
21-EN08-131	Clean Vehicle Initiatives | Regional	This program includes funding to support the adoption and use of clean vehicles, which include more fuel-efficient vehicles and electric vehicles, through purchase incentives and deployment of charging and fueling infrastructure, in partnership with the Air District and the state. These investments would expand existing strategies in MTC's Climate Initiatives Program, which include a vehicle buyback & electric vehicle incentive program; a regional electric vehicle charger network; a clean vehicle feebate program; as well as new requirements for the electrification of Transportation Network Company vehicles and autonomous vehicles.	No					
21-EN09-132	Regional Transportation Demand Management Initiatives | Regional	This program includes funding to support transportation demand management programs through MTC's Climate Initiatives Program, including a wide range of programs that discourage single-occupancy vehicle trips and support use of other travel modes. Programs include the Bay Area Commuter Benefits Program, vanpool programs, bikeshare and carshare services, targeted transportation alternatives programs, and a regional parking fee program.	No					

Notes:

(1) Regionally-significant is defined as a project which serves regional transportation needs and would normally be included in the modeling of a metropolitan area's regional transportation network.

(2) For this conformity analysis, the analysis years are 2025, 2030, 2040 and 2050 for the 2008 and 2015 ozone and 2006 PM2.5 standards.

Appendix D

Plan Bay Area 2050: Forecasting and Modeling Report

PLAN BAY AREA 2050

FORECASTING AND MODELING REPORT

OCTOBER 2021

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Executive Summary

This report presents a technical overview of the forecasting and modeling processes performed in support of the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission's (MTC) Plan Bay Area 2050. The plan included several phases of modeling and analysis (described in detail in Chapter 1. This report focuses primarily on the later phases of the planning process, the Final Blueprint and Environmental Impact Report (EIR) analyses, as these phases built upon and refined work from prior phases like Horizon and the Draft Blueprint. The report includes details on each of the modeling components that are used to analyze the plan strategies.

The first step in the modeling process is the development of the **Regional Growth Forecast**, which uses the Regional Economic Models, Inc. (REMI) Policy Insight+ (or PI+) tool to forecast the growth in jobs by industry, housing units and population in the Bay Area. Custom inputs and adjustments to the model are described in detail in Chapter 2, as well as the post processes which derive household size and income distributions from this high-level Regional Growth Forecast. The second step in the modeling process is the application of the **Land Use Model**, which is used to forecast that regional growth in jobs and households at more specific geographies — jurisdictions and travel analysis zones — within the Bay Area. MTC and ABAG use Bay Area UrbanSim 2 (BAUS2) for this analysis, which is a custom variant of the UrbanSim model with additional features developed for policy priorities in the Bay Area. The third step in the modeling process is the application of the **Travel Model**, which simulates the travel of each forecasted Bay Area resident on an average weekday in a given model year as they travel to their workplace and other destinations using the planned transportation infrastructure. The travel modeling process includes a forecast of travel by different modes of transportation and analysis of greenhouse gas emissions generated from the vehicle miles traveled.

There are two additional data exchanges between these modeling components (described in more detail in the **Model System Overview**). First, staff incorporates feedback from the Land Use Model analysis into the Regional Growth Forecast to capture the effects of strategies that affect housing supply and prices as well as job locations and type; this feedback is new to the process and was not included in previous long-range plans. Second, staff incorporates feedback from the Travel Model analysis into the Land Use Model by feeding back measures of accessibility from the travel model into BAUS2. This means that transportation strategies, as well as overall traffic congestion, affecting accessibility can affect the value of commercial and residential development.

For each of these modeling tools, the respective section in the report describes the modeling methodology, including input assumptions inherent to all scenarios. Each section then includes details about how the strategies that comprise the Plan and the EIR Alternatives are represented in the modeling process. Finally, each section describes some high-level findings.

Between 2015 and 2050, the region's employment is projected to grow by 1.4 million to just over 5.4 million total jobs. Population is forecasted to grow by 2.7 million people to 10.3 million. This population will comprise over 4.0 million households, for an increase of nearly 1.4 million households from 2015. At a more local level, the Plan focuses that growth in both Transit-Rich Areas and High-Resource Areas while improving the jobs-housing balance in the region's most populous counties. The Plan also improves non-automobile mode shares, with substantial increases in transit boardings, while reducing vehicle miles traveled and greenhouse gas emissions per capita.

Chapter 1 | Introduction

Plan Bay Area 2050 modeling analysis was performed in several phases. As part of the **Horizon Initiative's Futures Planning**,[1] staff developed and studied three divergent what-if scenarios called "Futures" to identify how a range of forces could potentially shape the Bay Area. Futures Planning transcended previous scenario planning efforts by including a greater variety of political, technological, economic, and environmental challenges that will impact Bay Area residents.

Using the futures defined and modeled during Futures Planning, staff conducted the **Project Performance Assessment**[2] to understand how major transportation investments would fare in an uncertain future. By modeling major transportation projects and strategies within the context of the divergent futures, the Project Performance Assessment explored synergies between individual projects and strategies More information on the Project Performance Assessment process can be found in the Plan Bay Area 2050 Performance Report.

Before embarking on the core modeling effort of Plan Bay Area 2050, one further phase of modeling was performed: the **Incremental Progress Assessment**. Requested by the California Air Resources Board[3], the Incremental Progress Assessment enables "a normalized comparison, to the greatest degree feasible, of the previously submitted RTP/SCS [Regional Transportation Plan/Sustainable Communities Strategy] to the proposed RTP/SCS". This involved applying current exogenous variables and the updated modeling framework to the previous plan inputs – in this case, using the land use distribution and transportation networks from Plan Bay Area 2040. This assessment served to show the size of the region's greenhouse gas emissions reduction gap with respect to regional targets.

Building upon the earlier steps, the modeling team began the technical analysis for the plan, and the first step was the development of the **Regional Growth Forecast**. That is, before developing a localized growth pattern as part of the plan, a long-range regional growth forecast must be developed to identify the number of people, jobs and housing units required through 2050. The findings from this analysis — that the Bay Area must accommodate 1.5 million new homes (necessary to house the anticipated expanded population and address overcrowding) and 1.4 million new jobs — underpinned the remaining phases of modeling.

Informed by the results of the Horizon Initiative's Futures Planning and the Project Performance Assessment, 25 transportation, housing, economic and environmental strategies, alongside an expanded set of Growth Geographies, were developed and analyzed in the **Draft Blueprint**. After feedback from stakeholders and the public following findings from the Draft Blueprint analysis, these strategies were then refined and expanded into a set of 35 Plan strategies through the Final Blueprint phase. Throughout the Plan Bay Area 2050 process, a strategy is defined as a public policy or set of investments that can be implemented in the Bay Area at the city, county, regional or state level over the next 30 years. The Blueprint integrated critical strategies to address regional challenges, such as the Bay Area's severe and longstanding housing crisis. With infrastructure investments in walking, biking and public transportation — as well as critical sea level protections designed to keep most Bay Area communities from flooding through 2050 — the Blueprint made meaningful progress toward the adopted Plan Bay Area 2050 vision and advanced critical climate and equity goals. Additionally, three additional alternatives were developed for analysis in the Environmental Impact Report: the **EIR Alternatives** (including the No Project Alternative).

In the sections that follow, input assumptions and methodology primarily refer to the modeling done for the Final Blueprint, hereby referred to as the **Plan** and **EIR Alternatives**.

1 See more information about Horizon and Futures Planning: https://www.planbayarea.org/2050-plan/horizon.

2 See more information about the Horizon/Plan Bay Area 2050 Project Performance Assessment: https://mtc.ca.gov/our-work/plans-projects/horizon/project-performance-assessment.

3 See CARB's Final Sustainable Communities Strategy Program and Evaluation Guidelines: https://ww2.arb.ca.gov/sites/default/files/2019-11/Final%20SCS%20Program%20and%20Evaluation%20Guidelines%20Report.pdf.

Consistency with the Regional Housing Needs Allocation

Plan Bay Area 2050 identifies Growth Geographies and strategies for the next 30 years, whereas the Regional Housing Needs Allocation is a short-to-medium term housing allocation process, distributing growth as assigned by California Housing and Community Development. While each process is subject to a different set of objectives established by state and/or federal law, Plan Bay Area 2050 contains a range of strategies that would bolster housing production and increase zoned capacity in identified Growth Geographies. The estimated impact of the full bundle of strategies is that by 2050, the region would have an additional 1.4 million households and 1.5 million housing units (see Table 8), well above the 441,000 housing-unit need identified for the 8-year period from 2023-2031. Given that Plan Bay Area 2050 accommodates more than three times the number of new housing units required in the next eight years, staff can confirm that Plan Bay Area 2050 identifies areas within the region "sufficient to house an eight-year projection of the regional housing need for the region."

Model System Overview

Analysis for Plan Bay Area 2050 involves a sequence of modeling tools used together to create and study the scenarios of interest. The Regional Growth Forecast is the first step, identifying how much the Bay Area might grow between the plan baseline year (2015) and the plan horizon year (2050), including population, jobs, households, and associated housing units. The location of these households and jobs are then projected on a more localized level throughout the Bay Area by the Land Use Model (Bay Area UrbanSim 2, hereby referred to as BAUS2), which represents the potential effects of land use strategies and infrastructure investments. These first two models each represent the entire sequence of years in five-year increments, starting with the plan baseline year and ending at the plan horizon year. Finally, the Travel Model is used to analyze an average weekday for a single given model year, simulating a day's worth of travel for each Bay Area resident given their daily activities and enabling staff to understand the effects of transportation strategies on daily vehicle miles traveled, transit ridership and active transportation.

The strategies that comprise the Plan and the EIR Alternatives are listed below, along with the modeling tools used to quantify them. The column with the heading "Off-Model" refers to analysis done to quantify the effects of these strategies outside of the other modeling tools. More detail on the off-model processes used to estimate greenhouse gas emissions can be found in the section Off-Model Calculations. Some strategies were represented consistently across the Plan and EIR Alternatives 1 and 2; these are noted as "Included in all EIR Alternatives except No Project." Some strategies are included in the different alternatives with different details depending on the alternative; these are noted as "Variants included in all EIR Alternatives (except No Project)." Further information about how the strategies are represented in the modeling tools can be found in the Strategy Implementation section within the larger section on that modeling tool.

Table 1. Strategy modeling tools

STRATEGY	EIR ALTERNATIVES	REMI	BAUS2	TM1.5	OFF-MODEL
Housing | Protect and Preserve Affordable Housing					
H1: Further Strengthen Renter Protections Beyond State Law	Included in all EIR Alternatives except No Project	-	✓	-	-
H2: Preserve Existing Affordable Housing	Variants included in all EIR Alternatives	✓	✓	-	-
Housing | Spur Housing Production for Residents of All Income Levels					
H3: Allow a Greater Mix of Housing Densities and Types in Growth Geographies	Variants included in all EIR Alternatives except No Project	✓	✓	-	-
H4: Build Adequate Affordable Housing to Ensure Homes for All	Variants included in all EIR Alternatives	✓	✓	-	-
H5: Integrate Affordable Housing into All Major Housing Projects	Included in all EIR Alternatives except No Project	✓	✓	-	-
H6: Transform Aging Malls and Office Parks into Neighborhoods	Variants included in all EIR Alternatives except No Project	✓	✓	-	-
Housing | Create Inclusive Communities					
H7: Provide Targeted Mortgage, Rental and Small Business Assistance to Equity Priority Communities	Variants included in all EIR Alternatives except No Project	-	-	-	✓
H8: Accelerate Reuse of Public and Community Land for Mixed-Income Housing and Essential Services	Variants included in all EIR Alternatives except No Project	✓	✓	-	-

STRATEGY	EIR ALTERNATIVES	REMI	BAUS2	TM1.5	OFF-MODEL
Economy | Improve Economic Mobility					
EC1: Implement a Statewide Universal Basic Income	Included in all EIR Alternatives except No Project	✓	-	-	✓
EC2: Expand Job Training and Incubator Programs	Included in all EIR Alternatives except No Project	✓	✓	-	-
EC3: Invest in High-Speed Internet in Underserved Low-Income Communities	Not modeled	-	-	-	-
Economy | Shift the Location of Jobs					
EC4: Allow Greater Commercial Densities in Growth Geographies	Variants included in all EIR Alternatives except No Project	-	✓	-	-
EC5: Provide Incentives to Employers to Shift Jobs to Housing-Rich Areas Well Served by Transit	Included in all EIR Alternatives except No Project	-	✓	-	-
EC6: Retain and Invest in Key Industrial Lands	Included in all EIR Alternatives except No Project	-	✓	-	-
EC7: Assess Transportation Impact Fees on New Office Developments	Included in EIR Alternative 1 only	-	✓	-	-
EC8: Implement Office Development Caps in Job-Rich Cities	Included in EIR Alternative 2 only	-	✓	-	-

STRATEGY	EIR ALTERNATIVES	REMI	BAUS2	TM1.5	OFF-MODEL
Transportation | Maintain and Optimize the Existing System					
T1: Restore, Operate and Maintain the Existing System	Variants included in all EIR Alternatives	✓	-	✓	-
T2: Support Community-Led Transportation Enhancements in Equity Priority Communities	Not modeled	-	-	-	-
T3: Enable a Seamless Mobility Experience	Included in all EIR Alternatives except No Project	-	-	✓	-
T4: Reform Regional Transit Fare Policy	Variants included in all EIR Alternatives except No Project	✓	-	✓	-
T5: Implement Per-Mile Tolling on Congested Freeways with Transit Alternatives	Included in all EIR Alternatives except No Project	✓	-	✓	-
T6: Improve Interchanges and Address Highway Bottlenecks	Variants included in all EIR Alternatives	✓	-	✓	-
T7: Advance Other Regional Programs and Local Priorities	Variants included in all EIR Alternatives	✓	-	✓	-
Transportation | Create Healthy and Safe Streets					
T8: Build a Complete Streets Network	Included in all EIR Alternatives except No Project	✓	-	✓	-
T9: Advance Regional Vision Zero Policy through Street Design and Reduced Speeds	Included in all EIR Alternatives except No Project	-	-	✓	-
Transportation | Build a Next-Generation Transit Network					
T10: Enhance Local Transit Frequency, Capacity and Reliability	Variants included in all EIR Alternatives	✓	-	✓	-
T11: Expand and Modernize the Regional Rail Network	Variants included in all EIR Alternatives	✓	-	✓	-
T12: Build an Integrated Regional Express Lanes and Express Bus Network	Variants included in all EIR Alternatives	✓	-	✓	-

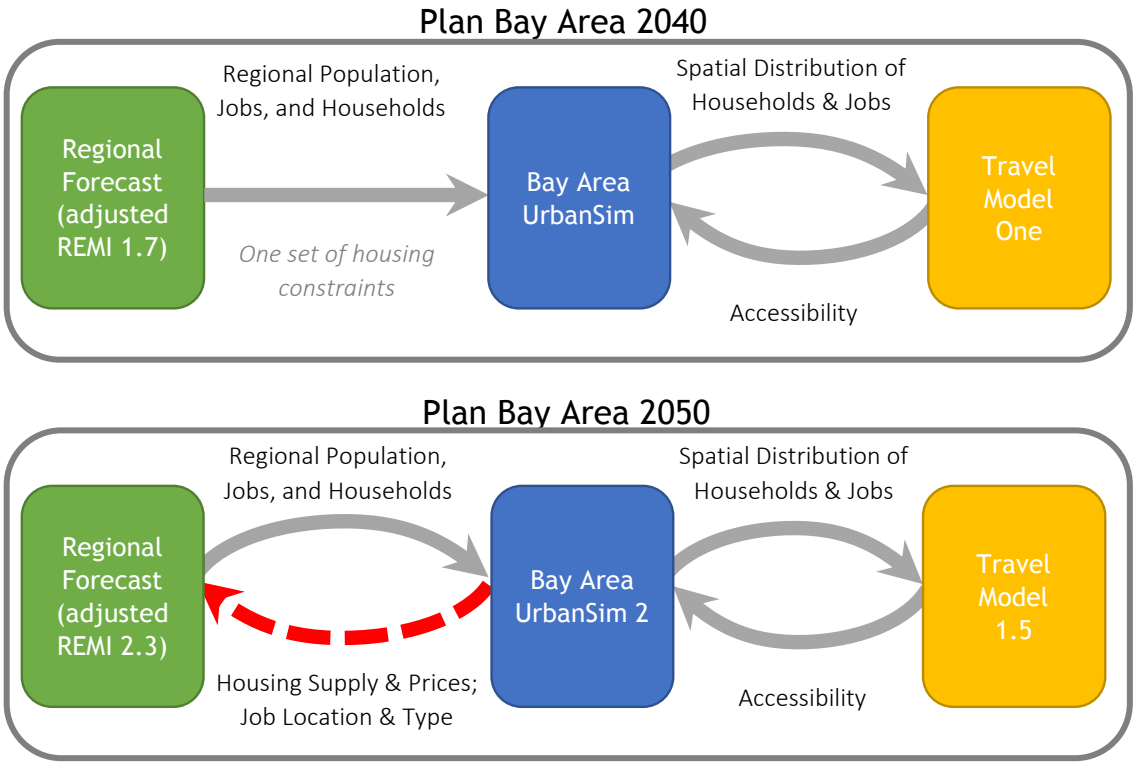
STRATEGY	EIR ALTERNATIVES	REMI	BAUS2	TM1.5	OFF-MODEL
Environment | Reduce Risks from Hazards					
EN1: Adapt to Sea Level Rise	Variants included in all EIR Alternatives	✓	✓	✓	-
EN2: Provide Means-Based Financial Support to Retrofit Existing Residential Buildings	Included in all EIR Alternatives except No Project	✓	-	-	✓
EN3: Fund Energy Upgrades to Enable Carbon-Neutrality in All Existing Commercial and Public Buildings	Included in all EIR Alternatives except No Project	-	-	-	✓
Environment | Expand Access to Parks and Open Space					
EN4: Maintain Urban Growth Boundaries	Variants included in all EIR Alternatives except No Project	-	✓		-
EN5: Protect and Manage High-Value Conservation Lands	Not modeled	-	-	-	✓
EN6: Modernize and Expand Parks, Trails and Recreation Facilities	Not modeled	-	-	-	✓
Environment | Reduce Climate Emissions					
EN7: Expand Commute Trip Reduction Programs at Major Employers	Included in all EIR Alternatives except No Project	-	✓	✓	-
EN8: Expand Clean Vehicle Initiatives	Included in all EIR Alternatives except No Project	-	-	-	✓
EN9: Expand Transportation Demand Management Initiatives	Included in all EIR Alternatives except No Project	-	-	✓	✓

Although these models are run in sequence, they are run multiple times and iteratively so that they interact with each other, and metrics produced by downstream models can factor into upstream models. For example, transportation strategies that affect travel accessibilities will affect land use outcomes because of the feedback from the Travel Model to Bay Area UrbanSim 2.

Regional Growth Forecast and Land Use Model Interaction

The Regional Growth Forecast, produced by MTC and ABAG staff using the Regional Economic Models, Inc. (REMI) demographic and economic model, and the land use model interact with each other in two ways. In previous plans, the Regional Growth Forecast identified the total amount of population, job, household, and housing unit growth, which was then forecast to grow in local areas using the Bay Area UrbanSim land use model based on strategies integrated into the plan.

Figure 1. Integrated model flow Plan Bay Area 2040 vs. Plan Bay Area 2050



The Bay Area's housing market is so far from equilibrium[4] that strategies to increase housing supply at all income levels (thereby lowering housing prices) would affect the location of firms, labor markets, households, housing markets, and city size.[5] Additionally, a housing market that is closer to equilibrium would be able to accommodate those priced out of the region into the megaregion and beyond, reducing in-commute need. To better capture the impact of changed local housing policies on regional housing prices and the overall regional growth trajectory, staff added a feedback link to the model flow, which would enable a more complete analysis of housing price outcomes. The new approach was informally referred to as the "Backward Arrow" during the Plan Bay Area 2050 process, shown in red in Figure 1 above.

To implement this feedback linkage, housing strategies were tested in Bay Area UrbanSim 2 to find a package to allow for the construction of sufficient low-income deed-restricted units and market-rate units by 2050 to drive down the housing cost to year 2000 levels. On the regional model side, staff worked within limitations of the REMI model; since it does not explicitly treat the count of housing units, the key lever used to represent the increase in housing supply was to adjust the model's representation of the region's housing prices relative to the nation. Therefore, staff adjusted the relative housing price and investment variables accordingly in REMI. Additionally, adjustments to headship rates and vacancy rates were made to reflect a healthier and more dynamic housing market to estimate household and housing unit numbers. These processes are discussed later in detail.

4 For further explanation, please see Edward Glaeser and Joseph Gyourko. "The Economic Implications of Housing Supply" NBER Working Paper No. 23833, September 2017.

5 For further explanation, please see Chang-Tai Hsieh and Enrico Moretti. "Housing Constraints and Spatial Misallocation" American Economic Journal: Macroeconomics. 2019, 11(2): 1–39.

Land Use Model and Travel Model Interaction

Bay Area UrbanSim 2 and Travel Model 1.5 work as a system to capture the interaction between transportation and land use. Accessibility to a variety of destinations and amenities is a key driver in both household and business location choice. For instance, households often prefer locations near employment, retail, and similar households but avoid other features such as industrial land use. Business preferences vary by sector with some firms looking for locations popular with similar firms (e.g., Silicon Valley) while others desire locations near an airport or university. In all cases, the accessibility between a given location in the region (defined as a transportation analysis zone or TAZ) and all other locations/TAZs is provided to BAUS2 by the Travel Model. This data represents overall regional accessibility for future years considering changing infrastructure and policy.

Moving in the other direction, BAUS2 provides the travel model with a projected land use pattern and spatial distribution of activities for each year into the future. This pattern includes the location of housing, jobs, and other activities that serve as the start and end locations for trips predicted by the travel model. This information is provided to the travel model at a TAZ level aggregation for each future year examined. Overall, the linkages between the two models allow land use patterns to evolve in relation to changes in the transportation system and for future travel patterns to reflect dynamic shifts in land use, thus representing long-term induced demand.

Forecast Modeling Suite

The Plan Bay Area 2050 Regional Growth Forecast identifies how much the Bay Area might grow between the plan baseline year (2015) and the plan horizon year (2050), including population, jobs, households, and associated housing units. The forecast also includes important components of that growth, including employment by sector, population by age and ethnic characteristics, and households by income level. These figures were then integrated into the Bay Area UrbanSim 2 land use model which explores how Plan strategies affect growth in households and employment at a local level.

The Plan Bay Area 2050 Regional Growth Forecast was primarily developed using the REMI (Regional Economic Models, Inc.) Policy Insight+ (or PI+) model version 2.3.1[6]; for the remainder of this report, REMI PI+ will be used interchangeably with REMI. The REMI PI+ model integrates into one package a dynamic accounting of the core components of the economy: industry structure and competitiveness relative to other regions, propensity to export, and population and labor market structure. The population is explicitly connected to industry growth and demand for labor, assuming that employment growth is a driving force of regional population and household growth, with migration increasing in times of strong employment growth. This is an updated version of the REMI PI+ model used to calculate the growth forecast for Plan Bay Area 2040, which used REMI PI+ version 1.7.8.

The model produces projections of population, employment, gross regional product, and labor force. To generate other key components of the Regional Growth Forecast, staff also developed a household model and a household income distribution model, built around the projections from the REMI analysis. Household projections are generated through a headship rate analysis. The household module uses the projected age and ethnic distribution of the adult population and a moving average of the percent in different age categories that are heads of household to project the number of households associated with demographic characteristics and size of the population.

The household income distribution analysis estimates the share of households in each of four mutually exclusive income groups, to coincide with analysis required in the transportation model. The share of households in low-, moderate-low-, moderate-high-, and high-income categories is estimated using a regression analysis which ties the share in each wage category with ethnic and age distribution, industry characteristics, relative housing prices, and per capita income.

Modeling Context

For decades, developing a Regional Growth Forecast has been a key element of the long-range transportation planning process for the Bay Area. However, in recent years, it has become apparent that critical issues need to be better addressed in the context of developing such a forecast.

The first is related to regional affordability. In Plan Bay Area 2040, it was estimated that the average share of lower-income household income spent on housing would rise by approximately 13 percentage points; this was due in part to the fact that regional housing strategies were limited in nature and affected only the geographic distribution of forecasted growth rather than overall level of housing growth in the Regional Growth Forecast itself. As part of this planning process, policymakers specifically asked “what it would take” to move the needle on affordability, but solutions for these affordability shortcomings were not identified in time for integration into that plan. Plan Bay Area 2050 presents an opportunity to integrate new housing strategies specifically designed to increase supply for all income levels — consistent with policymaker direction for Plan Bay Area 2050 — which will in turn contribute to a more affordable region and a slightly higher Regional Growth Forecast.

6 REMI PI+: https://www.remi.com/model/pi/.

The second is related to uncertainty. While required by statute, the creation of a single Regional Growth Forecast in prior cycles did not provide the opportunity to explore how different trajectories for regional growth would affect critical environmental, economic, and other goals. To address this gap, MTC and ABAG staff undertook the Horizon Initiative in 2018 and 2019, which explored not only how different growth trajectories would affect the region but also how the region could respond to those different trajectories through new strategies.

Both factors mean that developing the Regional Growth Forecast is a more policy-conscious effort, equally focused on contextual uncertainties as well as policy linkages and implications. Upon the kickoff of the Plan Bay Area 2050 cycle, staff accordingly worked with a technical advisory committee to make methodological refinements that incorporate lessons learned from both efforts. The methodology adopted by the ABAG Executive Board in September 2019 enables the Regional Growth Forecast to incorporate changes in strategies that would affect the level of growth in the region, while also affecting affordability, equity, economic mobility, and other critical outcomes.

MTC and ABAG staff developed a draft range for the Regional Growth Forecast forecasts based on the adopted methodology and sought feedback from technical stakeholders during winter 2020. The Final Regional Growth Forecast incorporates comments and feedback received; it also integrates the effects of key Plan strategies.

With the declaration of a public health emergency by the federal government on January 31, 2020, and shelter-in-place guidelines issued at the state- and countywide levels beginning in March 2020, it became clear that the virus would have a widespread impact on many facets of life, especially over the next one to ten years. The economic impact was recognized in February and March with stock markets declining and unemployment ticking upwards. Therefore, MTC and ABAG staff revised the forecast in April and May 2020, making changes to the employment numbers between 2020 and 2030 to reflect significant economic impacts from the coronavirus pandemic and the 2020 recession over the first ten years of the planning horizon; more details are provided below, in the section, Integrating COVID-19 Pandemic and Subsequent Recession. The revised Final Regional Growth Forecast was adopted in September 2020 with the approval of MTC Resolution No. 4437 and ABAG Resolution No. 16-2020.

REMI Modeling

The following sections first introduce the economic and demographic assumptions that underpin the Final Regional Growth Forecast, as well as adjustments made to the near-term forecast to integrate the impact of the recession spurred by the COVID-19 pandemic. This results in a "status quo" baseline forecast for the future of the Bay Area that reflects near-term economic impacts but does not fully accommodate regional growth in an affordable and equitable manner. The report then delves into how a selection of key strategies from the Plan were incorporated into the Final Regional Growth Forecast to meet the Plan's affordability goals.

Adjustments to REMI Baseline

Demographic Adjustments

Staff adjusted Hispanic international migration based on numbers from the most recent U.S. Census Bureau projections. Compared to Census projections, REMI PI+ 2.3.1 using default inputs (REMI Default) projects 42,000 more Hispanic international migrants in 2020. The difference decreases for the next 30 years, and by 2050, the REMI Default projection is just 1,000 higher than the Census (See Table 2).

Table 2. Hispanic international migration - Census vs REMI PI+ 2.3 default

	2020	2030	2040	2050
Census Hispanic	414,000	412,000	410,000	391,000
REMI Unadjusted Hispanic	456,000	431,000	415,000	392,000
Census Total	1,010,000	1,064,000	1,098,000	1,110,000
REMI Unadjusted Total	1,111,000	1,112,000	1,113,000	1,113,000

SOURCE: REMI PI+ 2.3.1; Census 2017 National Population Projections

Therefore, staff updated REMI's Hispanic international migration assumptions using Census 2020, 2030, and 2040 numbers and interpolated for the in-between years, as the Census trends more closely align with observed data in recent years. The gender and age distributions from REMI were used to produce detailed Hispanic international migration for all years between 2020 and 2050. Additionally, in conversation with the California Department of Finance (DOF) about REMI birth rates, DOF noted that REMI fertility rates are projected to be slightly higher, notably for Hispanic individuals (which could overstate births). REMI Default birth rates are higher than DOF estimates, although somewhat lower than rates found in earlier REMI versions. As a result, staff also reduced Hispanic birth rates at the national level by 20%, consistent with observations from a variety of sources that indicated slowing Hispanic birth rates throughout the country as well as in Mexico. This adjustment lowers the total national population in 2050 by less than 0.3%.

Economic Adjustments

At the national level, staff adjusted the employment growth downward for the data processing sector. Data processing (which includes data processing, hosting, and related services) is projected to grow by 136% between 2018 and 2050 in REMI Default for the nation. REMI Default projects the average annual growth rate for this sector for 2018-2028 to be 2.2%, slightly above the BLS 2018-2028 forecast (2.1%). However, after 2030, REMI Default projects an average annual growth rate of roughly 3% for the data processing sector. Staff adjusted data processing employment using the 2020-2030 annual average growth rate from REMI and assuming a constant growth rate after 2030, which lowers the national total employment slightly.

The REMI Default forecast estimates that the region's share of the U.S. employment and population will continue to grow. The share of U.S. data processing jobs was estimated to grow from 18.5% to 22.5% in 2050. However, this contrasts sharply with historic experience. Based on Bureau of Economic Analysis (BEA) data, the Bay Area's share of total U.S. employment, even at peak periods, has never been above 2.9% and has not reached that level since the early 1990s. Staff identified sector shares to adjust and their period of adjustment, and created new regional controls that keep the share of some sectors constant after 2025 and after 2040, as shown in Table 3.

Table 3. Sector share adjustments made to REMI

1. Sectors with share constant after 2025 (basic sectors):
   - Oil and gas extraction
   - Mining (except oil and gas)
   - Support activities for mining
   - Beverage and tobacco product manufacturing
   - Wholesale trade
   - Data processing, hosting, and related services; Other information services
   - Broadcasting, except Internet
   - Telecommunications
   - Professional, scientific, and technical services
   - Management of companies and enterprises
   - Administrative and support services
2. Sectors with share constant after 2040 (local serving):
   - Construction
   - Retail trade
   - Transit and ground passenger transportation
   - Monetary authorities - central bank; Credit intermediation and related activities
   - Securities, commodity contracts, other investments; Funds, trusts, other financial vehicles

SOURCE: ABAG, MTC, and Center for Continuing Study of the California Economy

Relative Housing Price Adjustment

In REMI, the relative housing price influences overall population levels because it factors into the relative wage levels of the region, net of housing costs. Higher relative prices will make the region less attractive to new workers and labor costs more expensive, all other things equal. REMI does not account for absolute levels for current and future prices but instead provides a measure of relative prices for regions compared to national levels. Staff looked at U.S. Census Bureau American Community Survey (ACS) median home prices and Zillow reported home and rental prices to determine if the REMI relative housing price index had accurately reflected the relative strength of the Bay Area housing market. Based on a review of ACS and Zillow data, staff determined that the price difference was not fully captured in the REMI index. REMI Default shows Bay Area prices ranging from 1.3 times the national level in Solano to 3.6 times the national level in San Francisco in 2018 – with a weighted average of 2.8. Using Zillow homeowner and renter indices, the weighted average of this aggregated series is 3.1, 11% above the REMI price index. Staff used this higher ratio for 2018 for each county and maintained this proportional higher price through 2050. This relative housing price was utilized for adjusting the REMI Default.

Table 4. Relative housing price comparisons - REMI, ACS, and Zillow*

	ACS RELATIVE HOME VALUE	ZILLOW ALL HOME INDEX	ZILLOW RENTAL INDEX	ZILLOW AVERAGE ALL HOME AND RENTAL	REMI	ZILLOW RELATIVE TO REMI
Alameda	4.4	3.6	1.9	2.7	2.5	1.1
Contra Costa	3.5	2.5	1.7	2.1	2.1	1.0
Marin	5.5	4.4	2.4	3.4	3.3	1.0
Napa	3.4	3.3	1.8	2.6	2.0	1.3
San Francisco	6.2	7.0	2.7	4.9	3.6	1.4
San Mateo	6.2	5.9	2.3	4.1	3.5	1.2
Santa Clara	5.7	4.7	2.1	3.4	3.1	1.1
Solano	2.3	1.8	1.3	1.5	1.3	1.2
Sonoma	3.4	2.9	1.7	2.3	2.0	1.2
Weighted Average	**4.8**	**4.0**	**2.2**	**3.1**	**2.8**	**1.1**

SOURCE: ABAG and MTC from REMI PI+ 2.3.1, calculations from data from the American Community Survey, and Zillow Home Value Index (2018, Bay Area Counties and U.S.), Zillow Rental Index (2018, Bay Area Counties and U.S.). Weighted average calculated using California Department of Finance housing unit numbers.

***NOTE:** Staff used Zillow index only because it includes detailed rental information. ACS data was shown for reference in this table.

Integrating COVID-19 Pandemic and Subsequent Recession

While there was limited data at the time of the forecast revision, staff used the available information and consulted with, or reviewed, the work of other forecasters, including but not limited to estimates from the Congressional Budget Office, the UCLA Anderson Forecast (March 16th 2020 report), and the University of Michigan Research Seminar in Quantitative Economics (RSQE) forecast report (March 2020 release). Staff determined that while employment totals would be impacted significantly in the near term, the direct impact on population and households would be more limited as COVID-19 impacts are both nationwide and global.

To represent the near-term economic impacts of the recession caused by the pandemic along with the anticipated subsequent recovery, staff made changes to employment projections in the Plan Bay Area 2050 Final Growth Forecast for the years between 2020 and 2030 in REMI. The regional forecast is meant to represent a moderate growth trend over a thirty-year period and does not typically represent economic cycles. Even recognizing the unprecedented stimulus measures that have been put into place, the recovery from this event is likely to go on for several years. Over the longer term, the Bay Area is expected to return to the previously forecasted trend line by 2030.

Strategy Implementation

The Plan integrated critical strategies to address regional challenges, including the region's longstanding affordability crisis. These strategies would have implications for the level of growth in the region. For example, making the region more affordable would attract more residents who may have otherwise been priced out of the Bay Area. Similarly, the investment associated with building more housing would create more jobs and labor demand. Recognizing these dynamics, based off the baseline forecast, staff sought to incorporate the impacts of the strategies adopted for the Final Blueprint into the Regional Growth Forecast. These strategies impact all the models used, but in this section, the focus is on the REMI PI+ model. Ultimately, not every strategy is anticipated to have significant impacts on the Regional Growth Forecast; many strategies only need to be incorporated in BAUS2 and/or Travel Model 1.5. After reviewing the 35 strategies, staff determined that the following strategies would likely influence the Regional Growth Forecast, with impacts ranging widely across strategies (Table 5).

Table 5. Strategies incorporated in Final Regional Growth Forecast

CATEGORY	STRATEGY	MODEL INPUT ADJUSTMENTS
TRANSPORTATION	Restore, Operate and Maintain the Existing System	Increase investment in construction sector and government administrative spending
	Improve Interchanges and Address Highway Bottlenecks	
	Advance Other Regional Programs and Local Priorities	
	Build a Complete Streets Network	
	Enhance Local Transit Frequency, Capacity and Reliability	
	Expand and Modernize the Regional Rail Network	
	Build an Integrated Regional Express Lanes and Express Bus Network	
	Reform Regional Transit Fare Policy	Increase disposable income (consumer spending)
	Implement Per-Mile Tolling on Congested Freeways with Transit Alternatives	Decrease disposable income
HOUSING	Allow a Greater Mix of Housing Densities and Types in Growth Geographies	Decrease housing costs, increase investment in construction sector
	Accelerate Reuse of Public and Community Land for Mixed-Income Housing and Essential Services	
	Transform Aging Malls and Office Parks into Neighborhoods	
	Preserve Existing Affordable Housing	Increase disposable income (consumer spending) and government administrative spending
	Build Adequate Affordable Housing to Ensure Homes for All	
	Integrate Affordable Housing Into All Major Housing Projects	
ECONOMY	Implement a Statewide Universal Basic Income[7]	Adjust income distribution results outside REMI model
	Expand Job Training and Incubator Programs	Increase investment in manufacturing and education sectors
ENVIRONMENT	Adapt to Sea Level Rise	Increase investment in construction sector
	Provide Means-Based Financial Support to Retrofit Existing Residential Buildings	

7 The UBI strategy replaced the Childcare Subsidy strategy after the Draft Blueprint and the latter was modeled as part of the Regional Growth Forecast. However, staff expects the net impact of the Childcare Subsidy strategy on the region's economy and demographics to be negligible.

Transportation Strategies

The economic impact of transportation investments generally fits into two categories: (1) direct effects from spending — in operations and maintenance (O&M)[8] and construction of new projects – as well as multiplier effects; (2) enhanced economic competitiveness through improved network efficiency and congestion reduction (which reduces cost for businesses), as well as improved air quality and quality of life. While staff recognized the importance of capturing the comprehensive effects of the proposed transportation strategies, the forecast only considered the impact in the first category due to limited model capacities. Therefore, the forecast reflects a more conservative estimate of the transportation spending in the plan.

Seven of the transportation strategies include major investments in transportation infrastructure. These strategies were represented in the Regional Growth Forecast as increased demand within the construction industry and increased government administrative spending. The strategies were:

- T1: Restore, Operate and Maintain the Existing System
- T6: Improve Interchanges and Address Highway Bottlenecks
- T7: Advance Other Regional and Local Transit Projects
- T8: Build a Complete Streets Network
- T10: Enhance Local Transit Frequency, Capacity and Reliability
- T11: Expand and Modernize the Regional Rail Network
- T12: Build an Integrated Regional Express Lanes and Express Bus Network.

For the transportation strategy T4: Reform Regional Transit Fare Policy, staff anticipated that a $10 billion means-based fare discount, funded through existing transportation revenues, would increase transit subsidies, and allow for consumer spending reallocation (i.e., money saved would be spent on other commodities). In contrast, staff represented strategy T5: Implement Per-Mile Tolling on Congested Freeways with Transit Alternatives as a reduction in personal income.

Housing Strategies

Housing strategies are designed to spur housing production as well as to protect and preserve affordable housing. Boosting housing capacity is addressed through strategic zoning changes, seeking to support the development of housing throughout the region where appropriate. Staff assumed these zoning change-related strategies would allow and encourage private construction investment for market rate housing, which would help the region reach the goal of driving down its 2050 average housing cost, affecting the overall regional growth trajectory significantly. As mentioned in the Regional Growth Forecast and Land Use Model Interaction section, this was modeled in REMI by adjusting the relative housing price variable downward starting in 2022 so that by 2050 Bay Area home price relative to the U.S. would be back to 2001 levels.[9] Additionally, the level of residential construction investment was increased in the model based on expected housing development. Staff estimated the set of strategies to fund affordable housing protection, preservation, and production would allow consumer spending reallocation (95% of the subsidy provided) and increase government administrative spending (remaining 5%).

Economic Strategies

Economic strategies are primarily focused on improving economic mobility and shifting the location of jobs. Two of the strategies that are designed to improve economic mobility are included in the regional economic model: EC1: Implement a Statewide Universal Basic Income (UBI); and EC2: Expand Job Training and Incubator Programs. Other strategies designed to shift location of jobs are represented in the land use and travel models, but not reflected in the Regional Growth Forecast.

8 O&M is where most of the forecasted transportation revenues will be spent. Staff considers the current level of operations and maintenance spending sufficient to maintain existing conditions of the region's transportation assets. Therefore, staff did not simulate the impacts of these baseline investments separately. However, in cases where there are additional revenues to improve the condition beyond today's levels or to fund operations and maintenance demand necessitated by new projects, staff modeled the impacts of these investments.

9 Because in REMI, historical data dates to only 2001, relative housing price index of year 2001 level was used instead of the 2000 level.

Strategy EC1: Implement a Statewide Universal Basic Income is costly but provides many benefits to low and low-to-moderate income households. While the model's ability to capture the full effects of the UBI strategy is limited, staff tested the strategy in the REMI model through an increase in both taxation and spending, which resulted in a minimal to neutral economic impact. Given that the purpose of the strategy is to improve economic mobility, in the end staff updated the income distribution results outside the REMI model to represent its impact. Strategy EC2: Expand Job Training and Incubator Programs is represented by increasing investment in the manufacturing and education industries.

Environmental Strategies

Strategy EN1: Adapt to Sea Level Rise focuses on protecting the shoreline as well as critical transportation infrastructure in areas at risk. To the extent that there would be increases in capital projects spending such as building levees and infrastructure enhancements, staff increased demand for the construction industry using the REMI model.

Strategy EN2: Provide Means-Based Financial Support to Retrofit Existing Residential Buildings is estimated to cost $15 billion, of which staff assumed that $12 billion[10] was directly invested into the construction industry in the model. This was not modeled as increased consumer spending because staff assumed that without the subsidies, homeowners would not be incentivized to retrofit existing building at all.

Revenues to Fund Plan Strategies

Staff assumed that the current levels of government funding for programs, including transportation operations, maintenance, and investment will continue. Funding for the strategies included in the REMI model would be generated by additional taxes.

For the purposes of the Regional Growth Forecast, staff assumed that:

- Additional transportation revenues would be generated by a sales tax increase;
- Additional housing revenues would be generated by a business tax increase;
- Additional economic revenues would be generated by a personal income tax increase; and
- Additional environment revenues would be generated by a property tax increase.

10 The Draft Blueprint assumed a total cost of $20 billion for this strategy, and the $12 billion investment in the construction industry was based upon this assumption. While the Final Blueprint/Plan adjusted the total down to $15 billion, the $12 billion investment in the construction industry remained unchanged.

Households

In the Regional Growth Forecast, households are closely related to the age, racial and ethnic composition of the population, reflecting important patterns of how households are formed in relation to demographic features. Typically, young adults leave the home or migrate to an area and form their own households or share housing with others. For young adults, it is common to see relatively higher average household sizes. Some will pair up and form families, often with two adults in a household. Life events, such as divorce or loss of a partner in later years will be result in fewer adults per household in the upper half of the population age distribution. While children make up a sizeable chunk of the population, they only indirectly impact the number of households formed, and units occupied. The typical accounting framework relates the number of households to the number of adults: headship rates.

Headship rates, while serving to capture the propensity for a given group of adults to form households, also reflect a larger set of behavioral and economic conditions in a region, for which reason these rates vary between regions, and over time. Some ethnic groups are more prone to multi-generational households, which will be reflected in the headship rates. Further, in regions with higher housing costs, the propensity to form households is slightly lower than in more affordable regions. To project a future number of households, accordingly, staff needs information about the future population and its age and racial/ethnic structure.

Headship rates can change over time as behavior or economics change. As housing affordability is currently at historically low levels in the Bay Area and one of the plan goals is to increase housing affordability, current headship rates were assumed to represent a constrained housing market. With a proactive state and regional housing policy framework adjusting the capacity for housing, more households would be able to form than would be the case today. To practically reflect this, headship rates were set to transition from today's constrained levels to rates observed two decades ago, in effect "rolling back" the clock on the housing market.

Headship rates were set to vary by year, starting with observed rates from ACS 2012-2016 sample, and then transitioned to the somewhat higher rates found in Census 2000 Public Use Microdata Sample (PUMS). As this change took place over more than a decade, it was assumed this transition to a more accommodating housing market and associated household formation regime would take a more than a decade and a half – with a few years to allow for policy to become effective. Rates were thusly transitioned from existing rates starting in 2022, and gradually rolled back to 2000 levels, with the transition assumed to be complete by 2038. The practical effect of this is for a given population, a slightly larger number of households would result, reflecting a healthier and more dynamic housing market.

The rates are applied to the forecasted future household population, where the household population is segmented into the four racial/ethnic groups accounted for in REMI: Hispanic/Latinx; White, Not Hispanic; Black, Not Hispanic, and Other, Not Hispanic. The household population is further broken down into 15 five-year age groups, beginning at 15, and ending at 85 and over for a total of 60 age/ethnic and racial groups. The detailed headship rates for the years 2015, 2030 and 2050 for the final forecast are provided in Table 6. For many age groups, a small increase of rates can be observed from 2015 to 2050.

Table 6. Headship rates, by year, age group, race/ethnic group

RACE / ETHNICITY	BLACK-NON-HISPANIC			HISPANIC			OTHER-NON-HISPANIC			WHITE-NON-HISPANIC		
Age Group	2015	2030	2050	2015	2030	2050	2015	2030	2050	2015	2030	2050
Ages 15-19	0.02	0.02	0.03	0.01	0.02	0.02	0.01	0.02	0.03	0.01	0.01	0.02
Ages 20-24	0.14	0.18	0.23	0.11	0.12	0.15	0.13	0.15	0.18	0.15	0.19	0.25
Ages 25-29	0.32	0.36	0.43	0.24	0.26	0.29	0.27	0.28	0.30	0.34	0.38	0.44
Ages 30-34	0.40	0.44	0.51	0.37	0.38	0.39	0.40	0.41	0.42	0.47	0.49	0.51
Ages 35-39	0.48	0.51	0.56	0.41	0.42	0.44	0.47	0.46	0.44	0.51	0.52	0.54
Ages 40-44	0.54	0.55	0.58	0.45	0.46	0.49	0.48	0.48	0.48	0.53	0.54	0.56
Ages 45-49	0.56	0.57	0.60	0.48	0.49	0.51	0.50	0.50	0.50	0.56	0.57	0.58
Ages 50-54	0.61	0.62	0.65	0.49	0.50	0.51	0.49	0.49	0.49	0.57	0.58	0.60
Ages 55-59	0.58	0.61	0.65	0.49	0.50	0.51	0.48	0.48	0.49	0.58	0.59	0.61
Ages 60-64	0.64	0.66	0.69	0.49	0.49	0.49	0.44	0.45	0.46	0.60	0.61	0.64
Ages 65-69	0.67	0.68	0.70	0.48	0.48	0.49	0.44	0.44	0.43	0.62	0.64	0.66
Ages 70-74	0.74	0.74	0.75	0.51	0.52	0.54	0.43	0.43	0.44	0.65	0.66	0.67
Ages 75-79	0.72	0.73	0.75	0.49	0.53	0.59	0.44	0.45	0.47	0.66	0.68	0.70
Ages 80-84	0.66	0.69	0.73	0.53	0.54	0.55	0.44	0.47	0.52	0.70	0.72	0.74
Ages 85+	0.68	0.69	0.70	0.54	0.54	0.54	0.48	0.48	0.49	0.75	0.76	0.77

NOTE: Headship rates vary by year, starting with observed rates from U.S. Census Bureau, American Community Survey 2014-2018 sample, and are transitioned to higher rates found in U.S. Census Bureau, Census 2000 PUMS. Transition is from 2022-2038. Data is for the nine-county San Francisco Bay Area.

Income

After household counts have been projected, they are disaggregated further into income groups. Household income is an important predictor for housing location choices as well as travel behavior and is thus important to downstream analyses. The income distribution analysis considers structural characteristics of the region including demographic factors such as the age profile and ethnic mix, and economic factors such as the predominant industries and occupations in which people work, as well as the various sources of income (retirement income, public assistance income, wage and salary income) observed in the aggregate. The core translation performed is one where such overall factors of a regional economy are related to the share of households in each of four income groups. The relationship is based on observed county-level data for the nation's largest metropolitan areas, where economic and demographic variables serve as predictors of the relative shares in different household income groups.

The income categories are defined below. They were originally defined as approximate quartiles in 2000 dollars because that is the year of currency used in the Travel Model. Over the years as income inequality has risen, they have morphed into quantiles. The income quantiles presented below are used throughout the remainder of this report.

Table 7. Income quantile definitions used in the modeling system

QUANTILE	2000 DOLLARS	2020 DOLLARS
Q1: low-income	Less than $30,000	Less than $50,000
Q2: moderate-low-income	$30,000 to $60,000	$50,000 to $100,000
Q3: moderate-high-income	$60,000 to $100,000	$100,000 to $170,000
Q4: high-income	More than $100,000	More than $170,000

The relationship between regional economic performance and the distribution of incomes is complex and dependent on not just compensation practices but also how people group together to form households, decide whether to hold a job or retire, raise children, and a host of other considerations. These decisions themselves will vary over time, but there is much than can be seen from the data available. All other things equal, for example, locations with a relatively large share of management occupations may be expected to have more upper income households, while locations with a higher proportion receiving public assistance may conversely be expected to have more low-income households.

To capture such relationships, staff specified four regression models (using data from ACS at the county level) on the relationship between demographic and economic variables and share of households in each of the four income quartiles defined above, with a generally good fit.[11] These relationships are carried forward, with data from REMI on the future economy (employment, age, industry, occupation) used to predict the relative share of households in the four income groups, and those shares are applied to the projected household counts.

11 Because ordinary least squares (OLS) regressions are not limited to the range between 0 and 1, the predicted shares from the four models are scaled to sum to 100%, and the predicted shares are indexed to 2015 observed levels. The projection then moves the observed levels up or down depending on the index.

Findings: Regional Growth Forecast Results

Table 8 shows both the baseline forecast and the Plan Bay Area 2050 Final Regional Growth Forecast. The baseline forecast does not integrate regional strategies and represents a "status quo" future where regional goals such as affordability would not be achieved, in conflict with state requirements to fully accommodate future regional growth and affordability objectives established in the adopted Plan Bay Area 2050 Guiding Principles. As discussed previously, the Final Regional Growth Forecast incorporates the impacts of regional strategies on the region's economy, demographics and households.

In the Final Regional Growth Forecast, between 2015 and 2050, the region's employment is projected to grow by 1.4 million to just over 5.4 million total jobs. Population is forecasted to grow by 2.7 million people to 10.3 million. This population will comprise over 4.0 million households, for an increase of nearly 1.4 million households from 2015. The number of housing units is projected to grow by 1.5 million units. Compared to the baseline forecast, integrating the regional strategies and fully accommodating future residents led to 300,000 more jobs, 760,000 more people, 460,000 more households, and 480,000 more housing units.

Table 8. Plan Bay Area 2050 Baseline Forecast and Final Regional Growth Forecast

	2015	2020	2025	2030	2035	2040	2045	2050
BASELINE FORECAST								
Total Population	**	**	8,130,000	8,360,000	8,700,000	9,040,000	9,330,000	9,570,000
Total Employment	**	**	4,050,000	4,530,000	4,680,000	4,850,000	4,980,000	5,110,000
Total Households	**	**	2,930,000	3,080,000	3,230,000	3,370,000	3,490,000	3,580,000
Total Housing Units	**	**	3,050,000	3,240,000	3,400,000	3,550,000	3,670,000	3,770,000
FINAL REGIONAL GROWTH FORECAST								
Total Population	7,660,000	7,940,000	8,230,000	8,560,000	9,010,000	9,490,000	9,930,000	10,330,000
Total Employment	4,010,000	4,080,000	4,150,000	4,640,000	4,830,000	5,050,000	5,230,000	5,410,000
Total Households	2,680,000	2,760,000	2,950,000	3,210,000	3,500,000	3,710,000	3,890,000	4,040,000
Total Housing Units	2,710,000	2,840,000	3,060,000	3,370,000	3,670,000	3,900,000	4,080,000	4,250,000

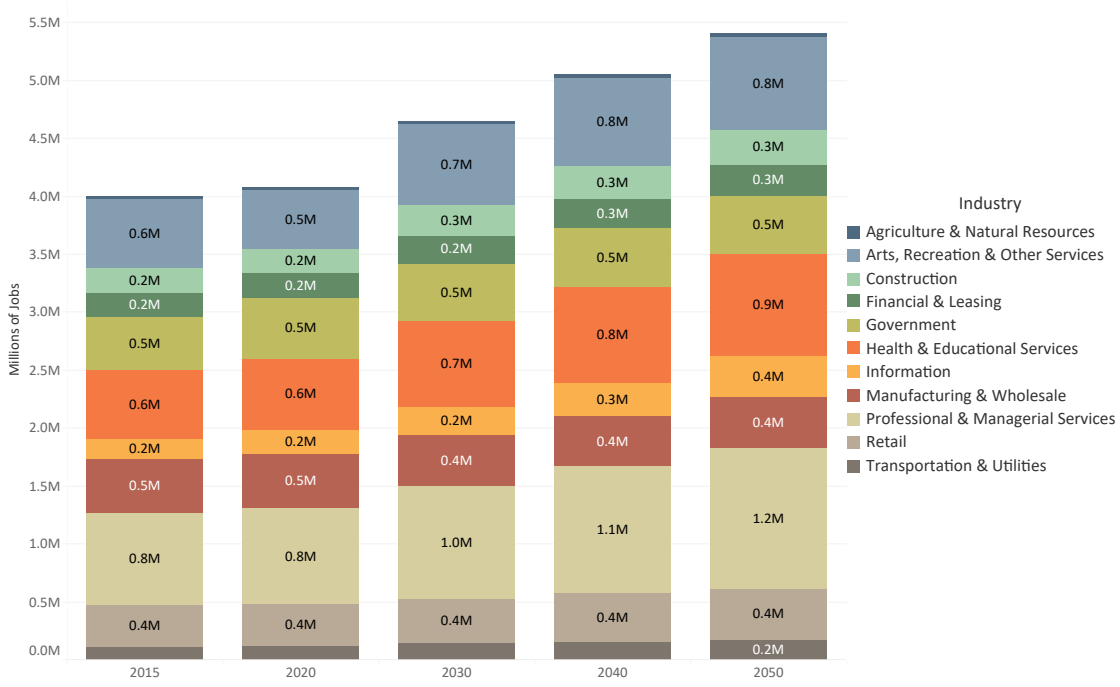
** = See Final Regional Growth Forecast below.

The Final Regional Growth Forecast projects approximately 400,000 more jobs, 200,000 fewer people, 300,000 more households and 300,000 more housing units in 2040 compared to the Plan Bay Area 2040 forecast. There are several reasons for the difference in the forecasts between Plan Bay Area 2040 and this latest forecast for the Bay Area. Differences in population are largely due to the assumption that the recent observed decline in Hispanic international migration and birth rates would continue, which is consistent with U.S. Census Bureau and California Department of Finance assumptions. Second, strong employment growth during the 2010s has resulted in adjustments to the early years of the forecast, and as a result the endpoint of the trend is also higher. Meanwhile, comparing the age composition of the population in these two forecasts, this forecast has a higher number of older adults, who usually have higher headship rates, forming more households. Finally, this forecast integrated housing strategies that would encourage more housing production and investment, resulting in higher household and housing unit numbers, as well as creating more jobs.

Employment Growth and Change

Figure 2 compares the level and distribution of employment in 2015 to projected employment in future years up to 2050. Professional and managerial services, and health and educational services are forecasted to continue dominating future employment in the San Francisco Bay Area, and the information sector more than doubles its current job numbers. Meanwhile, despite increases in both output and demand in all sectors as well as proposed strategies intended to stimulate employment in certain industries, the forecast shows declining employment in a few sectors, due to both technologically induced higher productivity and changes in economic structure, particularly in the manufacturing and wholesale industries. Finally, job forecasts both for construction as well as transportation and warehousing are boosted by the infusion of investments.

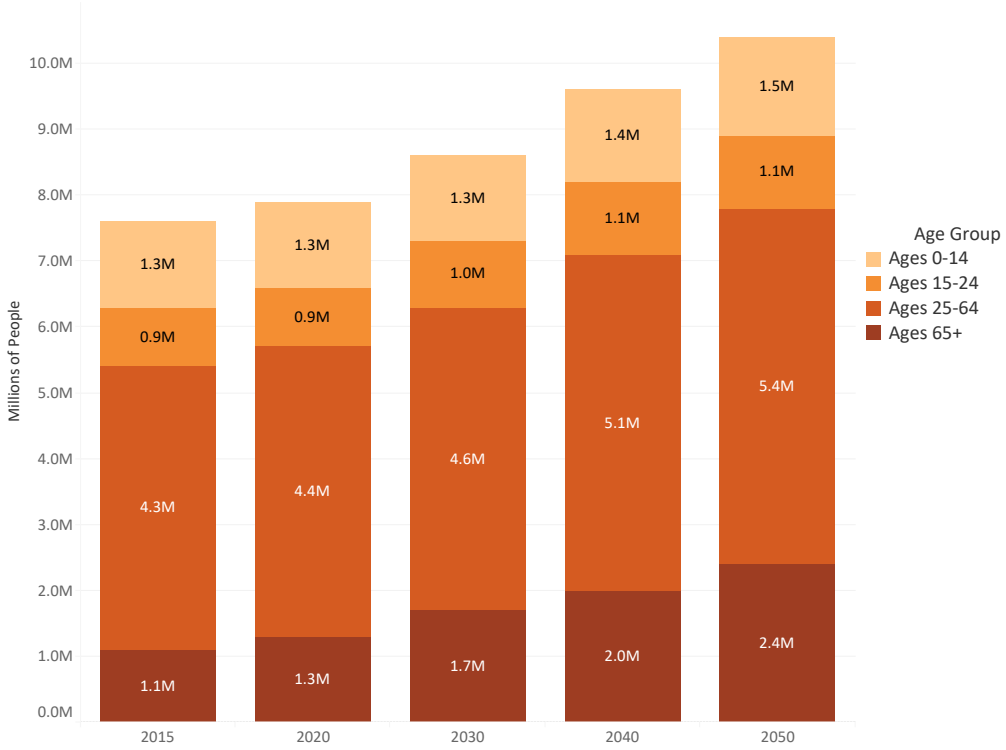
Figure 2. Employment by sector in the Regional Growth Forecast



Population Growth and Change

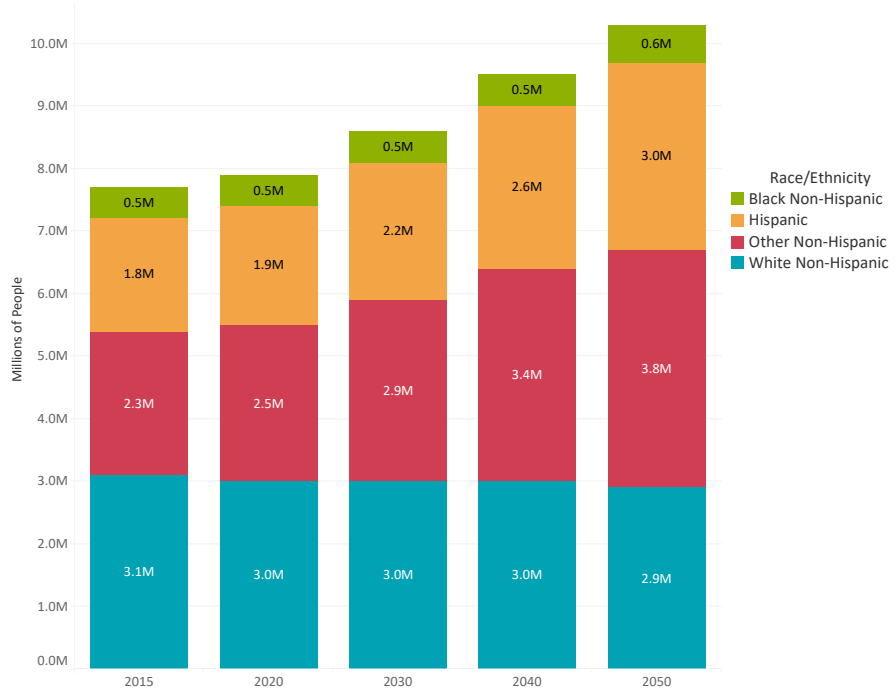
Figure 3 compares the population by age group in 2015 with that of the projections for future years up to 2050. Between 2015 and 2050, the number of working-age adults is forecasted to grow by 25%, but the share declines by 4% (from 56% to 52%). The growth in the share of people in the 65+ age group is anticipated to continue in the decades ahead from 14% of the total population in 2015 to 23 percent in 2050. While the 2050 total population is projected to be 35% higher than in 2015, growth will differ widely by age group.

Figure 3. Population by age group in the Regional Growth Forecast (in millions)



Ethnically, the region continues to diversify over time, as shown in Figure 4. Growth takes place mainly in Hispanic and Asian racial/ethnic groups (the largest group within the Other Non-Hispanic category in the figure). There is a small increase in the Black Non-Hispanic population, while the White Non-Hispanic population decreases steadily over time. By 2050, Asian, Native American, Pacific Islander, and More than One Racial group will reach 4 million people, while the Hispanic population will grow to the same level as White Non-Hispanic: around 3 million people.

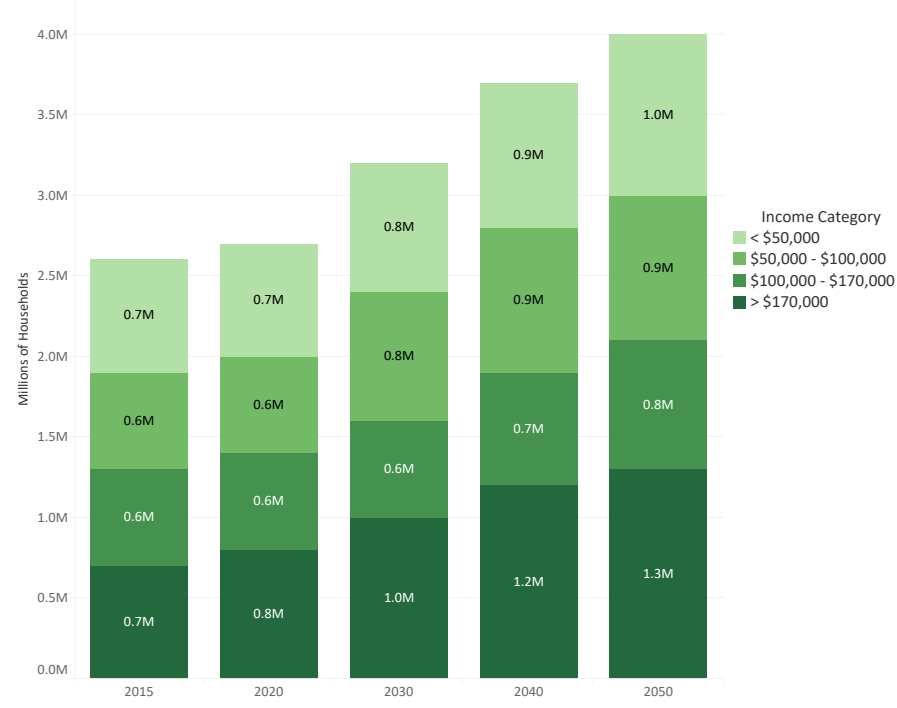
Figure 4. Population by race/ethnicity in the Regional Growth Forecast (in millions)



Household Income Distribution

Figure 5 compares the household income distribution in 2015 with the projected income distribution for future years. The amount of household growth projected (1.4 million new households between 2015 and 2050) reflects strategies that encourage both market rate and affordable housing development, increasing the number of housing units produced.

Figure 5. Projected income distribution of households in the Bay Area (in millions; income segments are in 2020 dollars[12])



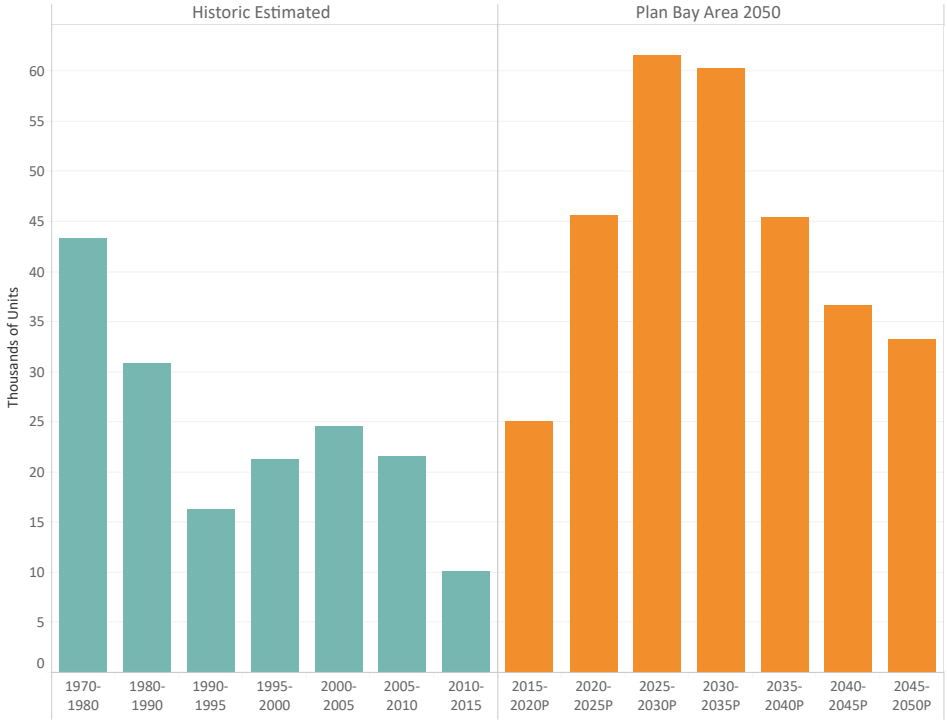
12 See Table 7: Income quantile definitions used in the modeling system.

While the number of households in all four income categories is expected to grow, household growth is anticipated to be strongest in the highest income category, reflecting the expected strength of growth in high-wage sectors combined with non-wage income (interest, dividends, capital gains, transfers). Household growth is also anticipated to be high in the lowest-income category, reflecting possible occupational shifts, wage stagnation, the retirement of seniors without pension assets, as well as the proposed affordable housing strategies. However, with the assumed implementation of a statewide Universal Basic Income strategy starting in 2025, portions of the households in the lowest-income category would be able to move up to the mid-lower income category.[13]

Housing Production

To translate growth in households to the anticipated demand for housing units, staff assumed a healthy vacancy rate for the region of five percent beginning from 2030[14] — leading to a projected increase of housing units by 1.5 million through 2050; the level of demand for new housing units follows the formation of new households. The forecast implies an annual average rate of increase of between 25,000 and 61,000 units, depending on the time period. As shown in Figure 6, this means a significant increase of production for the next three decades to a level of production above that of 1970s and 1980s, which requires the region successfully implement the housing strategies proposed in the plan.

Figure 6. Annual housing production, historic and projected (in thousands of housing units)



The Regional Housing Control Total in the Plan Bay Area 2050 Final Regional Growth Forecast, also known as the year 2050 total housing units projection, reflects the "Backward Arrow" linkage described previously which captures the impact of increasing housing supply at all income levels and lowering housing prices. The number also implies a much healthier housing market in the Bay Area compared to today's levels: higher headship rates, lower household size, healthier vacancy rate, improved job-housing ratio, and an affordable housing stock — nearly a quarter of the housing stock in 2050 would be deed-restricted affordable housing units in the Plan.

13 Although the UBI subsidies would be provided to households of all income groups, staff anticipate that the funding would come from a tax on households that not in the lowest-income category. That is to say, the net impact would only be a portion of the households in the lowest-income category would move up to mid-low-income category. According to PUMS 2014-2018 data, 11.6% of the lowest-income category households have such a level of income the UBI subsidies would push them over the income threshold to mid-low-income category. Staff assumes the ratio remains consistent, moving 11.6% lowest-income households into mid-low-income group in the pre UBI forecast results from 2025 to 2050 to simulate the impacts of the UBI.

14 California Department of Finance estimates of Bay Area vacancies have varied from 3.4% to 6.4% since 2000. Current vacancy rate stands around 3%.

Overall, the Regional Growth Forecast provides enough housing and making it affordable for the in-commuters who today are forced to live outside the region due to high housing cost or a lack of housing choices to move into the region in the future, thereby reducing the number of in-commuters. This amount is more than sufficient to preclude the need for a separate in-commute adjustment. Both the potential in-commuters and many additional potential residents who would have been excluded from living in the region or even the megaregion due to the Bay Area's high housing prices would be accommodated within the nine-county region through strategies in Plan Bay Area 2050.

This section provides a high-level overview of the Bay Area UrbanSim 2 Land Use Model application. The model provides a consistent, theoretically grounded means of forecasting land use change in the Bay Area for the Regional Forecast's household and employment totals and planning strategies that are incorporated into the Plan and EIR Alternatives. In addition, Bay Area UrbanSim 2 is integrated with Travel Model 1.5 to address the interactions between transport system changes and land use changes. This section includes an overview of the model structure, simulation sub-models and a brief introduction to the alternatives. Interactions between the BAUS2 and the other modeling components are described in the Model System Overview.

Bay Area UrbanSim 2 Land Use Model Application

UrbanSim is a modeling system developed to support the need for analyzing the potential effects of land use policies and infrastructure investments on the development and character of cities and regions. UrbanSim has been applied in a variety of metropolitan areas in the United States and abroad, including Detroit, Eugene-Springfield, Honolulu, Houston, Paris, Phoenix, Salt Lake City, Seattle, and Zürich. The application of UrbanSim for the Bay Area (i.e., Bay Area UrbanSim) was originally developed by the Urban Analytics Lab at UC Berkeley under contract to MTC and further refined (up to the current Bay Area UrbanSim 2) by MTC and ABAG modeling staff.[15]

The area included in the Bay Area model application includes all incorporated and unincorporated areas of the nine-county Bay Area.[16] This geographic area defined the scope of the data collection efforts necessary to define the modeling assumptions. Bay Area UrbanSim 2 is based on legal parcels of land drawn from 2010 data and updated with new information to match the 2015 base year used across the model system.

Within Bay Area UrbanSim 2 there are 10 sub-models simulating the real-world choices and actions of households, businesses, and real estate developers within the region, based on assumed public-sector strategies (i.e., policies or investments). Households have particular characteristics such as income that may influence preferences for housing of different types at different locations. Businesses also have preferences that vary by industry for building types and locations. Developers construct new buildings or redevelop existing ones in response to demand and planning constraints, such as zoning. Buildings are located on land parcels that have particular characteristics such as value, land use, topography, and other environmental qualities. Governments set policies that regulate the use of land, through the imposition of land use plans, urban growth boundaries, environmental regulations, or through pricing policies such as development impact fees or subsidies. Governments also build infrastructure, including transportation infrastructure, which interacts with the spatial distribution of households and businesses to generate patterns of accessibility at different locations that in turn influence the attractiveness of these sites for different consumers.

The Bay Area UrbanSim 2 model system simulates these choices through the sub-models described below and shown Figure 7, Figure 8 and Figure 9. These figures also show how the travel model and Bay Area UrbanSim 2 interact. Several of the system models include algorithms that aim to match the total number of units (e.g., jobs, households) included in the Regional Growth Forecast. These totals are checked at the end of each model year run. In each of Bay Area UrbanSim 2's five-year predictions, the model system steps through the following components:

1. The **Employment Transition Model** predicts new businesses being created within or moved to the region, and the loss of businesses in the region – either through closure or relocation out of the region. The role of this model is to keep the number of jobs in the simulation synchronized with aggregate expectations of employment in the region.

2. The **Household Transition Model** predicts new households migrating into the region, the loss of households emigrating from the region, or new household formation within the region. The Household Transition Model accounts for changes in the distribution of households by type over time, using an algorithm analogous to that used in the Employment Transition Model. In this manner, the Household Transition Model keeps Bay Area UrbanSim household counts synchronized with the aggregate household projection.

15 More information on UrbanSim is available at http://urbansim.com.

16 Technical information on Bay Area UrbanSim 2 can be found at https://github.com/BayAreaMetro/bayarea_urbansim.

3. The **Real Estate Development Model** simulates the location, type, and density of real estate development, conversion, and redevelopment events at the level of specific land parcels. This sub-model simulates the behavior of real estate developers responding to excess demand within land use policy constraints. The algorithm examines a subset of parcels each forecast year and builds pro formas comparing development costs and income. New structures are built in profitable locations.

4. The **Scheduled Development Events Model** provides an alternative means for the introduction of new buildings into the region. This component is simply a list of predetermined structures to be built in specific future years. These are from three categories: 1) recently completed development or projects under construction; 2) large, committed but unbuilt, public-private partnership projects (examples shown in Table 9); 3) special strategy-driven developments such as the mall-office park and public land strategies described below.

5. The **Employment Relocation Model** predicts the relocation of business establishments (i.e., specific branches of a firm) within the region each simulation year. The Employment Relocation Model predicts the probability that jobs of each type will move from their current location to a different location within the region or stay in place during a particular year.

6. The **Household Relocation Model** predicts the relocation of households within the region each simulation year. For households, mobility probabilities are based on the synthetic population from Travel Model 1.5. Drawn from Census data, these rates reflect the tendency for younger and lower income households to move more often.

7. The **Government Growth Model** uses a set of rules to project the employment in non-market sectors such as government and schools based on historical employment in those sectors and projected local, sub-regional, and regional population growth.

8. The **Employment Location Choice Model** predicts the location choices of new or relocating establishments. In this model, we predict the probability that an establishment that is either new (from the Employment Transition Model), or has moved within the region (from the Employment Relocation Model), will be located in a particular employment submarket. Each job has an attribute of the amount of space it needs, and this provides a simple accounting framework for space utilization within submarkets. The number of locations available for an establishment to locate within a submarket will depend mainly on the total vacant square footage of nonresidential floor space in buildings within the submarket, and on the density of the use of space (square feet per employee). This sub-model simulates the behavior of businesses moving to suitable locations within the region.

9. The **Household Location Choice Model** predicts the location choices of new or relocating households. In this model, as in the business location choice model, we predict the probability that a household that is either moving into the region (from the Household Transition Model), or has decided to move within the region (from the Household Relocation Model), will choose a particular location defined by a residential submarket. This sub-model simulates the household behavior in selecting a neighborhood based on their sociodemographic preferences.

10. The **Real Estate Price Model** predicts the price per unit of each building. UrbanSim uses real estate prices as the indicator of the match between demand and supply of land at different locations and with different land use types, and of the relative market valuations for attributes of housing, nonresidential space, and location. This role is important to the rationing of land and buildings to consumers based on preferences and ability to pay, as a reflection of the operation of actual real estate markets. Since prices enter the location choice utility functions for jobs and households, an adjustment in prices will alter location preferences. All else being equal, this will in turn cause higher price alternatives to become more likely to be chosen by occupants who have lower price elasticity of demand. Similarly, any adjustment in land prices alters the preferences of developers to build new construction by type of space, and the density of the construction.

Figure 7. UrbanSim model flow: employment focus

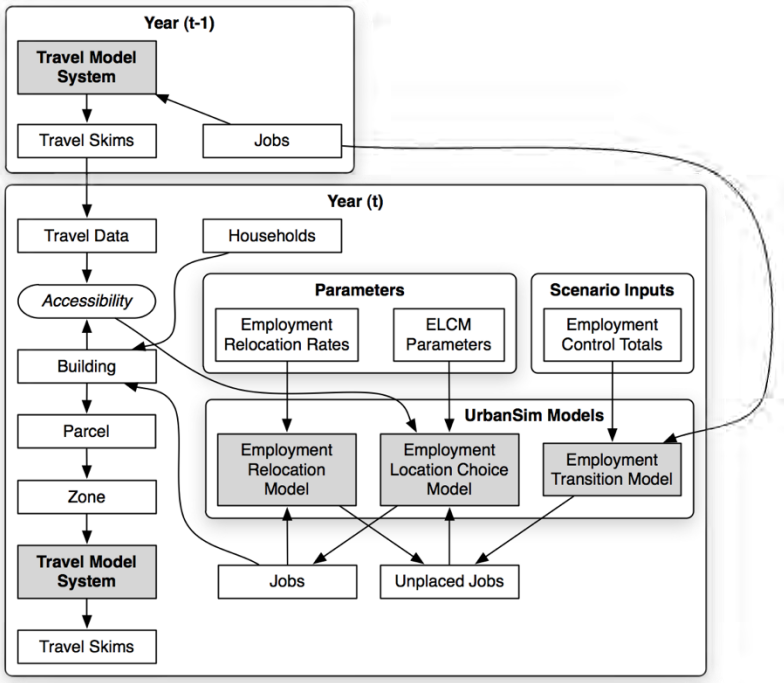


Figure 8. UrbanSim model flow: household focus

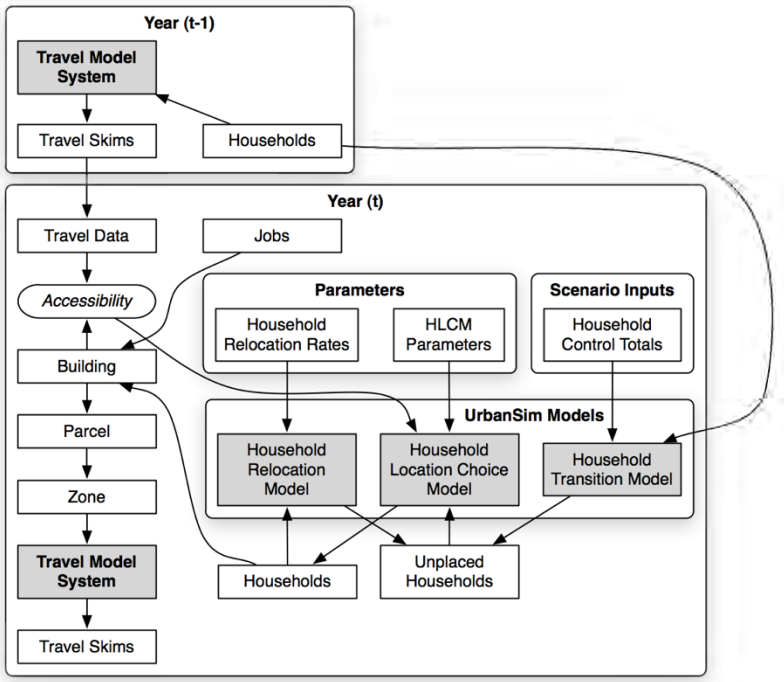


Figure 9. UrbanSim model flow: real estate focus

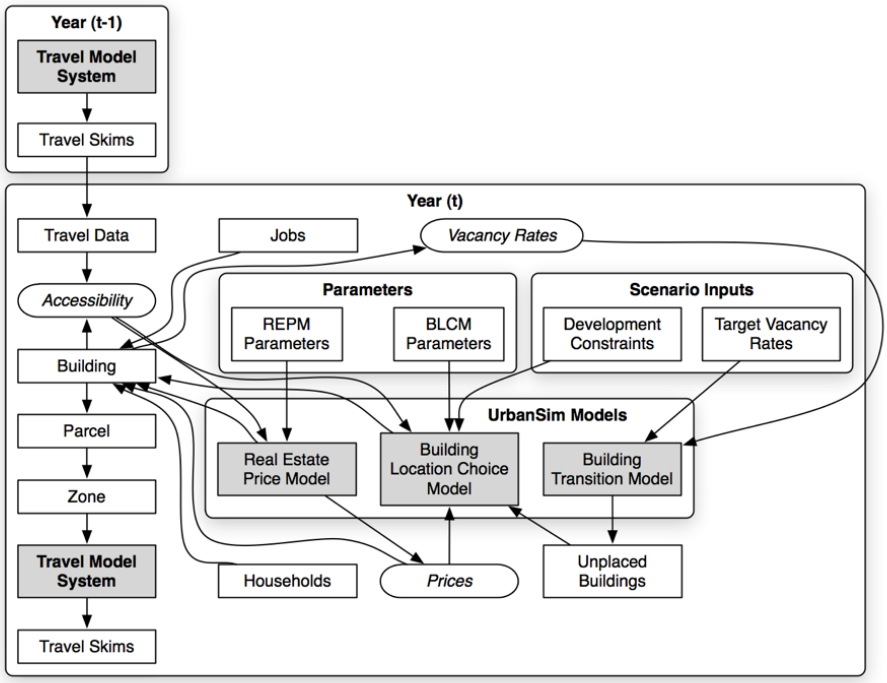


Table 9. Examples of scheduled development events

SCHEDULED DEVELOPMENT EVENT	
MacArthur BART Transit Village Construction	Park Merced Redevelopment
South Hayward BART Transit Village Construction	San Francisco General Hospital Expansion
Concord Community Reuse Construction	Transbay Terminal Redevelopment
Lawrence Berkeley Lab 2 Construction	Treasure Island Construction
Pleasant Hill BART Transit Village Construction	Bay Meadows Construction
Richmond BART Transit Village Construction	Kaiser Redwood City Expansion
Walnut Creek Transit Village Construction	Sequoia Hospital Expansion
Hunters Point Naval Shipyard Construction	Stanford Medical Center Expansion
Mission Bay Construction	Berryessa BART Transit Village Construction
Moscone Center Expansion	

Each of Bay Area UrbanSim 2's components were estimated individually and then assembled into a comprehensive system that is calibrated and reviewed. The household and employment transition models were simply an outcome of the regional totals divided into annual increments. The relocation models probabilities derived from Census and time series establishment data. The household and employment location choice models were estimated using logit models describing current locations as a function of various factors. The real estate price models are hedonic regressions that were built using recent residential transaction records and commercial rents. Finally, the real estate development model was assembled using output from the other components, industry estimates for building costs, and standard financial assumptions.

Once the components were functioning, Bay Area UrbanSim 2 was run. The forecast output was then compared to historical growth patterns and opportunities for feedback by planners at MTC and ABAG, the Regional Modeling Working Group, and local jurisdictions were provided at key points in 2020.

Input Assumptions

This section describes the Bay Area UrbanSim 2 base year database and assumptions for the various EIR Alternatives. Key variables, data sources, and processing steps are described, and selected variables are profiled or mapped to illustrate trends and assess reasonableness. While the year 2015 was selected as the base year for overall model system, the land use forecast begins from the year 2010 because both a complete parcel dataset and high-resolution census data were available for that year. Additional data updates were incorporated within the first model forecast step in 2015. The Bay Area UrbanSim 2 application operates at the level of individual households, jobs, buildings, and parcels. Jobs and households are linked to specific buildings, and buildings are linked to parcels.

In the sections below, there are tables of the base distribution of employment, population, and buildings in the Bay Area. In some cases, incomplete or inconsistent data was imputed using more-aggregate household or employment counts. The base-year database contains around 2.7 million households (not including group quarters), 4.0 million jobs, 1.9 million buildings, and 2 million parcels, based on information from the U.S. Census, Dun & Bradstreet establishment data, the CoStar commercial real estate database, and county assessor parcel files.

Base Year Spatial Database

Bay Area UrbanSim 2 uses a detailed geographic model of the Bay Area. A geographic information system was used to combine data from a variety of sources to build a representation of each building and property within the region. These detailed spatial locations are grouped into TAZs to improve model flow and provide summary output. Because this database represents the current state of the Bay Area's land use pattern, it is used as an identical starting point for all four alternatives.

Bay Area Spatial Information System (BASIS)

The Bay Area Spatial Information System (BASIS)[17], a new Data as a Service (DaaS) initiative operated by MTC and ABAG beginning in 2020, brought key regional datasets onto an industry standard DaaS platform where users internal and external to MTC and ABAG could download it, or access it via API for analysis and modeling purposes. BASIS represents an evolution of past efforts, such as the Local Policy Development Survey (2005), that sought to collect data from local jurisdictions for use in regional forecasts, and long-range planning activities for the nine county San Francisco Bay Area region.

A key component of BASIS included a robust review and feedback system that collected invaluable feedback from local jurisdictions, key regional stakeholders and staff within MTC and ABAG. BASIS presented the data for review by local jurisdictions in an inventory format that allowed local jurisdictions to select a location and retrieve a summary of the data available at that location. The summary was associated with a count of parcels that contain any one or more of the land use, transportation, or development characteristics that are tracked as part of Housing Development Tracking, Transportation and Land Use Modeling (Bay Area UrbanSim 2).

17 Bay Area Spatial Information System (BASIS): https://basis.bayareametro.gov.

The BASIS effort offered four key benefits for MTC and ABAG's understanding of development capacity:

- A secure, accessible database platform for the collection, standardization, discovery, and dissemination of key datasets used in regional planning efforts,
- A well-documented, organized, and definitive source of regional data,
- A single source of information that tracks trends associated with development conditions, land use, and environmental impacts associated with future growth and changes to the physical landscape, and
- A common framework to discuss and plan for future growth in the region.

Parcels

Parcels, or individual units of land ownership, provide a fundamental building block for the Bay Area UrbanSim 2 model: in both the real world and the model they are the entity that is owned, sold, developed, and redeveloped by households and businesses. In a given year, each parcel is associated with 0, 1, or multiple buildings that provide space for activities. The UrbanSim parcel database includes information linking the parcels to zones they are within, buildings that are on them, their size, their monetary value, and their current planning constraints.

Buildings

The base year database contains around 2 million buildings categorized into 14 different types as seen in Table 10. Households and businesses are assigned to buildings and buildings are linked to a parcel. Each building has attribute information on its size, age, and value, among other characteristics. Building attributes are primarily sourced from 2010 parcel assessor's data, updates on new construction provided by the BASIS process, and commercial real estate databases. The building database is modified by the Real Estate Development Model as it tears down buildings and constructs new buildings. Figure 10 and Figure 11 map out illustrative building attributes at the zonal level.

Table 10. Building types and 2015 counts in Bay Area UrbanSim 2

BUILDING TYPE	2015 COUNT
Single Family Detached	1,494,017
Single Family Attached	207,385
Multi-Family	103,423
Office	37,755
Hotel	2437
School	3184
Light Industrial	21,543
Warehouse	11,067
Heavy Industrial	1542
General Retail	43,328
Big-Box Retail	1840
Mixed-Use Residential	7467
Mixed-Use Retail-Focus	1379
Mixed-Use Employment-Focus	736

Figure 10. Percent single family residential buildings by TAZ

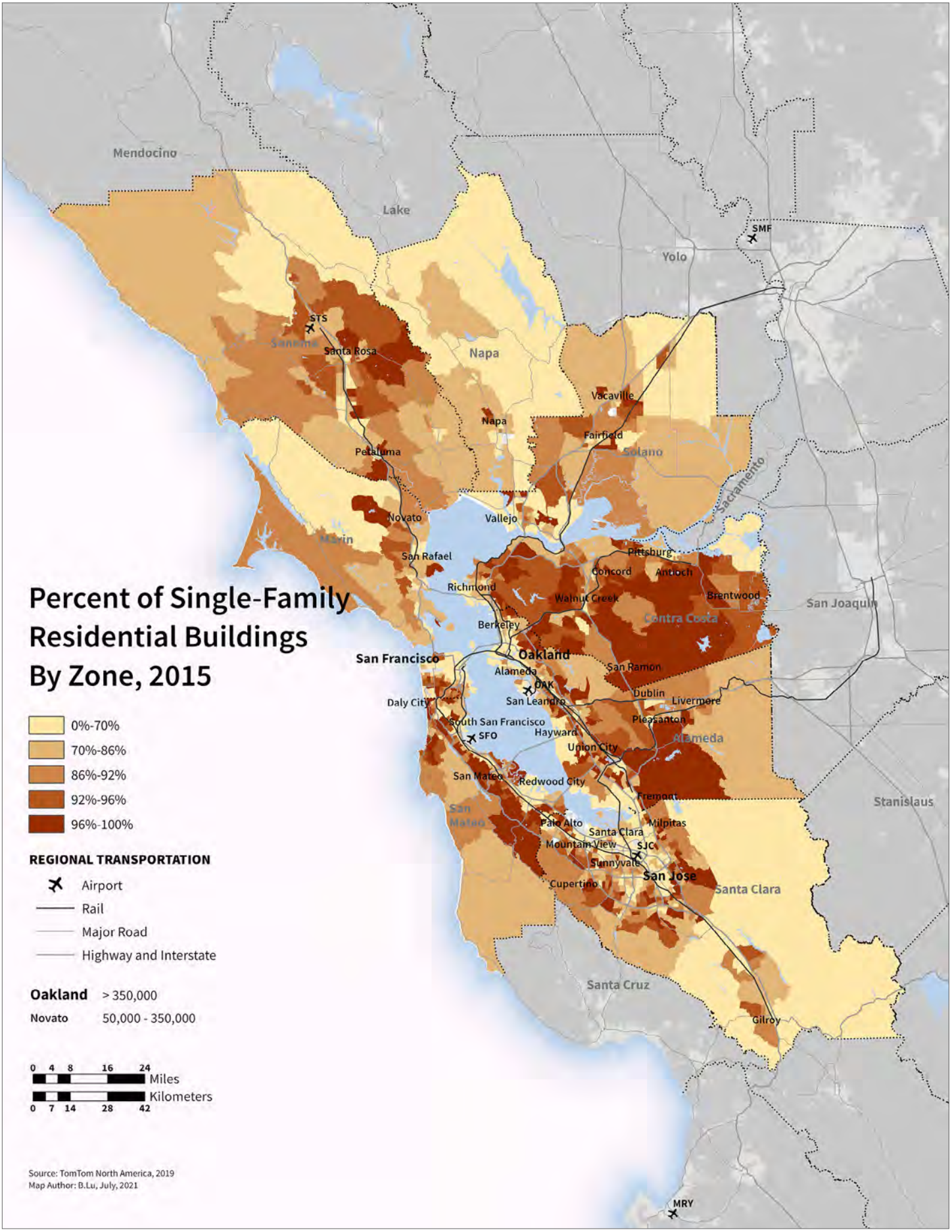


Figure 11. Buildings per acre by TAZ

Because buildings are a fundamental nexus in Bay Area UrbanSim 2 where the physical real estate market interacts with the households and employees who occupy the structures, a variety of key assumptions relate to buildings. While these assumptions greatly simplify the complexity of the region's land use market, they remain identical across EIR Alternatives allowing for consistent comparisons.

Two interrelated factors combine to determine how employees occupy buildings. First, workers in particular sectors use various types of buildings at different rates. For instance, many business service workers will use an office building, but a smaller number will occupy the same amount of light industrial space. The second step looks at the amount of square feet different types of workers use. Both use factors (types and amounts of space) were compiled on average for the entire region and assumed to be constant into the future (except for decreases in square feet per employee due to teleworking as described in the section on Strategy EN7 below). The result is an estimation of the number of jobs that could occupy a particular building, to which the model probabilistically matches employees by job sector. Household capacity, on the other hand, is directly determined by the number of residential units in a building.

Finally, Bay Area UrbanSim 2 provides flexibility in the representation of subsidized construction. Each model simulation begins with a baseline understanding of existing deed-restricted housing by zone. Various affordable housing inventory data sources and project-level data are compiled to represent the amount of deed-restricted housing which get distributed randomly within each zone. A separate component described above (the Scheduled Development Event Model) allows the construction of predetermined buildings in set future years. This list includes three types of projects: 1) buildings built between 2015 (the model forecast start year) and 2020 (the present year when the alternatives were created); 2) larger projects to be built with a mixture of public and private funding, that are currently under construction or funded; or 3) strategy representations. The same list of assumed projects for type 1 and type 2 was used for all EIR Alternatives. Type 3 projects, discussed below, were excluded from the No Project Alternative.

Development Capacity

Current zoning was obtained for all parcels in the region as a representation of the land use controls in place during the base year. Zoning or general plan data was collected for all jurisdictions through BASIS. BASIS offered cities and counties the opportunity to review the data for accuracy, which brought more transparency into the modeling process. Due to time constraints, specific plans were only collected for a limited subset of areas where such information was expected to exhibit a great deal of variation from the other planning information, and zoning and general plan data that was collected was only partially validated. To capture the latest local plans and fully incorporate local input while maintaining data accuracy, a hybrid version of current zoning was developed based on BASIS and Plan Bay Area 2040 zoning data to best represent the base year land use controls. Following the release of the Draft Blueprint, the Plan Bay Area 2050 project team conducted a series of public workshops and office hours to collect feedback from stakeholders, during which a number of jurisdictions provided additional input on BASIS development capacity data (current zoning, for example, prior to adopted strategy implementation). When accurate and appropriate, these were incorporated into the hybrid current zoning data used in Plan phase modeling. In general, constraints on new development were drawn from the information source judged most likely to represent a jurisdiction's long-term expectations for development maximums at each location.

This zoning and related information dictates the uses, residential densities, and building intensities allowed in each parcel within each jurisdiction. Adjustments to zoning were made in some locations to put protected land, government land, and transportation corridors off limits to development. Additionally, parcels containing structures built before 1930 were also deemed non-developable as a rough representation of historical protection ordinances until better data can be obtained.

Annual Business Totals

Forecasts for the region's overall rate of economic and demographic growth were developed as described in the Regional Growth Forecast section. The total number of employees by sector within the region is a result of that process and is input into Bay Area UrbanSim 2 and the resulting forecast must adhere to these totals while building and placing agents within the region. This information is used to generate new business establishments that in turn generate overall demand for commercial real estate. After new establishments are assigned locations by the Business Location Choice Model, the overall spatial distribution of employment provides input into the travel model's representation of personal travel.

Economic projections for the Bay Area are provided for the years 2015, 2020, 2025, 2035, 2040, 2045, and 2050 while intermediate years are interpolated. As seen in Table 8, the overall regional count of employment is projected to grow from around 4.0 million jobs in 2015 to almost 5.4 million jobs by 2050, or 35%. These business totals also project a changing sectoral distribution over the projection period: employment in agriculture and natural resources increases slowly over the period while the fastest growing sectors are professional services and business services.

Annual Household Totals

The total number of households by income category within the region is also forecast as part of the Regional Growth Forecast. This information is used to understand the overall demand for housing. In addition to the new households, the division of existing households into income categories is used to segment the population when considering relocation rates in the Household Transition Model. The forecasted new households and relocating households are allocated among the TAZs using the Household Location Choice Model. This spatial distribution of households is input into the Travel Model's representation of personal travel.

Working from these regional totals, Bay Area UrbanSim 2 forecasts the development of sufficient housing for all the population in the region, including all economic segments of the population. This number considers population growth, household formation, net inter-regional migration, and employment growth. The incorporation of a relaxation of local land use constraints into the regional growth forecast (as described in Findings: Regional Growth Forecast Results) results in no increase in the regional in-commute because all households supplying labor can be accommodated within the region. By forecasting the intra-regional locations for this population, Bay Area UrbanSim 2 also identifies areas within the region sufficient to house an 8-year projection of the regional housing needs under California State's Regional Housing Needs Allocation (RHNA) process.

Demographic projections for the Bay Area are provided for the years 2015, 2020, 2025, 2035, 2040, 2045, and 2050 while intermediate years are interpolated. As seen in Table 8, the overall regional count of households is projected to grow from around 2.7 million households in 2015 to over 4 million households by 2050, or 51.1%. These household totals also project a changing income distribution over the projection period: the share of households in each quartile (from lowest to highest income) is projected to shift from 26%/24%/22%/28% in 2015 to 25%/23%/19%/33% in 2050 (for the Plan and EIR Alternatives; the first two categories are slightly different in 2050 for the No Project as it lacks Strategy EC1, which envisions a statewide universal basic income).

Model Agents

Choices by key actors or agents in the region are the foundation of the Bay Area UrbanSim 2 model. The three classes of agents are households choosing places to live, business establishments choosing locations to do work, and real estate developers choosing places to build new buildings. This section discusses inputs related to each agent. Because these represent the fundamentals of the urban economy, input values are consistent across EIR Alternatives.

Households and People

Bay Area UrbanSim 2 represents each household individually. A 2015 household table with approximately 2.7 million households is synthesized for the region from Census 2010 Public Use Micro-Sample (PUMS) and Summary File 3 (SF3) tables using the PopGen population synthesizer.[18] This process creates a universe of simulated households and gives each household characteristics (such as household person count and income) so that the overall averages for those characteristics conform to the census information provided for that location. These households have a mean persons per household of 2.7, a mean number of household workers of 1.4, mean age of household head of 48.6 years, a mean household income of $81,937, and a mean number of household children of 0.5.

Establishments and Employees

Establishments are the other major class of agent in Bay Area UrbanSim 2. They represent a unique location of employment for a business. For example, a one-off barbershop is one establishment and so is one particular McDonald's restaurant location. Each establishment corresponds to a number of employees. For the Bay Area UrbanSim 2 model, the 2010 distribution of establishments and their employees are used as input. Future year projections are then made by modeling the movement of individual establishments.

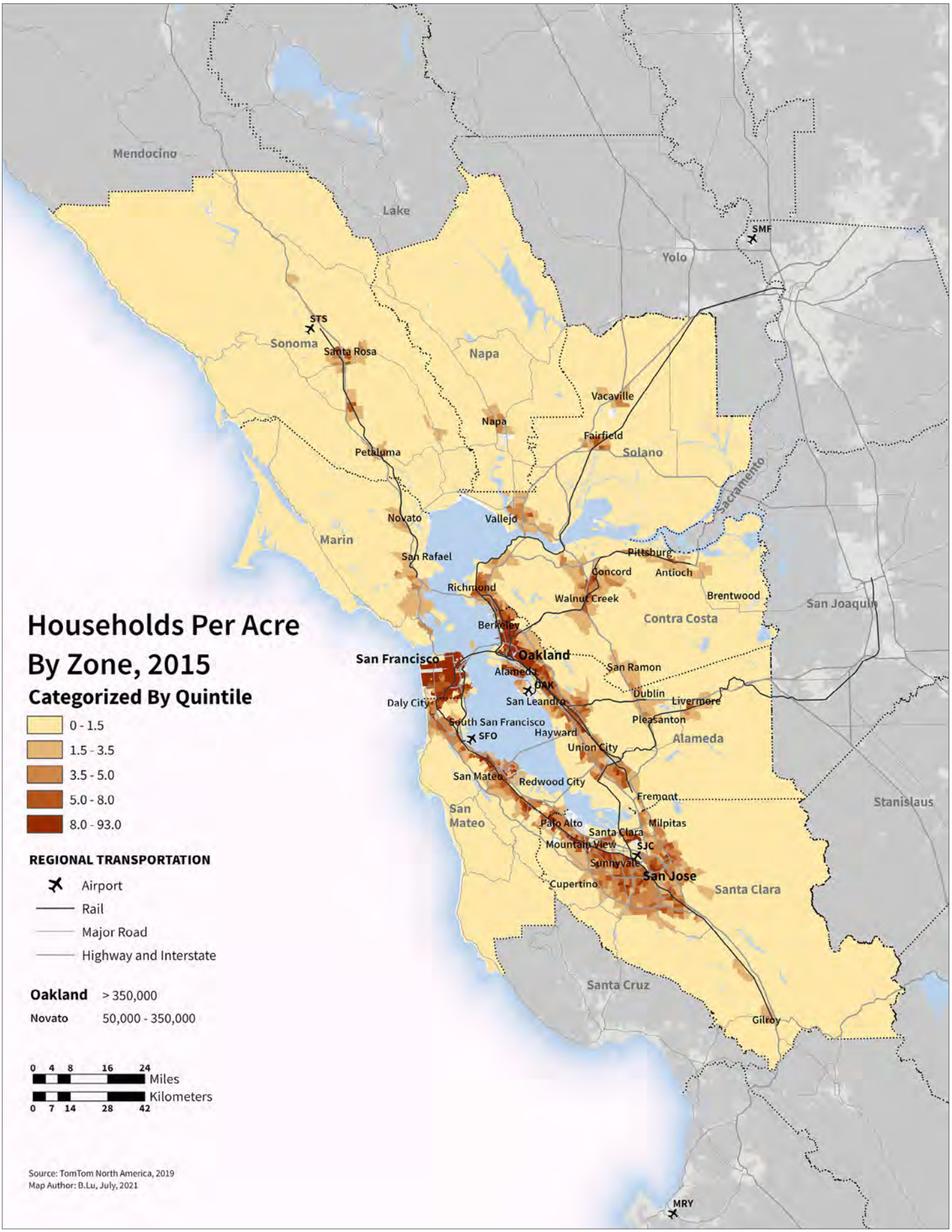
The 2010 establishment database was built by combining establishment data from the Dun & Bradstreet and California Employment Development Department (EDD)[19] datasets and then transforming it to conform to base year 2015 subregional employment totals.[20] Each establishment was assigned to one of the 6 sector classes and associated with an appropriate building. Each of these sectors is modeled separately in the Employment Location Choice Model. Because no clear relocation trends were readily observable in historic data, a 1.9% chance of relocating was assumed for employment each year, regardless of sector. All employment assumptions are the same for all EIR Alternatives.

18 PopGen: http://urbanmodel.asu.edu/popgen.html.

19 California Employment Development Department (EDD): http://www.labormarketinfo.edd.ca.gov.

20 All employment databases contain slightly different counts due to different definitions, data collection strategies, and error. For more information on the regional control totals please see the section, Regional Growth Forecast.

Figure 12. Synthesized households per acre by TAZ



Real Estate Developers

The final Bay Area UrbanSim 2 agent is a special class of business: the real estate developer. Developers monitor the relationship between supply and demand for different types of buildings across the region and attempt to build new structures in locations where they can make a profit. They are driven by market forces, so assumptions related the real estate developers are identical across the four EIR Alternatives.

Bay Area UrbanSim 2 implements the Real Estate Developer Model as a stochastic, or randomly defined, pro forma model that explicitly treats these decisions the same way they are made in the real world. The pro forma combines information on costs and income over a proposed project's lifetime, allowing an assessment of overall profitability. The model examines all parcels each year and tests various project concepts allowed under the site's zoning constraints. The developer chooses the project that maximizes profit and builds the project if it is profitable. After a construction period, these new buildings are available to households and businesses for occupation.

Environmental Factors

Traditionally, Bay Area UrbanSim 2 has focused primarily on model agents and their interaction with housing and job markets in order to study these systems. However, as the impact of the natural environment becomes increasingly apparent, it has become important that the effects on these systems be considered as well.

Prior to the official kickoff of Plan Bay Area 2050, the Horizon initiative considered a wide range of external forces to stress-test strategies amidst an uncertain future. One of these forces is an earthquake, which is likely to occur in the region within the plan's 30-year time horizon. A representative earthquake along the Hayward Fault was modeled in Horizon for the first time in MTC's and ABAG's regional planning, providing an opportunity to understand the impact of this earthquake on the Bay Area's unique housing stock and the displacement of households and jobs. However, due to an inability to pinpoint the location and timing of such an earthquake, and in recognition of the significant demonstrated impacts of the shock on the forecast, the plan does not include the simulation of an earthquake in order to avoid distorting the understanding of future conditions.

The second natural force in the region that was addressed for the first time in Horizon is the rising sea level and subsequent inundation of land. This consistently encroaching force was included in Plan Bay Area 2050. As one of the first efforts to include natural hazards in regional planning, Plan Bay Area 2050 has incorporated a model to address the impacts of sea level rise in the Bay Area.

The representation of sea level rise in Bay Area UrbanSim 2 leverages detailed sea level rise projections from the Adapting to Rising Tides[21] program at the San Francisco Bay Conservation and Development Commission for inundation along the San Francisco Bay, and the National Oceanic and Atmospheric Administration for inundation along the coast. With sea level rise inundation as an input, the land use model recognizes these parcels as locations no longer viable for existing buildings and removes these buildings. Parcels that intersect with inundation were flagged for removal from the input file, and then manually reviewed to remove the designation from parcels with minimal flooding — defined to be a location where the border touches an inundation layer but does not cover a portion of the polygon. Any existing residents or jobs in these buildings are also removed and must find new locations for housing or workspaces along with the other "movers" through the location choice sub-models. After capturing the effects on existing activities, parcels subject to sea level rise are also made ineligible for new development due to the inundation, thus removing them from the total area of potential developable space to accommodate the region's population and employment.

The sea level rise sub-model in Bay Area UrbanSim 2 can represent any future inundation scenario by changing its input files. Both the progression of sea level rise inundation and the height to which the sea level will rise and cover land area are configurable, allowing staff to analyze various futures. As part of Horizon, staff studied multiple sea level rise progression scenarios to capture the widest range of possible futures. Consistent with state guidance, Plan Bay Area 2050 posits a set of progression inputs to incorporate the effects of rising tides: the plan assumes there will be 1 foot of sea level rise by 2035 and 2 feet of sea level rise by 2050.

21 Adapting to Rising Tides: https://www.adaptingtorisingtides.org.

Baseline Policies

In addition to modeling future policy alternatives, Bay Area UrbanSim 2 includes a representation of policies which exist today and are regionally significant. Senate Bill 743 was officially adopted prior to the release of Plan Bay Area 2050 and is therefore included in all simulations; It is described further below. Other policy legislation that has been underway in California but not yet adopted may be found as a strategy in the modeling scenarios. As an example, the element of the strategy to reduce the cost of development discussed in Strategy H3: Allow a Greater Mix of Housing Densities and Types in Growth Geographies has goals similar to the reform of the California Environmental Quality Act (CEQA) development approvals process.

Senate Bill 743

California Senate Bill 743 (SB 743) is an effort to change the way the assessment of significance under CEQA is assessed. Traditionally, CEQA analysis has examined potential transportation impacts using the Level of Service (LOS) concept where impact significance occurs when highway facilities exceed a particular level of congestion. LOS assessments in dense urban areas often reveal high levels of existing congestion leading to frequent finding of significance and expensive mitigation requirements. SB 743 shifts analysis to a Vehicle Miles Traveled (VMT) method that is more likely to find transportation impacts in car-oriented suburban locations. The implementation of SB 743 is represented as having a slight (1% to 2%) increase in costs in suburban locations and a slight (again 1% to 2%) decrease in costs in urban locations with the amount of shift determined by zone level average VMT for commute trips originating in that zone.

EIR Alternatives

For the EIR analysis, Bay Area UrbanSim 2 was used to generate different alternative land use scenarios for future growth in the Bay Area. Each of these alternatives uses identical regional totals (from Table 8) representing future economic and demographic change but employs different policies constraining or promoting particular types and intensities of real estate development in particular locations.

The first alternative is called the No Project and represents the expected trajectory of the region without the implementation of the Plan or any of the alternatives. All policies in the No Project alternative are determined or extrapolated from existing base year plans and policies.

The second alternative is called the Plan, previously referred to as the Final Blueprint, and reflects the spatial distribution of future households and employment resulting from the strategies approved by the MTC and ABAG Executive Boards in fall 2020. The Plan alternative starts with base year plans and policies but modifies them as needed to represent the impacts of the strategies.

Similarly, the other two EIR Alternatives build off of the Plan while modifying existing strategies to provide a range of potential alternatives that aim to accomplish the goals pursued within the proposed plan. EIR Alternative 1 modifies strategies to minimize the development footprint by focusing on an even greater share of regional growth in low-VMT places with high-quality transit options. To a greater degree than the Plan, EIR Alternative 2 promotes housing growth in locations that are jobs-rich and/or are high-resource. Strategies in this alternative are designed to address the regional challenges of displacement and gentrification.

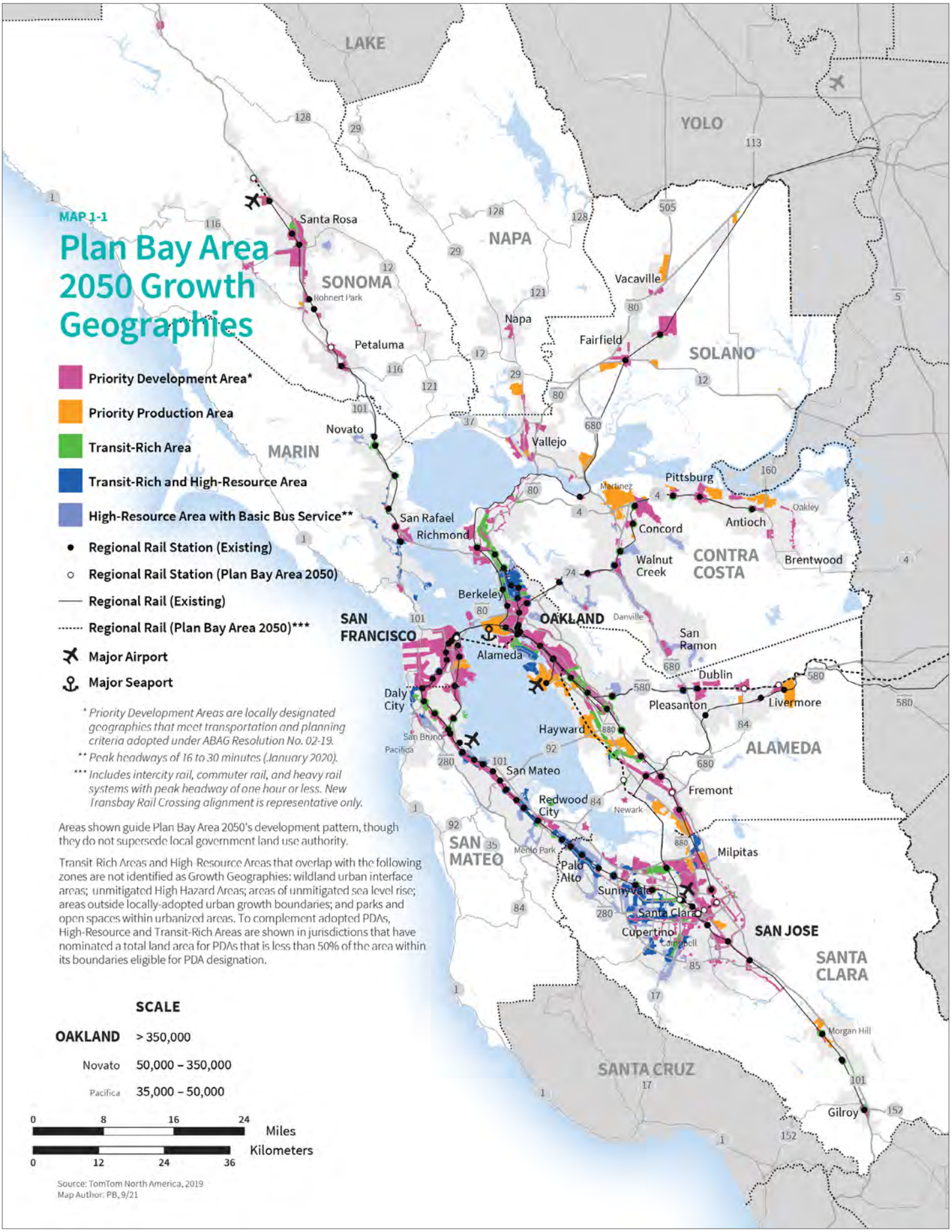
Growth Geography Framework

To advance the various goals of the EIR Alternatives, a spatial framework was established to carry out strategies and evaluate the outcomes of such strategies. The Growth Geographies are places identified for housing and/or job growth either by local jurisdictions or because of their proximity to transit or access to opportunity. For modeling purposes, a series of specific Growth Geographies were established to further define the overall definition of Growth Geographies (GG) adopted by the Commission and Executive Board in September 2020 (mapped in Figure 13). They have been identified spatially according to the following rules and used as the building blocks for several strategies.

Table 11. Growth Geography definitions

GEOGRAPHY NAME	DEFINITION
Growth Geography (GG)	In all local jurisdictions, these areas included locally designated Priority Development Areas (PDAs) and Priority Production Areas (PPAs), as well as Transit-Rich Areas (TRAs) served by BART or Caltrain Baby Bullet routes. In cities that have nominated less than 50% of the land within their boundaries eligible for designation as a PDA, these areas also include: all TRAs not included in a PDA including both High-Resource Areas (HRAs) and places outside HRAs; and HRAs that are outside of a TRA but within ¼ mile of a bus stop with 16- to 30-minute peak period headways
Priority Development Areas (PDAs)	Locally identified places for housing and job growth
Transit-Rich Areas (TRAs)	These are areas within ½ mile of transit, further distinguished by the quality of transit:
TRA1	Rail transit stop served by at least 3 BART routes or 1 BART route and 1 Caltrain Baby Bullet route
TRA2	Rail transit stop that does not meet the TRA1 definition and is served by BART or Caltrain; light rail stop; or bus stop served by a bus rapid transit route with peak headways of 1-9 minutes. Some alternatives divide this category into three sub-categories to more precisely apply the strategies:
TRA2a	Typical BART station or Baby Bullet Caltrain station
TRA2b	Typical Caltrain station or high-frequency light rail station with dedicated right-of-way (e.g., Muni Metro Castro Station)
TRA2c	High-frequency light rail (e.g., Muni Metro J-Church surface stations); moderate-frequency light rail station with dedicated right-of-way (e.g., VTA North 1st corridor); BRT stop or station
TRA3	Rail transit stop that does not meet the TRA1 or TRA2 definition; ferry terminal; or bus stop served by at least one route with a 1-15 minute peak headway
High-Resource Areas (HRAs)	Census Tracts designated “High or “Highest” Resource by the California Departments of Housing and Community Development and Finance, clipped to urban footprint
Priority Production Areas (PPAs)	Locally identified places for middle-wage job growth in industries like manufacturing, logistics, or other trades; must be zoned for industrial use or have a predominately industrial use

Figure 13. Plan Bay Area 2050 Growth Geographies



Policymakers can apply incentives or disincentives — financial or regulatory — in an effort to influence land use. These are referred to as "housing, economy and environment strategies" or "land use strategies" for short. Differences in the land use strategy inputs are the fundamental means of representing the different EIR Alternatives. The strategies represent actions that MTC, ABAG, or partner agencies such as cities and counties could take or seek legislation to allow. These input assumptions vary between alternatives and when combined with the more fundamental Model Agents described above, produce model outputs.

The land use strategies described in this section are applied in the same fashion to all alternatives except the No Project alternative, unless otherwise noted. The variation across alternatives derives mostly from the way these strategies are implemented within the region, or not implemented at all, and will be discussed in relation to each strategy.

Apart from the strategies modeled explicitly in Bay Area UrbanSim 2, economic and transportation strategies act on the land use pattern and enter through the interactions between models. Region-level economic strategies influence the level of demand for housing and job space as well as the characteristics of this demand that may be shaped by factors such as the income levels of households. Transportation strategies influence the accessibility of different locations in the region, which can increase the feasibility of housing or commercial development in these locations in the land use model.

Strategy H1 | Further Strengthen Renter Protections Beyond State Law

Strengthening renter protections across the region builds upon tenant protection laws and limits rent increases, and is thus modeled as a change in the behavior of renter households. The policy is represented as a slowing of the relocation rate of renters and increased stability. Based on PUMS 2013-2017 data, it is estimated that renter households have an 80% likelihood of relocating within five years. This is used to set the probability a modeled household will move and re-enter the search for housing. Renter protections are modeled as a 15% decrease in the rate of relocation for low-income households. The resulting relocation probability is therefore 67% within each five-year model time step. Consequently, low-income renter households remain in their homes longer than other household groups as the region continues to grow and the land use pattern evolves.

Strategy H2 | Preserve Existing Affordable Housing

To maintain the existing affordable housing in the region, funding is used over the plan period to preserve units as permanently deed-restricted housing. In the No Project alternative, only preservation funding from existing federal, state, and local sources is available. Funding levels remain relatively similar to the baseline year and are continued through the plan horizon year to preserve units. This results in 110,050 additional deed-restricted units by 2050: 22,600 in Alameda, 15,000 in Contra Costa, 3,150 in Marin, 1,650 in Napa, 14,950 in San Francisco, 13,500 in San Mateo, 28,150 in Santa Clara, 5,150 in Solano, and 5,900 in Sonoma. In all other alternatives, Bay Area UrbanSim 2 applies affordable housing funds by randomly selecting housing units for preservation. Once an affordable housing unit becomes preserved, the subsidized unit is then prioritized for low-income households in the model.

Housing in the region is selected for preservation and allocated funding if it is located within one of the three following areas: Transit-Rich Areas (TRAs), the Displacement Risk (DR) geographies,[22] or the general Growth Geography (GG) areas. The funding is further specified by county, based on the base year number of low-income households in these geographies and the number of low-income households otherwise expected to leave these areas without the preservation of housing. First, an equal or greater number of units than the number of low-income households in a given county in 2010 were preserved in the "DR+TRA" and "TRA only" geographies. Next, where a net loss in low-income households was projected in Draft Blueprint modeling results between 2010 and 2050 in "DR" geographies,

22 Displacement Risk geographies are derived from the UC Berkeley Urban Displacement Project (https://www.urbandisplacement.org/map/sf). They are within census tracts designated: "At Risk of Gentrification or Displacement (Low Income)", "Ongoing Gentrification / Displacement of Low Income Households (Low Income)", "At Risk of Exclusion (Moderate to High Income)", and "Ongoing Exclusion / Displacement of Low Income Households (Moderate to High Income)".

an equal or greater number of units than the number of low-income households in 2010 was preserved in "DR only" geographies. In counties that had a reduction in the percentage of low-income households between 2010 and 2050, and a deficit in low-income units remained, additional units were preserved to fill in the gap. Lastly, any remaining low-income units to meet the regional target were added to "GG" geographies in each county, proportional to its 2010 share of the region's low-income households. Table 12 details the resulting targets for the number of units to preserve in Bay Area UrbanSim 2 within the Growth Geography combinations in each county.

Table 12. Preservation of affordable housing by county and Growth Geography

	TOTAL PRESERVED UNITS TARGET								
	Alameda	Contra Costa	Marin	Napa	San Francisco	San Mateo	Santa Clara	Solano	Sonoma
DR+TRA	27,500	8,500	5,000	0	27,500	7,500	38,500	500	5,000
DR only	0	0	6,000	0	500	0	0	0	0
TRA only	99,000	12,500	5,000	500	93,000	17,000	64,000	3,000	5,000
GG (any)	2,500	1,000	12,000	0	54,000	41,500	2,000	500	500

Bay Area UrbanSim 2 uses four household income categories, described in Table 7. To give low-income households priority for these units, an initial household location choice model runs which only places low-income households into deed-restricted units. Afterwards, a general household location choice model runs to place remaining households. Once a unit becomes preserved as affordable, low-income households either continue to occupy these units or relocate into them based on historical rates. The time it may take for a low-income household, or a new low-income household, to occupy a preserved unit is reflective of the transaction costs of moving.

Strategy H3 | Allow a Greater Mix of Housing Densities and Types in Growth Geographies

All alternatives start with the basic zoning classification established as the development capacity inputs. For most alternatives, zoning modifications are made for various subsets of parcels in the region. Zoning modifications act on two components: the set of building types allowed on a parcel and the maximum dwelling units per acre (if the modification is not already permitted under the local zoning). Zoning schemas are guided by the regional Growth Geographies which have been used in combination to create the detailed zoning schema. The No Project alternative assumes current land use regulations captured in the base zoning do not change between now and 2050. Further, the No Project alternative assumes that trends in the expansion of the region's urban limits (as discussed below under Maintain Urban Growth Boundaries) continue to accommodate some of the region's growth.

In the Plan, zoning is modified to broaden allowable building types and increase development density in Transit-Rich Areas (TRAs) and High-Resource Areas (HRAs) to encourage growth near transit and in high-resource neighborhoods. Table 13 provides the detail on the zoning modifications in the Plan. Zoning differs between parcels containing single family dwelling (SFD) units and parcels not containing SFD units to account for local context.

Table 13. Residential zoning modifications for the Plan

PLAN			
Zoning Alternative Geography		Maximum Dwelling Units per Acre Applied	
	Broadened Allowable Building Type	Parcels not occupied by Single Family Dwelling (SFD) Units	Parcels occupied by Single Family Dwelling (SFD) Units
GG + TRA1 + HRA	Multifamily Dwelling (MFD)	200	50
GG + TRA1 + nonHRA	MFD	150	50
GG + TRA2 + HRA	MFD	100	50
GG + TRA2 + nonHRA	MFD	75	35
GG + TRA3 + HRA	MFD	50	50
GG + TRA3 + nonHRA	MFD	35	35
GG + nonTRA + HRA	MFD	35	35
GG + nonTRA + nonHRA	n/a	25	25

EIR Alternative 1 increases zoning intensity in all TRAs to a greater amount than the proposed Plan alternative to create a more transit-supportive land use pattern. This alternative further refines the TRA categories to create a schema that enables more development around the regional transportation infrastructure providing the most service. The TRA categories used in EIR Alternative 1 are defined within the Growth Geography framework (Table 11), and the modifications to residential development capacity are detailed in Table 14.

Table 14. Residential zoning modifications for EIR Alternative 1

EIR ALTERNATIVE 1		
Zoning Alternative Geography	Broadened Allowable Building Type	Maximum Dwelling Units per Acre Applied
GG + TRA1	MFD	300
GG + TRA2a	MFD	300
GG + TRA2b	MFD	250
GG + TRA2c	MFD	250
GG + TRA3	MFD	100

EIR Alternative 2 broadens use types and increases residential densities in a selection of HRAs and TRAs in specific jurisdictions to encourage low-income housing in jobs-rich communities. Compared to the Plan, this alternative lowers upzoning for TRA1 and TRA2 to allow more growth in a greater array of jurisdictions. Additionally, within jobs-rich and high resource cities (defined below), as well as within their surrounding jurisdictions, upzoning in transit-rich and Growth Geography areas is higher where these overlap with high-resource areas. This contributes to more potential growth in HRAs to achieve a better jobs-housing balance. Importantly, there is a limitation on upzoning any parcels with multi-family development in Equity Priority Community (EPC) geographies[23], which is included to mitigate potential displacement impacts. The TRA categories used in EIR Alternative 2 are defined within the Growth Geography framework (Table 11), and the modifications to residential development capacity are detailed in Table 15.

Jobs-rich and high-resource cities are those with a job-housing ratio greater than 1.75 in addition to being identified as exclusionary in the final draft 2023-2031 RHNA allocation (via "equity adjustment" calculation). These include St. Helena, Pleasanton, Menlo Park, Palo Alto, Cupertino, and Milpitas. Adjacent cities are defined as jurisdictions within a five-mile of radius of these cities, which include Atherton, Belmont, Calistoga, Campbell, Dublin, East Palo Alto, Fremont, Hayward, Livermore, Los Altos, Los Altos Hills, Los Gatos, Monte Sereno, Mountain View, Newark, Portola Valley, Redwood City, San Carlos, San José, San Ramon, Santa Clara, Saratoga, Sunnyvale, Union City, and Woodside.

23 More information on the Equity Priority Communities framework can be found here: https://github.com/BayAreaMetro/Spatial-Analysis-Mapping-Projects/tree/master/Project-Documentation/Equity-Priority-Communities .

Table 15. Residential zoning modifications for EIR Alternative 2

EIR ALTERNATIVE 2			
Zoning Alternative Geography		Maximum Dwelling Units per Acre Applied	
	Broadened Allowable Building Type	Parcels in Job-Rich and High-Resource Cities and Adjacent Cities	Parcels in All Other Jurisdictions
GG + TRA1 + HRA	MFD	125	125
GG + TRA1 + nonHRA	MFD	125	125
GG + TRA2 + HRA	MFD	100	75
GG + TRA2 + nonHRA	MFD	55	55
GG + TRA3 + HRA	MFD	75	50
GG + TRA3 + nonHRA	MFD	35	35
GG + nonTRA + HRA	MFD	75	50
GG + nonTRA + nonHRA	n/a	35	35

Figure 16 provides an overview of zoning modifications within the Urban Growth Boundaries of incorporated areas across all alternatives.

Figure 14. Plan Bay Area 2050 Growth Geographies: Transit-Rich Area (TRA) details

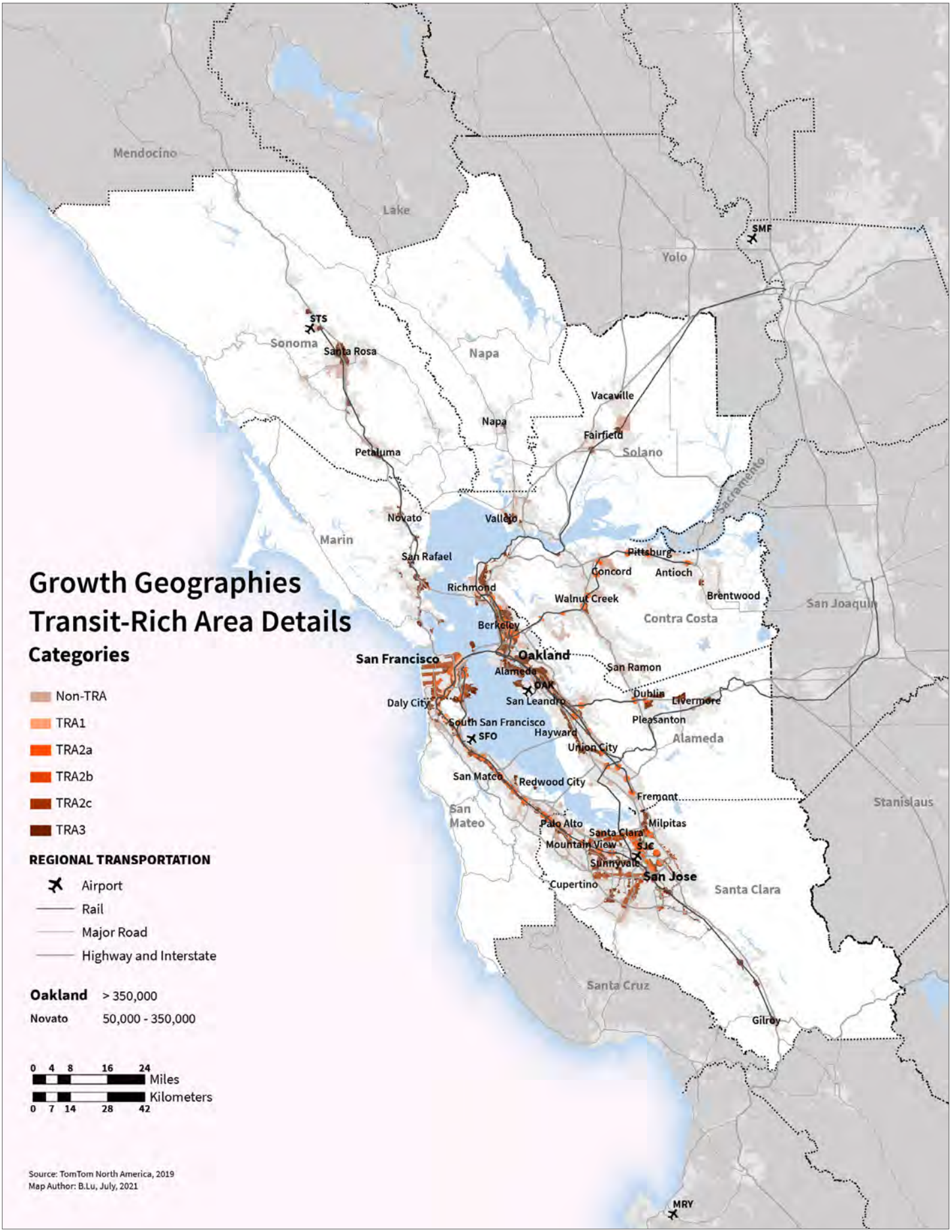


Figure 15. Plan Bay Area 2050 Growth Geographies: High-Resource Area (HRA) details

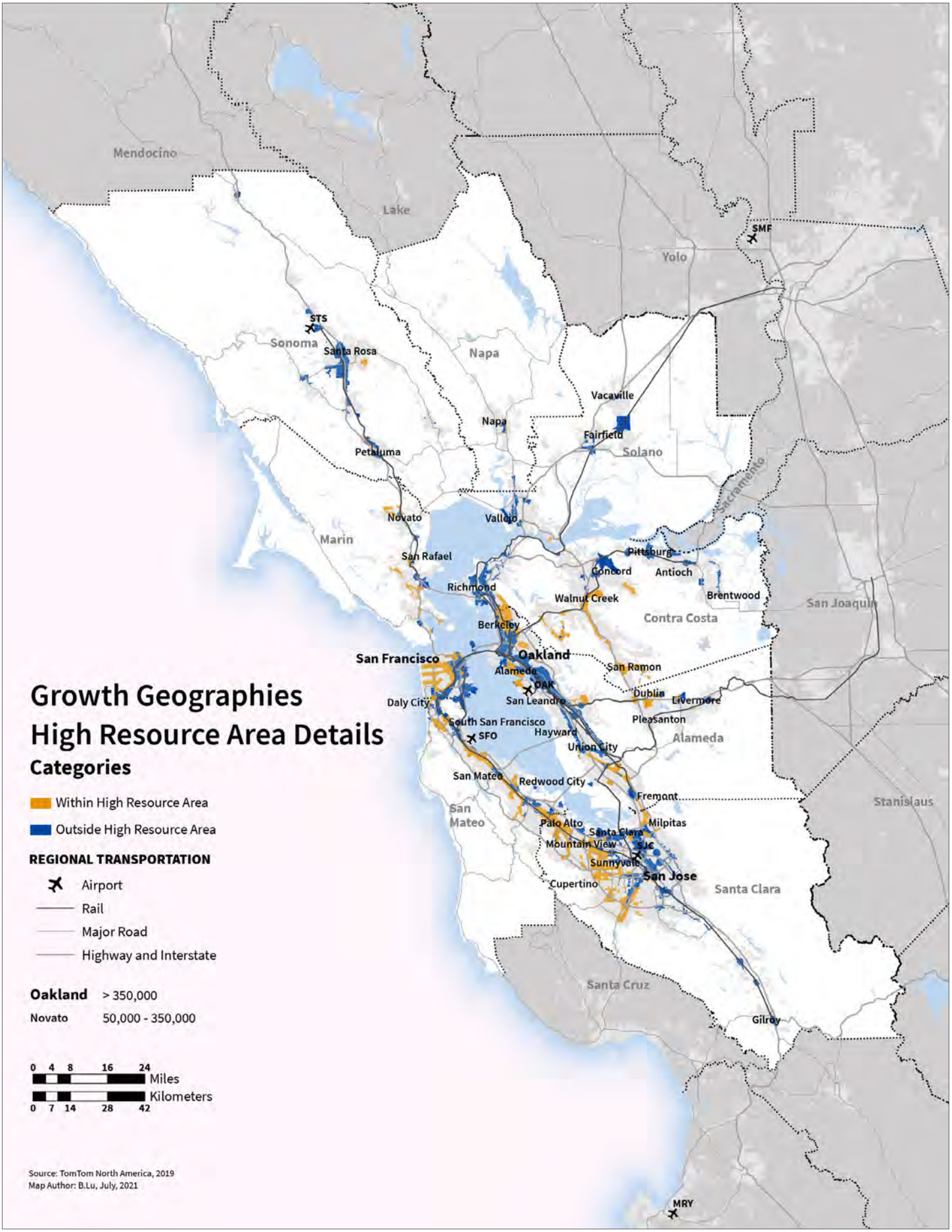
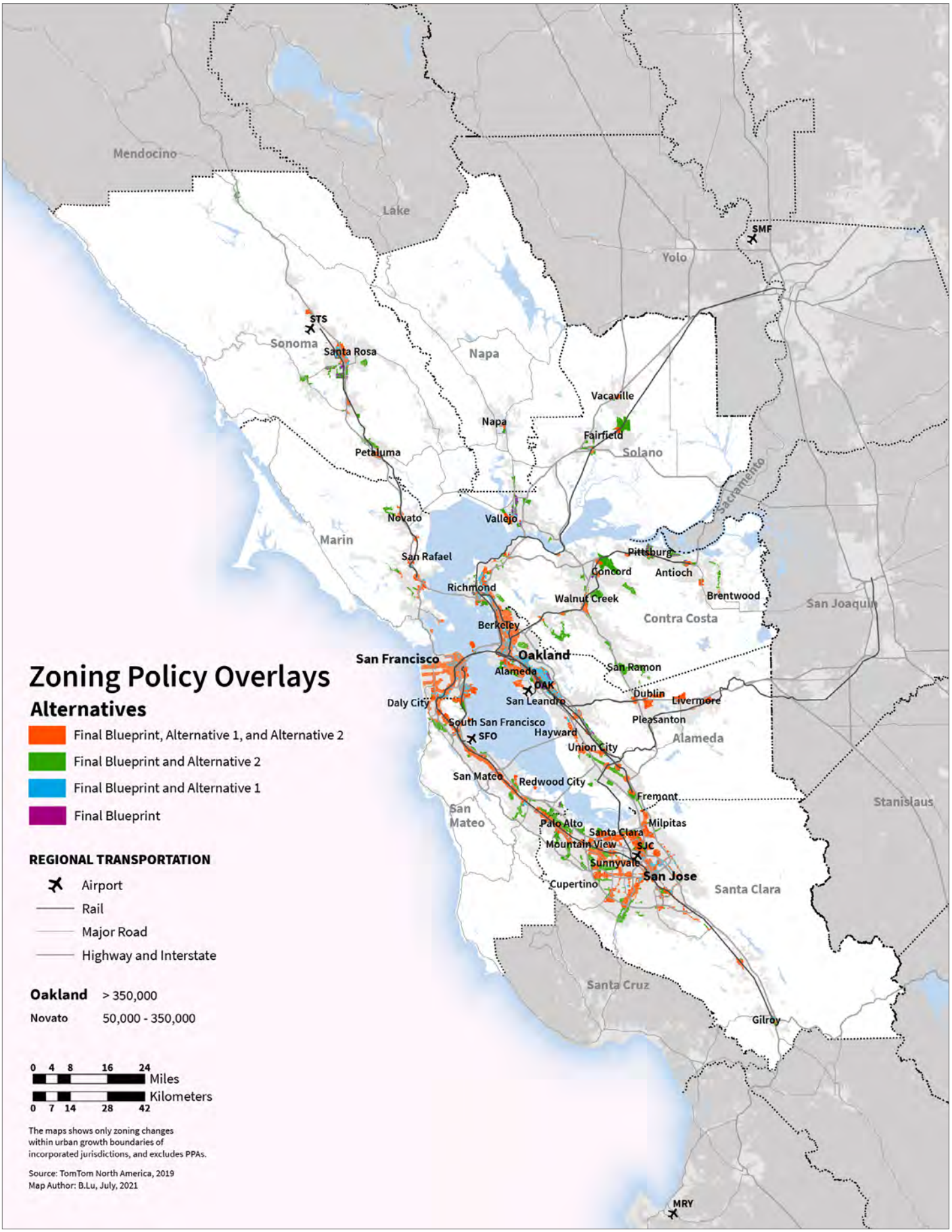


Figure 16. Zoning policy overlays across alternatives



To encourage growth in areas with access to the region's best public transit, schools, and community services, the plan also seeks to remove barriers to housing development in these locations. To do so, certain costs associated with housing development are limited, such as project review times and parking requirements. This is represented in the land use model as an increase in profit for the market-rate developer, thus increasing the feasibility of housing projects. The profit increases are applied using three tiers, determined by their levels of access to transit and resources. The profit increase levels associated with the savings are 1.3%, 1.9% and 2.5%. These amounts are based on estimates of development fees as a share of total housing costs and reflect the impact of reducing a specific share of these development costs.[24]

Strategy H4 | Build Adequate Affordable Housing to Ensure Homes for All

In addition to the preservation of affordable housing in the region, the alternatives also allow for the production of affordable housing to help meet the needs of low-income households. In the No Project alternative, only production funding from existing federal, state, and local sources is available. Funding levels remain similar to the baseline year and are continued through the plan horizon year to create deed-restricted units. This results in 117,000 additional deed-restricted units by 2050: 24,100 in Alameda, 15,900 in Contra Costa, 3,300 in Marin, 1,800 in Napa, 15,900 in San Francisco, 14,300 in San Mateo, 29,900 in Santa Clara, 5,400 in Solano, and 6,400 in Sonoma.

In all other alternatives, funding is used in the land use model to produce new deed-restricted housing over the forecast period. The funding is directed within the region according to the alternative's goals: the Plan uses production money only within the Growth Geographies, EIR Alternative 1 uses money in Transit-Rich Areas within the Growth Geographies, and EIR Alternative 2 splits funding evenly between High-Resource Areas and non-High-Resource Areas within the Growth Geographies. In the model, this production funding is made available for deed-restricted housing in individual counties based upon its share of the region's population, and existing city-and county-generated funding sources. Table 16 details the allocation of available funding by county.

Table 16. Production funding targets for affordable housing by county and Growth Geography: total production funding (millions of $)

	PLAN	EIR ALTERNATIVE 1	EIR ALTERNATIVE 2	
County	GG	GG + TRA	GG + HRA	GG + non-HRA
Alameda	4,000	4,000	2,000	2,000
Contra Costa	2,500	2,500	1,250	1,250
Marin	520	520	260	260
Napa	300	300	150	150
San Francisco	3,000	3,000	1,500	1,500
San Mateo	2,500	2,500	1,250	1,250
Santa Clara	5,000	5,000	2,500	2,500
Solano	850	850	425	425

24 12% is used as a proxy for development fees as a share of total development costs, based upon It All Adds Up: The Cost of Housing Development Fees in Seven California Cities (2018), Terner Center, which found fees in California range between 6%-18% of total development costs.

To build these units, the land use model identifies residential development projects that are close to being financially feasible under market conditions. Subsidizing these projects fills the "feasibility gap" and the financial need of projects is sorted to maximize the number of projects that can become feasible with the given funding. Building these projects creates deed-restricted units, which are only available to low-income households. This is complemented by the direct allocation of additional deed-restricted units through the Transform Aging Malls and Office Parks into Neighborhoods and the Accelerate Reuse of Public and Community-Owned Land for Mixed-Income Housing and Essential Services strategies.

Strategy H5 | Integrate Affordable Housing into All Major Housing Projects

An inclusionary zoning policy is included in Bay Area UrbanSim 2 as a requirement that new residential construction include a set percentage of units that are available exclusively to low-income residents. A default set of inclusionary zoning percentages capture the jurisdictional requirements in place today and these levels remain in place for the No Project. The default percentages came from multiple data sources, including research conducted by MTC and other entities[25], and local zoning ordinance or municipal code of Bay Area jurisdictions. The other EIR Alternatives vary these levels to tailor the requirements by location. Any new residential building must provide the percentage of affordable units required in each of the Growth Geographies, shown in Table 17.

Table 17. Minimum percent of affordable housing units in new development

	INCLUSIONARY PERCENTAGE
GG + TRA1/TRA2/TRA3 + HRA	20%
GG + TRA1/TRA2	15%
GG + HRA	15%
Other Areas	10%

Bay Area UrbanSim 2 reflects the requirement by altering the feasibility of building a new residential project. If a project remains profitable, the affordable units will be constructed. This process captures the challenges of building projects that have lower revenue but the same costs, with some otherwise feasible projects shifting to other locations. Like other affordable units, when projects are built with inclusionary units, only households in the lowest income quantile are prioritized to occupy them.

25 Data compiled by Association of Bay Area Governments in February 2017: https://mtc.maps.arcgis.com/home/item.html?id=4b-77830210d14982a3256fd7b67f68ee; Inclusionary Housing Map & Program Database maintained by InclusionaryHousing.org, a project of Grounded Solutions Network developed with support from the National Housing Conference and the Lincoln Institute for Land Policy: https://inclusionaryhousing.org/map/.

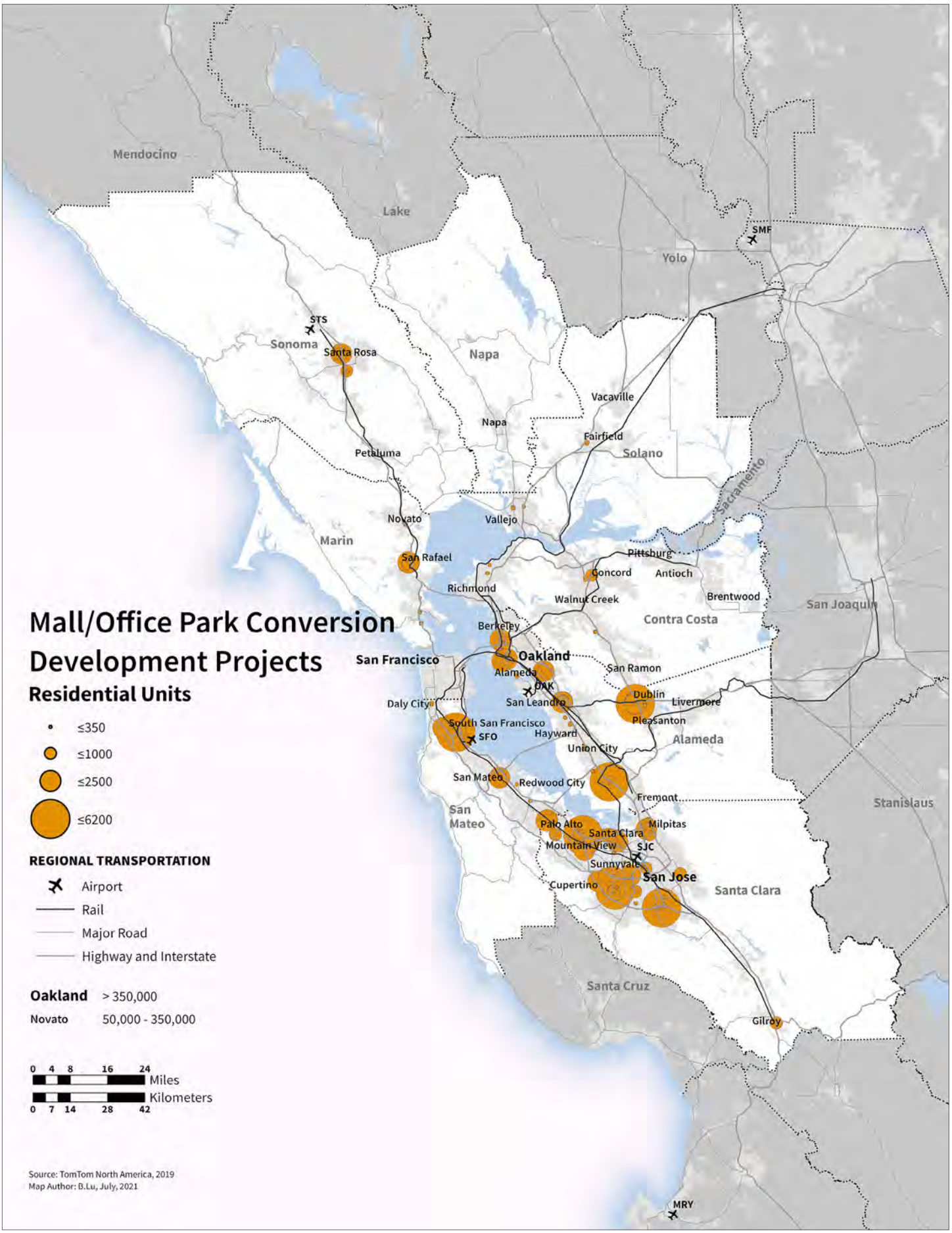
Strategy H6 | Transform Aging Malls and Office Parks into Neighborhoods

The transformation of aging malls and office parks promotes the reuse of land for critical housing, bringing new uses to these sites as neighborhoods with housing at all income levels as well as local and regional services. These projects are implemented through the Scheduled Development Events Model, where staff generate representative new projects that would comprise these sites and the model constructs them.

Malls and office parks in the region were analyzed to understand their likelihood of transitioning to new uses by assessing the age and value of existing buildings and the potential profitability under a new use. To support neighborhood-scale developments, only sites larger than 20 acres were assessed. Sites also needed to be located within a Growth Geography and required access to either transit, social resources, or both. In the Plan, the resulting set of malls and office parks were converted into new neighborhoods. In EIR Alternative 1, only projects within TRAs were built. In EIR Alternative 2, all projects within HRAs were constructed, while projects outside of HRAs were de-prioritized by random selection to achieve the focus of 50% of housing production in HRAs.

To support affordable housing production and capture the value created by rezoning particularly large sites, redeveloped malls and office parks with more than 1,000 new units are assumed to set aside adequate land for affordable housing at a ratio of 0.2:1 (or 20% of the project's housing units, in line with the upper bound of Strategy H4: Build Adequate Affordable Housing to Ensure Homes for All). Deed-restricted units above and beyond the inclusionary requirement contributed to this strategy as well. These are mall and office park transformation projects with 1,000+ dwelling units, which have a "set aside" for additional affordable housing on top of inclusionary requirements.

Figure 17. Mall/office park conversion development projects

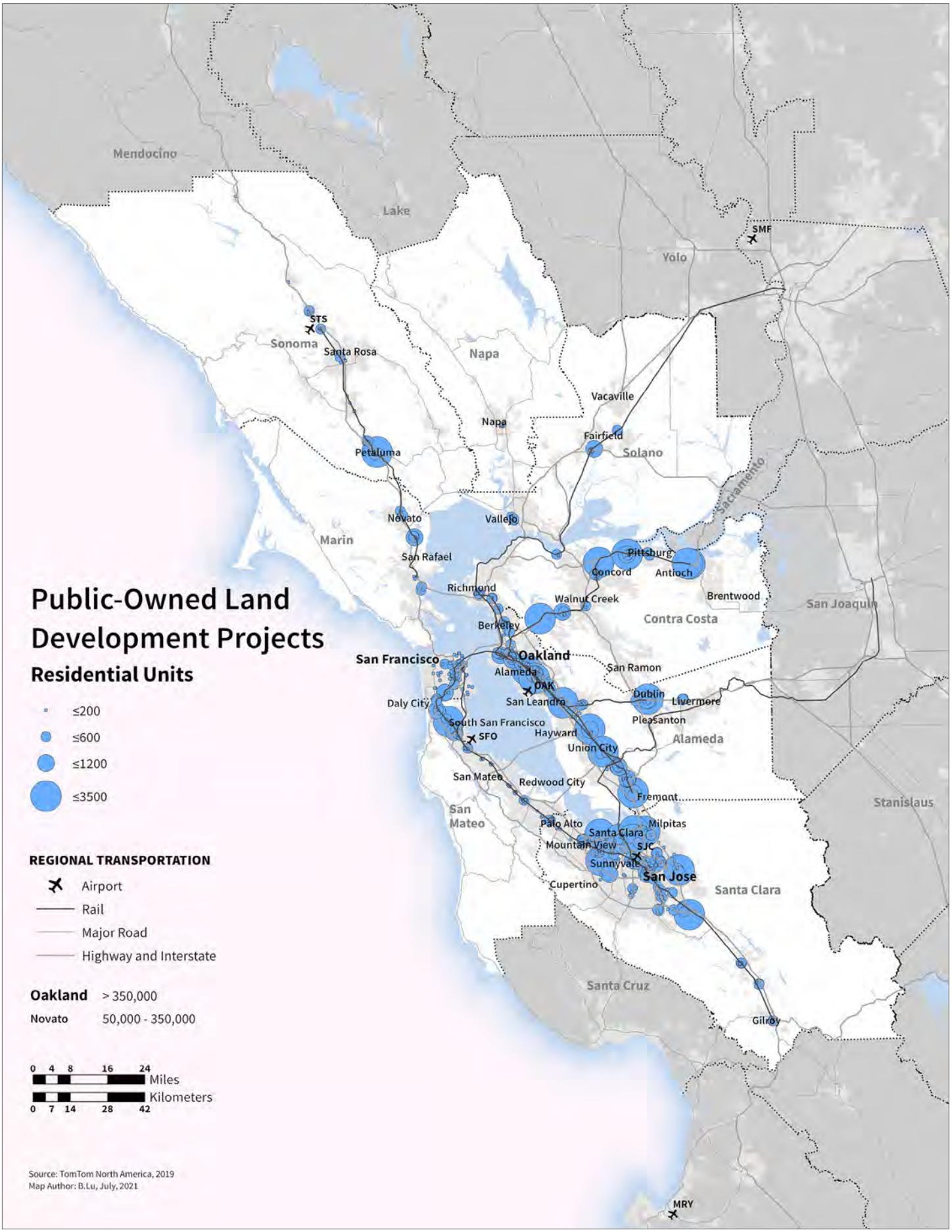


Strategy H8 | Accelerate Reuse of Public and Community-Owned Land for Mixed-Income Housing and Essential Services

Another strategy that makes effective use of land for housing is the development of public and community-owned land. This is accomplished first by identifying sites in the region owned by public agencies, community land trusts, and other non-profit landowners. By opening these sites for development, affordable housing and local services can be constructed. In the same way that mall and office park transformations are added to the development landscape, these projects are developed through the Scheduled Development Events Model. These developments were primarily 100% affordable housing projects, with some mixed-used projects to add commercial space for services. Staff generated projects to fit the building envelope of the parcels while considering appropriate scale for these sites.

All publicly owned sites identified for reuse were prioritized for development in upcoming and future years based upon size, transit proximity, and existing land use, if any. The first built were those on land owned by transit agencies within Transit-Rich Areas. These were followed by vacant sites in Transit-Rich Areas that are less than 10 acres, sites in Transit-Rich Areas that are less than 10 acres and occupied by buildings constructed before 1980, sites in Transit-Rich Areas that are larger than 10 acres and were assessed for viability of their current use, and finally other remaining sites. In the Plan, the full final set of public and community-owned lands were developed. In EIR Alternative 1, only projects in the Growth Geography area and within TRAs were built. In EIR Alternative 2, all projects within HRAs were constructed, while not all projects outside of HRAs were converted.

Figure 18. Public-owned land development projects



Strategy EC2 | Expand Job Training and Incubator Programs

Business incubators are used as an economic development catalyst for the creation of new small businesses and are designed to support training for high-growth, in-demand occupations. This strategy provides funding support for incubators and is modeled as the development of new incubator spaces. Incubators are co-located in select Priority Production Areas (PPAs) specifically in housing-rich locations to encourage job opportunities. Twenty-five jurisdictions nominated 34 PPAs around the region, which were adopted by MTC and ABAG in early 2020. Of these, PPAs with a jobs-housing ratio of less than 1.4 were assumed to receive incubator funding. The following PPAs fall under this criterion:

1. Bayside Industrial PPA
2. Pacific Commons PPA
3. Hayward PPA
4. Oakland Airport PPA
5. San Leandro PPA
6. Union City PPA
7. Northern Waterfront Industrial Corridor
8. Northern Concord PPA
9. Western Concord PPA
10. Oakley Employment Area
11. Pittsburg Northern Waterfront
12. Pacheco Manufacturing Zone
13. Baypoint Industrial Sector
14. American Canyon PPA
15. Northern Palmetto PPA
16. Morgan Hill PPA
17. Monterey Business Corridor
18. Benicia Industrial PPA
19. Dixon Northeast Quadrant
20. Fairfield PPA
21. Rio Vista PPA
22. Suisun City Gentry
23. Vacaville Industrial PPA
24. South Vallejo PPA
25. Cotati PPA

In Bay Area UrbanSim 2, these incubator spaces are represented by adding 450,000 square feet of industrial development within each PPA through the Scheduled Development Events model. Over time, the Employment Location Choice model may choose to locate jobs in these incubator buildings.

Strategy EC4 | Allow Greater Commercial Densities in Growth Geographies

As with residential zoning, commercial land use is treated in each of the alternatives to guide the region's employment growth. The zoning schemas are applied at the parcel level, allowing new building types on a parcel and/or changes to the Floor Area Ratio (FAR) (where not already permitted by local zoning). The commercial land use modifications in the alternatives are guided by the Growth Geographies previously defined in this report. In many situations, increased commercial zoning on a parcel coincides with zoning for denser residential development, meaning that these uses compete with one another, and also work to create mixed-use environments.

The No Project alternative maintains the existing commercial land use allowable intensities present in the base year model inputs. In the Plan, zoning is modified to increase development density in Transit-Rich Areas (TRAs) to encourage transit-supported commercial growth. In EIR Alternative 1, commercial development intensity is also increased in Transit-Rich Areas, with somewhat higher maximum allowed Floor Area Ratios than those in the Plan. In this alternative, TRAs in cities with three or more rail lines with frequent service are given even slightly higher FARs to encourage employment growth in locations with the most robust transit service. San Francisco, Oakland, Daly City, and San Leandro meet the requirements of having three or more rail lines as well as having peak service headways of five minutes or fewer. Since EIR Alternative 2 has a focus on creating housing opportunity in High-Resource Areas, commercial land use was not modified, and the base year zoning is maintained.

Table 18. Commercial density modifications across the alternatives

PLAN			
Zoning Alternative Geography		Maximum Floor Area Ratio (FAR) Applied	
	Broadened Allowable Building Type	Parcels not occupied by Single Family Dwelling (SFD) Units	Parcels occupied by Single Family Dwelling (SFD) Units
GG + TRA1	n/a	9	3
EIR ALTERNATIVE 1			
Zoning Alternative Geography	Broadened Allowable Building Type	Maximum Floor Area Ratio (FAR) Applied	
GG + TRA1 + three or more frequent rail lines	n/a	15	
GG + TRA1	n/a	12	
EIR ALTERNATIVE 2			
Zoning Alternative Geography	Broadened Allowable Building Type	Maximum Floor Area Ratio (FAR) Applied	
All Geographies	n/a	Local Zoning	

Strategy EC5 | Provide Incentives to Employers to Shift Jobs to Housing-Rich Areas Well-Served by Transit

To improve jobs-housing balance, this strategy uses building subsidies to encourage employers to locate in housing-rich areas near existing transit. These subsidies are used to support new office development in the land use model in a way similar to subsidizing housing: the land use model identifies office development projects that are close to being financially feasible under market conditions. Subsidizing these projects fills the "feasibility gap" and allows for office development projects that would not otherwise be built.

To meet the locational objectives of the strategy, the subsidy is only applied in select housing-rich cities, focusing on those with regional rail services (Table 19). These were the 11 cities with frequent rail services and four cities with other regional rail services such as SMART. The first group of cities has job-housing ratios lower than 1.2 at both the county and the jurisdiction levels in the base year; cities in the second group are either city centers or are linked to the New Transbay Rail Crossing. The total amount of $10 billion in subsidy is split between the two groups, with $9.5 billion going to the first group and $500 million going to the second group.

Table 19. Office development subsidies to improve jobs-housing balance

COUNTY	JURISDICTION	QUALIFICATIONS FOR SUBSIDY	SUBSIDY AMOUNT (2020$)
Alameda	Dublin	• 2015 job-housing ratios lower than 1.2 in both the county and the jurisdiction • Frequent rail services	864,000,000
Alameda	Fremont		864,000,000
Alameda	Oakland		864,000,000
Alameda	San Leandro		864,000,000
Alameda	Union City		864,000,000
Contra Costa	Antioch		864,000,000
Contra Costa	Concord		864,000,000
Contra Costa	El Cerrito		864,000,000
Contra Costa	Lafayette		864,000,000
Contra Costa	Pittsburg		864,000,000
Contra Costa	Richmond		864,000,000
Marin	San Rafael	• Other regional rail services • City center	125,000,000
Solano	Fairfield	• Other regional rail services • City center • Connected to New Transbay Rail Crossing	125,000,000
Solano	Vacaville	• Other regional rail services • Connected to New Transbay Rail Crossing	125,000,000
Sonoma	Santa Rosa	• Other regional rail services • City center	125,000,000

Strategy EC6 | Retain and Invest in Key Industrial Lands

This strategy focuses on industrial lands in order support and grow production, advanced manufacturing, distribution, and related businesses and middle-wage jobs. Priority Production Areas (PPAs) served as a basis for identifying the region's industrial land assets. Industrial zoning is maintained in the PPAs that intersect with the Growth Geographies through the allowed building types in the land use model. The zoning was modified to allow industrial use without competition from multifamily use. Development capacity in these PPAs was also increased to a maximum Floor Area Ratio (FAR) of 2 in this schema to accommodate new industrial development.

In addition, a subsidy of $4 billion was applied to allocate funding to jurisdictions with PPAs that are within the Urban Growth Boundaries. The funding is used to subsidize industrial development projects and to promote employment growth, especially in places with otherwise limited forecasted growth. To accomplish this, staff first looked at the BAUS2 model run results without integrating the industrial development subsidy and grouped the jurisdictions with PPAs into two categories based on their allocation of jobs in the manufacturing and wholesale sector as well as the transportation and utilities sector. The first group is jurisdictions with job growth in the these two sectors of over 800 jobs. These jurisdictions receive 15% of the total amount of subsidy, divided equally, and include Benicia, Fremont, Hayward, Livermore, Morgan Hill, Pacifica, San José, and Vacaville. The second group received the remaining 85%, divided equally, and includes American Canyon, Antioch, Concord, Cotati, Dixon, Fairfield, Milpitas, Oakland, Oakley, Pittsburg, Rio Vista, San Francisco, San Leandro, unincorporated Contra Costa County, Union City, and Vallejo.

Staff then converted the PPA funding for each jurisdiction into non-residential development projects using a cost factor of $50 per square foot. These projects were added to PPA parcels in their jurisdictions as scheduled development events, spread equally over 2025, 2030, 2035, 2040, 2045 and 2050. The model then constructed these projects in their respective future years.

Strategy EC7 | Assess Transportation Impact Fees on New Office Developments

This strategy is a fee on new commercial development that reflects transportation impacts associated with such development. The development fee focuses primarily on new commercial spaces anticipated to have high employment-related or residence-related vehicle miles traveled (VMT).

This strategy is used in EIR Alternative 1 to incentivize development inside low-VMT job centers. The fees are applied to new office development, set on a cost per square foot basis. The fees are further specified at the county level. The transportation impact of new development is based on the average VMT per worker by county in 2020, which is based on TAZ-level VMT data from Plan Bay Area 2040. The rationale for the different fees by county is to right-size the fee based on average county VMT. Table 20 below shows the resulting fees by VMT level.

Table 20. New office development fees (dollars per square foot)

	VERY HIGH VMT TAZ	HIGH VMT TAZ	MEDIUM-HIGH VMT TAZ	MEDIUM VMT TAZ
Alameda	40	30	15	4
Contra Costa	40	30	10	n/a
Marin	40	30	8	n/a
Napa	40	30	10	n/a
San Francisco	60	40	20	10
San Mateo	40	30	10	n/a
Santa Clara	40	30	10	4
Solano	40	30	10	n/a
Sonoma	40	30	10	n/a

This strategy is not included in any other EIR Alternatives, including the Plan.

Strategy EC8 | Implement Office Development Caps in Job-Rich Cities

Office Development Caps is a strategy applied in EIR Alternative 2 to help redistribute job growth in the region and to maximize the land availability for housing in job-rich cities. The job-housing ratio is used as a metric for understanding which cities have the greatest imbalance in their number of jobs versus housing units. In cities with at least two jobs per housing unit, or a job-housing ratio of 2 or greater, office development caps were applied in the land use model. Restricting new office development in these locations redistributes the modeled regional job demand. Jobs may move to existing vacant office space or into new office space built by the developer model in feasible locations.

The following cities had jobs-housing ratios of 2 or greater[26]:

- Emeryville
- Brisbane
- Menlo Park
- Santa Clara
- Mountain View
- South San Francisco
- Milpitas
- Burlingame
- Palo Alto
- Colma
- Cupertino

This strategy is not included in any other EIR Alternatives, including the Plan.

26 2016 jobs-housing ratios based on US Census 5-year data.

Strategy EN1 | Adapt to Sea Level Rise

As mentioned in the section on Environmental Factors, Plan Bay Area 2050 assumes a future with one foot of sea level rise by 2035 and two feet of sea level rise by 2050. To reduce the impact of associated inundation, the Plan, EIR Alternative 1 and EIR Alternative 2 include efforts to mitigate sea level rise by addressing adaptation needs. Protective measures are funded in most locations that are permanently inundated. Equity Priority Communities and areas with high benefit and low cost are prioritized for protection. In the No Project alternative, mitigation is much more limited; only committed mitigation project locations are protected from sea level rise. The committed mitigation projects are: San Francisco Airport Shoreline Protection Program, Foster City Levee Project, South Bay Shoreline Project, and Oakland Airport Sea Level Rise Adaptation.

In the land use model, protected areas become spared from inundation. This is done by altering the input files that specify inundated parcels. When a parcel is removed from the inundation set, households and jobs are no longer displaced from that parcel, and the land is available for new development that can accommodate the region's growth.

Strategy EN4 | Maintain Urban Growth Boundaries

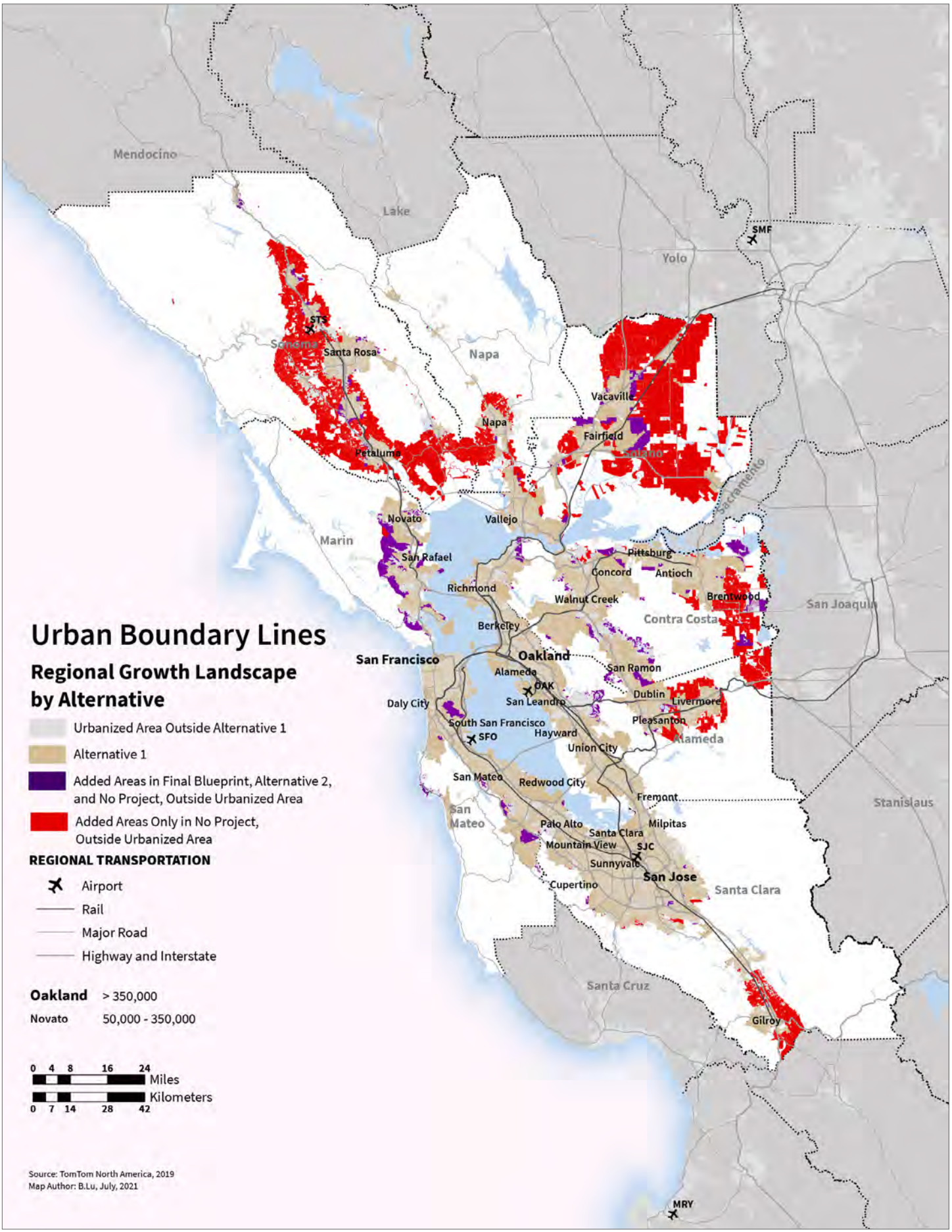
For the purpose of building EIR Alternatives, a consistent set of Urban Boundary Lines surrounding each city was established. These are meant to function like Urban Growth Boundaries in the EIR Alternatives. In some cases, the Urban Boundary Lines are drawn from true urban growth boundaries or urban service areas. In other cases, existing city boundaries are used to establish the Urban Boundary Line for EIR analysis.

The Urban Boundary Lines are treated in two different ways across EIR Alternatives. In the No Project alternative, they are assumed to be weakly enforced, meaning that suburban growth will be allowed to spill out past them. In the Plan and in EIR Alternative 2, the enforcement is assumed to be strict, meaning suburban growth is not allowed beyond them. In EIR Alternative 1, the boundaries limiting outward expansion are assumed to be the current city limits in all cases. Currently unincorporated land and any additional land within the Urban Boundary Line in each alternative is zoned to allow typical single-family development if not already permitted.

In the No Project alternative, the amount and location of growth beyond the Urban Boundary Lines must be determined. In the forecast, this can be thought of as land that is expected to become incorporated during the next three decades, either through city expansion or the formation of new cities. This is done by changing the zoning to allow suburban densities in particular locations and letting Bay Area UrbanSim 2 decide how much growth to place in those locations based on its representation of the regional land market. A total of 697 square miles of land was updated to allow typical suburban densities based the ratio of new incorporated land to population growth during the past three decades. Land was identified using a simple rule-based model that prioritized parcels that were near divided highways and had low slope within a five-mile radius (i.e., areas posited as most likely to incorporate). All land in this area was considered available in the base year.

The differential enforcement of Urban Boundary Lines across the alternatives results in different amounts of land being open for development by Bay Area UrbanSim 2's Real Estate Development sub-model. As seen in Figure 19, these potential "expansion areas" emphasize different degrees of regional compactness.

Figure 19. Urban boundary lines across alternatives



Strategy EN7 | Expand Commute Trip Reduction Programs at Major Employers

Modeling the strategy to expand commute trip reduction programs is primarily carried out through Travel Model 1.5 (see Strategy EN7: Expand Commute Trip Reduction Programs at Major Employers in that section). In the travel model, fewer trips are taken by auto and are substituted with an increase in the rate of telecommuting. Within Bay Area UrbanSim 2, the reduced number of employees going to their office on a given day results in an increase in building space efficiency. This strategy was represented in the same manner for the Plan and Alternatives 1 and 2. The resulting shift in building capacity was estimated by combining two factors at the super district zone level:

The share of workers likely to telework on a given day. Recent data on current workers was analyzed across all combinations of industry and occupation to understand the general compatibility of particular jobs (and their set of task requirements) for telework. These numbers were adjusted upward within Travel Model 1.5 to reflect the impacts of this strategy. Sub-areas of the Bay Area with larger shares of workers who were judged more likely to telework saw a larger change in this factor. By 2050 the superdistrict share of teleworkers ranged from 9% in Northwestern San Francisco to 25.5%. The largest increases in the share of teleworkers were in the Tri-Valley and the portion of the Inner East Bay from San Leandro to Hayward.

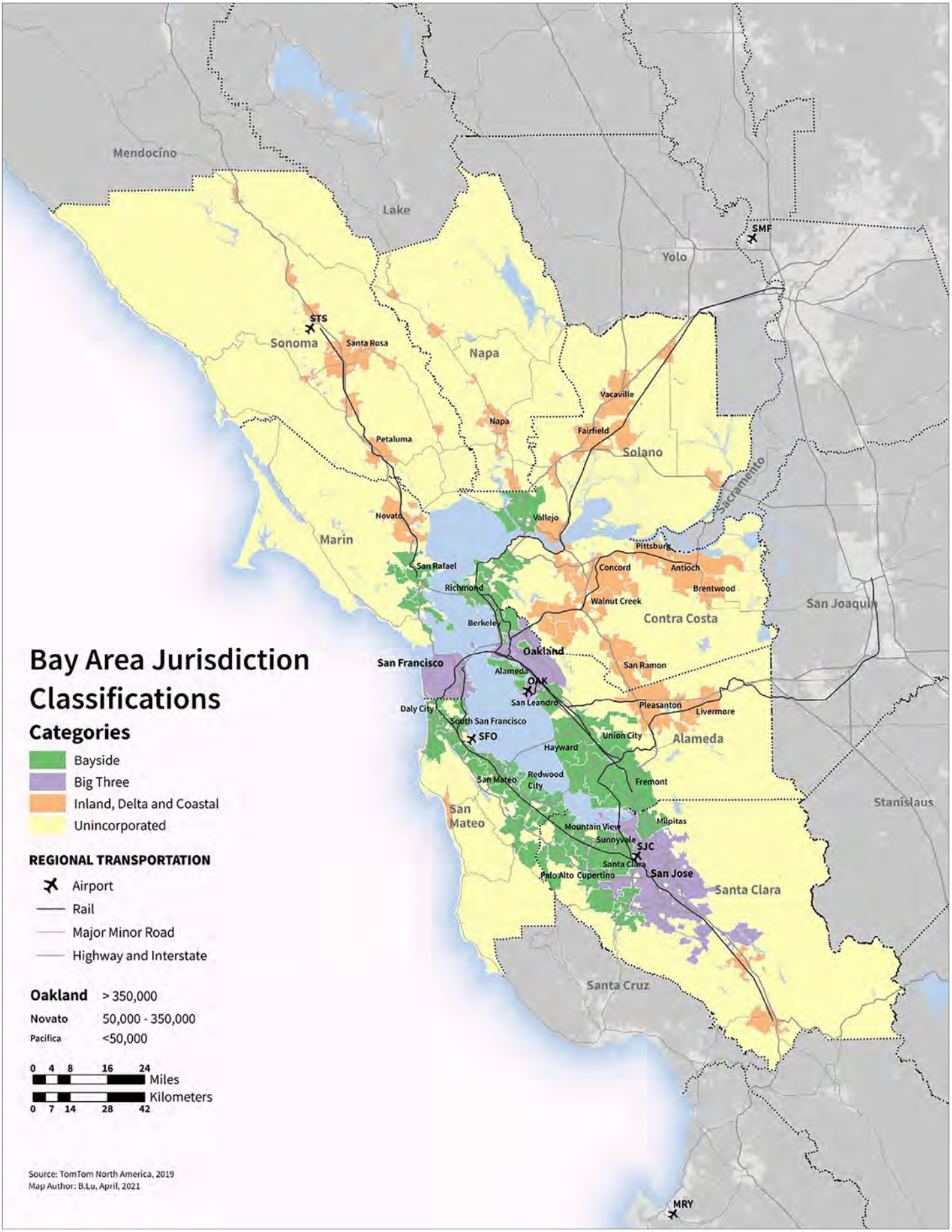
The "hoteling rate" at which it was assumed these workers could share their office workspaces. As a larger share of workers telework some days but continue to work in person on other days, firms are likely to re-arrange their offices by increasing the number of shared workspaces, often referred to as "hoteling". While some anecdotal data exists on this shift historically, it is difficult to forecast the degree to which offices will reduce their average square feet of rented space per employee. For the forecast, it is assumed that the hoteling rate (as applied to the share of workers that are teleworking) will range from 1/3 shared space in more expensive locations to no sharing in less expensive areas.

This strategy is then represented by applying each super district's hoteling rate to the share of workers expected to telework in a future year. This resulted in a reduced demand for commercial square feet of 7% by 2050 with the largest reductions occurring in San José and Oakland and very little expected change in most the North Bay. Overall, this tended to increase the tendency for employment growth in existing major job centers such as the San Francisco Central Business District and Silicon Valley because a greater number of employees can be accommodated by the large amount of existing space.

Findings

Selected land use model results are summarized and discussed here. The output presented is partial and intended to give a general sense of expected behavioral change across the alternatives and through the projection years. Emphasis is given to results that 1) influence the Travel Model, 2) affect Plan Bay Area 2050 results, and 3) provide a context for understanding the regional development change predicted by each alternative.

Figure 20. Map of Bay Area jurisdiction classification categories



Regional Land Use Outcomes

The share of regional population and employment growth provides a simple means of comparing the land use model outcomes for the four EIR Alternatives. For comparison, Figure 20 assigns the region's jurisdictions into four large categories: the Big Three Cities (San José, San Francisco, and Oakland); Bayside Cities; Inland, Delta and Coastal Cities; and Unincorporated Areas.

Table 21 shows the share of regional household growth for each alternative through 2050. Table 22 shows the share of regional employment growth for each alternative through 2050.

Table 21. Share of regional household growth across alternatives

AREA	2050 ALTERNATIVE			
	No Project	Plan	EIR Alternative 1	EIR Alternative 2
Big Three Cities	41%	43%	44%	37%
Bayside Cities	24%	34%	40%	40%
Inland, Delta and Coastal Cities	21%	18%	15%	18%
Unincorporated	15%	5%	1%	4%

NOTE: results may not total to 100% because of rounding.

Table 22. Share of regional employment across alternatives

AREA	2050 ALTERNATIVE			
	No Project	Plan	EIR Alternative 1	EIR Alternative 2
Big Three Cities	44%	39%	37%	47%
Bayside Cities	40%	45%	44%	36%
Inland, Delta and Coastal Cities	13%	13%	16%	14%
Unincorporated	3%	3%	4%	3%

Small Zone Outcomes

While the regional distribution of households and employment will influence travel behavior, a more micro-level understanding of growth is also fundamental in understanding each alternative's ability to achieve plan goals. As described above, the three small zones employed in the plan process are Priority Development Areas (PDAs), Transit-Rich Areas (TRAs), and High-Resource Areas (HRAs). Figure 13, above, shows these zones as well as additional Growth Geographies and areas of overlap. Table 23 provides the share of regional household growth in PDAs, TRAs, and HRAs for the alternatives through year 2050. Table 24 shows similar information for employment growth shares.

Table 23. Small zone share of household growth across alternatives

AREA	2050 ALTERNATIVES			
	No Project	Plan	EIR Alternative 1	EIR Alternative 2
PDAs	51%	72%	76%	66%
TRAs	63%	82%	91%	79%
HRAs	24%	28%	29%	39%

NOTE: results may not total to 100% because of rounding and/or overlapping zone definitions.

Table 24. Small zone share of employment growth across alternatives

AREA	2050 ALTERNATIVES			
	No Project	Plan	EIR Alternative 1	EIR Alternative 2
PDAs	51%	48%	50%	51%
TRAs	65%	63%	63%	63%
HRAs	18%	14%	15%	5%

NOTE: results may not total to 100% because of rounding and/or overlapping zone definitions.

Jobs-Housing Balance Outcomes

The jobs-housing balance is an ongoing topic of interest in the Bay Area, given wide variation between job-rich and housing-rich counties. The regionwide jobs-to-housing ratio decreases from 1.50 in 2015 to 1.34 by 2050, reflecting a higher ratio of housing to job production to accommodate pent-up demand for housing. Overall, the Plan results in counties converging toward the regional jobs-housing ratio of 1.34. The North Bay and East Bay subareas, while still below the regional average, are both moving closer to regional average. Similarly, the traditional jobs-rich Peninsula and South Bay subareas remain jobs-rich, but are moving closer to the regional jobs-housing ratio.

Table 25. Jobs-housing balance across alternatives

		2050 ALTERNATIVES			
COUNTY	2015	No Project	Plan	EIR Alternative 1	EIR Alternative 2
Regionwide	1.50	1.34	0.1.34	1.34	1.34
Alameda	1.58	1.40	1.40	1.37	1.43
Contra Costa	1.06	0.74	0.97	1.17	1.00
Marin	1.25	0.90	0.80	0.84	0.88
Napa	1.42	1.51	1.56	1.56	1.61
San Francisco	1.86	1.91	1.59	1.44	1.94
San Mateo	1.47	1.26	1.28	1.15	1.32
Santa Clara	1.78	1.56	1.51	1.52	1.32
Solano	0.93	0.95	1.14	1.30	1.12
Sonoma	1.18	1.21	1.14	1.14	1.12

Housing Affordability Outcomes

Housing affordability is another issue of great regional concern. As seen in Housing affordability is another issue of great regional concern. As seen in Table 26, households spend much more on housing than typically considered healthy (i.e., not more than 30% of income). Across all income categories, households have been spending 33% of income on housing while for the lowest quartile of households this figure has been around 68% in recent years. All alternatives contain higher levels of market rate construction in future years and this additional housing is forecast to decrease costs by the amount seen in the No Project results. The other alternatives also add a large amount of low-income, deed-restricted housing where subsidies cover costs above 30% of household income. These alternatives see a great deal of reduction in housing costs., households spend much more on housing than typically considered healthy (i.e., not more than 30% of income). Across all income categories, households have been spending 33% of income on housing while for the lowest quartile of households this figure has been around 68% in recent years. All alternatives contain higher levels of market rate construction in future years and this additional housing is forecast to decrease costs by the amount seen in the No Project results. The other alternatives also add a large amount of low-income, deed-restricted housing where subsidies cover costs above 30% of household income. These alternatives see a great deal of reduction in housing costs.

Table 26. Share of income spent on housing across alternatives

	ALTERNATIVE 2050				
	2015	No Project	Plan	EIR Alternative 1	EIR Alternative 2
Low-Income Households	68%	44%	29%	29%	29%
All Households	33%	25%	21%	21%	21%

Travel Modeling Suite

MTC and ABAG use an analytical tool known as a travel model (also known as a travel demand model or travel forecasting model) to first describe the reaction of travelers to transportation projects and policies and then to quantify the impact of cumulative individual decisions on the Bay Area's transportation networks and environment. MTC's and ABAG's travel modeling suite is comprised of three main analytical tools: a population synthesizer, a travel model, and a vehicle emission model. Each tool is described in turn below. While the travel model is able to represent most of the strategies and policy interventions in the plan, some elements of transportation strategies are not captured, and the calculations performed to analyze these policies are described in the section on Off-Model Calculations.

Population Synthesizer

MTC and ABAG's travel model is an agent-based simulation. The "agents" in this case are individual households, comprised of the people who form each household. In this way, the travel model attempts to simulate the behavior of the individuals and the households who carry out their daily activities in a setting described by the input land development patterns and input transportation projects and policies. To use this type of simulation, each agent must be characterized in a fair amount of detail.

Software programs that create lists of households and persons for travel model simulations are known as population synthesizers. For Plan Bay Area 2050, MTC and ABAG began using the population synthesizer, PopulationSim.[27] The population synthesizer attempts to sample households described in the 2007-2011 Census Public Micro-sample (PUMS) data in such a way that when looking at the population along specific dimensions spatially (at a level of detail below which the PUMS data is reported), the aggregate sums more or less match those predicted by other Census summary tables (when synthesizing historical populations) or the land use projections made by the Land Use Model (when forecasting populations). For example, if Bay Area UrbanSim 2 forecasts that 60 households containing 100 workers and 45 children will live in spatial unit X in the year 2035, the population synthesizer will locate 60 PUMS households in spatial unit X and will select households in such a way that, when summing across households, the number of workers is close to 100 and the number of children is close to 45.

The population synthesizer "controls" (i.e., minimizes the discrepancy between the synthetic population results and the historical Census results or the land use forecasts) at the travel analysis zone (TAZ) along the following dimensions:

1. Number of total households (individuals living in non-institutionalized group quarters, e.g. college dorms, are counted as single-person households);
2. Number of total households by size (four categories: 1, 2, 3 or 4+);
3. Number of households by income quantile (four income quantiles as defined in Table 7);
4. Number of households by number of workers (four categories: 0, 1, 2, 3+);
5. Number of persons by age (five categories: 0-4, 5-19, 20-44; 45-64; 65+) and,
6. Number of persons living in non-institutionalized group quarters by type (three categories: college dorm, military, and other non-institutional group quarters)

27 PopulationSim: https://activitysim.github.io/populationsim/.

Travel Model

Travel models are frequently updated. As such, a bit of detail as to which version of a given travel model is used for a given analysis is useful. The current analysis uses MTC's Travel Model 1.5 (version 1.5.2.3), released in December 2020, calibrated to year 2015 conditions, and validated against year 2010 and 2015 conditions.[28] Travel Model 1.5 will also be referred to as TM1.5 for the purposes of this report.

Travel Model 1.5 is of the so-called "activity-based" archetype. The model is a partial agent-based simulation in which the agents are the households and people who reside in the Bay Area. The simulation is partial because it does not include the simulation of individual behavior of passenger, commercial, and transit vehicles on roadways and transit facilities (though the model system does simulate the behavior of aggregations of vehicles and transit riders). In regional planning work, the travel model is used to simulate a typical weekday – when school is in session, the weather is pleasant, and no major collisions or incidents disrupt the transportation system.

The model system operates on a synthetic population that includes households and people representing each actual household and person in the nine-county Bay Area – in both historical and prospective years. Travelers move through a space segmented into travel analysis zones (TAZs)[29] and, in so doing, use the transportation system. The model system simulates a series of travel-related choices for each household and for each person within each household. These choices[30] are as follows (organized sequentially):

1. **Usual workplace and school location** — Each worker, student, and working student in the synthetic population selects a travel analysis zone in which to work or attend school (or, for working students, one zone to work and another in which to attend school).
2. **Household automobile ownership** — Each household, given its location and socio-demographics, as well as each member's work and/or school locations (i.e., given the preceding simulation results), decides how many vehicles to own.
3. **Daily activity pattern** — Each household chooses the daily activity pattern of each household member, the choices being (a) go to work or school, (b) leave the house, but not for work or school, or (c) stay at home.
4. Work/school tour[31] frequency and scheduling — Each worker, student, and working student decides how many round trips they will make to work and/or school and then schedules a time to leave for, as well as return home from, work and/or school.
5. **Joint non-mandatory[32] tour frequency, party size, participation, destination, and scheduling** — Each household selects the number and type (e.g., to eat, to visit friends) of "joint" (defined as two or more members of the same household traveling together for the duration of the tour) non-mandatory (for purposes other than work or school) round trips in which to engage, then determines which members of the household will participate, where, and at what time the tour (i.e., the time leaving and the time returning home) will occur.
6. **Non-mandatory tour frequency, destination, and scheduling** — Each person determines the number and type of non-mandatory (e.g., to eat, to shop) round trips to engage in during the model day, where to engage in these tours, and at what time to leave and return home.

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28 Additional information is available here: https://github.com/BayAreaMetro/modeling-website/wiki/Development.

29 Map of TAZs: https://mtc.maps.arcgis.com/home/item.html?id=b85ba4d43f9843128d3542260d9a2f1f

30 These "choices", which often are not really choices at all (the term is part of travel model jargon), are simulated in a random utility framework – background information is available here: https://en.wikipedia.org/wiki/Choice_modelling.

31 A "tour" is defined as a round trip from and back to either home or the workplace.

32 Travel modeling practice use the term "mandatory" to describe work and school travel and "non-mandatory" to refer to other types of travel (e.g., to the grocery store); this terminology is used to communicate efficiently with others in this space. Staff neither assume nor believe that all non-work/school-related travel is non-mandatory or optional.

7. Tour travel mode — The tour-level travel mode choice (e.g., drive alone, walk, take transit) decision is simulated separately for each tour and represents the best mode of travel for the round trip.

8. Stop frequency and location — Each traveler or group of travelers (for joint travel) decides whether to make a stop on an outbound (from home) or inbound (to home) leg of a travel tour, and if a stop is to be made, where the stop is made, all given the round trip tour mode choice decision.

9. Trip travel model — A trip is a portion of a tour, either from the tour origin to the tour destination, the tour origin to a stop, a stop to another stop, or a stop to a tour destination. A separate mode choice decision is simulated for each trip; this decision is made with awareness of the prior tour mode choice decision.

10. Assignment — Vehicle trips for each synthetic traveler are aggregated into time-of-day-specific matrices (i.e., tables of trips segmented by origin and destination) that are assigned via the standard static user equilibrium procedures to the highway network. Transit trips are assigned to time-of-day-specific transit networks.

Travel Model 1.5 is a major update to Travel Model One v0.6, which was used for the previous long-range plan (Plan Bay Area 2040). Developed to support the needs of Plan Bay Area 2050, Travel Model 1.5 added representation for ride-hailing (or Transportation Network Company - TNC) and taxi modes, as well as for autonomous vehicles.[33]

The Travel Model 1.5 system inherits without significant modification the representation of interregional and commercial vehicle travel from MTC's previous travel model system (commonly referred to as BAYCAST or BAYCAST-90). Specifically, commercial vehicle demand is represented using methods developed for Caltrans and Alameda County as part of the Interstate 880 Intermodal Corridor Study conducted in 1982 and the Quick Response Freight Manual developed by the United States Department of Transportation in 1996. When combined, these methods estimate four classes of commercial travel, specifically: "very small" trucks, which are two-axle/four-tire vehicles; "small" trucks, which are two-axle/six-tire vehicles; "medium" trucks, which are three-axle vehicles; and, "combination" trucks, which are truck/trailer combinations with four or more axles.

Reconciling travel demand with available transportation supply is particularly difficult near the boundaries of planning regions because little is assumed to be known (in deference to efficiency – the model must have boundaries) about the land development patterns — the primary driver of demand — or supply details beyond these boundaries. The typical approach to representing this interregional travel is to first estimate the demand at each location where a major transportation facility intersects the boundary and to then distribute this demand to locations either within the planning region (which results in so-called "internal/external" travel) or to other boundary locations ("external/external" travel). MTC uses this typical approach and informs the process with the Census Transportation Planning Product (CTPP) based on 2006-2010 5-year American Community Survey Data, which are allocated via simple method to represent flows to and from MTC's travel analysis zones and 21 boundary locations, as well as the flows between boundary locations.

The travel of air passengers to and from the Bay Area's airports is represented with static (across alternatives), year-specific vehicle trip tables. These trip tables are based on air passenger survey data collected in 2006 and planning information developed as part of MTC's Regional Airport Planning Study.

Similarly, the travel of high-speed rail (HSR) passengers to and from the Bay Area's expected HSR stations is represented with static (across those alternatives for which HSR is assumed to be implemented), year-specific vehicle trip tables. The HSR demand estimates are derived from the California High Speed Rail Authority's 2016 Business Plan[34] with modifications to delay service based on the 2020 Business Plan.[35] The update assumes that the Gilroy and San Jose stations open around 2035, and the Millbrae and San Francisco stations open by 2040 [opening years rounded to nearest five-year increment; opening contingent on high-speed rail investments in Period 2 of Plan Bay Area 2050].

33 For more detail about Travel Model 1.5, see: https://github.com/BayAreaMetro/modeling-website/wiki/TravelModel1.5.

34 https://hsr.ca.gov/docs/about/business_plans/2016_BusinessPlan.pdf.

35 https://hsr.ca.gov/docs/about/business_plans/2020_Business_Plan.pdf.

Vehicle Emissions Model

The MTC travel model generates spatially- and temporally-specific estimates of vehicle usage and speed for a typical weekday. This information is then input into an emissions model to estimate on-road mobile source criteria pollutants as well as carbon dioxide emissions (used as a proxy for all greenhouse gases). For the current plan air quality analyses, MTC and ABAG used the California Air Resource Board's EMissions FACtor (EMFAC) 2014 for SB 375 calculations, EMFAC 2017 for Plan Bay Area 2050 Equity Analysis calculations, CT-EMFAC 2017 for Plan Bay Area 2015 EIR mobile source air toxic emission inventory estimation, and EMFAC 2021 for Plan Bay Area 2050 EIR criteria pollutant emission inventory estimation.

Input Assumptions

Analysis work was done to simulate historical conditions, conditions in future years should no action be taken, and conditions in future years under a variety of planned modifications representing the Plan and EIR Alternatives. Historical scenarios are labeled by their year and include Year 2005 and Year 2015. Planned actions include varying sets of strategy packages. As described in EIR Alternatives section of Chapter 3: Land Use Model, there are three planned sets of strategy actions: the Plan as well as EIR Alternative 1 and EIR Alternative 2. These simulations were performed for 2025, 2030, 2035, 2040 and 2050. The no action alternative is referred to as No Project; No Project simulations were performed for the same years as the Plan and EIR Alternatives 1 and 2, but this report will focus on Year 2050 for the No Project, the Plan and the EIR Alternatives. The various simulation years serve different purposes: historical years demonstrate the model's ability to adequately replicate on-the-ground conditions[36] and provide the reader data for a familiar scenario; the California Air Resources Board established greenhouse gas targets for 2035; the regional plan, as guided by federal regulations, extends to 2050. Interim year (2025, 2030 and 2040) modeling is performed primarily for air quality conformity analysis.

The above strategy packages differ across four dimensions, namely land use, roadway supply, transit supply, and prices. Land use refers to the locations of households and jobs (of different types). Roadway supply is the physical network upon which automobiles, trucks, transit vehicles, bicycles, and pedestrians travel. Transit supply refers to the facilities upon which public transit vehicles travel (the roadway, along rail lines, ferry routes, and other dedicated infrastructure), as well as the stop locations, routes, and frequency of transit service. Prices include the monetary fees users are charged to board transit vehicles, cross bridges, operate and park private vehicles, and use express lanes (also known as high occupancy toll lanes).

36 Details of this "validation" process are available here: https://github.com/BayAreaMetro/modeling-website/wiki/Development.

Table 27. Travel model simulations by year and alternative

	SIMULATION YEAR						
Scenario	2005	2015	2025	2030	2035	2040	2050
Historical	✓	✓					
No Project			✓	✓	✓	✓	✓
Plan			✓	✓	✓	✓	✓
Incremental Progress Assessment					✓		
EIR Alternative 1					✓		✓
EIR Alternative 2					✓		✓

In the remainder of this chapter, each of the six scenarios (the rows in Table 27) are discussed, organized by the above four dimensions; additional notes on "other assumptions" concludes the section. This organization should allow the reader to compare the input assumptions across scenarios.

Land Use

Additional information regarding the land development patterns is available in Chapter 3: Land Use Model. Here, we provide a handful of details regarding the transformation of these land use inputs into the information needed by the travel model.

Prior to executing the travel model, the land development inputs provided by the Regional Growth Forecast (Table 8) and by Bay Area UrbanSim 2 (distribution details) are run through the population synthesizer as described above. The journey from control totals through the modeling system introduces minor inconsistencies between the estimated regional control totals, which are carried through Bay Area UrbanSim 2, and the totals implied by the synthetic population. These inconsistencies are presented in Table 28 confirm this matches final EIR runs.

Table 28. Demographic statistics of control and simulated populations

		HOUSEHOLDS				POPULATION		
Year	Alternative	Regional Forecast Households	Group Quarters	Synthetic Population	Percent Difference†	Regional Forecast Results	Synthetic Population	Percent Difference
2015	Historical	2,677,000	91,000	2,792,000	0.9%	7,656,000	7,581,000	-1.0%
2025	Plan	2,952,000	149,000	3,056,000	-1.4%	8,231,000	8,235,000	0.0%
2030	Plan	3,209,000	158,000	3,321,000	-1.4%	8,553,000	8,602,000	0.6%
2035	Incremental Progress	3,495,000	165,000	3,658,000	0.0%	9,003,000	9,009,000	0.1%
2035	No Project	3,495,000	167,000	3,613,000	-1.3%	9,003,000	9,168,000	1.8%
2035	Plan	3,495,000	167,000	3,613,000	-1.3%	9,003,000	9,167,000	1.8%
2035	EIR Alt1	3,495,000	167,000	3,613,000	-1.3%	9,003,000	9,168,000	1.8%
2035	EIR Alt2	3,495,000	167,000	3,613,000	-1.3%	9,003,000	9,170,000	1.9%
2040	Plan	3,711,000	176,000	3,836,000	-1.3%	9,487,000	9,546,000	0.6%
2050	No Project	4,043,000	176,000	4,183,000	-0.9%	10,325,000	10,367,000	0.4%
2050	Plan	4,043,000	176,000	4,183,000	-0.9%	10,325,000	10,368,000	0.4%
2050	EIR Alt1	4,043,000	176,000	4,183,000	-0.9%	10,325,000	10,367,000	0.4%
2050	EIR Alt2	4,043,000	176,000	4,183,000	-0.9%	10,325,000	10,363,000	0.4%

† – Individuals living in group quarters are considered individual households in the synthetic population and, subsequently, the travel model.

A key function of the population synthesizer is to identify each member of the representative populous with one of eight "person type" labels. Each person in the synthetic population is identified as a full- time worker, part-time worker, college student, non-working adult, retired person, driving-age student, non-driving-age student, or child too young for school. The travel model relies on these person type classifications, along with myriad other variables, to predict behavior.

Figure 21. Historical and forecasted person type distributions for Plan

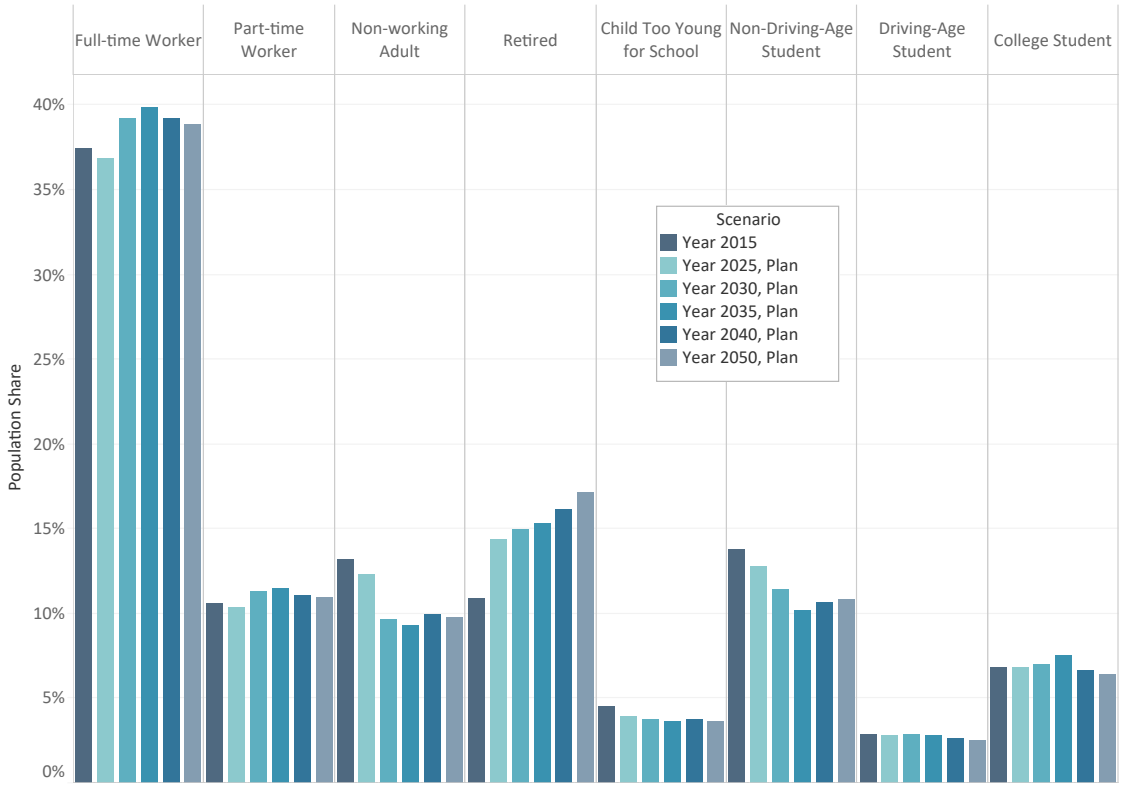
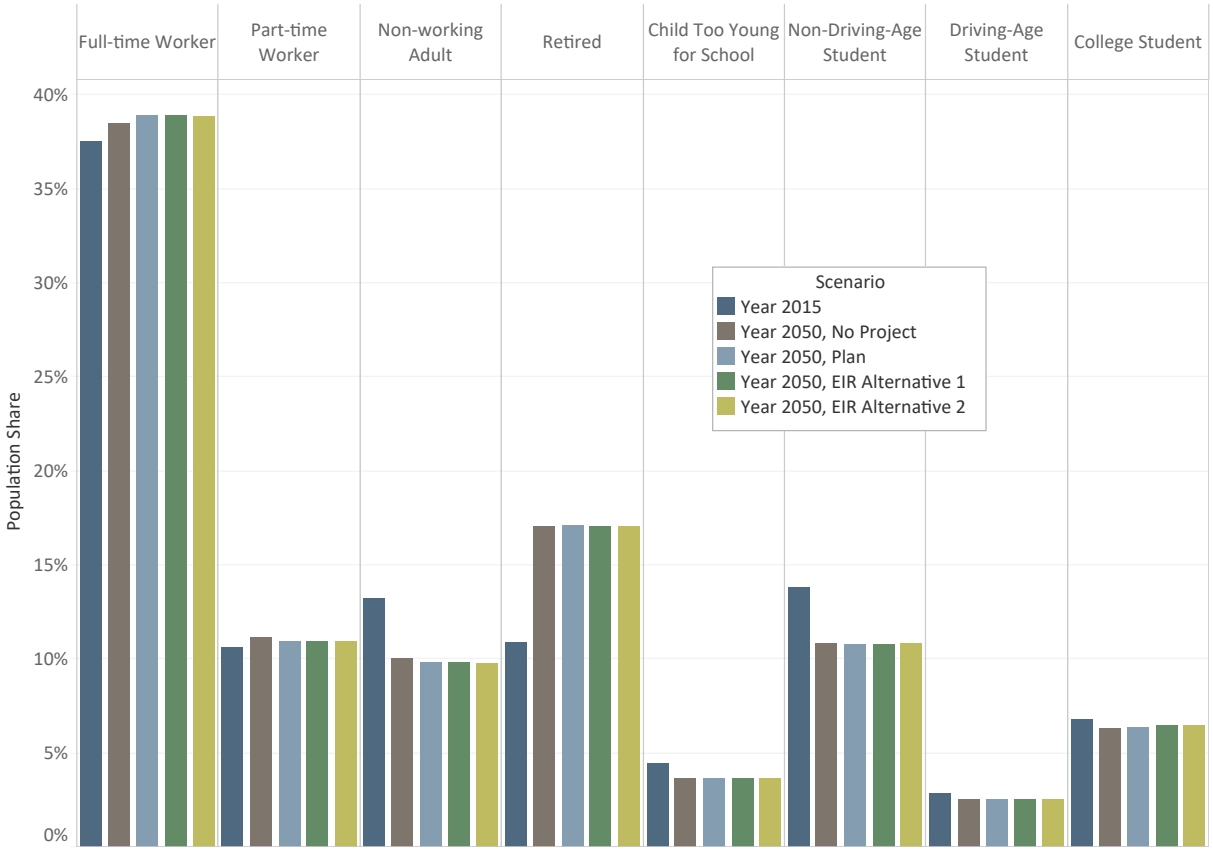


Figure 21 shows the distribution of person types for the historical scenarios and the Plan, from years 2015 to 2050. Interesting aspects of these distributions, which are driven by assumptions embedded in the regional forecast, are as follows:

1. The share of full-time workers peaks in 2035;
2. The share of retired workers steadily increases from 2015 to 2050; and
3. The person types don't change dramatically.

Figure 22 shows the distribution of person types across the four forecast year alternatives for year 2050.

Figure 22. Person type distributions across alternatives



Road Network

The historical scenarios for 2005 and 2015 have a representation of roadways that reflect infrastructure that was in place in 2005 and 2015.

The No Project alternative includes projects that are either in place in 2016 or are "committed" as defined by MTC Resolution No. 4182. The Plan (and EIR Alternatives 1 and 2) builds upon these networks, adding in the roadway projects included in the transportation investment strategies, which is discussed in more detail in Strategy Implementation. Finally, because the No Project alternative does not include EN1: Adapt to Sea Level Rise, the networks built for No Project lose some lane miles due to flooding.

A graphical depiction of the changes in the roadway network is presented Figure 23. The chart shows the change in lane-miles (e.g., a one-mile segment of a four-lane road is four lane-miles) available to automobiles in year 2050 relative to year 2015. San Francisco County shows a decrease in lane-miles, primarily due to the Market Street closure that started in 2020 as well as some conversions of roadway segments to dedicated bus ways. Figure 24 shows the change in lane-miles over time for the Plan.

Figure 23. Growth in roadway lane miles (relative to 2015) available to automobiles across alternatives

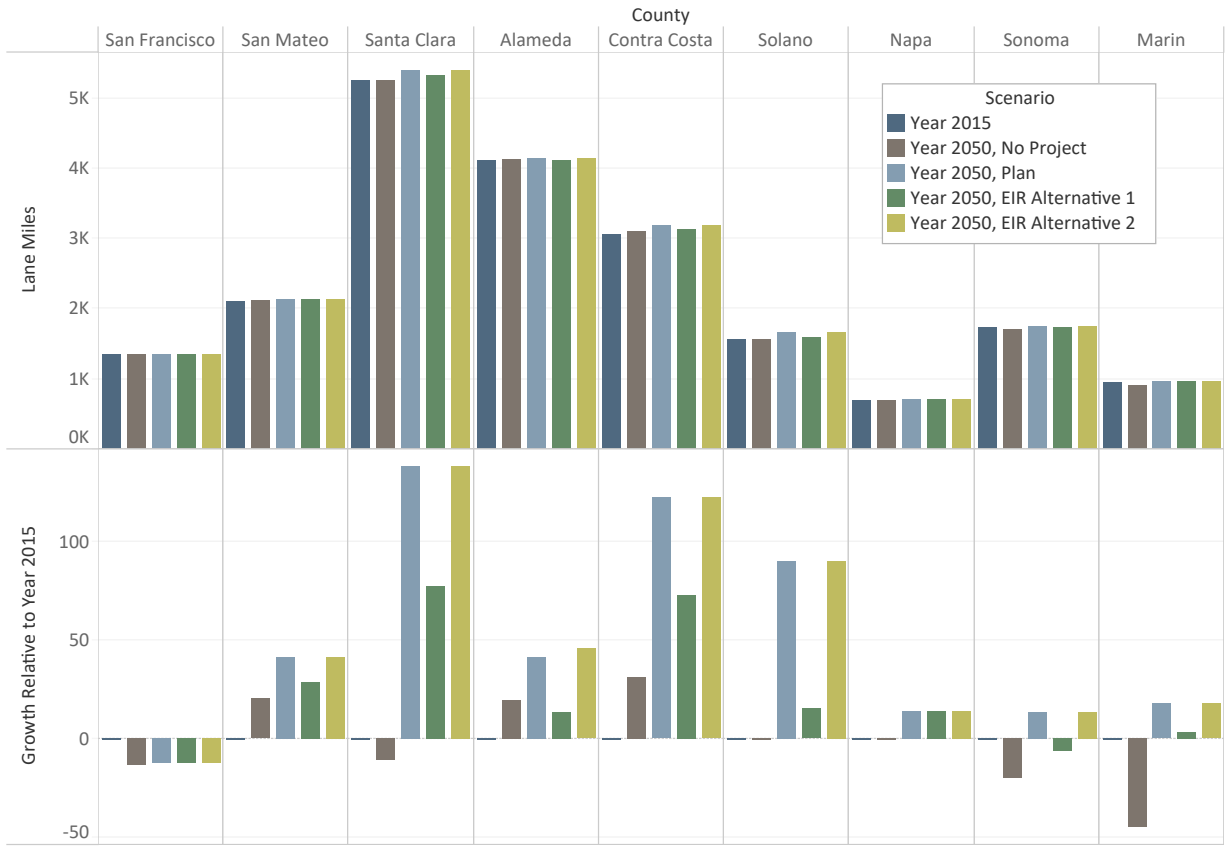
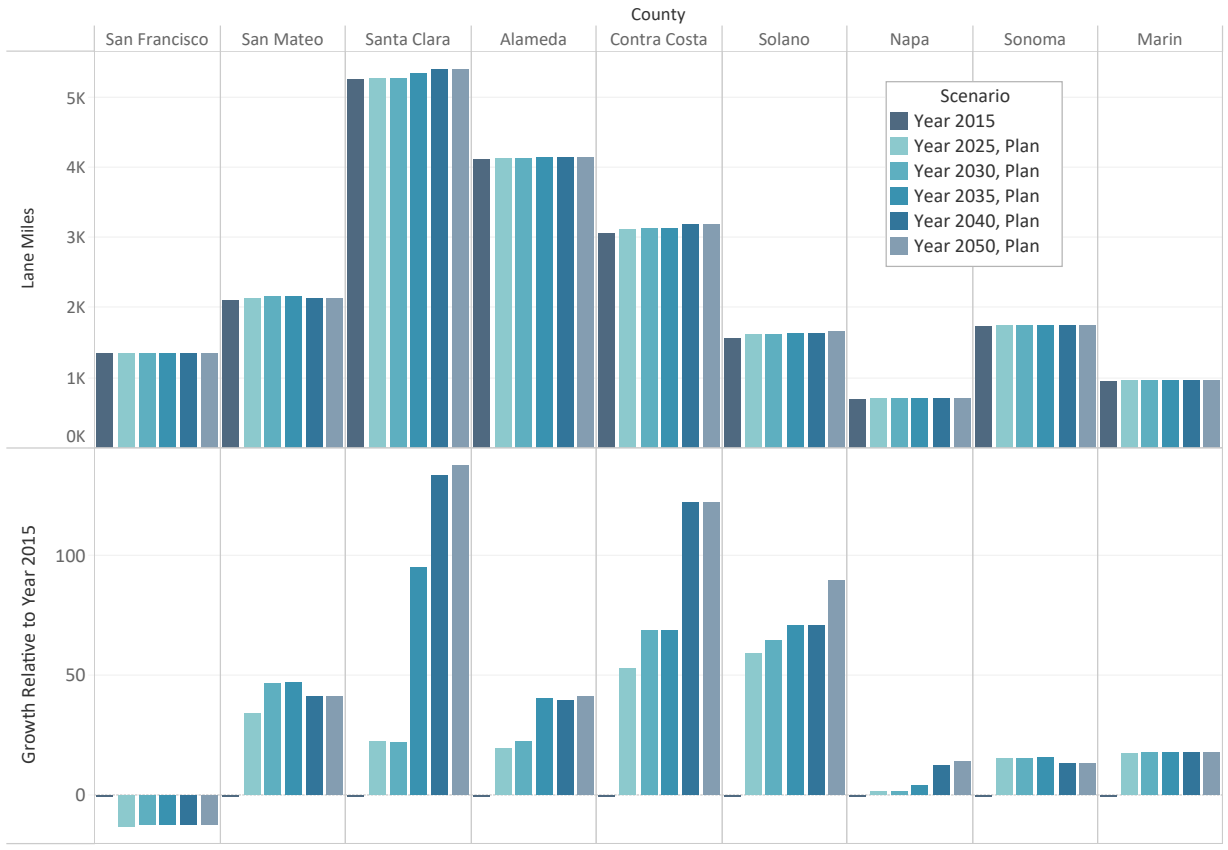


Figure 24. Growth in roadway lane miles (relative to 2015) available to automobiles in the Plan



Transit Network

The historical scenarios for 2005 and 2015 reflect service in these years.

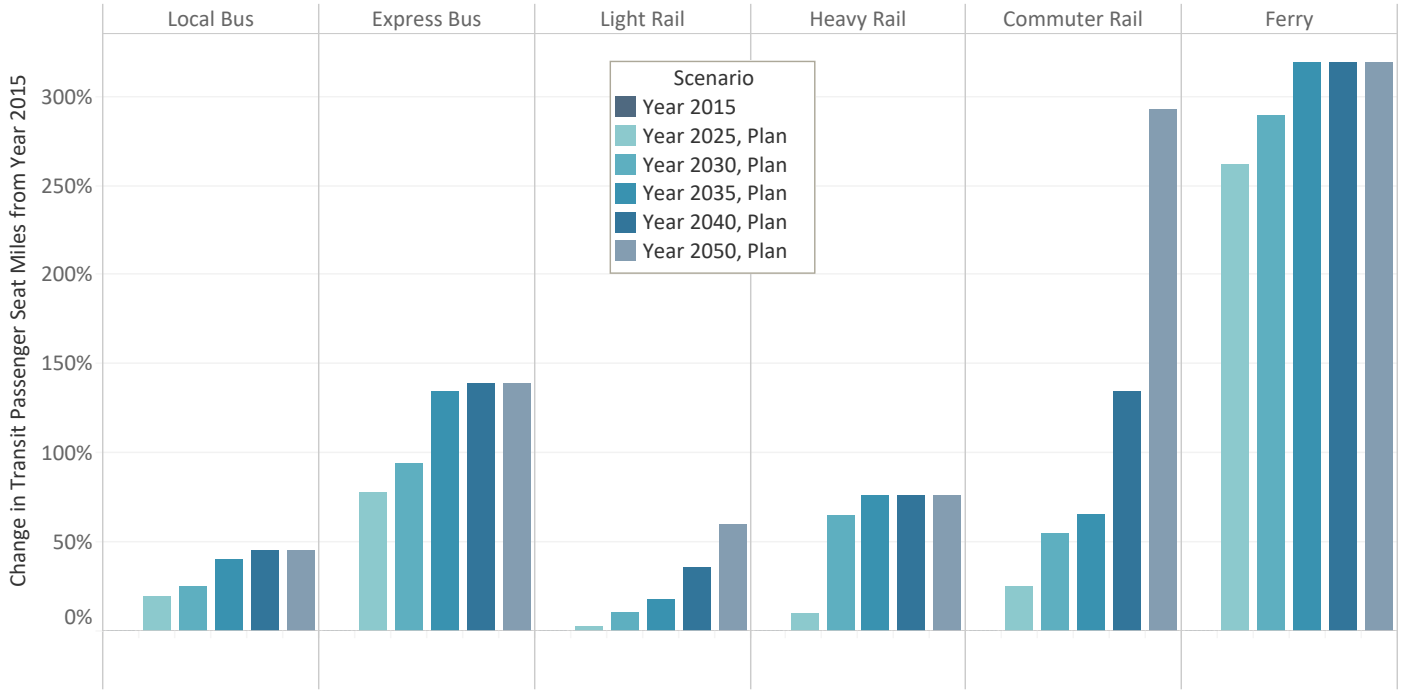
The No Project alternative begins with 2015 service levels and adds projects that are committed as defined by MTC Resolution No. 4182. The Plan alternative begins with 2015 service levels and adds both the committed projects as well as those included in the transportation investment strategies, described in more detail in the Strategy Implementation section below.

The onset of the COVID-19 pandemic in early 2020 significantly altered on-the-ground service provision and created uncertainty around the levels of transit service provision in near-term future model years (2025, 2030 and 2035). While current and future funding availability and service levels continue to evolve, modeling work for Plan Bay Area 2050 used a conservative approach to represent transit service provision in the No Project Alternative. It was assumed that transit headways would increase in 2025, 2030 and 2035 commensurate to the expected percentage decrease in future funding available for transit operations. Headways were increased across all operators by 8% in the No Project for years 2025, 2030 and 2035. As planned projects increase the total service hours in the Plan and EIR Alternatives, a smaller percentage increase was applied to all transit service so that the total service hours cut were equivalent between the No Project, Plan and EIR Alternatives in 2025 and 2030. This translated to a 6.7% increase in service hours (once planned service increases from projects were applied) in the 2025 Plan and a 6.4% increase in the 2030 Plan. The plan includes an investment to return transit service levels to 2019 levels no later than 2035, so no percentage increase in headways was modeled in the Plan and EIR Alternatives for 2035. Headways in the No Project were assumed to return to the pre-pandemic baseline starting in 2040.

A graphical depiction of the changes in transit service is presented in Figure 25 below. The chart shows the change in seat-miles (e.g., a one-mile segment of a bus with 40 seats is 40 seat-miles) by mode in year 2050 compared to year 2015 across alternatives. Figure 26 shows the change in seat-miles over time by technology for the Plan.

Figure 25. Change in transit passenger seat miles (relative to year 2015) by technology across alternatives

Figure 26. Change in transit passenger seat miles over time (relative to 2015) by technology in the Plan



Prices

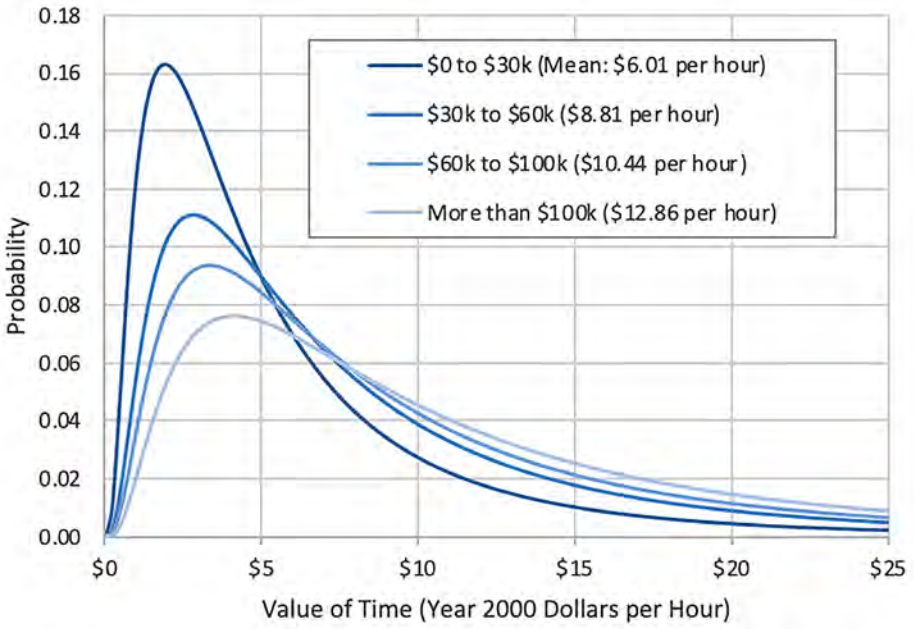
The travel model system includes probabilistic models in which travelers select the best travel mode (e.g., automobile, transit, bicycle, etc.) for each of their daily tours (round trips) and trips. One consideration of this choice is the trade-off between saving time and saving money. For example, a traveler may have two realistic options for traveling to work: (i) driving, which would take 40 minutes (round trip) and cost $10 for parking; or (ii) taking transit, which would take 90 minutes (round trip) and cost $4 in bus fare ($2 each way). The mode choice model structure, as estimated in the early 2000s, includes coefficients that dictate how different travelers in different contexts make decisions regarding saving time versus saving money. These model coefficients value time in units consistent with year 2000 dollars, i.e., the model itself – not an exogenous input to the model – values time relative to costs in year 2000 dollars. Because re-estimating model coefficients is "expensive" (in terms of staff time and/or consultant resources), it is done infrequently, which in effect "locks in" the dollar year in which prices are input to the travel model. To use the model's coefficients properly, all prices must be input in year 2000 dollars. In the remainder of this document, prices are presented both in (close to) 2020 dollars, to give the reader an intuitive sense of the magnitude of the input prices, as well as year 2000 dollars, which are the units required by the model coefficients.

Six different types of prices are explicitly represented in the travel model: (i) bridge tolls; (ii) express lane or per-mile roadway tolls; (iii) transit fares; (iv) parking fees; (v) perceived automobile operating cost; and (vi) cordon tolls. A brief discussion on how the model determines each synthetic traveler's value of time is presented next, after which the input assumptions across each of these price categories are presented.

Value of Time

The model coefficients that link the value of time with the other components of decision utilities remain constant between the baseline and forecast years, with the one exception of the coefficients on travel cost. These coefficients are a function of each synthetic individual's value of time, a number drawn, in both the historical and forecast year simulations, from one of four log-normal distributions (see Figure 27). The means of these distributions are a function of each traveler's household income (see Table 7). The value of time for children in a household is equal to two-thirds that of an adult. The means and shapes of these distributions remain constant across forecast years and scenarios.

Figure 27. Value of time distribution by household income category



Bridge Tolls

The bridge tolls assumed in 2015 and 2050 are shown below in Table 29. The bridge tolls for future years (all alternatives) follow the scheduled increase in in Regional Measure 3.[37]

Table 29. Common peak period bridge tolls in 2015 and 2050

	TOLLS IN YEAR 2015				TOLLS IN YEAR 2050			
	In 2015 Dollars		In 2000 Dollars		In 2020 Dollars		In 2000 Dollars	
Bridge	Base Toll	Carpool Toll	Base Toll	Carpool Toll	Base Toll	Carpool Toll	Base Toll	Carpool Toll
Antioch Bridge	5.00	2.50	3.50	1.75	8.00	4.00	4.29	2.15
Bay Bridge	6.00	2.50	4.20	1.75	9.00	4.00	4.83	2.15
Benicia - Martinez Bridge	5.00	2.50	3.50	1.75	8.00	4.00	4.29	2.15
Carquinez Bridge	5.00	2.50	3.50	1.75	8.00	4.00	4.29	2.15
Dumbarton Bridge	5.00	2.50	3.50	1.75	8.00	4.00	4.29	2.15
Golden Gate Bridge	6.75	4.75	4.72	3.32	8.75	6.75	4.70	3.62
Richmond - San Rafael Bridge	5.00	2.50	3.50	1.75	8.00	4.00	4.29	2.15
San Mateo - Hayward Bridge	5.00	2.50	3.50	1.75	8.00	4.00	4.29	2.15

Express Lane and Per-Mile Roadway Tolls

MTC's travel model explicitly represents the choice of travelers to pay a toll to use an express lane (i.e., a high-occupancy toll lane) in exchange for the time savings offered by the facility relative to the parallel free ("general purpose") lanes. To represent this functionality, MTC staff assigns a toll price by time of day and vehicle class on each tolled link in the network. To simulate the impacts of the tolled lanes efficiently and transparently on behavior, the tolled lane network is segmented within each scenario into logical segments, with each segment receiving a time-of-day-specific per mile fee. To illustrate the detail involved in this coding, Figure 28 (abstractly) presents the morning commute period price for the year 2050 simulations. Please note that the simulated prices are not perfectly optimal, although staff modeled the Plan iteratively to find the prices that meet a pre-defined operational goal – an average speed of 45mph or higher in any time period. The logic used in the toll optimization script is described in Table 30 below. Importantly, the prices are held constant over four-hour morning (6 to 10 a.m.) and evening (3 to 7 p.m.) commute periods. MTC's travel model makes the simplifying assumption that congestion is uniform over the entire four-hour commute periods. The peak one-hour within the four-hour commute period would require a higher toll than those simulated in the model.

37 https://mtc.ca.gov/sites/default/files/BATA%202019%20Toll%20Schedule%20Dec%202018.pdf

Figure 28 also depicts the roadways that comprise the per-mile tolling strategy in the Plan. More details are provided in the section on Strategy T5 to Strategy T5: Implement Means-Based Per-Mile Tolling on Congested Freeways with Transit Alternatives. Additionally, the figure shows the SR-37 corridor, which would be tolled to fund sea level rise adaptation measures on the corridor in the Plan.

Figure 28. Morning commute express lane tolls (in 2000$) for the No Project and Plan alternatives in 2050

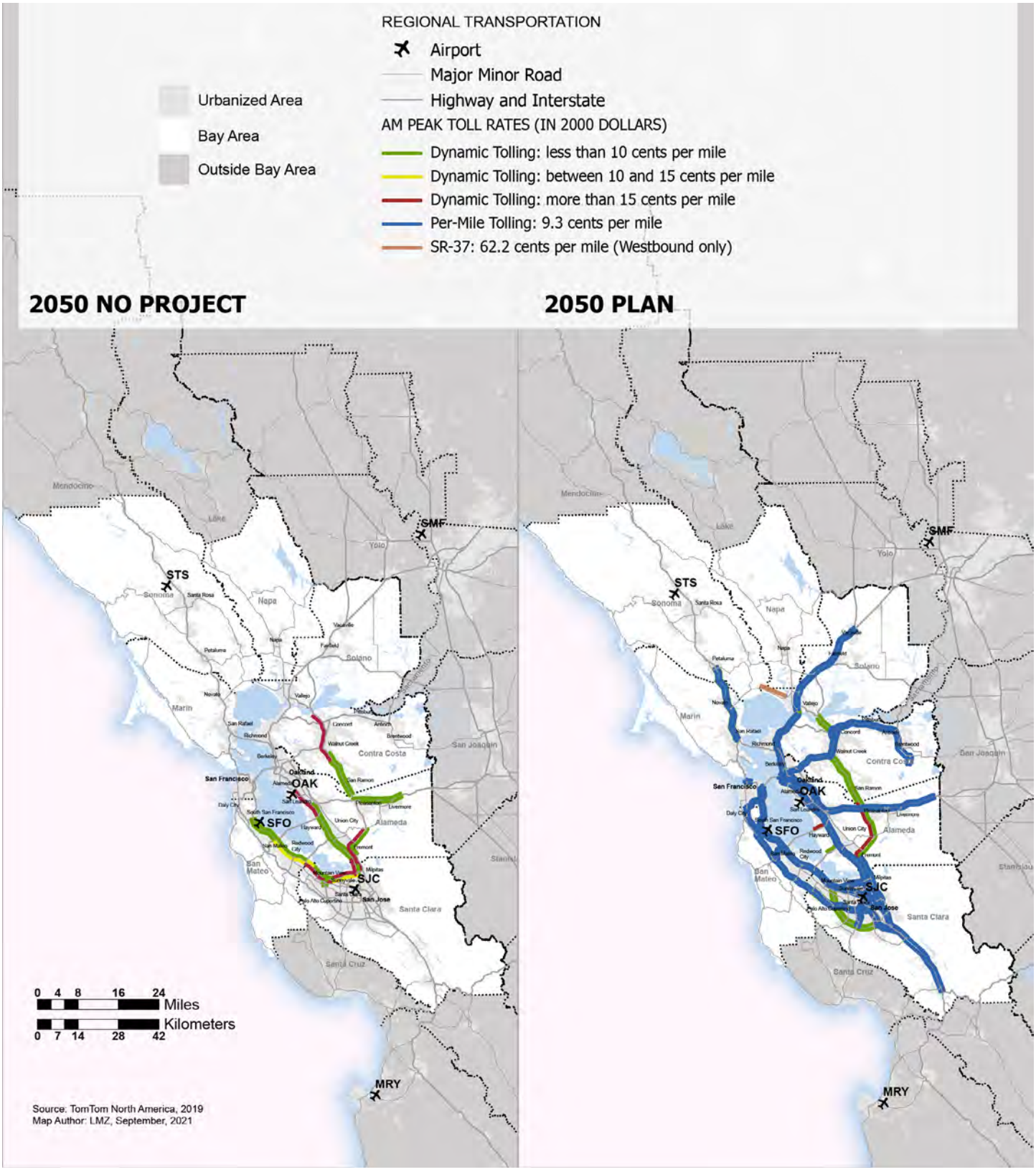


Table 30. Logic used in the toll optimization process

CASE #	EXPRESS LANE (EL) SPEED (MPH)	GENERAL PURPOSE LANE (GP) SPEED (MPH)	INTERPRETATION AND ACTION
Case 1	<=48*	any	EL too slow; increase toll rate.
Case 2	>48	<=40	GP too slow; decrease toll rate.
Case 3	48-60	40-60	OK; no change in toll rate.
Case 4	>60	40-60	GP speed can be improved; decrease toll rate.
Case 5	>48	>60	Set toll to minimum, i.e. 3 cents (2000$) per mile in morning peak, midday, and afternoon peak for drive alone

*Note: The threshold used in the toll optimization script is 48mph, which is slightly higher than the performance target of 45mph. This is because average speeds in toll optimization runs (which only execute only CTRAMP and highway assignment) can be slightly different from the full model run (which includes transit assignment). Setting the threshold slightly higher than the actual performance target makes sure the average speeds in the full model run do not go below 45mph.

Transit Fares

The forecast year transit networks pivot off a year 2015 baseline network (i.e., the alternatives begin with 2015 conditions and add/remove service to represent the various alternatives in future years). The transit fares in 2015 are assumed to remain constant (in real terms) in all forecast years. Staff are therefore explicitly assuming transit fares will keep pace with inflation and that transit fares will be as expensive in the forecast year as they are today, relative to parking prices, bridge tolls, etc. As a simplification, we assume travelers pay the cash fare to ride each transit service. Table 31 includes year 2015 fare prices expressed in both year 2000 and year 2015 dollars.

Table 31. Fare prices (in 2015$ and 2000$) by operator in 2015

OPERATOR	FARE IN 2015 DOLLARS	FARE IN 2000 DOLLARS
West Berkeley Shuttle	Free	Free
Broadway Shuttle	Free	Free
Emery Go-Round	Free	Free
Stanford Shuttles	Free	Free
Caltrain Shuttles	Free	Free
VTA Shuttles	Free	Free
Palo Alto/Menlo Park Shuttles	Free	Free
WHEELS Ace Shuttles	Free	Free
Amtrak Shuttles	Free	Free
Burlingame Shuttle	Free	Free
MUNI - Cable Cars	7.00	4.74
MUNI - Local	2.25	1.52
SamTrans Local	2.00	1.35
VTA - Community Bus	1.25	0.85
VTA - Regular and Limited	2.00	1.35
AC Transit Local	2.00	1.35
WHEELS - Local	2.10	1.42
Union City Transit	2.00	1.35
County Connection (CCCTA) - Local	2.00	1.35
Tri Delta Transit	2.00	1.35
WESTCAT Local	1.75	1.19
SolTrans - Local	1.75	1.19
Fairfield And Suisun Transit - Local	1.75	1.19

OPERATOR	FARE IN 2015 DOLLARS	FARE IN 2000 DOLLARS
American Canyon Transit	1.00	0.68
Vacaville City Coach	1.60	1.08
VINE (Napa County) - Local	1.60	1.08
Sonoma County Transit - Local	1.50	1.02
Santa Rosa CityBus	1.50	1.02
Petaluma Transit	1.50	1.02
Golden Gate Transit - Local	1.80	1.22
SamTrans - Express	2.00	1.35
VTA - Express	4.00	2.71
Dumbarton Express	2.10	1.42
AC Transit - Transbay	4.20	2.84
County Connection (CCCTA) - Express	2.25	1.52
Golden Gate Transit - Express	5.00	3.39
Golden Gate Transit - Richmond	4.40	2.98
WESTCAT - Express	5.00	3.39
SolTrans - Express	1.75	1.19
Fairfield and Suisun Transit - Express	2.75	1.86
VINE (Napa County) - Express	3.25	2.20
MUNI Metro	2.25	1.52
VTA - Light Rail	2.00	1.35

For SamTrans Express and SolTrans Express, the local fare is initially applied. An additional fare is paid as the Express lines traverse screen lines outside the service area for local bus service. For rail and ferry service, the fares vary based on posted fares between individual stations/terminals.

Parking Prices

The travel model segments space into travel analysis zones (TAZs). Simulated travelers move between TAZs and, in so doing, burden the transportation network. Parking costs are applied at the TAZ level: travelers going to zone X in an automobile must pay the parking cost assumed for zone X.

The travel model uses hourly parking rates for daily/long-term (those going to work or school) and hourly/short-term parkers. The long-term hourly rate for daily parkers represents the advertised monthly parking rate, averaged for all lots in a given TAZ, scaled by 22 days per month, then scaled by 8 hours per day; the short-term hourly rate is the advertised hourly rate — generally higher than the rate daily parkers pay — averaged for all lots in a given TAZ. Priced parking in the Bay Area generally occurs in greater downtown San Francisco, downtown Oakland, Berkeley, downtown San Jose, and Palo Alto.

When forecasting, it is assumed that parking prices change over time per a simple model: parking cost increases in line with employment density. Across the scenarios, therefore, the parking charges vary with employment density according to their land use input. For the Plan and EIR Alternatives 1 and 2, additional parking pricing is included, as described in more detail in the following Strategy Implementation section.

Perceived Automobile Operating Cost

When deciding between traveling in a private automobile or on a transit vehicle (or by walking, bicycling, etc.), the modeling process assumes travelers consider the cost of operating and maintaining, but not owning and insuring, their automobiles. The following three inputs are used to determine the perceived automobile operating cost: average fuel price, average fleet-wide fuel economy, and non-fuel related operating and maintenance costs.

To improve consistency among regional planning efforts across the state, the Regional Targets Advisory Committee (formed per Senate Bill 375) recommended that California's metropolitan planning organizations (MPOs) use consistent assumptions for fuel price and for the computation of automobile operating cost in long range planning. The assumptions for Plan Bay Area 2050 build off the multi-agency methodology developed by the four largest MPOs for the previous round of regional plans, as well as resources provided by the California Air Resources Board (CARB). The fuel price forecasts use projections generated by the United States Department of Energy (DOE) and California Energy Commission (CEC). Gas tax rates are added to base fuel price forecasts to project total fuel cost rates. The average fleet-wide fuel economy implied by CARB's EMFAC2017 model is used to represent the average fleet-wide fuel economy. Non-fuel operating and maintenance costs are based on data from AAA and forecasted using growth assumptions developed in the multi-MPO methodology. A summary of assumptions is presented in Table 32. Note that the prices in the table are presented in year 2017 dollars, year 2010 dollars (the units used in the above referenced documentation), and year 2000 dollars (the units of the travel model).

Table 32. Perceived automobile operating cost assumptions

MEASURE	ANALYSIS YEAR	
	2015	2050
Average fuel price (Year 2000 dollars per gallon)	$2.19	$3.22
Average fuel price (Year 2010 dollars per gallon)	$2.77	$4.06
Average fuel price (Year 2017 dollars per gallon)	$3.35	$4.91
EMFAC-implied fuel economy (miles per gallon)	23.48	44.23
Non-fuel-related operating cost ($2000 per mile)	$0.04	$0.10
Non-fuel-related operating cost ($2010 per mile)	$0.06	$0.13
Non-fuel-related operating cost ($2017 per mile)	$0.07	$0.16
Perceived automobile operating cost ($2000 per mile) †	$0.14	$0.17
Perceived automobile operating cost ($2010 per mile) †	$0.17	$0.22
Perceived automobile operating cost ($2017 per mile) †	$0.21	$0.27

† – Sum of the fuel-related operating cost (fuel price divided by fuel economy) and non-fuel-related operating cost.

New Model Features and Associated Assumptions

Ride-Hailing

Since Plan Bay Area 2040, a key enhancement made to the Travel Model is the explicit representation of ride-hailing modes, including Taxi and Transportation Networking Companies (TNCs) such as Uber and Lyft. Specifically, the tour and trip-based mode choice models have been modified to include a new ride-hailing nest.[38] This new nest has three sub-alternatives: traditional taxi, non-pooled TNC (e.g. UberX) and pooled TNC (e.g. UberPool).

Tour and Trip Mode Choice Utilities

For all three ride-hailing modes, the tour and trip mode choice utilities are specified as a function of in-vehicle time, wait time, cost (including fares, bridge tolls, road tolls), an alternative-specific constant, and a "TNC availability adjustment" constant. Table 33 below summarizes the assumptions used in these utility components in the Plan and EIR Alternatives.

38 The mode choice model is a nested logit model. Choices within the same "nest" in a model are closer substitutes to one another than other choices.

Table 33. Taxi and TNC utility components in Plan Bay Area 2050 modeling

UTILITY COMPONENTS	VARIABLE	COEFFICIENTS
In-vehicle time	For taxi and non-pooled TNC: travel time is generated from the network modeling component of the Travel Model. For pooled TNC: a multiplier of 1.5 is applied to the travel time of non-pooled TNC, to reflect detours taken to pick-up or drop-off additional customers.[39]	Generic in-vehicle coefficient (i.e., same coefficient used in drive alone and other modes)
Wait time	Simulated from distribution Taxi and TNC mode wait times are simulated from distributions that were estimated based on a survey of actual taxi and TNC wait times conducted in the Portland region in 2015.[40] Lognormal distributions were estimated from this observed data for each mode according to the land-use density of the tour or trip origin.	1.5 times the in-vehicle time coefficient (to represent that time spent on waiting is more onerous than time spent in vehicle)
Fares	A function of minimum cost, initial cost, cost per mile, distance, cost per minute, in-vehicle time Based on 2015 data.[41]	Generic cost coefficient (i.e., same coefficient used in drive alone and other modes)
Bridge tolls	Based on Regional Measure 3[42] Additionally, based on current TNC policies, it is assumed that TNC users are being charged bridge toll both ways.[43] For example, even though Golden Gate Bridge (Northbound) is free, TNC users who cross the bridge still must pay for the toll for the driver's return trip.	Generic cost coefficient (i.e., same coefficient used in drive alone and other modes)
Roadway tolls	Based on Plan tolling strategy inputs described in the section,	Generic cost coefficient (i.e., same coefficient used in drive alone and other modes)
Alternative-specific constant	Different constant for the three ride-hailing modes and for different household car-sufficiency level (0 car, fewer cars than workers, or more cars than workers)	Calibrated based on 2015 data. See detail in Travel Model 1.5 Calibration and Validation documentation[44]
TNC availability adjustment	A user-defined parameter to account for presumed wider availability compared to base year. Expressed in terms of minutes of "in-vehicle travel time equivalent"	Base year = calibrated Future-year (2050) = asserted to be 15 minutes of in-vehicle travel time equivalent (deducted from the utility, making TNCs more attractive)

39 For shared TNCs, an in-vehicle time multiplier of 1.5 is applied to reflect detours taken to pick-up or drop-off additional customers. The factor of 1.5 was used in the Plan run, based on data collected in Chicago between November 2017 to March 2018 (Schwieterman and Livingston (2018) available on https://las.depaul.edu/centers-and-institutes/chaddick-institute-for-metropolitan-development/research-and-publications/Documents/Uber%20Economics_Live.pdf).

40 See: https://www.portlandmercury.com/images/blogimages/2015/07/10/1436550157-uber_taxi_report.pdf). The only modification to the empirical distribution was that for the highest density area type we reduced the mean wait time slightly, from 4.7 minutes to 3 minutes, to represent presumed shorter wait time in the highest density areas in San Francisco compared to Portland.

41 See details in: https://github.com/BayAreaMetro/modelingwebsite/wiki/TravelModel1.5#Ridehailing_and_Taxi_Modes.

42 See: https://mtc.ca.gov/sites/default/files/BATA%202019%20Toll%20Schedule%20Dec%202018.pdf.

43 See the "Return Charges" section in https://help.lyft.com/hc/en-us/articles/115012927227.

44 See: https://github.com/BayAreaMetro/modeling-website/wiki/Development.

Vehicle Occupancy Assumptions and Autonomous TNCs

After mode choice and other demand model components are run, ride-hailing trips are assigned in the network modeling component of TM1.5. The total trips in each ride-hailing mode are multiplied by their vehicle occupancy factors, which determine the number of ride-hailing trips to be assigned as single-occupant, double-occupant, or 3+ occupant trips.

The vehicle occupancy factors were developed using data collected from the pilot phase of the Bay Area Transportation Study,[45] since the full survey was not available at the time of this model development work. The pilot was conducted in Fall 2018, with close to 1,300 ride-hailing trips collected.

The vehicle occupancy factors applied in the Plan are described in Table 34 below. According to data collected from the pilot of the Bay Area Transportation Study, 53% of the non-pooled TNC trips were 2-person occupancy and 47% were 3+ person occupancy in 2018 (there were no single occupancy taxi or TNC trip because each trip should have at least one driver and one passenger, except for out-of-service movement which is considered separately and will be explained in the "deadheading" section below). For future years (2035 onwards), it is assumed that TNC vehicles will become autonomous, and therefore the 53% that were 2-person occupancy are assumed to be single occupancy, and the 47% of that were 3+ person occupancy are assumed to be 2+ person occupancy. Similarly, for pooled TNC trips, the data suggests that 18% of the pooled TNC trips were 2-person occupancy (one driver plus one passenger, as the TNC did not successfully match an additional passenger for that trip) and 82% were 3+ person occupancy (one driver plus at least 2 passengers) in 2018. For future years (2035 onwards), since it is assumed that TNC vehicles will become autonomous, some percentage of the pooled TNC trips will become single occupancy. Staff assumed 9% (lower than the 18% that were 2-person occupancy in the base year) to reflect improvement in ride-matching.

45 See: https://mtc.ca.gov/our-work/plans-projects/other-plans/bay-area-transportation-study.

Table 34. TNC vehicle occupancy assumptions

		SHARE OF TRIPS BY OCCUPANCY	
Mode	Occupancy	2015	2035 and 2050
Taxi	single	0%	0%
	double	53%	53%
	three or more	47%	47%
TNC non-pooled	single	0%	53%
	double	53%	29%
	three or more	47%	18%
TNC pooled	single	0%	9%
	double	18%	29%
	three or more	82%	62%

Deadheading

Deadheading, or out-of-service movement, is the movement of a vehicle without a passenger. TNCs and taxis cruise around to look for fares and reposition before or after a paid trip. Modeling deadheading is a new area in the field of travel modeling. During the Plan Bay Area 2050 model upgrade effort, very little data about taxi and TNC deadheading behavior was available and so staff could not justify the development of a detailed deadheading model. Therefore, a simple approach was implemented, involving the application of a multiplier (a "zero-passenger vehicle-mile factor") to the transpose of the taxi and TNC trip origin-and-destination matrices to represent deadheading trips.

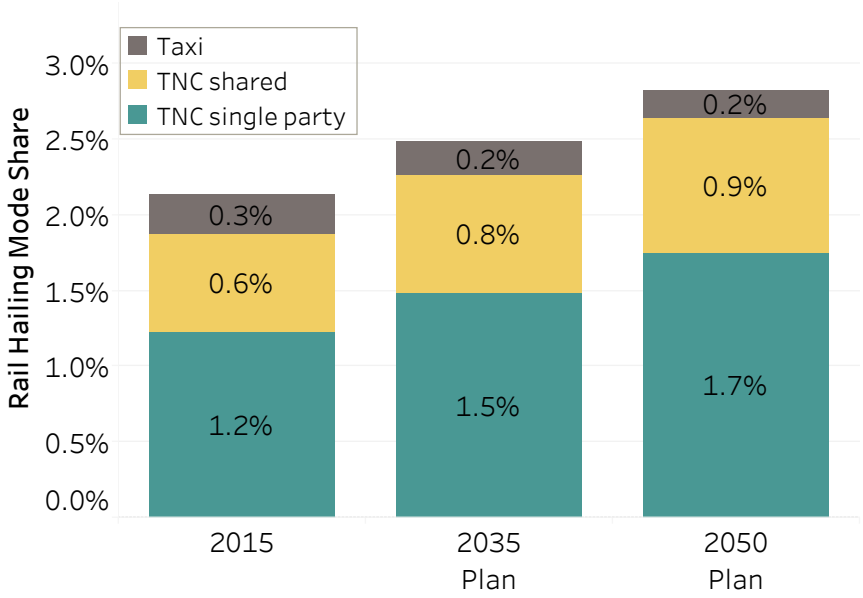
The zero-passenger vehicle-mile factor is a user-defined parameter in the model and can be easily updated when better data becomes available. Based on data from the California Public Utilities Commission (CPUC), the current assumption is that for every mile driven with passengers, a ride-hailing vehicle drives another 0.7 miles without passengers.[46] While simplistic, this method allows the model to represent the pollution and greenhouse gas emissions from the additional VMT generated from deadheading.

46 Source: aggregated statewide data released by the California Public Utilities Commission: http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/About_Us/Organization/Divisions/Policy_and_Planning/PPD_Work/PPD_Work_Products_(2014_forward)/Electrifying%20the%20Ride%20Sourcing%20Sector.pdf.

Modeled TNC Shares in Base and Future Years

As shown in Figure 29, future TNC mode share is expected to grow but remains a small share of the overall market, growing from 1.8% in 2015 to 2.5% in 2050 regionwide. Much of the growth is driven by the assumption that TNCs will be more widely available (via a user-defined input known as "availability adjustment" described in Table 33).

Figure 29. Modeled TNC shares



At the time of Travel Model 1.5 development for Plan Bay Area 2050, there was a dearth of available data for the calibration of TNC mode shares. Therefore, staff focused model calibration on meeting conventional calibration targets (including achieving estimated transit boardings within 10% of what is observed for each operator, and 20% percent root mean square for high volume roadway links), since reliable data about transit boardings and traffic counts exist. The underlying logic is that as long as transit boardings are within 10% of observed, then the number of TNC trips would not be too far off.

Another MTC effort, the Bay Area Transportation Study, was underway at the same time as the Plan Bay Area 2050 effort. The survey fieldwork was conducted in spring 2019. The data from the Bay Area Transportation Study was not available in time for model calibration but became available at the time of this report writing. Some key numbers from the Bay Area Transportation Study are shown in Table 35, along with a couple other key references for a retrospective model validation. Staff found that the 2015 TNC mode share erred on the high side, especially in the mode share outside San Francisco. While staff acknowledges this caveat, it is not expected to have a significant impact on the modeling GHG results since TNC represents a small share of the overall mode share. More detailed validation results (e.g., trip lengths and county-to-country trip matrices) are available in the Travel Model 1.5 Calibration and Validation documentation.

Table 35. Key references for retrospective model validation

VALIDATION DATA	VALIDATION DATA DETAIL	TM1.5	REMARK
Combined mode share for TNC and Taxi	NHTS 2017 data suggest that the combined mode share for Taxi and TNC was 0.91% on a typical weekday for the Bay Area.	2015 base year has a combined mode share for TNC and Taxi = 2.1%	Note that the NHTS data is more recent. One would expect TNC usage was lower in 2015 than 2017. Combined mode share for TNC and Taxi probably too high in the base year of TM1.5 (2015).
Vehicle trips within San Francisco	"On a typical weekday, ride-hail vehicles make more than 170,000 vehicle trips within San Francisco, approximately 12 times the number of taxi trips, representing 15 percent of all intra-San Francisco vehicle trips." (from the report TNCs Today, published in 2017, with data reflecting November and December 2016 situation)[47] CPUC data suggests that the year-on-year growth for TNC trip miles was 122% statewide between 2015 and 2016. Assuming the statewide data applies to vehicle trips within San Francisco, a rough estimate of intra-SF ride-hail trips is 77,000.	Intra-SF TNC trips = 71,000 in 2015	TNC Today's data includes TNC trips made by non-residents, and data for scaling the number to residents only is unavailable. Thus, the TNC Today number should be treated as an upper bound.
Trip mode share (San Francisco and non-SF)	San Francisco = 3.0% Non-San Francisco = 0.6% Reported in Bradley et al. (2021), Spring 2019 data. San Francisco refers to all trips to, from or within San Francisco.	San Francisco = 2.3% Non-San Francisco = 1.7%	Trip mode share for TNC in TM1.5 is probably too high outside of San Francisco.

47 SFCTA. 2017. TNCs Today — A Profile of San Francisco Transportation Network Company Activity. Draft Report. San Francisco, CA: San Francisco County Transportation Authority.

Autonomous Vehicles

One main difference between Travel Model One and the enhanced Travel Model 1.5 is the ability to incorporate different levels of autonomous vehicle (AV) market penetration. The enhancements include:

- **Auto ownership:** extended to consider ownership of both autonomous (AV) and human driven (HV) vehicles
- **AV allocation:** a simulation model was added to determine, for AV-owning households, whether an AV is allocated for a tour
- **Tour and trip mode choice:** user-defined coefficients to represent AV scenario assumptions are added
- **Zero passenger vehicle module:** a multiplier, known as the zero-passenger vehicle factor, is applied to the transpose of the AV and TNC trip matrices to represent zero passenger vehicle trips
- **Traffic assignment:** AVs (together with TNCs) are assigned as a separate vehicle class from the existing vehicle classes. This allows analysts to generate summaries specific to AVs and TNCs. Also, to represent potential increases in effective roadway capacity due to closer vehicle spacing, the traffic assignment module of TM1.5 is updated such that the passenger-car equivalent[48] of AVs is configurable by facility type.

Detailed documentation about these enhancements is available on the Travel Model 1.5 documentation wiki.[49] This report will focus on the user-defined coefficients used in Plan Bay Area 2050 modeling.

Since fully autonomous vehicles are still a nascent technology that is not available to the public yet, there is considerable uncertainty around its operational characteristics and the associated traveler behavioral responses. TM1.5 allows users to define different coefficients that represent different AV modeling assumptions. The user-defined coefficients in Plan Bay Area 2050 modeling were informed by the outcomes of a literature search, a series of presentations, a workshop and a survey of Regional Modeling Working Group[50] participants that took place in late 2018 as part of the Horizon process. These coefficients and assumptions are presented in Table 36.

Given these assumptions, the incorporation of AV use and their deadheading miles in Plan Bay Area 2050 modeling shows that the emergence of AVs has an adverse impact on the Bay Area's ability to meet its VMT and GHG reduction goals. In a test run, in which AV market penetration was set to zero while holding all else the same as the 2050 Plan scenario, the VMT per capita was 9% lower than the Plan (14.9 in the test, compared to 16.3 in the Plan).

48 PCE rates are generally determined prior to the assignment step, with values of 1.0 given to passenger vehicles and values greater than 1.0 to trucks. To simulate increase in roadway capacity due to AVs, PCEs of less than 1.0 can be assigned to the vehicles that are assumed to be autonomous.

49 Travel Model 1.5 Documentation wiki: https://github.com/BayAreaMetro/modeling-website/wiki/TravelModel1.5#Autonomous_Vehicles.

50 The Regional Modeling Working Group is comprised of planners and modelers working for transportation agencies in the San Francisco Bay Area. In 2018-2020, the working group has more than 20 active members who regularly attend the group's monthly meetings.

Table 36. Autonomous vehicle modeling assumptions

VARIABLE	VARIABLE DESCRIPTION	ASSUMPTION
Fleet Penetration	Share of total passenger vehicle fleet that is autonomous	2035: 5% 2050: 20%
Auto Ownership Likelihood by Households	Coefficients representing different likelihood of AV ownership by household types	Based on recent research for FHWA[51]
Household Use Allocation	Probability boosts representing that, for AV-owning households, AVs are more likely to be used than human-driven vehicles	The probability boost is set to 1 (i.e., the assumption was that AV and human driven vehicles are equally likely to be used within an AV owning households)
In-Vehicle Time Coefficient for Mode Choice	The marginal disutility of in-vehicle travel time	Same as human driven vehicles
Parking Cost, Per-mile Auto Operating Cost and Terminal Time	Parking and per-mile auto operating costs are self-explanatory. Terminal Time refers to the time it takes to park the vehicle and walk from the parking location to the actual destination.	Same as human driven vehicles
Zero-Passenger Vehicle Factor	Factor reflecting that every AV mile driven with passengers yields additional mileage without passengers	0.7 (i.e., for every mile driven with passengers, an AV drives another 0.7 miles without passengers)[52]
Effective Roadway Capacity	Passenger-car equivalent reflecting improved vehicle spacing	1.0 (i.e., no effective roadway capacity increased is expected given the low AV market penetration assumed in the Plan)

Telecommuting

The implementation of telecommuting was updated slightly for Travel Model 1.5 to better represent Strategy EN7: Expand Commute Trip Reduction Programs at Major Employers, described in more detail below. In the previous version of the model, telecommuting was represented by dampening the likelihood of making a mandatory tour within the Coordinated Daily Activity Pattern sub-model for workers. The Coordinated Daily Activity Pattern sub-model was estimated and calibrated for Travel Model One v0.3, which was released in April 2012. As described in that version's Calibration and Validation Technical Report,[53] the model specification was transferred from the Atlanta Regional Commission (ARC) model, and the Travel Model One calibration was based on targets from the Bay Area Travel Survey (BATS) 2000, with adjustments to offset respondents' underreporting of travel. For the modeled base year of 2015, 80.8% of full-time workers made a work tour and 19.2% of full-time workers did not make a work tour in the modeled day. When looking at all workers (including part-time), this grew to 24.2% of workers who did not make a work tour on an average workday.

51 https://www.fhwa.dot.gov/planning/tmip/publications/other_reports/model_impacts_cavs/.

52 Same factor as TNC deadheading is used. SOURCE: aggregated statewide data released by the California Public Utilities Commission: http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/About_Us/Organization/Divisions/Policy_and_Planning/PPD_Work/PPD_Work_Products_(2014_forward)/Electrifying%20the%20Ride%20Sourcing%20Sector.pdf.

53 Travel Model Development: Calibration and Validation - Technical Report, May 17, 2012: https://mtcdrive.box.com/s/7crr7bwhromi2au42jnpp11fqe5l24xq.

In updating the telecommuting implementation in Travel Model 1.5 for this plan, staff looked further into the data and assumptions previously made around teleworking. Workers who do not make a work tour on an average weekday may do so because they have an alternate work schedule, or because they are taking a vacation, personal or sick day, or because they are telecommuting. It is therefore necessary to assume what portion of workers who are not making work tours are doing so because they are telecommuting versus not working that day. Initially, staff looked at estimates of telecommuting from the American Community Survey's Table B08301: Means of Transportation to Work, which included data for "Worked at home." The ACS 1-year Estimates for 2015 dataset estimated that 5.6% of Bay Area workers aged 16 years and over worked at home. However, the ACS data under-represents telecommuting as defined for travel modeling, stating that the "principal means of transportation to work refers to the mode of travel used to get from home to work most frequently" (emphasis added). Therefore, this estimate does not include workers who telecommute regularly but less than the majority of the work week. Thus, staff looked at the results of the Bay Area Transportation Study[54], which surveyed Bay Area residents about their travel behavior in the fall of 2018 and the spring of 2019. This survey asked whether respondents traveled to work and/or teleworked on each day of survey participation. Using weighted data representing a "typical" (here, Monday through Thursday) weekday, the survey results of full-time workers showed dramatically higher rates of not-working, 19.9%, as well as telecommuting (with no work tours), 15.6%, with only 64.4% of workers making a work tour.

Since recalibration of the Coordinated Daily Activity Pattern sub-model was out of scope, staff did not alter the overall assumption of workers not making work tours in the 2015 base year. Therefore, staff applied the proportion from the survey: that 56.1% of full-time workers who did not go to work did not work that day, and the remainder teleworked; for part-time workers, 55.3% of workers who did not go to work did not work that day. Applying this assumption resulted in a telecommute rate assumption of 8.5% of full-time workers and 16.6% of part-time workers in the 2015 base year, and 10.3% across all full- and part-time workers. Doing a similar summary of the 2005 base year model run resulting in a telecommute rate assumption of 7.8% of full-time workers and 17.0% of part-time workers, and 9.5% across all full- and part-time workers. Staff fit an exponential curve to these two base years to extrapolate No Project telecommute rates for future years.

Table 37. Baseline telecommute rate assumption, 2005-2050, as a percentage of full- and part-time workers (including those not working on a given day)

MODEL YEAR	OVERALL TELECOMMUTE RATE ASSUMPTION
2005	9.5%
2015	10.3%
2025	11.0%
2030	11.4%
2035	11.8%
2040	12.3%
2050	13.2%

For future years, this base level of telecommute increase was represented by increasing the magnitude of a constant which would reduce the likelihood of a full-time worker making a work tour in the Coordinated Daily Activity Pattern sub-model. Because telecommuting eligibility is correlated with higher-wage occupations and occupation/industry is not attached to any individual worker in the model, this constant was applied only to workers with a household income of $50,000 or higher (in 2000 dollars). The methodology used for representing telecommuting remained unchanged from Plan Bay Area 2040; the only update made was the distinction between workers not working and workers telecommuting described above, which affected the telecommute rate estimation from model runs as well as the telecommute assumption used in future (No Project) model years.

54 https://mtc.ca.gov/our-work/plans-projects/other-plans/bay-area-transportation-study.

Several transportation strategies comprised of programmatic expenditures on projects exempt from air quality conformity analysis, such as state of good repair investments or transit stop improvements, were not evaluated in the travel model. This affected the following strategies:

- **Strategy T1:** Restore, Operate and Maintain the Existing Transportation System: the only modeled component of this strategy was the restoration of transit headways to baseline levels in the Plan after 2030 from the reduced service levels described in the Transit Network section above.
- **Strategy T2:** Support Community-Led Transportation Enhancements in Equity Priority Communities: the specific projects that would be funded under this strategy would be defined later, through a collaborative process allowing residents of Equity Priority Communities to prioritize projects. Existing community-engaged planning work at MTC and ABAG suggests that community recommendations would likely focus on improvements that do not increase transit or road capacity, such as bus shelters, sidewalk improvements or traveler information services. As such, this strategy was not modeled.
- **Strategy T7:** Advance Other Regional Programs and Local Priorities: in general, investments nested within this strategy include improvements to local streets not represented within the travel model network or ongoing programs that do not increase capacity on roads or transit systems. As such, this strategy was not modeled.

Strategy T3 | Enable a Seamless Mobility Experience

The goal of this strategy is to reduce the friction of taking multi-operator or multi-modal trips. It encompasses several different elements, such as a smartphone app for trip planning and payment, real-time passenger information, wayfinding signage and cross-operator schedule coordination. The modeling approach focuses on the cross-operator schedule coordination element.

Cross-operator schedule coordination is expected to be implemented in 15 strategic locations (see Figure 30). In the model, a maximum transfer time was applied at these locations (i.e., transit nodes in modeling terminology). The transit nodes are classified as either a regional-to-regional node or a regional-to-local node. Regional-to-regional nodes are given a maximum transfer time of 3 minutes, whereas regional-to-local nodes are given a maximum transfer time of 5 min (see summary in Table 38 below).

Transfer time is one of the travel time components in the mode choice model. Reduced transfer times make transit a more attractive choice to travelers. In TM1.5, the model coefficient for transfer time is twice the magnitude of the model coefficient for in-vehicle time, to represent travelers' perception that a minute spent on transferring is more onerous than a minute spent sitting in a vehicle.

Figure 30. Seamless nodes

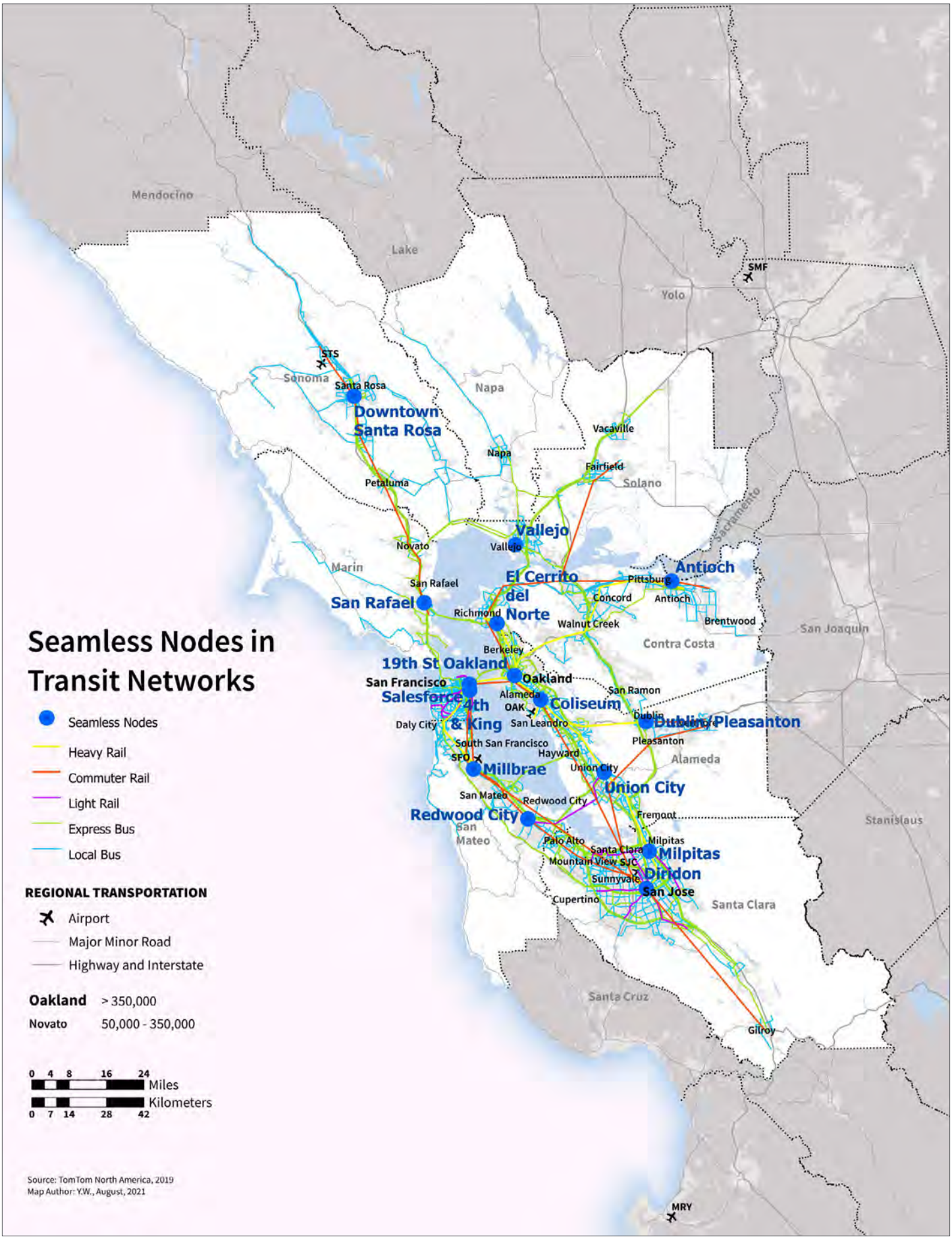


Table 38. Maximum transfer time at seamless nodes

CLASSIFICATION	TRANSIT NODE	TRANSIT SERVICE
Regional-to-local node (maximum transfer time = 5 minutes)	19th St Oakland	BART ↔ ReX, BRT
	4th and King	Caltrain ↔ Muni
	Antioch	BART ↔ BRT
	Diridon	Caltrain ↔ BART, ReX, VTA
	Downtown Santa Rosa	SMART ↔ Bus
	Milpitas	BART ↔ VTA
	Salesforce	Caltrain ↔ Muni
	Vallejo	ReX ↔ Bus
Regional-to-regional node (maximum transfer time = 3 minutes)	Coliseum	BART ↔ Bus
	Dublin/Pleasanton	BART ↔ Valley Link
	El Cerrito del Norte	BART ↔ ReX
	Millbrae	Caltrain ↔ BART
	Redwood City	Caltrain ↔ ReX, Dumbarton
	San Rafael	SMART ↔ Bus
	Union City	BART ↔ Dumbarton

Strategy T4 | Reform Regional Transit Fare Policy

The regional transit fare reform has two parts: (i) a streamlined fare structures across the region's 27 transit operators and replace existing operator-specific discount fare programs with an integrated fare structure across all transit operators; and (ii) a means-based fare discount for low-income riders.

Regional transit fare reform was implemented in Travel Model 1.5 by effectively overriding the fares calculated by the normal methods. During the normal course of a travel model run, fares are calculated from a variety of methods, including flat, operator-based fares; stop-to-stop based fares for some operators (such as BART and Caltrain); transfer fares and discounts, etc. To represent a regional integrated fare structure, these fares were calculated normally, but then swapped out with an integrated fare structure before being used by the travel model core, where simulated travelers make decisions about their travel. The integrated fares included were as follows: for travelers who used only local buses (including light rail), a flat fare of $2.55 (in 2020 dollars) was assumed. For travelers who used other modes (ferry, express bus, commuter rail or heavy rail), a fare was assumed based upon the total distance traveled on transit.

Table 39. Reform Regional Transit Fare Policy assumptions for distance-based regional transit fares

DISTANCE TRAVELED	FARE (IN 2020 DOLLARS)	FARE (IN 2000 DOLLARS)
0-10 miles	$3.62	$2.17
10-20 miles	$4.68	$2.80
20-30 miles	$5.71	$3.42
30-40 miles	$6.75	$4.04
40-50 miles	$7.78	$4.66
Over 50 miles	$8.82	$5.28

A means-based fare discount of 50% was given in the model to individuals in households with annual incomes less than $30,000 (in 2000$). Modeling of this discount was implemented through a simple change in the fare input to the mode choice component, in which lower fares make transit a more attractive choice to low-income travelers.

While the means-based fare discount is reflected in the mode choice component of TM1.5, it is not reflected in the transit route choice component of the model. This is because the transit assignment component of TM1.5 does not have income segmentation. Adding income segmentation to the transit assignment component would require a significant level of effort to upgrade the model. More importantly, adding income segmentation to transit assignment would greatly increase model run time. Given these resource constraints and potential run time issues, MTC staff decided not to pursue such an upgrade. This means discounted fares would not be a factor affecting transit route choice in the model, but MTC staff judged this a minor caveat that would not have a significant impact on the modeling results – especially since all operators/routes would have the same discount level.

This strategy was modeled consistently across the Plan and EIR Alternatives with one key exception. In EIR Alternative 2, the means-based fare discount was extended to passengers with a household income in quantile 2 (under $100,000 in 2020 dollars) to better advance equity outcomes.

Strategy T5 | Implement Means-Based Per-Mile Tolling on Congested Freeways with Transit Alternatives

This strategy involves implementing a per-mile charge on auto travel on congested freeway corridors where transit alternatives exist (BART, Caltrain, SMART, Valley Link, VTA Light Rail, and Regional Express Bus). Drivers on these corridors would pay a higher charge during the morning and evening peak periods, with discounts for off-peak travel, carpools with three or more occupants, or travelers with a qualifying disability (although disability is not modeled). Toll rates would be 15 cents per mile (9.3 cents per mile in 2000$) for solo travel in the morning (6am to 10am) and afternoon (3pm to 7pm) peak periods and 5 cents per mile (3.1 cents per mile in 2000$) for travelers in discount categories above. To support equity goals and reduce the potentially regressive impact of this pricing measure, lower-income drivers (i.e., those in households with annual income lower than $100,000 in 2020$, or $60,000 in 2000$) would be charged only half of the per-mile tolling rate. Bridge tolls would remain in effect, with no per-mile toll on the bridges. Existing express lanes on corridors without a transit alternative would continue to operate, while existing express lanes on corridors with per-mile tolling would be converted to carpool lanes on an all-lane tolling corridor. Figure 28 shows a map of the per-mile tolling corridors in the Plan (and EIR Alternatives 1 and 2) in 2050 in red. The figure also shows other priced corridors, including other express lanes that would be tolled but not part of the per-mile tolling system and the SR-37 priced corridor which would be tolled to fund sea level rise adaptation measures.

Strategy T6 | Improve Interchanges and Address Highway Bottlenecks

This strategy includes a set of capacity expansions or operational improvements on highway corridors and at interchanges throughout the region. This includes improvements at key regional interchanges like the I-80/I-680/SR-12 interchange in Solano County, the I-680/SR-4 interchange in Contra Costa County, and more. Widenings are highly limited and include the widening of SR-4, the construction of a new connector facility between SR-4 and Byron Highway, and a direct connector between US-101 and I-580. The complete set of projects included in this strategy can be found in the Draft Plan Bay Area 2050 Transportation Project List.

The Plan and the EIR Alternatives included the same projects nested under this strategy, with a few key exceptions. For EIR Alternative 1, the following projects were removed to minimize environmental impacts:

- SR-37 Interim Project
- SR-37 Ultimate Project
- SR-262 Safety and Interchange Improvements | Phase 1
- I-680/SR-4 Interchange Improvements Phases 1, 2, 4 and 5
- SR-4 Operational Improvements (Eastbound and Westbound)
- Widening of SR-4 and Vasco Road
- US-101/I-580 Direct Connector
- I-80/I-680/SR-12 Interchange and Widening Phases 3-7
- Vasco Road Byron Highway Connector Road

Strategy T8 | Build a Complete Streets Network

This strategy involves enhancing streets to promote walking, biking, and other micro-mobility by (1) building out a contiguous regional network of 10,000 miles of bike lanes or multi-use paths; (2) providing support to local jurisdictions to maintain and expand car-free slow streets; and (3) supporting other amenities like improved lighting, safer intersections, and secure bike parking at transit stations. This strategy would emphasize Complete Streets improvements near transit to improve access and in Equity Priority Communities to advance equity outcomes (although the geographical aspect of this strategy is not clearly determined yet and is not modeled).

Travel Model 1.5 does not include a detailed bike and pedestrian network, and it is not designed to represent traveler responses to improvement in safety and comfort that may result from a Complete Streets network or expanded bike infrastructure. Therefore, to predict this strategy's potential impacts, staff estimated the effect of this strategy based on available literature and integrated this effect into the modeled mode choice.

Three research studies, Dill and Carr (2003), Marshall and Garrick (2010), and Buehler and Pucher (2011), were identified by CARB in the Final Sustainable Communities Strategy Program and Evaluation Guidelines Appendices (November 2019) as providing elasticities that can be used to determine the relationship between bike infrastructure supply (e.g., miles of bike lane per square mile of land, or miles of bike) and bike usage (e.g., percent commuting by bicycle). Based on GIS analysis, MTC staff determined that the Complete Streets Network strategy is expected to add 5,600 miles of new bicycle infrastructure between 2015–2035 and another 6,000 miles between 2036-2050. Given this input, staff used the relationships inferred from the three research studies cited above and calculated the expected mode shift. The expected impact on walking is not modeled, as the existing literature does not provide enough evidence to estimate these impacts.

The bicycle mode choice constant was increased to represent improvement in several unmeasured characteristics of the mode such as perceived safety, comfort and convenience resulting from the bike infrastructure expansion. Without the constant adjustment, the cycling mode share in the Plan would have been 2.6% in both 2035 and 2050. Based on literature-based estimates of increased bicycle-trip making, the bicycle mode choice constant was calibrated to result in a cycling mode share of approximately 4.6% and 7.0% in 2035 and 2050 respectively.

EIR Alternative 2 includes an additional reserve for pedestrian improvements, which was not modeled.

Strategy T9 | Advance Regional Vision Zero Policy through Street Design and Reduced Speeds

Travel Model 1.5 represents maximum roadway speeds based on a lookup using the area type and facility type of that link.[55] For example, a link with facility type of freeway would have a maximum speed of 65 mph in rural and suburban areas, 60 mph in urban areas, and 55 mph in central business districts (CBD) and the regional core.

To represent this strategy, the lookup was modified to reduce speed limits to between 20 and 35 mph on arterials and local streets, and 55 mph on freeways. The following table shows the relationship between area type, facility type and maximum speed, with and without this strategy. Note that the maximum speed reduction for freeways is assumed to be implemented in 2030, while the maximum speed reduction for major arterials is assumed to be implemented in 2025.

Table 40. Strategy to Advance Regional Vision Zero Policy, speed reductions by facility type and area type

FACILITY TYPE	AREA TYPE	MAXIMUM SPEED, BEFORE STRATEGY	MAXIMUM SPEED, WITH STRATEGY
Freeway	Urban Business	60 mph	55 mph
	Urban	60 mph	
	Suburban, Rural	65 mph	
Major Arterial	CBD	25 mph	20 mph
	Urban Business	30 mph	20 mph
	Urban	30 mph	25 mph
	Suburban	35 mph	30 mph
	Rural	40 mph	35 mph

Strategy T10 | Enhance Local Transit Frequency, Capacity and Reliability

Projects within this strategy aim to make local bus and light rail service faster and more frequent. Network frequency boosts on AC Transit, Muni, Sonoma County Transit and more provide a more frequent baseline on some of the region's highest ridership routes. Additionally, capital projects that increase the speed and reliability of transit maximize the throughput of existing service. Example projects include light rail grade separation in downtown San Jose, BRTs on Geary Boulevard and San Pablo Avenue, and transit signal priority in Napa, among others.

Cordon Tolls

Two cordon tolls are also part of this strategy. The Plan, as well as EIR Alternatives 1 and 2, include two cordon tolls: one in downtown San Francisco, and another on Treasure Island. The downtown San Francisco scheme, which is expected to be implemented in 2025 in the Plan, requires all vehicles to pay a $6 (in 2010$, which is $7.92 in 2020$ or $4.76 in 2000$) fee to enter or leave the greater downtown San Francisco area during the evening commute period. The cordoned area is bounded by Laguna and Guerrero Streets to the west, 18th Street to the south, and San Francisco Bay to the north and east.

55 For more on Facility Type and Area Type definitions, see https://github.com/BayAreaMetro/modeling-website/wiki/MasterNetworkLookupTables#facility-type-ft.

The Treasure Island cordon toll, which is expected to be implemented in 2035 in the Plan, is set at $5 in 2021$ (which is $4.93 in 2020$ or $2.99 in 2000$) during the morning and afternoon peak, $1.50 in 2021$ (which is $1.48 in 2020$ or $0.89 in 2000$) in midday. There is not expected to be a toll in the evenings and early mornings.
The toll is charged to all vehicles entering Treasure Island from I-80 in either the westbound or eastbound direction.

Local Transit Projects

The Plan and the EIR Alternatives included the same projects nested under this strategy, with a few key exceptions.

EIR Alternative 1 further improves local transit frequencies to encourage mode shift away from driving, focusing on core bus service that was overcrowded in the Plan. This includes doubling the peak frequency of select routes on AC Transit local bus service, Muni local bus service and VTA local bus service. EIR Alternative 1 also includes a reserve for transit signal priority capital improvements, which was not modeled.

EIR Alternative 2 also improves local transit service beyond the Plan investments. The VTA Orange Line serving northern Santa Clara County receives a frequency boost to better serve jobs-rich Growth Geographies. There is also a reserve for grade separations on this line that is not modeled. Across the region, all Growth Geographies not adjacent to rail, ferry or bus service with peak headways of 15 minutes or greater see local bus frequency upgrades. Jobs-rich Growth Geographies that were identified for more intensive development in EIR Alternative 2 see even greater investments in local transit service to align with projected growth.

Strategy T11 | Expand and Modernize the Regional Rail Network

Investments nested under this strategy include key extensions to existing rail networks, including the extension of BART to downtown San Jose, the Caltrain Downtown Extension and Valley Link, among others. Additionally, a new rail link between downtown Oakland and downtown San Francisco provides additional capacity to the transbay corridor. These extensions are complemented by modernization projects that increase frequencies on rail networks, including South Bay Connect, improving Capitol Corridor service in Alameda County, BART Core Capacity, and projects boosting ACE and Caltrain frequencies. Ferry projects are also nested within this strategy, including new service to Berkeley, the Seaplane Lagoon in Alameda, Redwood City, and more. The full list of projects included in this strategy can be found in the Plan Bay Area 2050 Transportation Project List.

The Plan and the EIR Alternatives included the same projects nested under this strategy, with a few key exceptions. For EIR Alternative 2, regional rail projects are delayed one period to free up fiscal capacity for local transit improvements. The following projects are delayed to open after 2035 in EIR Alternative 2:

- Caltrain Downtown Extension
- South Bay Connect
- Valley Link

The following projects open after the year 2035 in the Plan. In EIR Alternative 2, they are delayed to open after 2050, meaning they are not modeled:

- Caltrain/High-Speed Rail Electrification and Grade Separation: Tamien to Pacheco Pass
- Dumbarton Group Rapid Transit
- Link21 New Transbay Rail Crossing

Strategy T12 | Build an Integrated Regional Express Lanes and Express Bus Network

To maximize the time-competitiveness of express bus and carpool trips in comparison to single-occupancy vehicles, this strategy includes a full build-out of the express lanes network, the introduction of new express bus routes throughout the region, and frequency increases on select existing express bus service. The full list of projects included in this strategy can be found in the Draft Plan Bay Area 2050 Transportation Project List.

The Plan and the EIR Alternatives included the same projects nested under this strategy, with a few key exceptions. For EIR Alternative 1, all express lanes projects that required the construction of a new lane were modified to instead convert a lane of general purpose travel to an express lane, except for the proposed express lane on SR-85, where there are only two lanes of travel in either direction. Staff determined that converting this facility to have just a single lane for general purpose travel was not feasible.

In EIR Alternative 2, the Plan project list is modified to include additional capital improvements and frequency boosts on AC Transit transbay routes; add express bus service along I-580 in eastern Alameda County prior to the delayed opening of Valley Link in model year 2040; to improve frequencies on ReX Green Line and Blue Line; and to implement capital upgrades to ReX Blue Line stations to provide a premium service.

Strategy EN1 | Adapt to Sea Level Rise

The plan assumes a future with two feet of sea level rise by 2050. To reduce the impact of associated inundation, the Plan, EIR Alternative 1 and EIR Alternative 2 include efforts to mitigate sea level rise by addressing adaptation needs. Protective measures are funded in most locations that are permanently inundated. Equity Priority Communities and areas with high benefit and low cost are prioritized for protection. In the No Project alternative, mitigation is much more limited; only committed mitigation project locations are protected from sea level rise. The committed mitigation projects are: San Francisco Airport Shoreline Protection Program, Foster City Levee Project, South Bay Shoreline Project, and Oakland Airport Sea Level Rise Adaptation.

This degree of sea level rise would inundate several major rail and highway corridors, removing them from the travel model network. One component of this strategy is to prevent inundation from sea level rise on SR-37, segments of US-101 on the Peninsula and in the North Bay, I-580 in Marin County, and other key facilities.

The Plan and the EIR Alternatives included the same projects nested under this strategy, with a few key exceptions. For EIR Alternative 1, the SR-37 Ultimate Project — which includes additional highway capacity and contributes to the project footprint — was removed to minimize environmental impacts, resulting in inundation and removal from the model network.

Table 41 shows the impacts of sea level rise for each alternative, listing affected alternatives and the level of future protection. The inundation levels are assumed to be 12 inches by 2035 and 24 inches by 2050, which affect mostly the No Project alternative because the other alternatives assume some inundation protection. Bus bridges were created to fill the gap between transit stations in the No Project alternative, including the following:

- between Fremont and San Jose Diridon serving Capitol Corridor,
- between Martinez and Suisun City serving the Capitol Corridor, and
- between the Marin Civic Center and downtown Petaluma stations, serving SMART.

Additionally, Tasman station is closed for VTA light rail; as a result, the Blue and Green lines stop at River Oaks, while the Orange line bypasses Tasman. All other alternatives have protection measures that will mitigate inundation through 2050, except for SR-37 which floods in EIR Alternative 1.

Table 41. Impact of sea level rise by alternative

CORRIDOR	COUNTY	FROM	TO	NO PROJECT		PLAN	EIR ALTERNATIVE 1	EIR ALTERNATIVE 2
				2035	2050			
US-101	MRN	Sir Francis Drake Blvd.	Tamalpais Drive Interchange	×	×	✓	✓	✓
I-580	MRN	Bellam Blvd.	Sir Francis Drake Blvd.	×	×	✓	✓	✓
SR-37	MRN, NAP, SOL, SON	US-101 Interchange	Mare Island Interchange	×	×	✓	×	✓
US-101	MRN	Bellam Blvd.	2nd St.	×	×	✓	✓	✓
Seaport Blvd.	SM	US-101	(Entire Road)	✓	×	✓	✓	✓
University Ave.	SM	O'Brien Dr.	Bayfront Expy.	✓	×	✓	✓	✓
N Mathilda Ave.	SCL	Lockheed Martin Way	W Caribbean Dr.	✓	×	✓	✓	✓
E Caribbean Dr.	SCL	Borregas Ave.	N Mathilda Ave.	✓	×	✓	✓	✓
Union City Blvd.	ALA	Smith St.	Alvarado Blvd.	✓	×	✓	✓	✓
Doolittle Dr.	ALA	Bay Farm Island Bridge	OAK and Island Dr.	✓	×	✓	✓	✓
Webster/ Posey Tubes	ALA	City of Alameda		✓	×	✓	✓	✓
Lakeville Hwy.	SON	Gate 9	SR-37	×	×	✓	✓	✓
Irwin St.	MRN	US-101	Woodland Ave.	×	×	✓	✓	✓
Shoreline Hwy.	MRN	Pohono St.	Almonte Blvd. and US-101	×	×	✓	✓	✓
Shoreline Hwy.	MRN	Van Pragg	Stinson Beach	×	×	✓	✓	✓
ACE	ALA, SCL	Fremont	San Jose	×	×	✓	✓	✓
Capitol Corridor	ALA, SCL	Fremont	San Jose	×	×	✓	✓	✓

CORRIDOR	COUNTY	FROM	TO	NO PROJECT		PLAN	EIR ALTERNATIVE 1	EIR ALTERNATIVE 2
				2035	2050			
Capitol Corridor	CC, SOL	Martinez	Suisun City	✗	✗	✓	✓	✓
Ferries	ALA, SF	San Francisco	Alameda/ Oakland	✓	✗	✓	✓	✓
Ferries	ALA, SM	South San Francisco	Alameda/ Oakland	✓	✗	✓	✓	✓
SMART	MRN, SON	Marin Civic Center	Downtown Petaluma	✗	✗	✓	✓	✓
VTA LRT	SCL	Tasman Station		✗	✗	✓	✓	✓

NOTE: a check mark (✓) indicates the facility was protected from inundation and an x (✗) indicates the facility was inundated. Plan Bay Area 2050 assumes 1 foot of sea level rise by 2035 and 2 feet of sea level rise by 2050.

Strategy EN7 | Expand Commute Trip Reduction Programs at Major Employers

This strategy entailed setting a sustainable commute target for all major employers, such that by the year 2035, no more than 40% of each employer's workforce would be eligible to commute by auto on an average workday. To represent the effects of this strategy in Travel Model 1.5, staff first estimated the effects of this strategy on the modeled workforce. This was done using the following steps:

1. Starting with National Establishment Time Series (NETS) dataset which includes establishment, establishment sizes and industry, staff filtered to the 2015 establishments in the Bay Area counties
2. This dataset was then joined with firm data (also from the NETS dataset) based on the headquarters ID to segment the workforce into large firms and exclude small businesses, which would not be affected by the strategy.
3. Each establishment corresponds to one industry (for example, NAICS 54110, Legal Services), but that industry consists of a mix of occupations (for example, Lawyers and Judicial Law Clerks, Computer Support Specialists, Human Resources Workers, Building Cleaning Workers, etc). Using the May 2019 National Industry-Specific Occupational Employment and Wage Estimates[56], worker tallies by industry were translated to worker tallies by occupation.
4. Each occupation was assumed to be able to telework based a crosswalk from Dingel's and Neiman's research.[57]
5. Combining the above steps, maximum telecommute rates were developed for employment in each Bay Area county based on the forecasted employment for that county by industry category. Note that staff do not forecast firm sizes, so the percentage of employees excluded due to small firm size in 2015 was carried forward into future years.

56 May 2019 National Industry-Specific Occupational Employment and Wage Estimates: https://www.bls.gov/oes/current/oessrci.htm.

57 Jonathan I. Dingel and Brent Neiman, 2020. "How many jobs can be done at home?," Journal of Public Economics, vol 189.

Using the maximum telecommute rates, staff then calibrated a telecommute constant for each employment super district using the following logic: If the commute tour auto mode share for the super district was already less than the 40% target, then no additional telecommuting was modeled beyond the baseline estimate described in the section on . If the commute tour auto mode share to the super district exceeded 40%, the telecommute constant was calibrated upwards until telecommuting approached the maximum rates described above. As staff strived to be conservative about strategy benefits, note that this resulted in many workplace super districts continuing to exceed their 40% commute mode share target. Staff assumes that many of these workplaces would institute other measures to shift workers to alternative modes to reach their targets, but these are not captured in the model. Therefore, this representation likely underestimates the effect of this strategy on travel.

Strategy EN9 | Expand Transportation Demand Management Initiatives

This strategy included several components, most of which were not represented in the Travel Model. The analysis for these initiatives is described in the Off-Model Calculations section following. However, this strategy also included a parking pricing component, which was implemented in Travel Model 1.5.

As described in the above section on Parking Prices, Travel Model 1.5 represents parking pricing based on the tour and trip destination's travel analysis zone (TAZ), as well as the tour and trip purpose and the activity duration. Additionally, Travel Model 1.5 includes a simple Free Parking model to capture the fact that some employers subsidize employee parking even in areas with non-zero long term parking pricing.

In order to model the parking pricing component of this strategy, staff expanded the set of TAZs with non-zero parking pricing, assuming that TAZs within the Growth Geographies would have a minimum hourly cost (both for long-term and for short-term parking) of $0.25 per hour (in 2000 dollars), thereby expanding the set of TAZs with non-zero parking pricing.[58] Additionally, staff assumed a parking price increase of 25% above the No Project hourly cost for all TAZs within both Growth Geographies and Transit Rich Areas. Since Travel Model 1.5 TAZs do not match well with Growth Geographies and Transit Rich Areas, qualified TAZs were determined using a threshold approach, where a TAZ was defined as being "within" the relevant geography if 20% or more of the TAZ area intersected with the geography. Finally, this strategy assumed that employer subsidy of employee parking costs has been disallowed, and the Free Parking model was disabled.

Off-Model Calculations

Travel Model 1.5 is not sensitive to the full range of policies MTC and ABAG may choose to pursue in Plan Bay Area 2050. Marketing and education campaigns, as well as non-capacity-increasing transportation investments like bikeshare programs, are examples of strategies with the potential to change behavior in ways that result in reduced vehicle emissions. Travel Model 1.5 and EMFAC do not estimate reductions in emissions in response to these types of changes in traveler behavior. As such, MTC and ABAG use "off-model" approaches to quantify the GHG reduction benefits of these important climate initiatives, which constitute most of the key subcomponents of Strategy EN8: Expand Clean Vehicle Initiatives and Strategy EN9: Expand Transportation Demand Management Initiatives.

The following are the initiatives requiring off-model analysis included in Strategy EN8: Expand Clean Vehicle Initiatives or Strategy EN9: Expand Transportation Demand Management Initiatives of Plan Bay Area 2050:

- Initiative EN8a: Regional Electric Vehicle Chargers
- Initiative EN8b: Vehicle Buyback and Electric Vehicle Incentives
- Initiative EN9a: Bike Share
- Initiative EN9b: Car Share
- Initiative EN9c: Targeted Transportation Alternatives
- Initiative EN9d: Vanpools

58 The Plan Bay Area 2050 Growth Geographies are locations prioritized for future jobs and housing growth. For more information, refer to the Draft Plan Bay Area 2050 Plan Document.

All of these initiatives were included in the previous regional plan, Plan Bay Area 2040, and the primary GHG emission calculation approaches remain unchanged. However, the calculation inputs and assumptions have been updated to reflect new data and research, where available, and travel model outputs reflecting the Plan Bay Area 2050 Plan scenario. The initiative descriptions, GHG emission quantification approaches, and results are summarized in the following section by initiative.[59]

Strategy EN8 | Initiative EN8a - Regional Electric Vehicle Chargers

Electric vehicles (EVs) have the potential to significantly reduce GHG emissions from motor vehicles. Today, the Bay Area is the leading U.S. market for EV sales, including both plug-in hybrid electric vehicles (PHEVs) and battery electric vehicles (BEVs). PHEVs have a hybridized powertrain that is fueled by chemical energy from a battery or by gasoline/diesel. BEVs are powered exclusively by the chemical energy from a battery. The focus of this initiative is on expanding the charging opportunities for the population of PHEVs in the Bay Area by establishing a regional public network of electric vehicle charging stations.

The costs of installing charging stations can be high, and there are other barriers (e.g., on-site electrical capacity) that may also limit the potential for deploying charging at workplaces. This program will be designed to help overcome some of those barriers by providing financial assistance to interested employers, retailers, parking management companies, and others that qualify. A regional network of charging infrastructure will provide drivers an opportunity to plug in while at work, which is where most vehicles spend most of their time parked when not at home. This will mean that PHEVs are able to travel more miles using electricity and fewer miles using gasoline, reducing GHG emissions.

This initiative was included in Plan Bay Area 2040 and continues in Plan Bay Area 2050. In 2017, MTC transferred a total of $10 million to the Bay Area Air Quality Management District (BAAQMD) to advance EV activities. BAAQMD currently administers the Charge! Program, providing grant funding for the purchase and installation of publicly accessible chargers for light-duty EVs. MTC continues to work with BAAQMD to monitor investments and to develop a coordinated approach to implementing charging infrastructure throughout the region.

GHG Reduction Quantification Approach

This initiative invests in charging infrastructure to expand the network of chargers available to Bay Area drivers. As a result, PHEV drivers will be able to drive a larger share of miles in electric mode, as opposed to gasoline-powered mode, reducing GHG emissions. The impacts of this initiative are not otherwise captured in MTC's emissions calculations, which rely on default EMFAC assumptions for the fraction of PHEV miles in electric vs. gasoline mode.

Inputs and Assumptions

The prior Plan Bay Area analysis was updated to account for improved fuel economy estimates, updated vehicle populations, and new vehicle sales in the Bay Area based on data included in the EMFAC2014 (v1.0.7) Emissions Inventory and the ZEV Compliance Mid-Range Scenario of the Advanced Clean Cars Mid-term Review. The analysis also updated the number of chargers to be funded by MTC and deployed to support the region's PHEV population.

In the baseline, it was assumed that 46% to 60% of miles traveled by PHEVs would be in charge-depleting mode (i.e., electric miles instead of gasoline-powered miles). This assumption comes from EMFAC2017 Technical Documentation, which indicates that:

> (CARB) staff modeled PHEVs as having a 25-mile all-electric range, which equates to a utility factor of 0.40. For the average commute, this would mean that 40 percent of the VMT could be from all-electric, and 60% would be from gasoline operations.[60]

59 Note that the off-model analysis results for the No Project alternative are not shown. Off-model strategies are excluded in the No Project alternative and thus result in zero GHG emission reductions.

60 California Air Resources Board, EMFAC2014 Volume III – Technical Documentation v1.0.7, May 2015. Available online at: http://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation- 052015.pdf.

To estimate the fraction of PHEVs that operates like pure ZEVs, EMFAC uses utility factors, which are defined as the fraction of VMT the PHEV obtains from the electrical grid. EMFAC2014 was assuming a constant utility factor of 0.4 for all model years of PHEVs, while in EMFAC2017 this fraction is more dynamic and varies by model years from 0.46 for Model Year (MY) 2018 to 0.6 for MY2025+.[61]

The electric VMT (eVMT) percentage is assumed to increase to 80% due to the Regional Charger Program. Based on a review of EV user surveys and analytics included in the Advanced Clean Cars Mid-Term Report[62], data suggest that PHEV owners can reach 80% eVMT with access to adequate supportive charging infrastructure. This analysis assumes that if the entire region has sufficient workplace and opportunity (public) charging infrastructure, then all PHEVs in the region could operate at this assumed maximum eVMT percentage.

The analysis methodology assumes:

- Each charger deployed through the Regional Charger Network serves multiple vehicles each day
- The chargers deployed are Level 2 chargers
- Each charger consists of two plugs

The National Renewable Energy Laboratory's EVI Pro Lite tool was used to determine the number of chargers required to support the forecasted PHEV population. While the ratios vary by PHEV penetration, it is approximately one charger plug for every four vehicles over the program period. For the financial analysis, the initiative assumes a $3,000 subsidy per charger is provided.[63] The table below summarizes the number of expected PHEVs, plugs, and chargers by analysis year.

Table 42. Expected PHEVs, plugs and chargers by analysis year

PARAMETER	2035	2050	SOURCE
PHEV population	363,012	458,818	EMFAC2014
Plug/PHEV ratio	0.2352	0.2352	EVI-Pro
Charging plugs needed	85,384	107,918	Calculation
Chargers needed	42,692	53,959	Calculation
Incentive amount ($/charger)	$3,000	$3,000	Investment assumption

In addition to increasing the percentage of electric miles driven in PHEVs, the increased availability of chargers could mitigate consumers' "range anxiety" concerns and increase the adoption and use of EVs and further reduce GHG emissions, but this potential effect is not included in this approach, as a conservative assumption. Further, this approach does not include any additional PHEVs incentivized through the Vehicle Buyback and EV Incentive initiative and any increased eVMT share for those PHEVs; the baseline eVMT share is applied to PHEVs realized through that initiative rather than the higher eVMT share assumed in the regional charger network scenario, also as a conservative assumption.

61 California Air Resources Board, EMFAC2017 Volume III – Technical Documentation V1.0.2, July 20, 2018. Available online at https://ww3.arb.ca.gov/msei/downloads/emfac2017-volume-iii-technical-documentation.pdf.

62 California Air Resources Board, Advanced Clean Cars Mid-Term Report, Appendix G: Plug-in Electric Vehicle In-Use and Charging Data Analysis, January 18, 2017. Available online at https://ww2.arb.ca.gov/resources/documents/2017-midterm-review-report.

63 Note that the methodology uses the projected PHEV population from EMFAC and EVI-Pro to estimate the total number of chargers required across the region to meet that forecasted PHEV population; the incentive amount is used to calculate the total investment required to meet this demand.

Calculation of emissions impacts relies on the parameters shown in the table below.

Table 43. Regional electric vehicle initiative calculation inputs and assumptions

PARAMETER	VALUE	SOURCE
Fuel efficiency of PHEV gasoline engine	40 mpg	24.9 mpg for gasoline LDV, based on EPA Automotive Trends Report, 2020; 62% improvement for PHEV engine based on comparison of similar gasoline and hybrid models
Baseline eVMT share for PHEVs – pre MY2025	46%	EMFAC2017 Volume III Technical Documentation
Baseline eVMT share for PHEVs – MY2025+	60%	EMFAC2017 Volume III Technical Documentation
Initiative eVMT share for PHEVs	80%	CARB, Advanced Clean Cars Mid-Term Report, 2017
Energy density of gasoline	115.83 MJ/gallon	CA GREET 3.0
Carbon intensity of gasoline (tailpipe)	72.89 gCO_2/MJ	CA GREET 3.0

Calculation Methodology

To determine the GHG emission reductions from the Regional Charger Program, the analysis method employs the following steps:

1. Use EMFAC to obtain the forecast population of EVs in the Bay Area through 2050, by calendar year and model year.
2. Process EV population data to estimate the population of PHEVs by calendar year and model year.
3. Calculate baseline PHEV eVMT by calendar year, using assumptions in EMFAC2017 that eVMT percentage is 46% for MY2018-2024 and 60% for MY2025+.
4. Calculate baseline PHEV emissions, multiplying baseline PHEV VMT for each calendar year by average fuel efficiency, energy density, and carbon intensity.
5. Apply initiative eVMT percentage to calculate difference in eVMT between baseline and initiative scenario.
6. Calculate PHEV emissions in initiative scenario.
7. Calculate GHG emissions reduction as the difference between the baseline and initiative scenario PHEV emissions.

Results

The table below summarizes the CO_2 reductions due to the Regional Electric Vehicle Charger initiative.

Table 44. CO_2 emissions reductions due to Electric Vehicle Charger initiative

ALTERNATIVE	DAILY REDUCTION (SHORT TONS)		PER CAPITA REDUCTION FROM YEAR 2005 EMISSIONS (PERCENT)	
	Year 2035	Year 2050	Year 2035	Year 2050
Plan	-741	-792	-0.93%	-0.88%
EIR Alternative 1	-741	-792	-0.93%	-0.88%
EIR Alternative 2	-741	-792	-0.93%	-0.88%

Emission reductions are consistent across all EIR Alternatives since the analysis does not rely on inputs from the travel model.

Strategy EN8 | Initiative EN8b - Vehicle Buyback and Electric Vehicle Incentive

Despite a rapid increase in commercially available electric vehicle (EV) models, EV sales are still relatively small, representing about 8 percent of total new light-duty vehicle sales in California. While falling battery prices are expected to make EVs more attractive to consumers, there are also barriers related to EV costs and benefits. The price of new EVs is still beyond the reach of many potential new vehicle buyers, particularly lower-income consumers. To begin addressing this challenge, California's Clean Vehicle Rebate Program (CVRP) was changed in 2016 to adjust incentive amounts based on household income. HOV lane access for some EVs has been eliminated, reducing the non-financial incentives to own an EV. And without additional Congressional action, federal EV tax credits will phase out in their current format because the full tax credit applies only to the first 200,000 EVs sold per automaker; once the 200,000-unit limit is reached, the tax credit value decreases on a quarterly basis until it is phased out completely approximately one year after the automaker surpasses the threshold. Tesla was the first automaker to surpass the sales threshold in July 2018 and General Motors followed suit in December 2018. The early phase out and elimination of these tax credits could potentially have negative sales implications for the Tesla Model 3 and Chevy Bolt – two of the most popular EVs sold in California. Other EV manufacturers are expected to surpass the threshold in the coming years.

This program will provide an incentive to purchase an EV when trading in older, higher-emission vehicles. This is intended to extend the market for EVs into a broader range of income classes. Research indicates that the early adopters of EVs have been higher income individuals who own their homes, and in many cases, own or have owned a hybrid vehicle (e.g., a Toyota Prius). The higher purchase price of EVs makes it difficult for middle- and low-income consumers to purchase them. Older and wealthier individuals tend to buy more new vehicles than other cross-sections of the population. This demographic also tends to buy newer cars more frequently. Furthermore, research from IHS Markit has shown that owners of both new and used vehicles are holding on to their vehicles longer, the scrappage rate has flattened, and the average age of vehicles has increased; the researchers forecast that the population of oldest vehicles (16 or more years) will grow the fastest, increasing by 30% by 2021.[64] This will impact the turnover of the fleet significantly and may slow the purchase of new vehicles, including electric vehicles.

64 Vehicles Getting Older: Average Age of Light Cars and Trucks in U.S. Rises Again in 2016 to 11.6 Year, IHS Markit Says." Press release from IHS Markit, November 2016.

In this program, qualifying consumers can receive a subsidy to purchase a plug-in hybrid electric vehicle (PHEV) or battery electric vehicle (BEV) for scrapping a vehicle that is 15 or more years old. The incentive amount will vary with the vehicle type being purchased (e.g., PHEV or BEV). Additionally, to provide more equitable access to clean transportation options, incentive amounts will vary by household income level, with incentives phased out entirely for higher income buyers.

This initiative was included in Plan Bay Area 2040. In 2017, MTC transferred a total of $10 million to the Bay Area Air Quality Management District (BAAQMD) to advance the EV activities. MTC continues to coordinate with BAAQMD, the lead agency for electric vehicle programs in the region, to advance this initiative and track progress. In Plan Bay Area 2050, a significantly larger investment is envisioned with incentive amounts adjusted based on buyer income.

GHG Reduction Quantification Approach

The vehicle buyback program seeks to accelerate fleet turnover while also incentivizing the purchase of EVs. The combination vehicle buyback and incentive program is intended to induce demand in middle- and lower-income brackets that might otherwise delay car purchasing or purchase a new or used conventional vehicle (i.e., non-EV). The program will result in a higher fraction of EVs owned and operated in the Bay Area than assumed in default EMFAC assumptions.

Inputs and Assumptions

Plan Bay Area 2040 analysis was revised to account for improved fuel economy estimates, increased incentive amounts and program participation, and the mix of PHEVs vs. BEVs incentivized. The program is assumed to be implemented through 2035's incentive program, is assumed to be equal across the program years. The age of the vehicles being replaced is assumed to be 15 years or older.

The program incentives are assumed to range from $1,800 to $13,600, with average incentive levels of $3,600 per PHEV and $8,160 per BEV; the program incentive will vary based on income and EV type.[65] The State's primary EV incentive program, the Clean Vehicle Rebate Project (CVRP), is assumed to provide additional purchase incentive amounts on top of the plan initiative in the amount of $3,500 per PHEV and $4,500 per BEV for households with incomes below $50,000, $1,000 per PHEV and $2,000 per BEV for households earning up to $170,000, and no rebates for the highest income households.[66] The region's GHG benefits for this initiative are calculated as a proportion of the region's incentive amount relative to the total combined regional and state incentive amount. The program assumes a $5.1 billion investment through 2035, incentivizing buyback and purchase of 630,000 EVs. It is assumed that 30 percent of incentives are used for PHEVs and 70 percent for BEVs, based on the share of EV types receiving California Vehicle Rebate Project incentives over the period 2017-2019.

65 A consultant review of EV models and equivalent non-EV models (e.g., Volkswagen Golf vs eGolf) found the average difference in cost to be $13,600 The program is assumed to cover the full difference in cost for households in the lowest income quartile. Purchase subsidies for the second and third quartile households are scaled relative to income quartile thresholds; no subsidies are assumed for the highest quartile earners. It is assumed that the participation level across the three qualifying income groups will be equal.

66 California Clean Vehicle Rebate Project incentive amounts based on current (2021) program structure offering $1,000 per PHEV and $2,000 per BEV for consumers earning up to $150,000 (single filers) and an additional $2,500 for consumers earning less than $51,520 (household size 1). Rebate amounts and income eligibility information collected from CVRP website (accessed August 11, 2021): https://cleanvehiclerebate.org/eng.

Calculation of emissions impacts relies on the parameters shown in the table below.

Table 45. Vehicle Buyback and EV incentive calculation inputs and assumptions

PARAMETER	VALUE	SOURCE
Fuel efficiency of PHEV gasoline engine	40 mpg	24.9 mpg for gasoline LDV, based on EPA Automotive Trends Report, 2020; 62% improvement for PHEV engine based on comparison of similar gasoline and hybrid models
Share of incentivized EV types	70% BEV, 30% PHEV	CVRP rebate data, average 2017-19
eVMT share for PHEVs – pre MY2025	46%	EMFAC2017
eVMT share for PHEVs – MY2025+	60%	EMFAC2017
Energy density of gasoline	115.83 MJ/gallon	CA GREET 3.0
Carbon intensity of gasoline (tailpipe)	72.89 gCO_2/MJ	CA GREET 3.0

Calculation Methodology

To determine the GHG emission reductions from the Vehicle Buyback and EV Incentive initiative, the analysis method employs the following steps:

1. Calculate the number of new PHEVs and BEVs incentivized through initiative for each program year.
2. Calculate the cumulative number of incentivized PHEVs and BEVs operating in each calendar year, accounting for average vehicle turnover by vehicle age.[67]
3. Use EMFAC forecasts of vehicle populations, fuel consumption, and VMT for gasoline light-duty automobiles (LDA – Gas) in the Bay Area to calculate the average gasoline consumption per replaced vehicle (for vehicles 15 years old), by calendar year.
4. Calculate the GHG emissions impact of the program, by calendar year, as the difference between emissions from the replaced vehicles and the emissions from the incentivized EVs, using average carbon intensity values for electricity and gasoline, average energy density for electricity and gasoline, and average energy efficiency for gasoline and electric motors.
5. Calculate MPO regional incentive share of combined MPO and State incentive amount for PHEVs and BEVs.
6. Apply MPO incentive share to GHG emissions impact for each program calendar year to calculate MPO share of GHG emission reductions.

67 A share of these new EVs are assumed to be removed from operation (e.g., as a result of collisions) each year, with higher turnover rates for older model years.

Results

The table below summarizes the CO_2 reductions due to the Vehicle Buyback and EV Incentive initiative.

Table 46. CO_2 emissions reductions due to Vehicle Buyback and EV Incentive initiative

ALTERNATIVE	DAILY REDUCTION (SHORT TONS)		PER CAPITA REDUCTION FROM YEAR 2005 EMISSIONS (PERCENT)	
	Year 2035	Year 2050	Year 2035	Year 2050s
Plan	-3,271	-503	-4.12%	-0.56%
EIR Alternative 1	-3,271	-503	-4.12%	-0.56%
EIR Alternative 2	-3,271	-503	-4.12%	-0.56%

Emission reductions are consistent across all EIR Alternatives since the analysis does not rely on inputs from the travel model.

Strategy EN9 | Initiative EN9a - Bike Share

Bike share systems provide bicycles that members of the public can borrow and use for limited durations in exchange for a fee. In traditional systems, bike share bicycles must be borrowed from and returned to designated docking stations. More recently, dockless bike share systems have emerged, allowing users to leave the bicycles anywhere in the service area. Additionally, bike share providers offer electric bikes, or e-bikes, that can be both parked at a station or elsewhere. Dockless e-bikes may attract more users and replace more motorized vehicle trips by making bike trips more convenient and by expanding the trip distances that can be made by bike share. In an analysis of docked, dockless, and e-bike bike share services in San Francisco, researchers found that a dockless e-bike service was used for more bike trips per bike and for longer trips.[68]

In August 2013, in collaboration with MTC, the Bay Area Air Quality Management District implemented a bike share system in the Bay Area on a limited pilot basis called Bay Area Bike Share (BABS). BABS consisted of approximately 700 bikes deployed across 70 stations; approximately half in San Francisco and the other half in South Bay cities. This pilot program provided valuable information regarding the potential for bike share systems to reduce VMT and emissions.

Since the initial pilot program, bike share has expanded widely across the Bay Area both in the number of bikes and in the number of service areas. The system, now called Bay Wheels, is growing to 7,000 bikes and operates across San Francisco, Berkeley, Emeryville, Oakland, and San Jose. Lyft owns and operates the system with MTC serving as contract administrator. MTC has also provided grants to initiate other bike share services that will expand access in the East Bay and bring bike share to the counties of Marin and Sonoma along the SMART train corridor. MTC also manages the Clipper Card, which can also be used to access and unlock bike share bikes.

68 Lazarus, Jessica, Jean Carpentier Pourquier, Frank Feng, Henry Hammel, and Susan Shaheen. Bikesharing Evolution and Expansion: Understanding How Docked and Dockless Models Complement and Compete--A Case Study of San Francisco. No. 19-02761. 2019.

GHG Reduction Quantification Approach

Bike share reduces GHG emissions by enabling users to take short-distance trips by bicycle instead of by car, and in some cases bike share can eliminate longer trips by enabling users to connect to transit. Bike share program expansion is not captured in MTC's travel model. The mode choice models in Travel Model 1.5 were calibrated using the California Household Travel Survey from 2012-2013, before bikeshare deployment. Although MTC's travel model includes bicycling as a travel mode, it is not structured to capture the travel effects of expansion of a bike share system.

In Plan Bay Area 2040, bike share ridership was estimated based on studies of other systems. For Plan Bay Area 2050, the approach has been updated to incorporate recent ridership data collected from the regional bike share operator. Additionally, the approach now includes modeling the impacts of the rapid introduction of e-bikes into the regional bike share system.

Inputs and Assumptions

Travel and emissions impacts are calculated based on the number of Bay Wheels bike share trips and the relationship between bike share trips and VMT reduction.

Lyft reported the number of trips using the Bay Wheels system for the period May to October 2019, shown in the table below. The daily average during this period is 7,089 trips per day.

Table 47. Bike share trips using Bay Wheels system, 2019

CITY	MAY	JUNE	JULY	AUG	SEPT	OCT
Berkeley	15,854	14,173	12,738	17,985	20,324	20,307
Emeryville	1,795	1,989	1,916	2,159	2,071	1,987
Oakland	21,310	22,286	38,145	24,395	24,003	23,723
San Francisco	132,452	142,594	189,313	156,762	160,512	182,369
San Jose	10,945	12,355	17,142	9,416	11,444	11,847
Monthly Total	182,356	193,397	259,254	210,717	218,354	240,233

During this same period, there were 3,203 Bay Wheels bicycles available per day. Full deployment of the bike share system will consist of 7,000 bicycles, including 4,500 in San Francisco, 1,500 in the East Bay, and 1,000 in San Jose. Usage of the system is expected to grow in proportion of the number of bicycles available. Once the system is fully deployed, use of the bike share system is expected to grow in proportion to population; this is a conservative assumption that does not account for expansion of bike share service beyond the planned Bay Wheels program, including service provided by other private providers and service funded through more recent MTC bike share grants.

The bike share trips were then converted to VMT reductions based on results from MTC's evaluation of the Bay Area Bike Share program, which found that each bike share trip, using conventional bicycles, reduced an average of 1.3 VMT.[69] Many bike share trips do not reduce any VMT because they do not displace vehicle trips, while others only reduce short trips, but the evaluation found that a significant share of bike share trips enables users to connect to transit, eliminating longer personal vehicle trips.

69 MTC Climate Initiatives Program Evaluation: Pilot Bike-sharing Program, Prepared for MTC by Eisen-Letunic, 2015.

Over the last several years, bike share systems have begun transitioning to electric bicycles, which are popular with users and enable longer trips. In early 2020, only about 5% of Bay Wheels bicycles were electric, but the system is expected to continue the transition to electric over the next several years. By 2035, it is assumed that all bike share bicycles will electric.

Based on bike share system research conducted in the Bay Area, trips using dockless electric bicycles were 36% longer than trips using conventional bike share bicycles.[70] Using e-bikes, it is assumed that the VMT reduced per bike share trip will be 36% higher than the 1.3 VMT observed during the BABS pilot.

Table 48. Inputs and assumptions for bike share calculations

PARAMETER	VALUE	SOURCE
Planned bike share bike availability (Bay Wheels)	7,000	MTC
Daily bike share trips	15,492	May-October 2019 bike availability and trips, Lyft Bay Wheels System Data
Average VMT displaced per conventional bike share trip	1.30	MTC Climate Initiatives Program Evaluation: Pilot Bike-sharing Program, 2015.
Average VMT displaced per e-bike share trip	1.77	Calculated based on Lazarus, J. et al. Bikesharing Evolution and Expansion: Understanding How Docked and Dockless Models Complement and Compete – A Case Study of San Francisco, Paper No. 19-02761. 2019.
Assumed share of e-bikes in bike share fleet, 2035 and 2050	100%	Assumption based on market trends

Calculation Methodology

The methodology for calculating the GHG reductions from the bike share initiative is as follows:

1. Calculate or obtain average bike share trips per day for base year.
2. Calculate percentage growth of Bay Area total population relative to base year.
3. Multiply the percentage population growth by the baseline average daily bike share trips to calculate the average daily bike share trips for modeled years.
4. Multiply the percentage share of e-bikes by the average bike share trips per day to calculate the number of conventional versus e-bike share trips per day for each modeled year.
5. Multiply the average VMT displaced per conventional bike share trip by the number of conventional bike share trips per day for each modeled year.
6. Multiply the average VMT displaced per e-bike share trip by the number of e-bike share trips per day for each modeled year.
7. Sum the VMT displaced by conventional bike share and e-bike share trips per day.
8. Multiply daily VMT displaced by exhaust emission rates to calculate GHG emission reductions.

70 Lazarus, Jessica, Jean Carpentier Pourquier, Frank Feng, Henry Hammel, and Susan Shaheen. Bikesharing Evolution and Expansion: Understanding How Docked and Dockless Models Complement and Compete--A Case Study of San Francisco. No. 19-02761. 2019.

Results

The table below summarizes the CO_2 reductions due to bike share.

Table 49. CO_2 emissions reductions due to bike share

ALTERNATIVE	DAILY REDUCTION (SHORT TONS)		PER CAPITA REDUCTION FROM YEAR 2005 EMISSIONS (PERCENT)	
	Year 2035	Year 2050	Year 2035	Year 2050
Plan	-15	-17	-0.02%	-0.02%
EIR Alternative 1	-15	-17	-0.02%	-0.02%
EIR Alternative 2	-15	-17	-0.02%	-0.02%

Strategy EN9 | Initiative EN9b - Car Share

Car sharing offers individuals the opportunity to conveniently rent vehicles by the hour or less, thus giving them access to an automobile without the costs (vehicle purchase, operations and maintenance, insurance) and responsibilities of personal vehicle ownership. Car sharing offers the opportunity for users to replace making trips in their own vehicles, particularly short trips such as for errands, shopping, or airport pick-ups. Car sharing can be particularly effective in neighborhoods with bus, rail, bike share, or other alternatives to driving where cars are infrequently needed and households in these neighborhoods can shed one or more vehicles. Even in less dense neighborhoods without high-quality alternatives to driving, car sharing can allow a two- or three-car household to shed one car by making a vehicle accessible for the infrequent instances that multiple vehicles are needed at the same time. Car sharing may also help extend the trend of younger generations putting off or never owning a vehicle. Businesses can also sign up for business memberships (known as corporate car sharing) to avoid maintaining or reduce the size of a company fleet of vehicles.[71]

Car sharing has been growing in the Bay Area since 2001, with multiple car share operators offering different service models, including traditional car share requiring pick-up and return of a company-owned vehicle at a specific location (e.g., Zipcar) and one-way or free-floating car share (e.g., Gig). Traditional car sharing businesses typically operate on a membership basis, where users pay an annual fee in addition to hourly and sometimes per-mile rates. Users benefit by not having to worry about fueling, maintenance, parking, and insurance, which are included in the membership and usage rates.

One-way car sharing allows a driver to pick up a vehicle in one location and drop it off at another, either at a specific location or anywhere within a service zone. This model provides an opportunity to incorporate driving as part of a longer multimodal trip chain. For example, Gig Car Share partnered with Bay Area Rapid Transit (BART) to provide designated Gig parking spaces at six BART stations, allowing users to drive a Gig car to transit, or alternatively, drive home after arriving at the station. This model also allows for more frequent vehicle turnover and higher utilization of vehicles, as the cars are rented just to get to destinations rather than rented and parked while the user completes their activities at the destination before returning the vehicle.

71 Reed, John. 2017. Corporate Car Sharing: an innovative solution to save the cost for company employee' car and taxi work travel. https://www.sharedmobility.news/corporate-car-sharing/.

The expansion of car sharing helps reduce GHG emissions by both reducing the amount participants drive and by shifting their driving to more fuel-efficient vehicles. The cumulative effect of car sharing, from a study conducted by UC Berkeley's Transportation Sustainability Research Center, found that for each car share vehicle, nine to 13 privately owned vehicles are shed from the region's vehicle fleet.[72] Vehicle owners drive more than those who do not own their own vehicle. Additionally, car share vehicles are newer and more fuel efficient than the average vehicle and thus contribute fewer emissions.

Car sharing was included in the previous regional plans and MTC will continue implementing relevant programs. Six grants were awarded to the following agencies to implement car sharing services:

- Contra Costa Transportation Authority
- Sonoma County Transportation Authority
- City of San Mateo
- City of Oakland
- City of Hayward
- Transportation Authority of Marin

Additionally, MTC is implementing a program for mobility hubs which will include car sharing as well as other shared transportation modes. Work has started on pilot projects with full implementation to follow.

GHG Reduction Quantification Approach

Car sharing is not explicitly captured in MTC's travel model, and a car share expansion initiative accordingly is accounted for off-model. Car sharing reduces emissions in two primary ways — by lowering the average VMT of members and by allowing trips to be taken with more fuel-efficient vehicles than would have been used without car sharing.

The primary calculation approach remains unchanged from Plan Bay Area 2040, estimating GHG reductions based on the reduced VMT and use of more fuel-efficient vehicles among car share program participants. However, the approach has been updated to reflect the increasing deployment of electric vehicles in car sharing fleets.

Inputs and Assumptions

Participation in the car share initiative is based on the number of Bay Area residents who are in the age groups likely to adopt car sharing and who live in communities that are compact enough to promote shared use. Research shows that adults between the ages of 20 and 64 are most likely to adopt car sharing, with estimates that between 10% and 13% of the eligible population in more compact areas adopt the practice when car sharing is available.[73, 74] With the implementation of regional initiatives to support car sharing and the introduction of one-way car sharing, adoption rates are assumed to reach 14% of the eligible population in dense urban areas (i.e., areas with at least 10 people per residential acre) by 2035, while 3% of the eligible population could adopt car sharing by 2035 in suburban areas (i.e., areas with fewer than 10 people per residential acre). The table below summarizes the assumptions with respect to car sharing participation rates.

As one-way car sharing programs expand in the Bay Area, it is expected that participation in car sharing programs will increase. Recent research suggests that while one-way car sharing still reduces emissions, the reductions are not as large as with traditional car sharing, as discussed below. In this analysis, it is assumed that one-way car sharing comprises 20% of carshare members in 2020 and remains at this level for 2035 and 2050. The table below summarizes the participation assumptions.

72 Martin, Shaheen, and Lidicker, 2010, "Impact of Carsharing on Household Vehicle Holdings: Results from a North American Shared-Use Vehicle Survey." Transportation Research Record Volume 2143, Issue 1, Pages 150-158. URL: https://escholarship.org/uc/item/3bn9n6pq.

73 Zipcar. http://www.zipcar.com/is-it#greenbenefits. Accessed March 20, 2017.

74 Zhou, B., Kockelman, K, and Gao, R. "Opportunities for and Impacts of Carsharing: A Survey of the Austin, Texas Market." International Journal of Sustainable Transportation 5 (3): 135-152, 2011.

Table 50. Car share participation assumptions

CATEGORY	SCENARIO YEAR		
	2020	2035	2050
Participation rates in urban areas	12%	14%	14%
Participation rates in suburban areas	0%	3%	3%
Percent of car share members who participate in one-way car sharing programs	19%	20%	25%

Research by Robert Cervero indicates that on average traditional car share members drive seven fewer miles per day than non-members.[75] This is mostly due to the members who shed a vehicle after joining carsharing. Daily VMT of these car share members drops substantially and outweighs the increase in VMT from car share members that previously did not have access to a vehicle.

In addition to the reduction in VMT, when members drive in car share vehicles, their per-mile emissions are generally lower because car share vehicles are more fuel efficient than the average vehicle. Research by Martin and Shaheen found that the car share vehicles in their study used 29% less fuel per mile than the passenger vehicle fleet in general.[76] This reduction is used for year 2020 in this analysis and increases to 36% and 43% for 2035 and 2050, respectively, based on a conservative assumption of 10% to 20% of the car share fleet becoming fully electric. The same study also shows that on average, members of traditional car sharing programs drive an average of 1,200 miles in car sharing vehicles per year. MTC assumes this individual annual car share mileage will remain constant over time.

Martin and Shaheen conducted an analysis of one-way car share services in five cities across North America and estimated VMT reduction of participants.[77] Based on the study's findings, this approach assumes that one-way car share members drive an average of 104 miles in car sharing vehicles per year but overall drive 1.07 fewer miles per day than non-members. Also based on the study's findings, it is assumed that one-way car sharing fleets use 45% less fuel per mile. Furthermore, based on observed offerings from recent one-way car share providers, it is assumed that one-way car sharing service fleets will include a share of battery electric vehicles in future years. For this analysis, it is assumed that this mileage will remain constant over time.

75 Cervero, Golub, and Nee, "City CarShare: Longer-Term Travel-Demand and Car Ownership Impacts", July 2006, TRB 2007 Annual Meeting paper.

76 Martin, Elliot, and Susan Shaheen, "Greenhouse Gas Emission Impacts of Carshaing in North America," 2010, Mineta Transportation Institute. MTI Report 09-11.

77 Martin, Elliot, and Susan Shaheen, "Impacts of Car2Go on Vehicle Ownership, Modal Shift, Vehicle Miles Traveled, and Greenhouse Gas Emissions", July 2016, Working Paper.

Table 51. Car share calculation inputs and assumptions

PARAMETER	VALUE	SOURCE
VMT per member per year, traditional carshare	1,200	Estimate based on Martin and Shaheen, MTI report, 2010 (figure 7); assume constant over time
VMT per member per year, one-way carshare	104	Martin and Shaheen, July 2016
VMT reduction per member per day, traditional car share	7	Cervero, Golub, and Nee, July 2006
VMT reduction per member per day, one-way car share	1.07	Martin and Shaheen, July 2016
Average mpg, traditional car share vehicles	32.8	Average US/Canada mpg from Martin and Shaheen, MTI report, page 65; assumed constant from 2010
Average mpg, one-way car share vehicles	24.4	Martin and Shaheen, July 2016
Average mpg, cars avoided by traditional car share service members	23.3	Average US/Canada mpg from Martin and Shaheen, MTI report, page 65; assumed constant from 2010
Average mpg, cars avoided by one-way car share service members	44.0	Martin and Shaheen, July 2016
Battery electric vehicle share of fleet, traditional car share	10% (2035); 20% (2050)	Assumption based on conservative electric vehicle adoption rate
Battery electric vehicle share of fleet, one-way car share	50%	Assumption based on current 100% electric one-way Gig car share fleet in Sacramento area
Travel days per year	347	Standard State Assumption

Calculation Methodology

To calculate the GHG emission reductions due to car sharing, the individual steps were as follows:

1. Calculate the residential density of each transportation analysis zone (TAZ) during the scenario year by dividing the total population by the residential acres (from travel demand model).
2. Sum total car sharing eligible population (between the ages of 20 and 64) for urban areas (TAZs with a population density greater than 10 residents per residential acre) and for suburban areas (TAZs with a population density less than 10 residents per residential acre).
3. Multiply participation rates, urban and suburban, by the car sharing eligible population in urban and suburban areas, respectively, and sum to calculate car share program members.
4. Multiply the one-way car share participation rate to calculate the number of members in traditional and one-way car sharing services.

Number of traditional (station-based) car share members	$= [P_{>10} \times QP_{urban} + P_{<10} \times QP_{suburban}] \times (1 - QP_{1-way})$
Number of one-way car share members	$= [P_{>10} \times QP_{urban} + P_{<10} \times QP_{suburban}] \times QP_{1-way}$
Number of one-way car share members	$= [P_{>10} \times QP_{urban} + P_{<10} \times QP_{suburban}] \times QP_{1-way}$

Where:

$P_{>10}$ = the total population in TAZs with density greater than 10 persons/residential acre

QP_{urban} = the percent of qualifying urban population expected to become members

$P_{>10}$ = the total population in TAZs with density less than 10 persons/residential acre

$QP_{suburban}$ = the percent of qualifying suburban population expected to become members

$QP_{1\text{-}way}$ = the percent of car share members participating in one-way car share

5. Multiply the VMT reduced per day per member by the number of members of each service type and sum the result across both service types to calculate VMT reduction per day from car share users.

Total daily VMT reductions from car sharing members driving less	$= M_{trad} \times V_{trad} + M_{1-way} \times V_{1-way}$

Where:

M_{trad} = the number of traditional car share members

V_{trad} = the VMT reduction per traditional car share member per day

$M_{1\text{-}way}$ = the number of one-way car share members

$V_{1\text{-}way}$ = the VMT reduction per one-way car share member per day

6. Multiply daily VMT reductions by average vehicle emission rates from EMFAC2014 to calculate GHG emission reductions due to car share members driving less.
7. Multiply the number of car share members for traditional and one-way car sharing by the respective average VMT per day per member to calculate VMT per day by service type.
8. Multiply daily VMT in each car share service type by the percent vehicle efficiency improvements (based on average car share vs non-car share vehicle fuel consumption rate) for each service type and by average vehicle emission rates to calculate GHG reductions due to car share members driving more fuel-efficient vehicles.
9. Sum GHG emission reductions due to car share members driving less (Step 6) and GHG reductions due to car share members driving more fuel-efficient vehicles (Step 8) to calculate total GHG reductions due to car sharing.

Results

The table below summarizes the CO_2 reductions due to car share.

Table 52. CO_2 emissions reductions due to car share

ALTERNATIVE	DAILY REDUCTION (SHORT TONS)		PER CAPITA REDUCTION FROM YEAR 2005 EMISSIONS (PERCENT)	
	Year 2035	Year 2050	Year 2035	Year 2050
Plan	-1,928	-2,173	-2.43%	-2.42%
EIR Alternative 1	-1,928	-2,171	-2.43%	-2.42%
EIR Alternative 2	-1,926	-2,171	-2.43%	-2.42%

Strategy EN9 | Initiative EN9c - Targeted Transportation Alternatives

The Targeted Transportation Alternatives initiative employs a variety of approaches, including individual travel consultation, organized events, and distribution of outreach and informational materials to encourage people to shift from driving alone to carpooling, transit, biking, or walking for any of their trips. These programs are "targeted" because they tailor activities and materials to focus on the travel needs and transportation options that are available in specific job centers or residential neighborhoods. Several MPOs and large cities in the U.S. administer these programs, partnering with local governments, transit agencies, employers, and transportation management associations to customize projects to different communities. In several cities, these types of programs have been operating for more than 10 years with documented positive results, including Portland (Ore.) Metro's Regional Travel Options program, City of Portland's SmartTrips program, and King County (Wash.)'s InMotion program.

Several public agencies in the Bay Area have successfully implemented similar programs. Two of the Climate Initiative Innovative Grant pilot projects funded by MTC from 2011-14, GoBerkeley and Connect, Redwood City!, included targeted transportation alternatives components. The former involved working with property managers to market travel options and provide free bus passes to residents of multifamily transit-oriented developments, while the latter included focused outreach to employers with billboard and print advertising to promote alternatives to driving alone.

MTC's Targeted Transportation Alternatives Program includes both residential and employer activities. The employer portion of the program will have a particular focus on supporting smaller employers to complement a separate strategy, EN7: Expand Commute Trip Reduction Programs at Major Employers (reflected in the travel model). The program is expected to reduce drive alone trips and associated VMT by encouraging travelers to shift to using active and shared modes for their commute and non-commute trips. By reducing single occupancy vehicle trips, the program will reduce GHG emissions.

The Targeted Transportation Alternatives initiative was included in Plan Bay Area 2040. MTC is currently developing a pilot project of this approach, which will inform implementation of a broader program.

GHG Reduction Quantification Approach

Off-model analysis is necessary to capture GHG reductions from targeted transportation alternatives programs. The mode choice models in Travel Model 1.5 were calibrated using the 2012-2013 California Household Travel Survey, so they do not capture the impacts of new strategies that change travel behavior such as this one. It is possible that these strategies will be captured by a future model once they have been implemented to the extent that they influence people's behavior and can be captured by the travel surveys, and once the model framework has been altered to include inputs that represent the presence of behavior change strategies.

Since Plan Bay Area 2040, the approach has been updated with a new cost per participant assumption based on a review of more recent evaluations from a broader set of similar programs across the country; the cost per household was increased significantly from $3.11 to $18.81 per household. This results in a more conservative estimate of program benefits per dollar of investment than identified in the last plan.

Inputs and Assumptions

To estimate the impacts of this program on traveler behavior, the analysis relies on evaluation data collected for similar programs implemented in other regions. For residential-focused programs, program evaluation information was obtained for the City of Portland's SmartTrips program, King County's InMotion Program, SANDAG's Travel Encinitas pilot program, and the Community Transit (Snohomish County, Wash.) Curb the Congestion program. For employer-focused programs, evaluation information was obtained for Portland Metro's Regional Travel Options program. Some of these programs have conducted multiple rounds of evaluation, with each round covering multiple projects. Information was collected on the cost per year of marketing to an individual household/employee, the percentage of residents/employees receiving program information who change behavior (penetration rate), and the reduction in SOV mode share for those residents/employees from evaluations of these programs. These were then applied to the daily number and distance of trips for all trips (for households) and for commute trips (for employees) to estimate VMT impacts.

Evaluations of targeted transportation alternatives programs typically focus on impacts during the year after programs are implemented; however, long-term evaluations that provide information on how long behavior change persists due to marketing and outreach programs are not currently available. To account for this uncertainty, the methodology uses a conservative assumption that behavior change lasts for five years before participants revert to their previous travel patterns.

Table 53. Targeted Transportation Alternatives calculation assumptions

PARAMETER	HOUSEHOLDS	EMPLOYEES	SOURCE
Average cost per year of marketing to a household/ employee	$18.81	$4.34	Portland, OR and King and Snohomish Counties, WA program evaluations
Average penetration rate	19%	33%	Portland, OR and King and Snohomish Counties, WA program evaluations; Assumption based on discussion with Portland Metro Regional Travel Options program staff
Average reduction in SOV mode share among participants	12%	9%	Portland, OR and King and Snohomish Counties, WA program evaluations; Portland Metro, Regional Travel Options 2012 Program Evaluation
Average daily one-way driving trips affected	5.47	2	MTC, Characteristics of Rail and Ferry Station Area Residents in the SF Bay Area
Average one-way trip length (miles)	6.2 (2035); 5.8 (2050)	10.0 (2035); 9.8 (2050)	Travel Model, Plan scenario
Number of years for which behavior change persists	5	5	Assumption based on discussion with SANDAG Community Based Travel Planning program consultant

MTC's investment in this initiative is the primary input in the GHG reduction estimates. MTC anticipates investing $5 million in this initiative per year, with $3 million going to residential programs and $2 million going to employee programs. MTC is working with consultants to develop an approach to implementation beginning in 2021. Implementation of the program is expected to continue through the lifetime of the plan years due to the assumption that behavior change from program interventions is temporary. The program is applied to all households and jobs in the region for each modeled year. Based on the annual investment assumption and cost per household or employee, the program is expected to reach approximately 160,000 households and 460,000 employees.[78]

78 2018 National Establishment Time Series (NETS) data indicates that there are approximately 2.5 million people in the Bay Area who work for establishments with less than 50 employees.

Calculation Methodology

The methodology for calculating the GHG reductions from the Targeted Transportation Alternatives initiative is as follows:

1. Allocate the investment between household and employee programs.
2. Divide the respective household/employee investments by the average cost per year of marketing to a household/employee and multiply by the penetration rate to calculate the total number of participants.
3. Multiply the total number of participants by the average reduction in SOV mode share among participants and the average daily one-way driving trips affected and the average number of years that behavior change will persist to calculate the total daily number of vehicle trips reduced due to total program funding.
4. Sum the total daily vehicle trip reductions for employees and households to calculate the total daily vehicle reductions.
5. Multiply daily vehicle trips reduced by the average one-way trip length to calculate the total daily VMT reductions.
6. Sum the product of trip-end emission rates and daily vehicle trip reductions and the product of exhaust emission rates and daily VMT reductions to calculate total GHG emission reductions.

Results

The table below summarizes the CO_2 reductions due to Targeted Transportation Alternatives.

Table 54. CO_2 emissions reductions due to Targeted Transportation Alternatives

ALTERNATIVE	DAILY REDUCTION (SHORT TONS)		PER CAPITA REDUCTION FROM YEAR 2005 EMISSIONS (PERCENT)	
	Year 2035	Year 2050	Year 2035	Year 2050
Plan	-883	-861	-1.11%	-0.96%
EIR Alternative 1	-877	-847	-1.11%	-0.94%
EIR Alternative 2	-872	-862	-1.10%	-0.96%

Strategy EN9 | Initiative EN9d - Vanpools Vanpool Incentives

MTC has coordinated a vanpool program since 1981 to encourage alternative commutes and reduce congestion and emissions. To date, MTC's 511 vanpool program recruitment has consisted of online passenger and driver matching, employer outreach, up to $500 for startup fees, empty seat subsidies to encourage continued participation when a passenger is lost, free bridge tolls, discounted parking permits, and various other incentives. With this program there is an operational vanpool fleet in the Bay Area of more than 500 vans.

As defined by the 511 program, a vanpool is a group of seven to 15 people commuting together and being driven by an unpaid driver. There are a handful of options for drivers to procure a vehicle: the first is simply a vehicle that is owned by the driver, the second is a vehicle provided by an employer, and the third option is renting a vehicle from a third-party provider. MTC modified its vanpool program to be similar to programs in San Diego, Los Angeles, Denver, Arizona and elsewhere. San Diego's program began in 2001 and saw 5% to 10% growth in the vanpool fleet every year through FY 2013. Los Angeles Metro began its program in 2007 and the vanpool fleet has grown about 14% per year.

The vanpool program was included in previous regional plans and MTC will continue supporting vanpooling across the region in Plan Bay Area 2050. Through a partnership with Enterprise Rent-A-Car, groups may be eligible for a $350 monthly subsidy for vanpool vehicles rented through the Commute with Enterprise program.[79] Currently vanpool rentals cost approximately $1,300 to rent and operate per month.[80] The $350 per month subsidy would reduce these costs by 27%. MTC assumes this incentive will significantly increase the vanpool fleet. Combined with growth in Bay Area population, employment, and highway congestion, the size of the Bay Area vanpool fleet is expected to reach 1,030 vans by 2035, after which the number of vanpools is assumed to stabilize. A sustained fleet of 1,030 vans is slightly more than the 1996 peak of 900 vans. Moreover, there is significant potential to expand vanpool operations in the Bay Area. For comparison, the Puget Sound region operates more than 1,700 vanpool vans compared to the Bay Area's 515 vans, with a population that is 54% of the Bay Area's.[81] In addition to financial subsidies, MTC works with vanpool groups, both in Commute with Enterprise and other vanpools, to provide technical assistance such as ride matching tools, identification of incentives (e.g., parking and bridge toll discounts), form completion guidance, and social media promotion resources to help form and fill vanpools.

GHG Reduction Quantification Approach

Travel and emissions impacts are calculated based on the number of vanpool program vans, average vanpool occupancy, and the relationship between vehicle trip reductions and VMT reductions. The vanpool program reduces GHG emissions by encouraging groups of people to share a ride for their commute, which reduces travel by single occupancy vehicles and associated VMT. The vanpool program is not captured by MTC's travel model and thus, the emission reductions resulting from this initiative are not otherwise captured. Travel Model 1.5's mode choice models are calibrated using the 2012-2013 California Household Travel Survey (CHTS).

The overall quantification approach remains unchanged from Plan Bay Area 2040 but uses updated driving mode shares from Plan Bay Area 2050. The impacts of the vanpool program are calculated based on the difference between the number of vanpools in existence since 2005 (515 vans) and the number expected in the future with an expanded program.

Inputs and Assumptions

In this analysis, the base year vanpool fleet of 515 vans is assumed to double by 2035 and remain at this level through 2050. Average vanpool occupancy, which is used to calculate the total daily vehicle trip reductions, is determined with data gathered from MTC's 511 program and is assumed to stay consistent over time.

The emission reduction analysis assumes that vanpools have an average of 10.8 passengers and roundtrip distance of 110 miles[82], both of which are expected to remain constant over time. To account for the emissions from the vanpool van itself, the calculations account for only 9.8 passengers in the van. Reducing the vanpool size is a simplified approach to account for the emissions from the shared van.

The population that shifts to vanpools is expected to be consistent with the commute mode share of the general population. Emissions reduced from a commuter switching from a single occupancy vehicle (SOV) are assumed to be 100%. Emissions reduced from a commuter switching from a two-person carpool are assumed to be 50%. Emissions reduced from a commuter switching from a 3+ person carpool are assumed to be 33%. Shifts from other modes (walking, biking, or transit modes) are not assumed to reduce emissions.

79 MTC Bay Area Vanpool Program, Commute with Enterprise, https://511.org/vanpool/enterprise.

80 Based on MTC staff conversations with vanpool users.

81 Ennis, Michael (2010). Vanpools in the Puget Sound Region: The case for expanding vanpool programs to move the most people for the least cost. Washington Policy Center for Transportation.

82 MTC Transit Finance Working Group memo, February 2015.

Since the baseline year for the SB 375 emissions reduction target is 2005, the current vanpool fleet of 515 vans is not included in the analysis; only growth above and beyond 515 vans is included in the calculations.

Table 55. Vanpool calculation inputs and assumptions

PARAMETER	VALUE	SOURCE
Baseline number of vans, 2005	515	MTC data, 2005-2011
Average vanpool occupancy	10.8	MTC data, 2005-2011
Vanpool program vans, 2035-2050	1,030	Assume doubling of the baseline fleet by 2035 and sustained stabilized fleet after 2035

The vanpool program is expected to be self-funding. Reporting ridership mileage to the National Transit Database (NTD) returns Federal Transit Administration (FTA) funding to the region for transit. Several other cities and regional agencies, including San Diego, Los Angeles, Denver, and Arizona, have found that NTD reporting of vanpool data returns more money to a jurisdiction than the amount spent to offset vanpool costs. For example, the Northern Virginia Transportation Commission found that failure to report vanpool data in the Washington, D.C. metropolitan area resulted in a $6 million to $8 million loss per year, and that each $1 invested would have returned more than $2 in transit funds.[83] Los Angeles spends $7 million annually to offset vanpool costs and brings back $20 million in additional transit funding.[84] While the amount returned varies depending on the number of passenger miles traveled, vanpools that log more miles and carry more passengers have higher returns. MTC estimates that for every $1 spent on vanpools, it could expect a return of about $1.40 in transit funds.

Calculation Methodology

To calculate the GHG emission reductions resulting from the vanpool program, the analysis steps were as follows:

1. Multiply the projected increase in vanpools by the number of passengers (minus the driver) to obtain increased number of vanpool participants.

Number of vanpool participants	$= (V_{2035} - V_{2005}) * (Pass_{avg} - 1)$

Where:

V = number of vanpools

$Pass_{avg}$ = average number of passengers per van (10.8)

2. Estimate the number of vehicle round trips reduced by vanpools, accounting for the previous mode selection of the vanpool participants, by multiplying the number of vanpool participants by each of the vehicle mode shares and an adjustment factor that accounts for the number of passengers and summed the results.

83 Northern Virginia Transportation Commission; FTA Section 5307 Earnings Potential from Vanpools in DC Metropolitan Region; Revised: August 7, 2009.

84 MTC October 2014 interview with LA Metro program manager, Jamie Carrington.

Number of vehicle round trips reduced by vanpools	$= (P * MS_{SOV}) + (P * MS_{HOV2} * 0.5) + (P * MS_{HOV3} * 0.33)$

Where:

P = vanpool participants

MS_{SOV} = drive alone mode share

MS_{HOV2} = 2-person carpool mode share

MS_{HOV3} = 3+ person carpool mode share

3. Multiply number of vehicle round trips reduced by the round trip vanpool mileage to obtain daily VMT reduced.
4. Sum the product of trip-end emission rates and daily vehicle trip reductions and the product of exhaust emission rates and daily VMT reductions to calculate total GHG emission reductions.

Results

The table below summarizes the CO_2 reductions due to vanpool programs.

Table 56. CO_2 emissions reductions due to vanpool initiative

ALTERNATIVE	DAILY REDUCTION (SHORT TONS)		PER CAPITA REDUCTION FROM YEAR 2005 EMISSIONS (PERCENT)	
	Year 2035	Year 2050	Year 2035	Year 2050
Plan	-131	-122	-0.17%	-0.14%
EIR Alternative 1	-131	-121	-0.16%	-0.13%
EIR Alternative 2	-129	-113	-0.16%	-0.13%

Performance and Equity Analysis

The purpose of this document is to describe the response of travelers to the strategies implemented in the Plan as compared to the No Project and EIR Alternatives. Information from the travel model was also used to help assess the performance of each alternative using the adopted Plan Bay Area 2050 Guiding Principles as a framework.

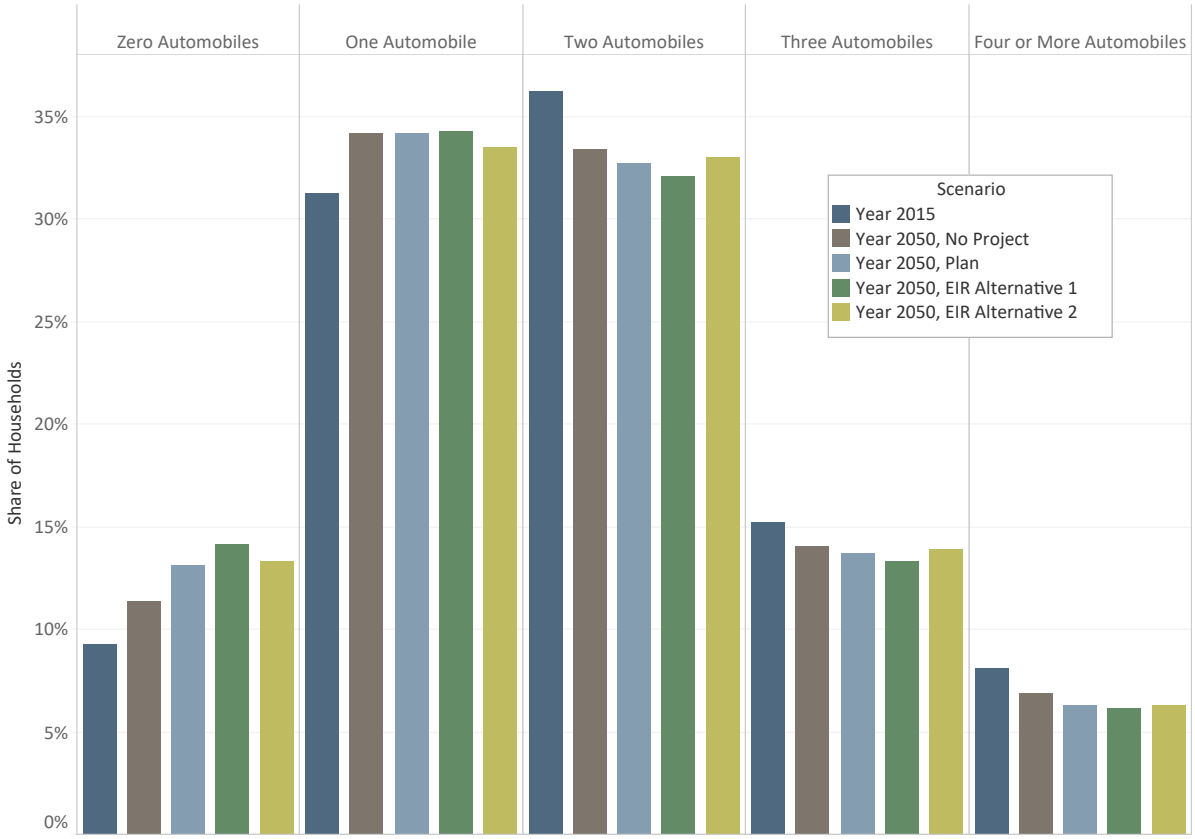
Greenhouse Gas Emissions

The above section on Off-Model Calculations describes how the Plan strategies which couldn't be represented in the travel model were estimated to contribute to the reduction of greenhouse gas emissions from transportation. More information about how the Plan achieves the Sustainable Communities and Climate Protection Act of 2008 (SB 375) 2035 targets for per-capita greenhouse gas emission reductions compared to 2005 levels can be found in the Environmental Impact Report for Plan Bay Area 2050, in Chapter 3.6: Climate Change, Greenhouse Gases, and Energy. Information about how the Bay Area achieved the 2020 greenhouse gas emissions targets can be found in MTC's Technical Methodology for the Sustainable Communities Strategy.

Automobile Ownership

Figure 31 presents the automobile ownership rates across the four alternatives in the year 2050 simulations as well as year 2015. Recall that one of the key factors affecting auto ownership between 2015 and 2050 is the assumption of some autonomous vehicle fleet penetration, which reduces the need for higher auto ownership levels per household because households with autonomous vehicles can share more easily. Beyond that, the Plan strategies enable slightly higher rates of zero automobile households, as do the land use patterns and strategies retained in the EIR Alternatives.

Figure 31. Auto ownership results in 2050 across alternatives



Activity Location Decisions

Figure 32 and Figure 33 present the average trip distance by travel mode for all travel and for trips on work tours, respectively. The key finding here is that the EIR Alternative 1 brings activities slightly closer together, when compared to 2050 Alternatives.

Figure 32. Average trip distance in 2050 across alternatives

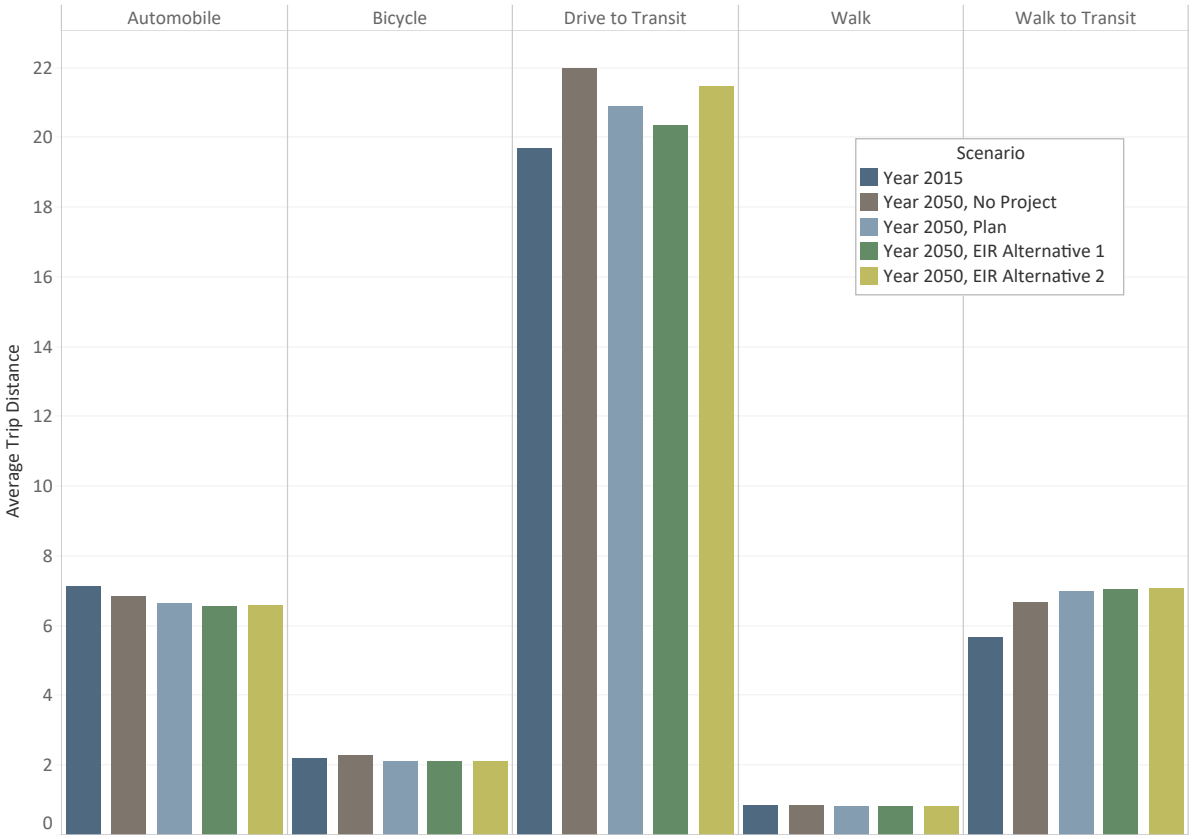
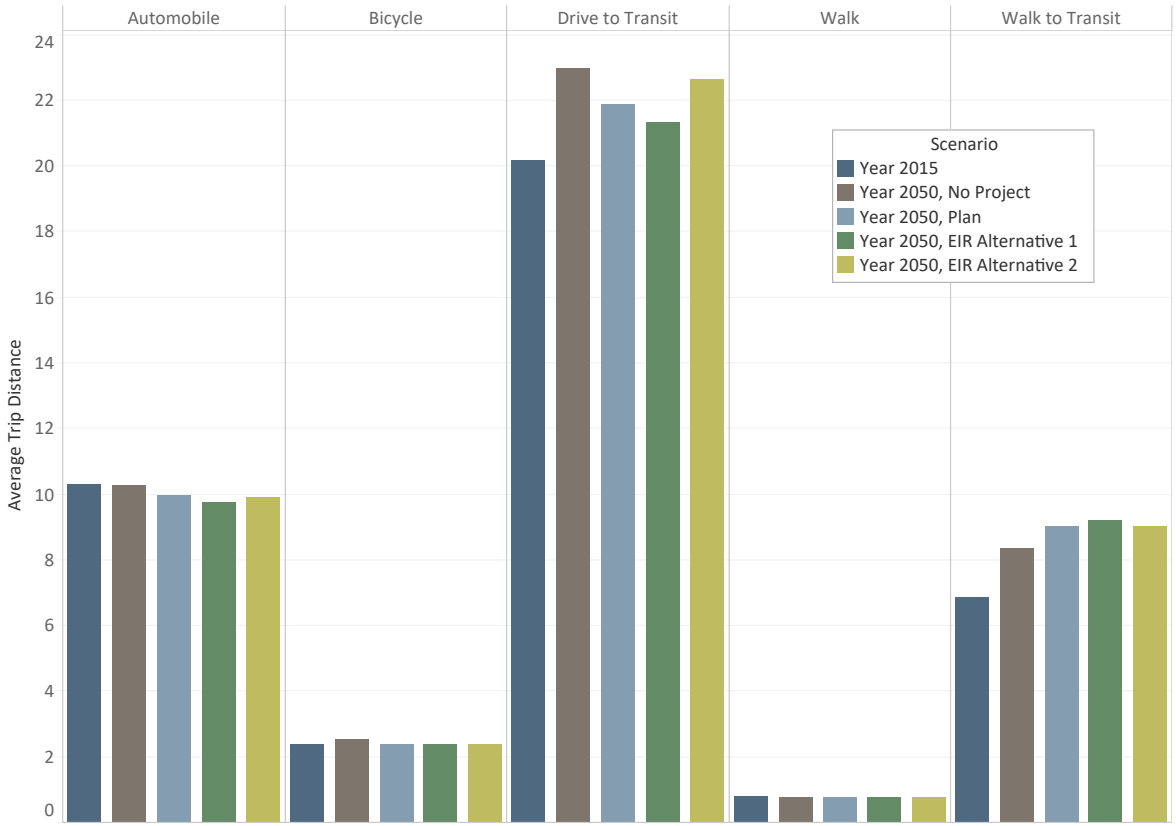


Figure 33. Average trip distance for travel on work tours in 2050 across alternatives



Travel Mode Choice Decisions

The means by which a traveler gets from point A to point B is referred to as the travel mode. Within MTC's representation of travel behavior, seven automobile-based modal options are considered, specifically:

1. traveling alone in a private automobile and opting not to pay to use a tolled lane ("Single Occupant, No Toll"), an option only available to those in households who own at least one automobile;
2. traveling alone in a private automobile and opting to pay to use a tolled lane ("Single Occupant, Paying Toll"), an option only available to those who both own a car and whose journey would benefit from using the tolled facility (e.g., this option is not available to those driving through a residential neighborhood to drop a child at school);
3. traveling with one passenger in a private automobile and opting not to pay to use a tolled lane ("Two Occupants, No Toll) (these travelers can use carpool lanes for which they are eligible), an option available to all households;
4. traveling with one passenger in a private automobile and opting to pay to use a tolled lane ("Two Occupants, Paying Toll"), an option available to all households provided they would benefit from using a tolled lane (if the tolled lane facility which benefits travelers allows two-occupant vehicles to travel for free, then these travelers are categorized as "Two Occupants, No Toll");
5. traveling with two or more passengers in a private automobile and opting not to pay to use a tolled lane ("Three or More Occupants, No Toll")
6. travelling with two or more passengers in a private automobile and opting to pay to use a tolld lane ("Three or More Occupants, Paying Toll"), an option available to all households provided they would benefit from using a tolled lane (if the tolled lane facility which benefits travelers allows three-occupant vehicles to travel for free, then these travelers are categorized as "Three Occupants, No Toll"); and
7. traveling using a taxi, transportation network company (TNC) vehicle -- either pooled with another party or as a single party; this option is available to all households.

The travel model explicitly considers numerous non-automobile options which are collapsed in these summaries into the following four options: transit, getting to and from by foot ("walk to transit"); transit, getting to or from in an automobile ("drive to transit"); walk; and bicycle.

Figure 34 and Figure 35 present the share of trips made by various travel modes. Figure 34 shows shares of travel in automobiles by occupancy category as well as by willingness to pay to use a tolled lane. The effect of Strategy T5 to Implement Means-Based Per-Mile Tolling on Congested Freeways with Transit Alternatives is clearly visible here as a large proportion of automobile trips become toll-paying trips. Overall, the shift towards the bike mode driven by Strategy T8: Build a Complete Streets Network is clearly visible in the three EIR Alternatives, as well as a slight shift towards transit.

Figure 34. Year 2050 automobile mode shares for all travel in 2050 across alternatives

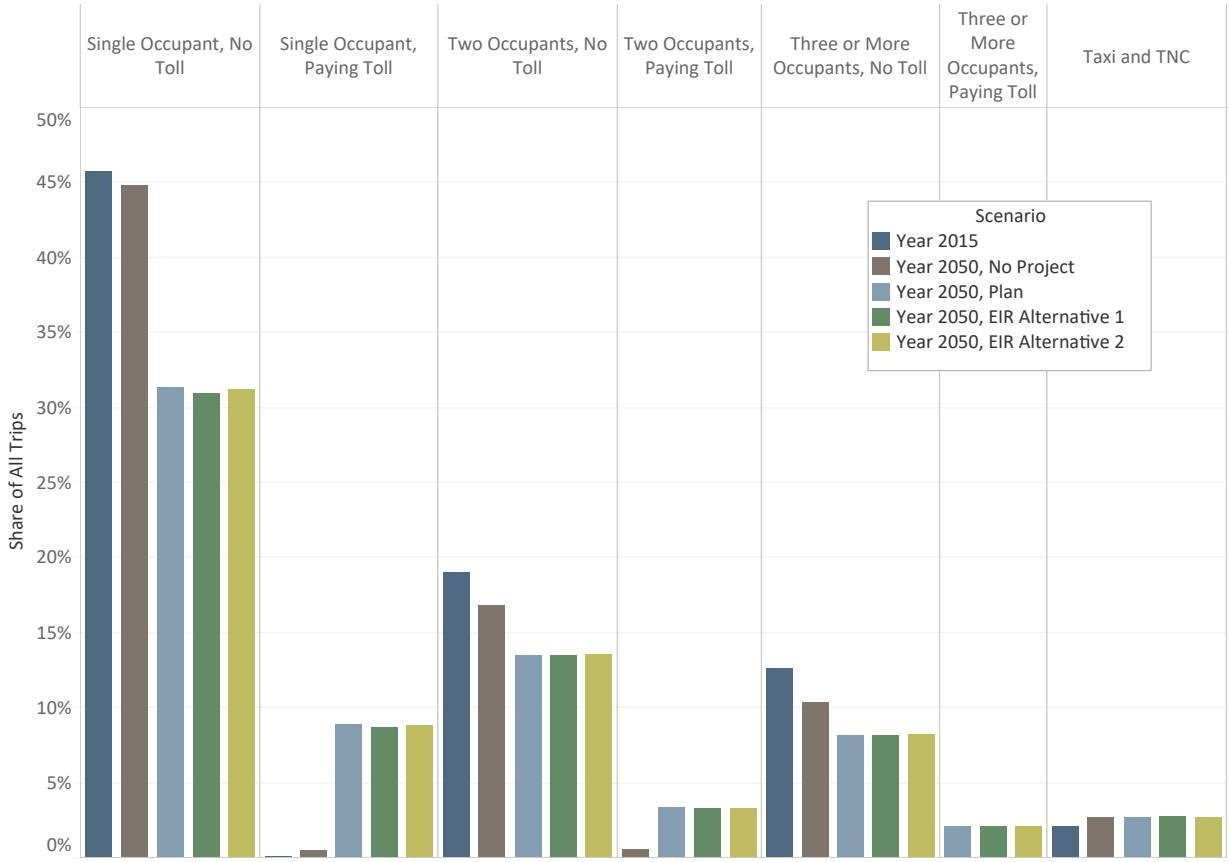
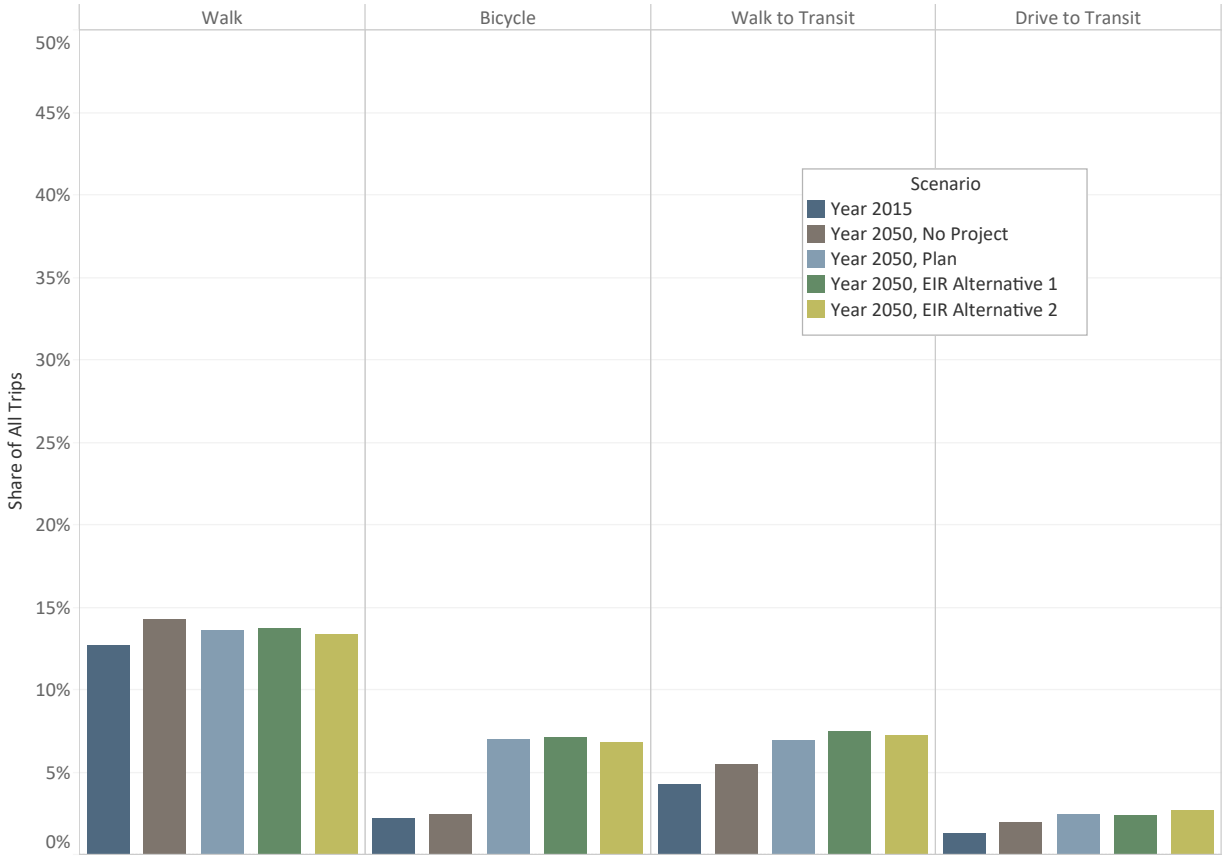


Figure 35. Non-automobile mode shares for all travel in 2050 across alternatives



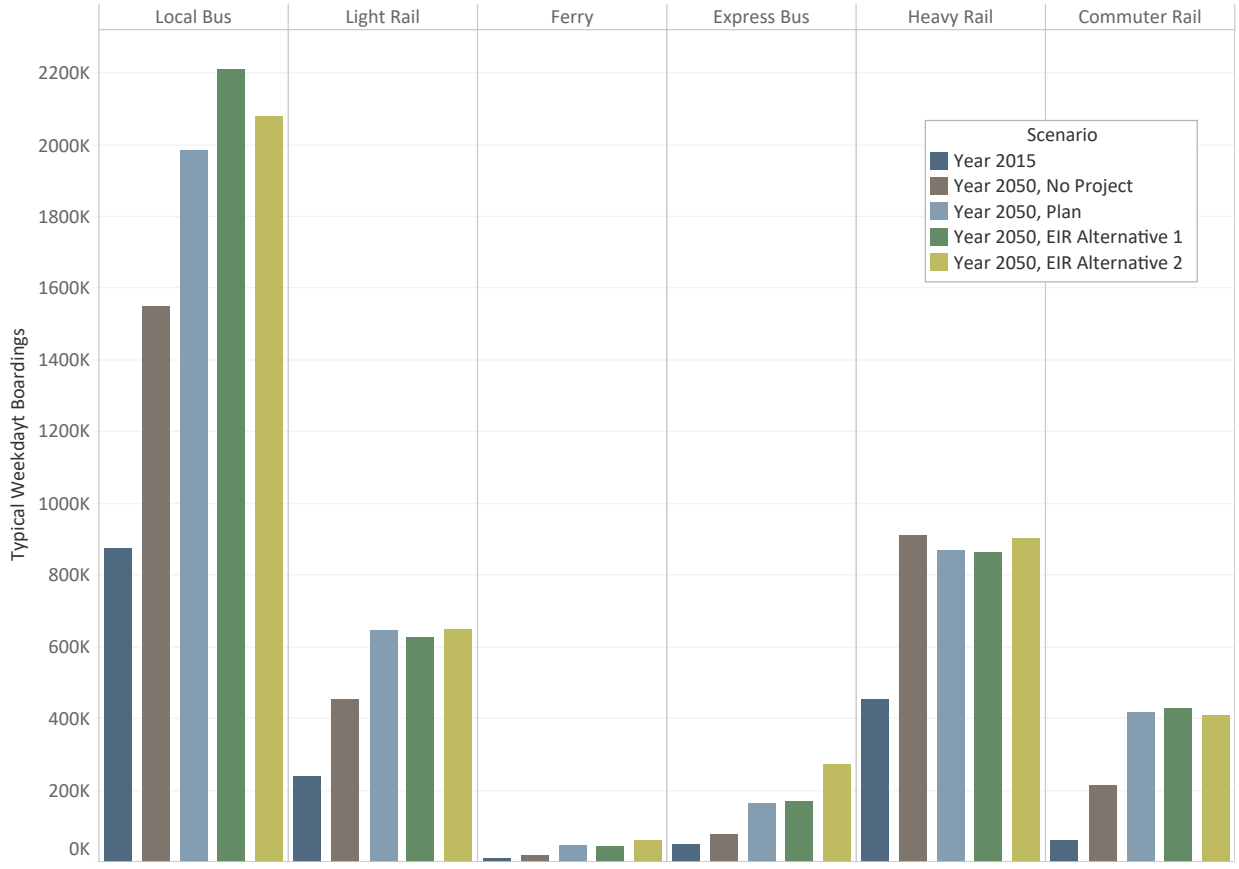
Aggregate Transit Demand Estimates

Bay Area residents choosing to travel by transit are explicitly assigned to a specific transit route. As a means of organizing the modeling results, MTC groups transit lines into the following technology- specific categories:

1. **Local bus:** standard, fixed-route bus service, of the kind a traveler may take to and from a neighborhood grocery store or to work, as well as "bus rapid transit" service. Cable cars are included in this category.
2. **Express bus:** longer distance service typically provided in over-the-road coaches. Golden Gate Transit, for example, provides express bus service between Marin County and Downtown San Francisco.
3. **Light rail:** represented in the Bay Area by San Francisco's Muni Metro and streetcar services (F- Market and E-Caltrain), as well as Santa Clara Valley Transportation Authority's light rail service.
4. **Heavy rail:** another name for the Bay Area Rapid Transit (BART) service.
5. **Commuter rail:** longer distance rail service typically operating in dedicated right-of-way, including Caltrain, Sonoma-Marin Area Rail Transit (SMART), Amtrak's Capitol Corridor, and Altamont Commuter Express.

Figure 36 presents the estimates of transit boardings by these categories on the typical weekday simulated by the travel model. Ridership increases from about 1.7 million daily boardings in 2015 to 3.1 million daily boardings in 2050 No Project, and 4 million daily boardings in all project scenarios in 2050.

Figure 36. Typical weekday transit boardings by technology in 2050 across alternatives



Roadway Utilization and Congestion Estimates

Trips made by automobile are first aggregated into matrices identifying each trip's origin and destination, and then "assigned" to a representation of the Bay Area's roadway network. The assignment process iteratively determines the shortest path between each origin-destination pair, shifting some number of trips to each iteration's shortest path, until the network reaches a certain level of equilibrium – defined as a state in which travelers cannot change to a lower "cost" route (where cost includes monetary and non-monetary (time) expenditures). Several measures of interest are generated by the assignment process, including vehicle miles traveled, delay, and average travel speed.

Please note that MTC maintains two separate estimates of the quantity of vehicle miles traveled (VMT), as follows:

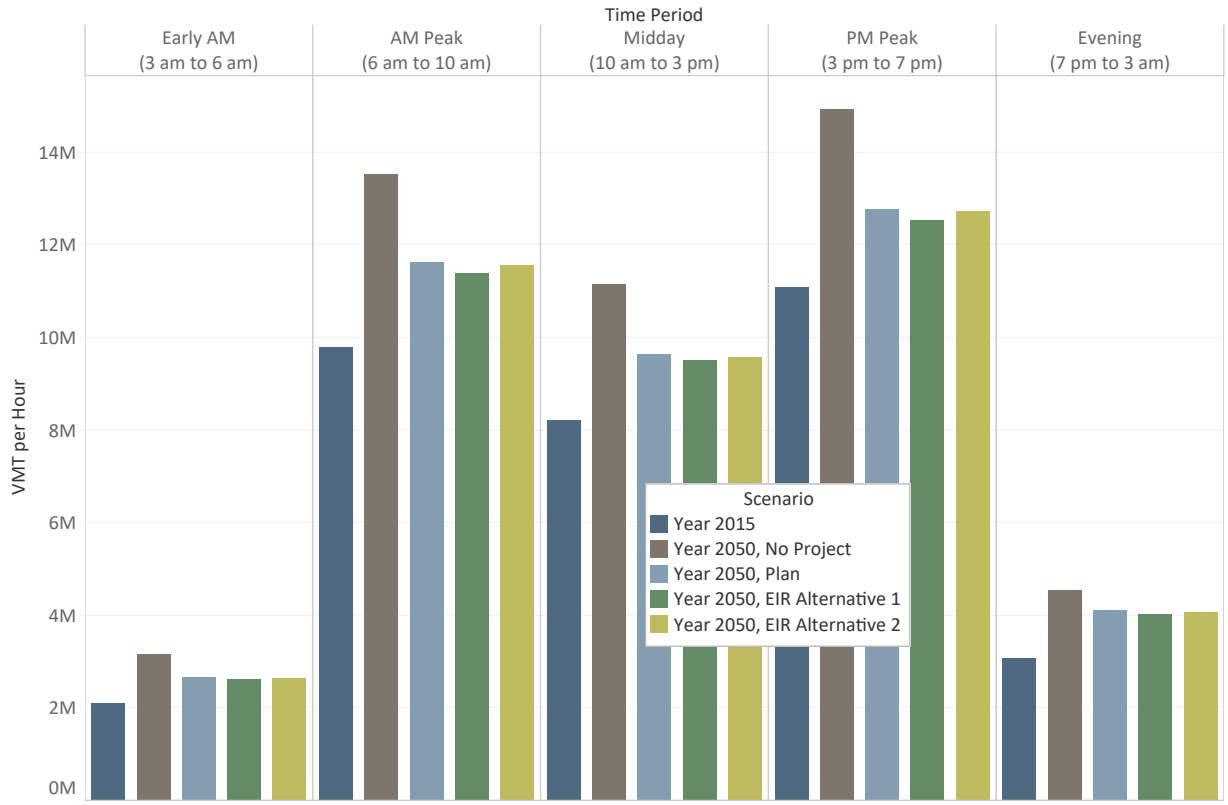
(1) the quantity assigned directly to the highway network; and

(2) the quantity (1) plus so-called "intra-zonal" VMT (i.e., travel that occurs at a geographic scale finer than the travel model's network representation), which is computed off-model

In this document, the VMT identified as (1) in the above list is presented.

Figure 37 first segments VMT into five time periods and then scales the VMT by the number of hours in each time period. The result is the intensity of VMT by time of day as well as the increase in VMT from 2015 to 2050. VMT drops significantly in the 2050 Plan and EIR Alternatives compared to 2050 No Project due to the strategies included in the Plan and EIR Alternatives, including road pricing and the commute trip reduction strategies, strategies to improve jobs/housing balance, and the other strategies included in the plan.

Figure 37. Vehicle miles traveled per hour by time period in 2050 across alternatives



Changes from Draft Forecasting and Modeling Report

Following the release of the Draft Environmental Impact Report and Draft Forecasting and Modeling Report for Plan Bay Area 2050, several assumptions underlying the Travel Modeling process were updated, and the scenarios were re-run. These fixes fell into two categories:

1) updates to modeling assumptions, and

2) network coding refinements for assorted projects to incorporate updated assumptions or correct errors

Additional detail on some of the more major updates is included below.

Refine "workers not working" assumptions

As discussed in the Draft Plan Bay Area 2050 Forecasting and Modeling Report, when staff incorporated updates to the estimate of telecommuters in the No Project scenario, staff applied data from the 2018-2019 Bay Area Transportation Study to estimate what proportion of workers who were not making a work tour (on the model simulation day) were telecommuting versus not going to work (due to alternative work schedules, or taking a vacation, sick or personal day). In reviewing this assumption, staff still considers it an appropriate assumption to apply to the 2015 model base year, but not to carry forward into future years. This is because the telecommute share is expected to rise, but the proportion of workers not going to work is not necessarily expected to change.

Therefore, staff updated the model assumption for future years to assume a fixed share of workers not working on the simulation day based upon the 2015 share: 10.8% of full-time workers and 20.6% of part-time workers. Assumptions about baseline telecommute rate (e.g., the share of workers telecommuting before the EN7 strategy was applied, described in Table 37 in the report) was not changed.

The impact on full-time workers for the No Project model runs is shown below. For the Draft EIR runs, the share of workers not working (in orange) increases slightly over time. With the implementation refinement, this share stays fixed for future years. This refinement affects all future year run, across all alternatives (No Project, Plan, EIR Alternative 1 and EIR Alternative 2).

Figure 38. Workers telecommuting, commuting, and not going to work in the Draft Plan (May 2021)

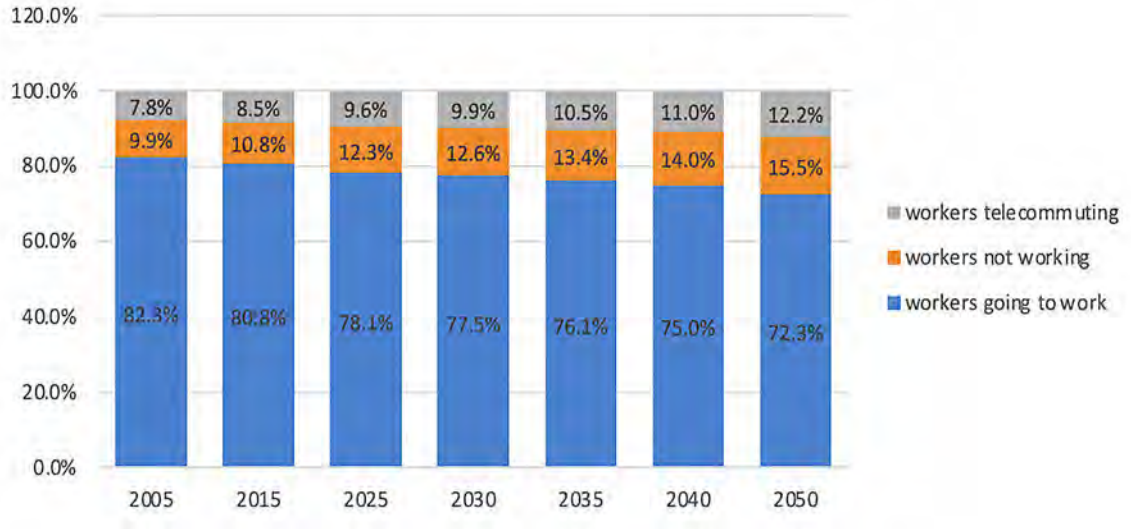
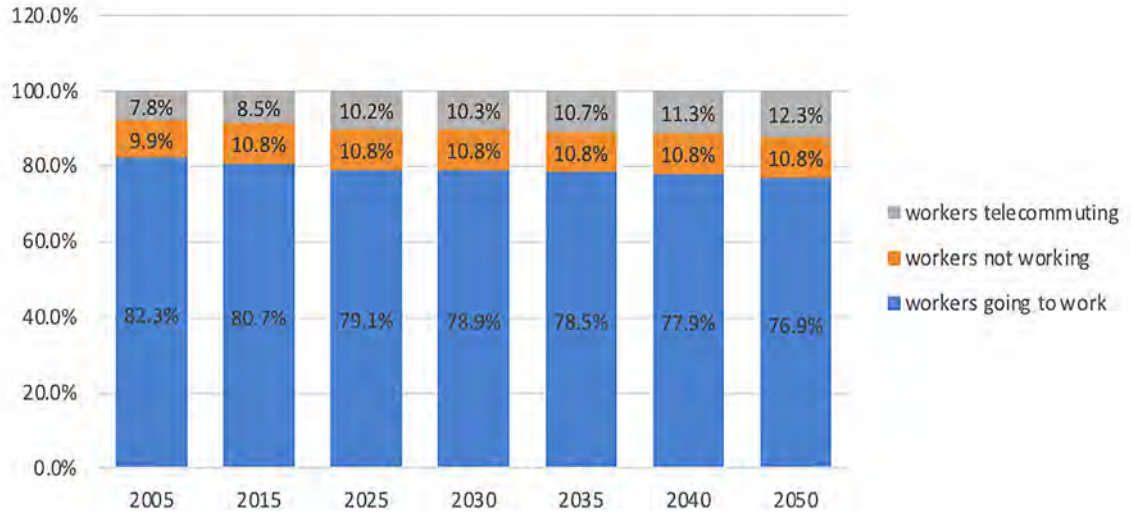


Figure 39. Workers telecommuting, commuting, and not going to work in the Plan (October 2021)



Update Transportation Network Company (TNC) wait time distribution configuration

The TNC wait time mean and standard deviation was reduced slightly in the highest density category. The wait time distribution was updated in the 2035 configuration, but not in the configuration for years after 2035; this omission has been corrected. This change has minor affects in model results because TNC trips represent a small share of trips.

Update Cube software to include fix for link-based fares which are used to represent zone-based express bus fares

For the Draft EIR travel model runs, 64-bit Cube 6.4.4 was used for transit assignment and skimming. This version does not assess link-based fares, which are used to add additional fares to the initial boarding fare when a certain link is traversed in a transit path. Link-based fares are a proxy for zone-based fares for express buses with a zone-based structure. Cube was updated to version 6.4.5, which fixed the bug in which link-based fares were not assessed. This fix had the effect of slightly decreasing express bus ridership for all model runs, but the effects were not significant. Staff verified the 2015 model run's transit ridership output was still valid with this fix.

Fix minor issues in base (2015) network

All the links in the 2015 network were scanned and the following fixes applied: a) reverse links that had different attribute values (distance, facility type, area type, city ID) b) a ramp that should be one-way instead of two-way on SR-4 in Antioch was fixed. Because the future year networks are built on top of the 2015 base network, these fixes affect the 2015 runs as well as all future year runs. However, the errors were all minor and so the effects on model results are likely insignificant.

Update internal/external travel assumptions

Travel Model 1.5 includes a representation of trips representing travel by non-residents who live outside the Bay Area and who drive into or out of the region on the typical simulated model day. For future forecast years, the traffic volumes at these gateway are assumed to be split into commute versus non-commute traffic; the assumed split is based on a comparison of Census Transportation Planning Product 2006-2010 and associated traffic volumes by subregion. For Plan Bay Area 2050, the commute share is not assumed to grow into the future, while the non-commute share of traffic is assumed to grow linearly based on past traffic volumes at the gateway. In 2019, these assumptions were updated slightly to move some forecasted growth between two gateways based on discussion with the neighboring Metropolitan Planning Organization, the Sacramento Area Council of Governments. Some model runs were found to be using the old configuration, and these were fixed. The effect of this fix is a minor change to traffic volumes at these gateways in future years.

Update Vehicle Buyback and Electric Vehicle Incentive initiative assumptions

Discussed in the Off-Model Calculations section, several updates were made to this program, which is part of Strategy, EN8: Expand Clean Vehicle Initiatives. First, the program's funding was increased, from $3.7 billion to $5.1 billion through 2035, incentivizing buyback and purchase of 630,000 electric vehicles (from 462,000 electric vehicles assumed with the lower funding amount). Second, the analysis was updated to assume electric vehicle adoptions are a result of both the regional program and the state's program, the California Clean Vehicle Rebate Project, and greenhouse gas emissions reductions are shared between the programs.

PLAN BAY AREA 2050

APPENDIX 1

PLAN BAY AREA 2050 GROWTH PATTERN

PLAN BAY AREA 2050

PLAN BAY AREA 2050 GROWTH PATTERN

Data tables below summarize the regional, county, and sub-county growth pattern for households and jobs in the Plan Bay Area 2050 Final Blueprint. Jurisdiction-level growth projections are developed solely for the 2023-2031 Regional Housing Needs Allocation (RHNA) process – for more information on RHNA, go to abag.ca.gov.

PROJECTED HOUSEHOLD AND JOB GROWTH, BY COUNTY

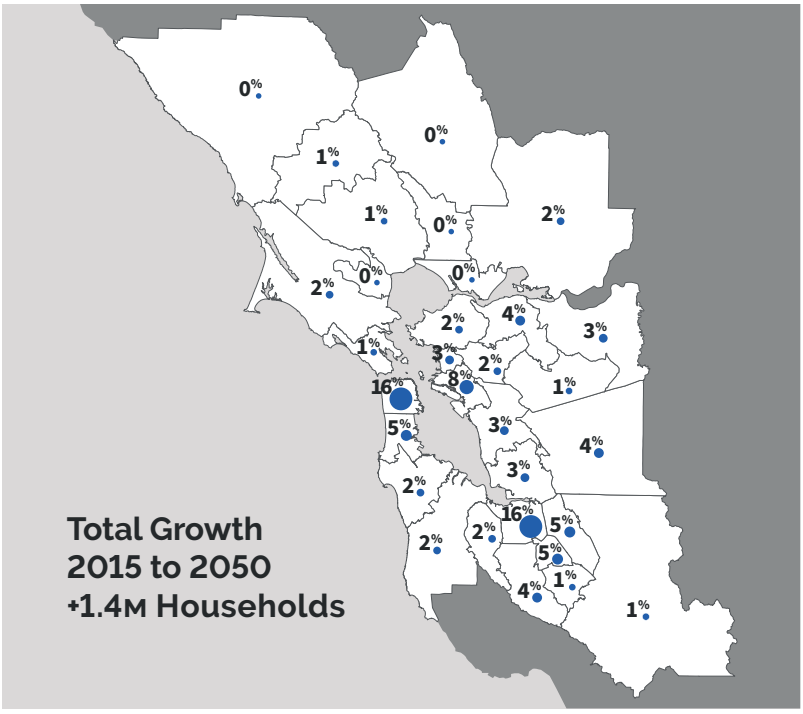
	HOUSEHOLDS					JOBS				
COUNTY	2015	2050	GROWTH	PERCENT GROWTH	SHARE OF REGIONAL GROWTH	2015	2050	GROWTH	PERCENT GROWTH	SHARE OF REGIONAL GROWTH
San Francisco	366,000	578,000	213,000	+58%	16%	682,000	918,000	236,000	+35%	17%
San Mateo	265,000	394,000	129,000	+48%	9%	393,000	507,000	114,000	+29%	8%
Santa Clara	623,000	1,075,000	453,000	+73%	33%	1,099,000	1,610,000	511,000	+46%	36%
Alameda	552,000	847,000	295,000	+54%	22%	867,000	1,182,000	315,000	+36%	22%
Contra Costa	383,000	551,000	169,000	+44%	12%	404,000	534,000	130,000	+32%	9%
Solano	142,000	177,000	35,000	+24%	3%	132,000	201,000	69,000	+53%	5%
Napa	50,000	56,000	5,000	+10%	0%	72,000	87,000	15,000	+21%	1%
Sonoma	188,000	220,000	32,000	+17%	2%	221,000	251,000	30,000	+14%	2%
Marin	109,000	146,000	37,000	+34%	3%	135,000	116,000	–19,000	–14%	–1%
REGION	2,677,000	4,043,000	1,367,000	+51%	100%	4,005,000	5,408,000	1,403,000	+35%	100%

Numbers may not always sum to 100% due to rounding.

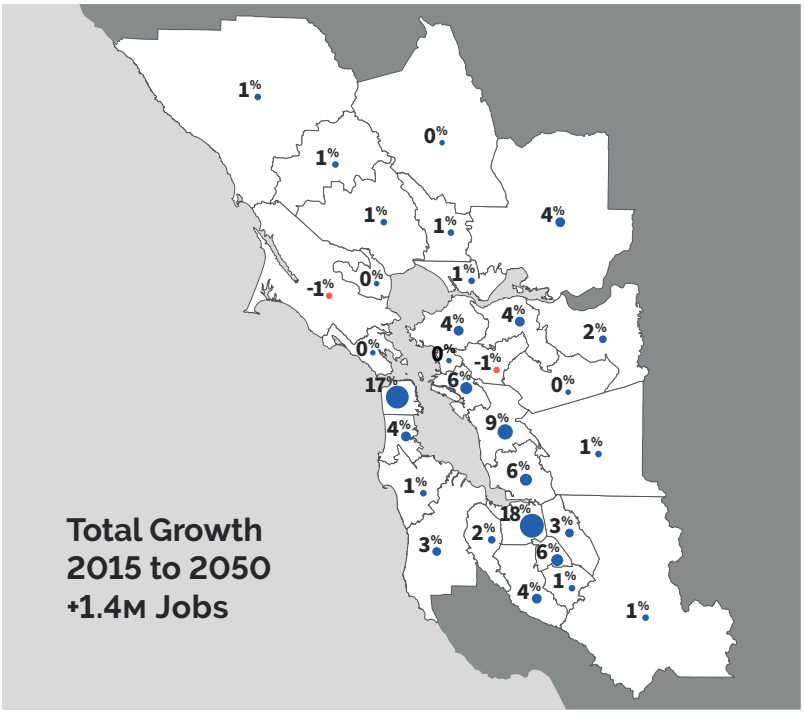
PLAN BAY AREA 2050

PLAN BAY AREA 2050 GROWTH PATTERN

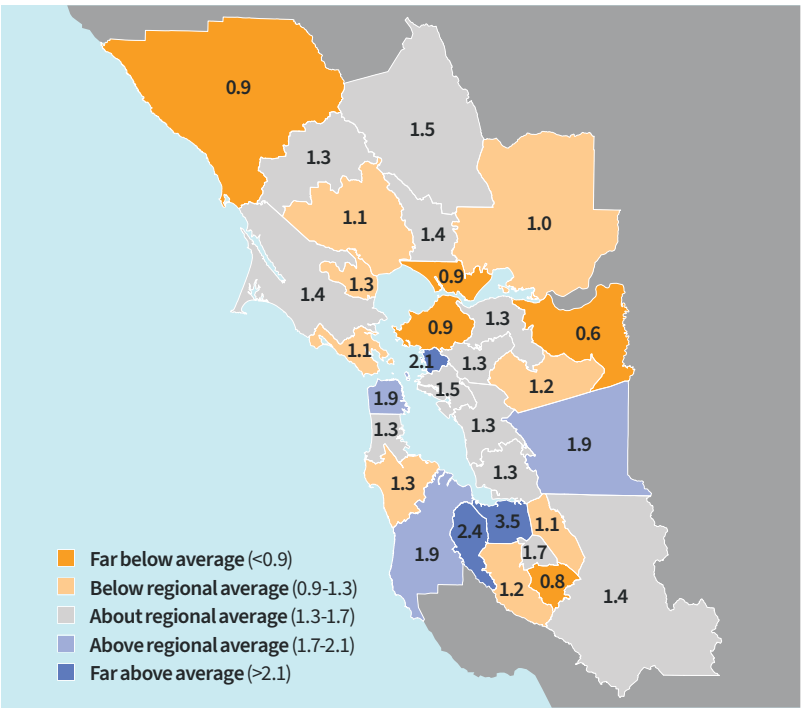
Housing Growth between 2015-2050
(as a Share of Region's Growth)



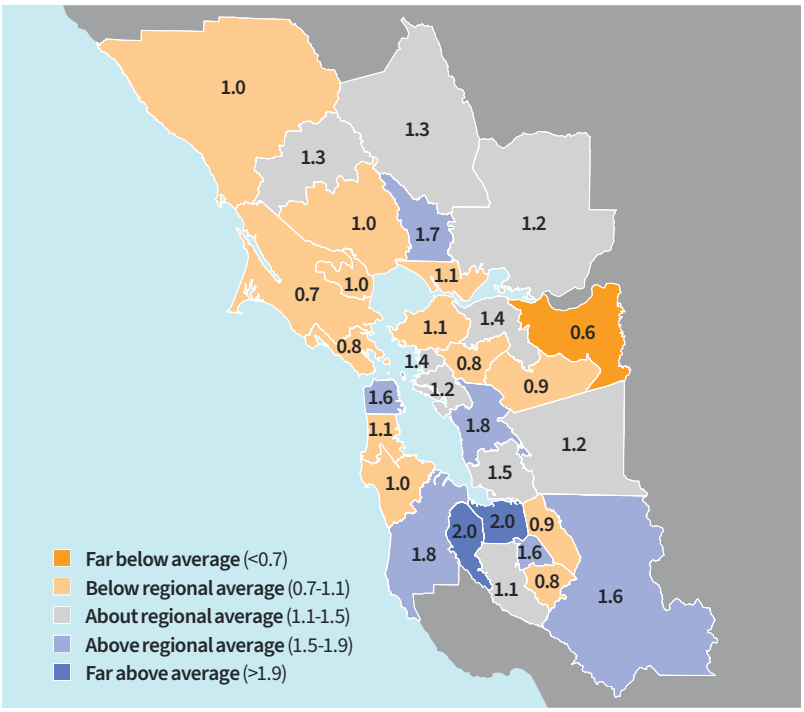
Job Growth between 2015-2050
(as a Share of Region's Growth)



Jobs/Housing Ratio 2015
(Region-Wide Average: 1.5)



Jobs/Housing Ratio 2050
(Region-Wide Average: 1.3)



The nine-county Bay Area is divided into 34 subcounty areas, called "superdistricts." Superdistricts are combinations of cities, towns and unincorporated areas that allow the public to see the more localized growth pattern in Plan Bay Area 2050. More information on the superdistricts can be found in the layer documentation.

PLAN BAY AREA 2050

PLAN BAY AREA 2050 GROWTH PATTERN

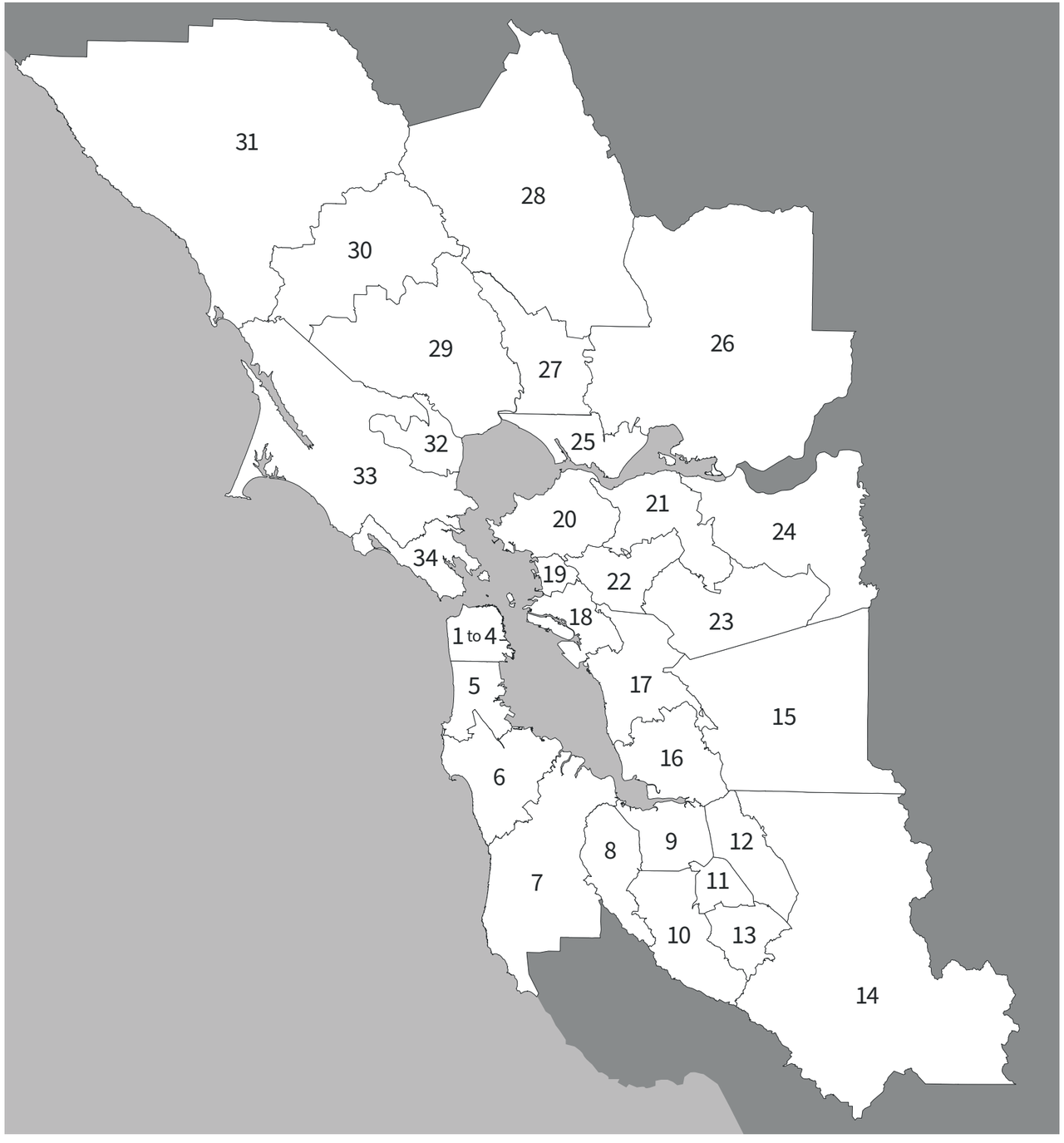
PROJECTED HOUSEHOLD AND JOB GROWTH, BY SUPERDISTRICT

			HOUSEHOLDS					JOBS				
COUNTY	SUPER-DISTRICT	SUPERDISTRICT NAME	2015	2050	GROWTH	PERCENT GROWTH	SHARE OF REGIONAL GROWTH	2015	2050	GROWTH	PERCENT GROWTH	SHARE OF REGIONAL GROWTH
San Francisco	1 to 4	San Francisco County (Combined)	366,000	578,000	213,000	+58%	16%	682,000	918,000	236,000	+35%	17%
San Mateo	5	North San Mateo County	98,000	166,000	69,000	+70%	5%	130,000	188,000	58,000	+44%	4%
	6	Central San Mateo County	87,000	121,000	34,000	+39%	2%	110,000	123,000	13,000	+12%	1%
	7	South San Mateo County	80,000	106,000	26,000	+32%	2%	152,000	196,000	44,000	+29%	3%
Santa Clara	8	Northwest Santa Clara County	74,000	102,000	28,000	+38%	2%	180,000	207,000	27,000	+15%	2%
	9	North Santa Clara County	107,000	320,000	212,000	+199%	16%	370,000	629,000	259,000	+70%	18%
	10	West Santa Clara County	121,000	172,000	51,000	+42%	4%	145,000	197,000	52,000	+36%	4%
	11	Central Santa Clara County	105,000	168,000	63,000	+60%	5%	178,000	263,000	86,000	+48%	6%
	12	East Santa Clara County	108,000	180,000	72,000	+67%	5%	121,000	170,000	49,000	+40%	3%
	13	Central South Santa Clara County	73,000	91,000	18,000	+25%	1%	57,000	77,000	21,000	+36%	1%
	14	South Santa Clara County	35,000	43,000	8,000	+24%	1%	49,000	68,000	18,000	+37%	1%
Alameda	15	East Alameda County	72,000	132,000	60,000	+82%	4%	138,000	156,000	18,000	+13%	1%
	16	South Alameda County	105,000	152,000	47,000	+45%	3%	142,000	221,000	79,000	+56%	6%
	17	Central Alameda County	120,000	160,000	40,000	+33%	3%	157,000	285,000	128,000	+82%	9%
	18	North Alameda County	181,000	287,000	107,000	+59%	8%	275,000	358,000	83,000	+30%	6%
	19	Northwest Alameda County	73,000	115,000	42,000	+57%	3%	155,000	162,000	7,000	+5%	0%
Contra Costa	20	West Contra Costa County	89,000	123,000	34,000	+38%	2%	79,000	132,000	52,000	+66%	4%
	21	North Contra Costa County	85,000	134,000	49,000	+58%	4%	121,000	184,000	63,000	+52%	4%
	22	Central Contra Costa County	60,000	89,000	28,000	+47%	2%	81,000	74,000	-7,000	–9%	-1%
	23	South Contra Costa County	55,000	70,000	15,000	+28%	1%	66,000	60,000	-6,000	–9%	0%
	24	East Contra Costa County	94,000	136,000	42,000	+45%	3%	56,000	84,000	28,000	+51%	2%
Solano	25	South Solano County	53,000	57,000	5,000	+9%	0%	45,000	62,000	17,000	+37%	1%
	26	North Solano County	89,000	119,000	30,000	+34%	2%	87,000	139,000	53,000	+61%	4%
Napa	27	South Napa County	34,000	40,000	5,000	+15%	0%	48,000	66,000	19,000	+39%	1%
	28	North Napa County	16,000	16,000	0	+1%	0%	24,000	20,000	-3,000	–14%	0%
Sonoma	29	South Sonoma County	64,000	83,000	19,000	+30%	1%	72,000	80,000	8,000	+11%	1%
	30	Central Sonoma County	88,000	98,000	10,000	+11%	1%	118,000	131,000	14,000	+12%	1%
	31	North Sonoma County	36,000	39,000	3,000	+9%	0%	31,000	40,000	9,000	+28%	1%
Marin	32	North Marin County	23,000	30,000	7,000	+28%	0%	29,000	29,000	0	+0%	0%
	33	Central Marin County	44,000	66,000	22,000	+50%	2%	63,000	49,000	–14,000	–23%	–1%
	34	South Marin County	41,000	50,000	9,000	+21%	1%	44,000	40,000	–4,000	–10%	0%
REGION			2,677,000	4,043,000	1,367,000	+51%	100%	4,005,000	5,408,000	1,403,000	+35%	100%

Numbers may not always sum to 100% due to rounding.

PLAN BAY AREA 2050 GROWTH PATTERN

REGIONAL MAP – SUPERDISTRICTS



SUPER-DISTRICT	COUNTY	SUPERDISTRICT NAME	PRIMARY JURISDICTIONS INCLUDED IN SUPERDISTRICT
1 to 4	San Francisco	San Francisco County (Combined)	San Francisco
5	San Mateo	North San Mateo County	Brisbane, Colma, Daly City, Pacifica, South San Francisco, Millbrae, San Bruno, Burlingame (partial)
6	San Mateo	Central San Mateo County	Half Moon Bay, Hillsborough, San Mateo, Foster City, Belmont, Burlingame (partial)
7	San Mateo	South San Mateo County	Atherton, Menlo Park, Redwood City, Woodside, East Palo Alto, Portola Valley, San Carlos
8	Santa Clara	Northwest Santa Clara County	Los Altos Hills, Los Altos, Palo Alto (partial), Mountain View (partial)
9	Santa Clara	North Santa Clara County	Sunnyvale, Santa Clara (partial), Mountain View (partial), Milpitas (partial), San Jose (partial), Palo Alto (partial)
10	Santa Clara	West Santa Clara County	Los Gatos, Monte Sereno, Saratoga, Cupertino, Campbell (partial), Santa Clara (partial)
11	Santa Clara	Central Santa Clara County	Campbell (partial), San Jose (partial)
12	Santa Clara	East Santa Clara County	Milpitas (partial), San Jose (partial)
13	Santa Clara	Central South Santa Clara County	San Jose (partial)
14	Santa Clara	South Santa Clara County	Gilroy, Morgan Hill, San Jose (partial)
15	Alameda	East Alameda County	Dublin, Livermore, Pleasanton
16	Alameda	South Alameda County	Newark, Fremont, Union City
17	Alameda	Central Alameda County	San Leandro, Hayward
18	Alameda	North Alameda County	Alameda, Piedmont, Oakland
19	Alameda	Northwest Alameda County	Albany, Berkeley, Emeryville
20	Contra Costa	West Contra Costa County	El Cerrito, Hercules, Pinole, Richmond, San Pablo
21	Contra Costa	North Contra Costa County	Clayton, Pleasant Hill, Concord, Martinez, Lafayette (partial), Pittsburg (partial)
22	Contra Costa	Central Contra Costa County	Moraga, Orinda, Walnut Creek (partial), Lafayette (partial)
23	Contra Costa	South Contra Costa County	Danville, San Ramon, Walnut Creek (partial)
24	Contra Costa	East Contra Costa County	Antioch, Brentwood, Oakley, Pittsburg (partial)
25	Solano	South Solano County	Benicia, Vallejo
26	Solano	North Solano County	Dixon, Fairfield, Rio Vista, Suisun City, Vacaville
27	Napa	South Napa County	American Canyon, Napa
28	Napa	North Napa County	Calistoga, St. Helena, Yountville
29	Sonoma	South Sonoma County	Cotati, Petaluma, Sonoma, Rohnert Park
30	Sonoma	Central Sonoma County	Santa Rosa, Sebastopol
31	Sonoma	North Sonoma County	Cloverdale, Healdsburg, Windsor
32	Marin	North Marin County	Novato
33	Marin	Central Marin County	Fairfax, San Anselmo, San Rafael, Ross
34	Marin	South Marin County	Belvedere, Corte Madera, Mill Valley, Sausalito, Tiburon, Larkspur

Unincorporated areas included in most superdistricts outside San Francisco. Small overlap zones, representing less than 10% of any city's size, are not shown for clarity.

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Appendix E

List of Transportation Control Measures (TCM) Projects

TCM A: Regional Express Bus

Regional Express Bus Program

Vehicle Deployment Throughout the Bay Area[1]

February 18, 2009

Transit Operator	Vehicle Type	Serial Registration[2]	Funds Obligated	Operating Agency	Route	Weekday Service Hours	Weekend Service Hours
AC Transit[3]	Over-The-Road	1M8PDMPA43P055640	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA63P055641	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA83P055642	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPAX3P055643	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	IM8PDMPA33P055645	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA53P055646	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA73P055647	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA93P055648	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA73P055650	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA93P055621	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA03P055652	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA23P055653	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA43P055654	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA63P055655	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPAX3P055657	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA13P055658	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA33P055659	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPAX3P055660	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA13P055661	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	IM8PDMPA73P055664	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	IM8PDMPA83P055656	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	IM8PDMPA03P055666	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	IM8PDMPA93P055665	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	IM8PDMPA53P055663	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	IM8PDMPA33P055662	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	IM8PDMPA23P055667	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	IM8PDMPA03P055649	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPAX3P055674	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA43P055668	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	IM8PDMPA63P055669	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA23P055670	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA43P055671	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA63P055672	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	IM8PDMPA83P055673	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA33P055676	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA53P055677	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	IM8PDMPA73P055678	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA93P055679	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Over-The-Road	1M8PDMPA13P055675	3/25/2001	AC Transit	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Suburban	15GCD201531111916	1/27/2003	AC Transit - Transferred from SamTrans[4]	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Suburban	15GCD201731111917	1/27/2003	AC Transit - Transferred from SamTrans[4]	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Suburban	15GCD201931111918	1/27/2003	AC Transit - Transferred from SamTrans[4]	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
	Suburban	15GCD201031111919	1/27/2003	AC Transit - Transferred from SamTrans[4]	Transbay - Bay, San Mateo, and Dumbarton Bridges	5:00 AM - 12:45 AM	5:30 AM - 12:50 AM
CCCTA	Suburban	15GDD271X21111662	3/25/2002	CCCTA	960B & 960C Mitchell Drive Park & Ride/Bishop Ranch	**960B** 5:15 AM - 7:51 PM **960C** 6:15 AM - 7:50 PM	
	Suburban	15GDD271X21111663	3/25/2002	CCCTA	960B & 960C Mitchell Drive Park & Ride/Bishop Ranch	**960B** 5:15 AM - 7:51 PM **960C** 6:15 AM - 7:50 PM	
	Suburban	15GDD271X21111664	3/25/2002	CCCTA	960B & 960C Mitchell Drive Park & Ride/Bishop Ranch	**960B** 5:15 AM - 7:51 PM **960C** 6:15 AM - 7:50 PM	
	Suburban	15GDD271X21111665	3/25/2002	CCCTA	960B & 960C Mitchell Drive Park & Ride/Bishop Ranch	**960B** 5:15 AM - 7:51 PM **960C** 6:15 AM - 7:50 PM	
	Suburban	15GDD271X21111666	3/25/2002	CCCTA	960B & 960C Mitchell Drive Park & Ride/Bishop Ranch	**960B** 5:15 AM - 7:51 PM **960C** 6:15 AM - 7:50 PM	
	Suburban	15GDD271X21111667	3/25/2002	CCCTA	960B & 960C Mitchell Drive Park & Ride/Bishop Ranch	**960B** 5:15 AM - 7:51 PM **960C** 6:15 AM - 7:50 PM	
	Suburban	15GDD271X21111668	3/25/2002	CCCTA	960B & 960C Mitchell Drive Park & Ride/Bishop Ranch	**960B** 5:15 AM - 7:51 PM **960C** 6:15 AM - 7:50 PM	
	Suburban	15GDD271X21111669	3/25/2002	CCCTA	960B & 960C Mitchell Drive Park & Ride/Bishop Ranch	**960B** 5:15 AM - 7:51 PM **960C** 6:15 AM - 7:50 PM	
	Suburban	15GDD271X21111670	3/25/2002	CCCTA	960B & 960C Mitchell Drive Park & Ride/Bishop Ranch	**960B** 5:15 AM - 7:51 PM **960C** 6:15 AM - 7:50 PM	
	Suburban	15GDD271X21111671	3/25/2002	CCCTA	960B & 960C Mitchell Drive Park & Ride/Bishop Ranch	**960B** 5:15 AM - 7:51 PM **960C** 6:15 AM - 7:50 PM	
	Suburban	15GDD271X21111672	3/25/2002	CCCTA	960B & 960C Mitchell Drive Park & Ride/Bishop Ranch	**960B** 5:15 AM - 7:51 PM **960C** 6:15 AM - 7:50 PM	
	Suburban	15GDD271X21111673	3/25/2002	CCCTA	960B & 960C Mitchell Drive Park & Ride/Bishop Ranch	**960B** 5:15 AM - 7:51 PM **960C** 6:15 AM - 7:50 PM	
	Suburban	15GDD271X21111674	3/25/2002	CCCTA	960B & 960C Mitchell Drive Park & Ride/Bishop Ranch	**960B** 5:15 AM - 7:51 PM **960C** 6:15 AM - 7:50 PM	

TCM A: Regional Express Bus

Regional Express Bus Program

Vehicle Deployment Throughout the Bay Area[1]

February 18, 2009

Transit Operator	Vehicle Type	Serial Registration[2]	Funds Obligated	Operating Agency	Route	Weekday Service Hours	Weekend Service Hours
Fairfield-Suisun	Over-The-Road	1M8PDMPA13P055949	11/14/2002	Fairfield-Suisun	40 Vacaville/Fairfield to Pleasant Hill/Walnut Creek BART	5:00 AM - 9:57 AM & 3:01 PM - 8:31 PM	
	Over-The-Road	1M8PDMPA83P055950	11/14/2002	Fairfield-Suisun	40 Vacaville/Fairfield to Pleasant Hill/Walnut Creek BART	5:00 AM - 9:57 AM & 3:01 PM - 8:31 PM	
	Suburban	15GCD201731111920	1/27/2003	Fairfield-Suisun - Transferred from SamTrans[4]	30 Fairfield to Davis/Sacramento	6:08 AM - 7:05 PM	Sat Only 8:03 AM - 4:43 PM
	Suburban	15CGD201931111921	1/27/2003	Fairfield-Suisun - Transferred from SamTrans[4]	30 Fairfield to Davis/Sacramento	6:08 AM - 7:05 PM	Sat Only 8:03 AM - 4:43 PM
Golden Gate	Over-The-Road	1M8PDMPA53PO55680	11/8/2002	Golden Gate	71 Novato/San Rafael/Marin City/San Francisco	6:35 AM - 8:27 PM	Sat Only 6:59 AM - 7:28 PM
	Over-The-Road	1M8PDMPA73PO55681	11/8/2002	Golden Gate	71 Novato/San Rafael/Marin City/San Francisco	6:35 AM - 8:27 PM	Sat Only 6:59 AM - 7:28 PM
	Over-The-Road	1M8PDMPA93PO55682	11/8/2002	Golden Gate	72 Santa Rosa/Rohnert Park/Cotati/San Francisco	3:54 AM - 8:59 AM & 2:12 PM - 8:05 PM	
	Over-The-Road	1M8PDMPAO3PO55683	11/8/2002	Golden Gate	72 Santa Rosa/Rohnert Park/Cotati/San Francisco	3:54 AM - 8:59 AM & 2:12 PM - 8:05 PM	
	Over-The-Road	1M8PDMPA23PO55684	11/8/2002	Golden Gate	75 Santa Rosa/Rohnert Park/Cotati · Petaluma /Marin Civic Center/San Rafael	5:02 AM - 8:35 AM & 2:59 PM - 7:18 PM	
	Over-The-Road	1M8PDMPA43PO55685	11/8/2002	Golden Gate	75 Santa Rosa/Rohnert Park/Cotati · Petaluma /Marin Civic Center/San Rafael	5:02 AM - 8:35 AM & 2:59 PM - 7:18 PM	
LAVTA	Suburban	15GDD271521110872	3/25/2002	LAVTA	70X Pleasanton - Walnut Creek Express	5:09 AM - 9:16 AM & 3:19 PM - 7:42 PM	
	Suburban	15GDD271721110873	3/25/2002	LAVTA	70X Pleasanton - Walnut Creek Express	5:09 AM - 9:16 AM & 3:19 PM - 7:42 PM	
	Suburban	15GDD271921110874	3/25/2002	LAVTA	70X Pleasanton - Walnut Creek Express	5:09 AM - 9:16 AM & 3:19 PM - 7:42 PM	
	Suburban	15GDD271021110875	3/25/2002	LAVTA	70X Pleasanton - Walnut Creek Express	5:09 AM - 9:16 AM & 3:19 PM - 7:42 PM	
NCTPA	Suburban	15GCD201631111911	1/27/2003	SamTrans Transfering to NCPTA on 2/28/09	June 2009 - Calistoga/Yountville/Napa/American Canyon/Baylink Ferry Terminal	5:00 AM-6:30 PM; Peak Only	
	Suburban	15GCD201831111912	1/27/2003	SamTrans Transfering to NCPTA on 2/28/09	June 2009 - Calistoga/Yountville/Napa/American Canyon/Baylink Ferry Terminal	5:00 AM-6:30 PM; Peak Only	
Tri-Delta	Over-The-Road	1M8PDMPA63P055686	11/8/2002	Tri-Delta	300 Express Commuter Service Brentwood/Pittsburg BART	4:15 AM - 9:07 PM	
	Over-The-Road	1M8PDMPA63P055687	11/8/2002	Tri-Delta	300 Express Commuter Service Brentwood/Pittsburg BART	4:15 AM - 9:07 PM	
	Over-The-Road	1M8PDMPA63P055688	11/8/2002	Tri-Delta	300 Express Commuter Service Brentwood/Pittsburg BART	4:15 AM - 9:07 PM	
	Over-The-Road	1M8PDMPA63P055689	11/8/2002	Tri-Delta	300 Express Commuter Service Brentwood/Pittsburg BART	4:15 AM - 9:07 PM	
Vallejo	Over-The-Road	1M8PDMPA13P055627	11/14/2002	Leased to Fairfield-Suisun[5]	90 Fairfield/El Cerrito Del Norte BART	4:55 AM - 10:35 PM	
	Over-The-Road	1M8PDMPA33P055628	11/14/2002	Leased to Fairfield-Suisun[5]	90 Fairfield/El Cerrito Del Norte BART	4:55 AM - 10:35 PM	
	Over-The-Road	1M8PDMPA53P055629	11/14/2002	Vallejo	78 Vallejo/Benicia/Pleasant Hill BART/Walnut Creek BART	5:00 AM - 8:38 PM	
	Over-The-Road	1M8PDMPA13P055630	11/14/2002	Leased to Fairfield-Suisun[5]	90 Fairfield/El Cerrito Del Norte BART	4:55 AM - 10:35 PM	
	Over-The-Road	1M8PDMPA33P055631	11/14/2002	Leased to Fairfield-Suisun[5]	90 Fairfield/El Cerrito Del Norte BART	4:55 AM - 10:35 PM	
	Over-The-Road	1M8PDMPA53P055632	11/14/2002	Vallejo	78 Vallejo/Benicia/Pleasant Hill BART/Walnut Creek BART	5:00 AM - 8:38 PM	
	Over-The-Road	1M8PDMPA73P055633	11/14/2002	Vallejo	78 Vallejo/Benicia/Pleasant Hill BART/Walnut Creek BART	5:00 AM - 8:38 PM	
	Over-The-Road	1M8PDMPA93P055634	11/14/2002	Vallejo	78 Vallejo/Benicia/Pleasant Hill BART/Walnut Creek BART	5:00 AM - 8:38 PM	
	Over-The-Road	1M8PDMPA03P055635	11/14/2002	Vallejo	78 Vallejo/Benicia/Pleasant Hill BART/Walnut Creek BART	5:00 AM - 8:38 PM	
	Over-The-Road	1M8PDMPA23P055636	11/14/2002	Leased to Fairfield-Suisun[5]	90 Fairfield/El Cerrito Del Norte BART	4:55 AM - 10:35 PM	
	Over-The-Road	1M8PDMPA43P055637	11/14/2002	Leased to Fairfield-Suisun[5]	90 Fairfield/El Cerrito Del Norte BART	4:55 AM - 10:35 PM	
	Over-The-Road	1M8PDMPA83P055639	11/14/2002	Leased to Fairfield-Suisun[5]	90 Fairfield/El Cerrito Del Norte BART	4:55 AM - 10:35 PM	
WestCat	Suburban	15GCD211121111974	3/7/2002	WestCat	30Z Hercules Transit Center/Martinez/BART	5:59 AM - 8:03 PM	
	Suburban	15GCD211521111975	3/7/2002	WestCat	30Z Hercules Transit Center/Martinez/BART	5:59 AM - 8:03 PM	
	Suburban	15GCD211121111976	3/7/2002	WestCat	30Z Hercules Transit Center/Martinez/BART	5:59 AM - 8:03 PM	
	Suburban	15GCD201X31111913	1/27/2003	WestCat - Transferred from SamTrans[4]	LYNX Rodeo/Hercules/San Francisco Transbay Terminal	5:00 AM - 9:45 AM & 3:30 PM - 8:33 PM	
	Suburban	15GCD201131111914	1/27/2003	WestCat - Transferred from SamTrans[4]	LYNX Rodeo/Hercules/San Francisco Transbay Terminal	5:00 AM - 9:45 AM & 3:30 PM - 8:33 PM	
	Suburban	15GCD201331111915	1/27/2003	SamTrans[4]	LYNX Rodeo/Hercules/San Francisco Transbay Terminal	5:00 AM - 9:45 AM & 3:30 PM - 8:33 PM	

1. Please note: MTC does not currently have information compiled on cumulative operating hours for all of the TCRP buses. For projects where the buses have been assigned to routes receiving operating funds that are tied to required performance measures, MTC has data compiled on the annual performance of those routes.
2. Each vehicle may be deployed on any of the approved routes listed for each operator.
3. Vehicles are deployed as needed for various routes on weekdays and weekends. All transbay service does not operate on weekends, but all vehicles may be deployed on weekend transbay service.
4. SamTrans REX service was discontinued in 2007 due to low ridership; all 11 TCRP vehicles purchased for the REX service were reallocated to AC Transit, Fairfield-Suisun Transit, WestCat, and NCTPA.
5. Route 90 service was transferred from Vallejo to Fairfield-Suisun Transit in 2006.

TCM B: Bicycle/Pedestrian Program
TDA ARTICLE 3 [Transportation Development Act Funds for Bicycle and Pedestrian Projects]

	SPONSOR	PROJECT NAME	AMOUNT
FY 2003-04	Alameda County	ADA Compliant Accessible Ramps	$ 105,767
FY 2003-04	Alameda County	Tesla Road Bicycle Lanes	$ 51,000
FY 2003-04	City of Albany	Manor Way Pedestrian Improvements	$ 22,706
FY 2003-04	City of Berkeley	Bicycle Safety Education	$ 30,000
FY 2003-04	City of Berkeley	Prepare plan for implementing future	$ 31,033
FY 2003-04	City of Fremont	Bike Detectors, Bike Logo on Pavement,	$ 128,989
FY 2003-04	City of Hayward	Installation of Wheelchair Ramps	$ 84,198
FY 2003-04	City of Livermore	Complete Portion of S. Livermore Valley	$ 97,301
FY 2003-04	City of Newark	Silliman Activity Center Pedestrian/	$ 59,158
FY 2003-04	City of Oakland	Bancroft Ave. Bike Lanes (96th - Durant)	$ 96,000
FY 2003-04	City of Oakland	Citywide Ped. Curb Ramp Program -	$ 295,266
FY 2003-04	City of Oakland	Lake Merritt 12th St. Dam Ped/Bike	$ 116,000
FY 2003-04	City of Oakland	Pedestrian Bulb Outs-Highland &	$ 100,000
FY 2003-04	City of Oakland	Walk/Bike Calif. Conf. - Alameda Co.	$ 30,000
FY 2003-04	City of Oakland	West City of Oakland Bay Trail	$ 289,000
FY 2003-04	City of Piedmont	Sidewalk Extension and Curb Cuts	$ 6,506
FY 2003-04	City of Pleasanton	ADA Compliant Wheelchair Accessible	$ 38,627
FY 2003-04	City of San Leandro	Install New Curb Cuts & Upgrade	$ 40,000
FY 2003-04	City of Brentwood	Installation of Wheelchair Ramps	$ 30,000
FY 2003-04	City of Concord	Iron Horse Trail Rte 242 Undercrossing	$ 36,000
FY 2003-04	City of Concord	Wren Avenue Ped. Improvements	$ 45,000
FY 2003-04	Contra Costa County	Bicycle/Pedestrian Safety Education	$ 21,500
FY 2003-04	Contra Costa County	Olympic Blvd. Ped. Path Phase II	$ 115,000
FY 2003-04	City of Lafayette	Hough Avenue Sidewalk	$ 37,000
FY 2003-04	City of Moraga	Rheem Blvd./Moraga Rd. Intersection	$ 66,100
FY 2003-04	City of Pittsburg	Polaris Drive Bike Facility	$ 77,500
FY 2003-04	City of San Ramon	Dougherty Road Sidewalk	$ 25,000
FY 2003-04	Marin County	Bicycle/Pedestrian Bridge	$ 140,000
FY 2003-04	Mill Valley	Signage Project	$ 7,200
FY 2003-04	City of Novato	Commuter Bikeway Connection	$ 402,286
FY 2003-04	City of Novato	Hill Road Path Connection	$ 60,000
FY 2003-04	City of San Anselmo	Purchase & Install Bicycle Racks	$ 15,000
FY 2003-04	Napa County	Yountville Cross Rd. Bike Lane	$ 150,000
FY 2003-04	Yountville	Yountville Cross Rd. Bike Lane	$ 47,000
FY 2003-04	City of Campbell	Westmont Ave. Improvement Project	$ 43,192
FY 2003-04	City of Los Altos	Fremont Ave. Sidewalk Phase III	$ 15,781
FY 2003-04	Los Altos Hills	Paseo Del Roble Pedestrian Bridge	$ 9,554
FY 2003-04	City of Milpitas	Calaveras Blvd. Sidewalk & Bike Path	$ 36,895
FY 2003-04	Mountain View	Access Ramp Installation	$ 24,905
FY 2003-04	Mountain View	Audible Ped. Signal Installations	$ 16,500
FY 2003-04	Mountain View	Bicycle Path Construction	$ 13,113
FY 2003-04	Palo Alto	Baffle Replacements: Calif. Ave.	$ 15,993
FY 2003-04	Palo Alto	Homer Ave. Ped. Bicycle Undercrossing	$ 293,000
FY 2003-04	Palo Alto	Ped. Walkway Lighted Warning System	$ 20,000
FY 2003-04	City of San Jose	ADA Wheel Chair Curb & Ramp Install.	$ 100,000
FY 2003-04	City of San Jose	Certified TDA Fiscal Audit	$ 9,000
FY 2003-04	City of San Jose	Murdock Park Bridge over San Tomas	$ 100,000
FY 2003-04	City of San Jose	Ped & Bike Facility Signing & Striping	$ 100,000
FY 2003-04	City of San Jose	Ped & Bike Safety Education	$ 50,000
FY 2003-04	City of San Jose	Pedro Street Sidewalk Improvement	$ 124,434
FY 2003-04	City of San Jose	Street Sidewalk Improvement	$ 147,435
FY 2003-04	City of Santa Clara	Certified TDA Fiscal Audit	$ 5,000
FY 2003-04	City of Santa Clara	Install Bike & Ped. Improvements	$ 61,815
FY 2003-04	City of Santa Clara	Update City's Existing Bike Plan &	$ 3,900
FY 2003-04	Santa Clara County	Bike Detector @ various Intersections	$ 58,118

TCM B: Bicycle/Pedestrian Program
TDA ARTICLE 3 [Transportation Development Act Funds for Bicycle and Pedestrian Projects]

	SPONSOR	PROJECT NAME	AMOUNT
FY 2003-04	Santa Clara County	Path along McKee Rd. bet Staples Ave.	$ 50,000
FY 2003-04	City of Saratoga	Saratoga Avenue Walkway Project	$ 17,254
FY 2003-04	City of Sunnyvale	Calabazas Creek Trail	$ 50,152
FY 2003-04	San Francisco City and County	Bicycle Projects	$ 404,000
FY 2003-04	San Francisco City and County	Pedestrian Projects	$ 300,000
FY 2003-04	City of Half Moon Bay	Construct Rt. 92 Bicycle Lanes and	$ 485,146
FY 2003-04	City of Pacifica	Milagra Drive Overcrossing at State	$ 240,000
FY 2003-04	City of San Bruno	Crystal Springs Rd. Traffic Signal	$ 20,000
FY 2003-04	City of San Mateo	Bikeway Detection Units	$ 30,000
FY 2003-04	City of San Mateo	Regional Bayfront Trail Upgrade	$ 150,000
FY 2003-04	South San Francisco	Construct San Francisco Bay Trail	$ 100,000
FY 2003-04	South San Francisco	Orange Avenue Intersection Improve.	$ 100,000
FY 2003-04	City of Benicia	Park Road Bike/Ped Improvements	$ 160,000
FY 2003-04	Solano County	Dixon to Davis Bike Route	$ 125,000
FY 2003-04	City of Suisun City	Central County Bikeway	$ 25,000
FY 2003-04	City of Healdsburg	Foss Creek Northwestern Pacific Multi-	$ 99,695
FY 2003-04	City of Petaluma	Washington Creek Multi-Use Path	$ 175,000
FY 2003-04	City of Santa Rosa	Sonoma Ave. Bike Lanes Phase II	$ 50,000
FY 2003-04	Sonoma County	Old Redwood Highway Class II Bike Lanes	$ 350,000
FY 2004-05	Alameda County	Conduct a planning study & develop	$ 38,000
FY 2004-05	Alameda County	Conduct bicycle plan study	$ 59,650
FY 2004-05	Alameda County	Sign & stripe 0.6 miles of 6-foot wide	$ 100,000
FY 2004-05	City of Berkeley	Contract with a qualified consultant	$ 34,281
FY 2004-05	City of Berkeley	Educate children about bicycle safety	$ 30,000
FY 2004-05	City of Fremont	Stripe bike lanes, modify bike lane	$ 121,168
FY 2004-05	City of Hayward	Design & construct ADA wheel chair	$ 88,925
FY 2004-05	City of Newark	Design & construct ADA wheel chair	$ 27,009
FY 2004-05	City of Piedmont	Design & construct ADA wheel chair	$ 6,852
FY 2004-05	City of Pleasanton	Preserve Golf Course	$ 75,000
FY 2004-05	City of San Leandro	Install curb ramps, accessible ped.	$ 41,438
FY 2004-05	City of San Leandro	Install curb ramps, accessible ped.	$ 50,024
FY 2004-05	City of San Leandro	Install curb ramps, accessible ped.	$ 8,000
FY 2004-05	City of Antioch	Improve curbs, ramps, crosswalk, signs	$ 80,000
FY 2004-05	City of Brentwood	Install lighted crosswalk and flashing lights	$ 31,500
FY 2004-05	City of Concord	Construct 500 ft of 4-to 6-foot wide bike/ped path	$ 45,000
FY 2004-05	City of El Cerrito	Conduct a planning study for bicycle/ped needs	$ 26,500
FY 2004-05	City of Lafayette	Construct 125 feet of 5-foot wide	$ 10,000
FY 2004-05	City of Martinez	Replace the two existing unsafe bridges	$ 90,000
FY 2004-05	City of Orinda	Develop a Lamorinda Trail Map & install	$ 28,500
FY 2004-05	City of Pittsburg	Construct Class II and Class III	$ 51,000
FY 2004-05	City of Pittsburg	Sign & stripe 3600 feet of 13-foot wide	$ 52,000
FY 2004-05	City of San Pablo	Install bike/ped friendly lighting	$ 45,100
FY 2004-05	City of Walnut Creek	Construct 2040 feet of asphalt walkway	$ 95,000
FY 2004-05	Contra Costa County	Construct 344 feet of 4.5-foot wide bike/ped path	$ 201,000
FY 2004-05	Contra Costa County	Construct 402 feet of 5-foot wide bike/ped path	$ 158,928
FY 2004-05	Contra Costa County	Provide bicycle & pedestrian safety	$ 20,000
FY 2004-05	City of San Rafael	Construct 6' wide sidewalk & stripe	$ 207,710
FY 2004-05	City of Sausalito	Construct 6' wide sidewalk & stripe	$ 186,290
FY 2004-05	City of Calistoga	Construct 1.0 miles of Class I bike-ped path	$ 270,881
FY 2004-05	City of Napa	Construct 2.0 miles of Class I bikeway	$ 149,727
FY 2004-05	City of Campbell	Construct Class II bike lockers at J.D.	$ 24,308
FY 2004-05	City of Campbell	Widen & regrade bicycle/Pedestrian	$ 515,600
FY 2004-05	City of Cupertino	Construct 1030' bike path	$ 107,622
FY 2004-05	City of Gilroy	Complete 881' of Uvas Creek Class I	$ 50,000
FY 2004-05	City of Gilroy	Refurbish & replace bikeway signs, etc	$ 10,611

TCM B: Bicycle/Pedestrian Program
TDA ARTICLE 3 [Transportation Development Act Funds for Bicycle and Pedestrian Projects]

	SPONSOR	PROJECT NAME	AMOUNT
FY 2004-05	City of Gilroy	Rehabilitate, resurface & stripe 2.5 mile path	$ 60,666
FY 2004-05	City of Los Altos	Construct approx. 300' of concrete bike path	$ 27,354
FY 2004-05	City of Los Altos	Replace approx. 2,800 lineal feet of bike path	$ 17,580
FY 2004-05	City of Los Gatos	Design & construct solution to restore path	$ 35,000
FY 2004-05	City of Morgan Hill	Install bicycle sensitive detector	$ 36,000
FY 2004-05	City of Mountain View	Install countdown pedestrian signals	$ 30,000
FY 2004-05	City of Mountain View	Install curb access ramps at Showers	$ 2,381
FY 2004-05	City of Mountain View	Install curb access ramps at various	$ 15,696
FY 2004-05	City of Mountain View	Purchase & install 14 bicycle lockers	$ 14,506
FY 2004-05	City of Palo Alto	Construct raised pavement pedestrian path	$ 50,000
FY 2004-05	City of San Jose	Construct 0.66 miles of Class I paved path	$ 712,131
FY 2004-05	City of San Jose	Design & construct ADA wheel chair improvement	$ 176,068
FY 2004-05	City of San Jose	Design & construct sidewalk for school	$ 36,000
FY 2004-05	City of San Jose	Design & install 12' wide asphalt path	$ 136,821
FY 2004-05	City of San Jose	Install median island ped. Refuge	$ 185,000
FY 2004-05	City of San Jose	Install sidewalk, ADA curb ramps	$ 90,000
FY 2004-05	City of San Jose	Provide bicycle & pedestrian safety	$ 50,000
FY 2004-05	City of San Jose	Stripe crosswalks, paint pavements	$ 100,000
FY 2004-05	City of Santa Clara	Perform an annual transportation	$ 5,000
FY 2004-05	City of Santa Clara	Stripe crosswalks & paint pavements	$ 62,148
FY 2004-05	City of Saratoga	Install continuous curb & gutter	$ 19,357
FY 2004-05	City of Sunnyvale	Provide gates, signs, fencing and ramps	$ 27,550
FY 2004-05	Santa Clara County	Construct a 3,300' by 5' walkway	$ 63,403
FY 2004-05	Santa Clara County	Sign & restripe 8" stripe on shoulders	$ 121,105
FY 2004-05	SF City/County	Bicycle safety brochures, maps, public education	$ 31,500
FY 2004-05	SF City/County	Prelim. engineering (plan & design) of bike path	$ 200,000
FY 2004-05	SF City/County	Purchase & install bicycle racks	$ 95,000
FY 2004-05	SF City/County	Repair public sidewalks at various locations	$ 115,000
FY 2004-05	SF City/County	Stripe & sign Class II bike lanes	$ 188,500
FY 2004-05	City of Benicia	Final design plans, specs & estimate	$ 124,573
FY 2004-05	City of Suisun City	Constr. 10' wide concrete bike path	$ 86,000
FY 2004-05	City of Vacaville, Transit	Construct 3400 feet of Class I bike/Ped path	$ 148,738
FY 2004-05	Solano Transportation Authority (STA)	Build bridge adjacent to existing path	$ 76,000
FY 2004-05	City of Petaluma	Construction of pedestrian & bicycle path	$ 54,876
FY 2004-05	City of Rohnert Park	Install 80' long bicycle & pedestrian path	$ 160,000
FY 2004-05	City of Santa Rosa	Install directional signage & ADA signs	$ 18,900
FY 2004-05	County of Sonoma	Construct 1.5 miles of Class I Bikeway	$ 160,000
FY 2004-05	County of Sonoma	Conduct bicycle safety education workshop	$ 10,000
FY 2004-05	County of Sonoma	Install 27 "Share Road" bicycle sign	$ 15,000
FY 2004-05	County of Sonoma	Purchase 37 front loading bicycle	$ 5,000
FY 2005-06	San Carlos	Class II bike lanes on Alameda de Las Pulgas and on Brittan Avenue; Class III bike lanes on Old County Road	$ 20,000
FY 2005-06	San Mateo	Design of a pedestrian and bicycle bridge in the vicinity of the Hillsdale interchange of highway U.S. 101	$ 100,000
FY 2005-06	South San Francisco	Bicycle and pedestrian crosswalk and signals at intersection of Spruce Ave. and South San Francisco Linear Park	$ 150,000
FY 2005-06	Half Moon Bay	Construct 6600 foot Class I trail in the right of way of Highway 1 between Highway 92 and Higgins Purisima Rd.	$ 220,000
FY 2005-06	Brisbane	Install 45 feet by 8 feet asphalt cement path adjacent to Shoreline Court; sign and restripe existing Class II bikeway	$ 25,739

TCM B: Bicycle/Pedestrian Program
TDA ARTICLE 3 [Transportation Development Act Funds for Bicycle and Pedestrian Projects]

	SPONSOR	PROJECT NAME	AMOUNT
FY 2005-06	South San Francisco	Construct 363 feet by 12 feet asphalt bicycle and pedestrian trail near the Oyster Point Marina	$ 36,000
FY 2005-06	San Bruno	Construct a Class II bike lane in both directions of Sneath Lane from El Camino Real to Skyline Boulevard	$ 60,000
FY 2005-06	Daly City	Install bike lanes on Callan Blvd from King Dr to Serramonte Blvd and along Serramonte Boulevard	$ 82,000
FY 2005-06	Burlingame	Install bike lane directional signs at 52 locations along north-south bicycle routes throughout the city	$ 17,400
FY 2005-06	Burlingame	Install an in-pavement lighted crosswalk system across Carolan Avenue at Morrell Avenue, including new push buttons	$ 30,000
FY 2005-06	Menlo Park	Install video detection for bikes at 3 intersections: Willow at Middlefield, Marsh at Bohannon, Marsh at Bay	$ 44,000
FY 2005-06	San Mateo	Install bridge railing fencing on the north side of the Nineteenth Avenue Bridge over highway U.S. 101	$ 50,000
FY 2005-06	Menlo Park	Create bicycle lanes on Bay Road between Berkeley Avenue and Willow Road, plus signage	$ 13,600
FY 2005-06	San Mateo	Install bike detection loops at: 3rd + Claremont, 3rd + Delaware, 4th + Claremont, 4th + Delaware	$ 40,000
FY 2005-06	Daly City	Install in-pavement lights and warning signs: Park Plaza Dr. north of Belmar, and Mission St. at Evergreen Ave.	$ 120,000
FY 2005-06	San Mateo	Install pedestrian countdown signal heads at 27 existing signalized intersections throughout the city	$ 50,000
FY 2005-06	Daly City	Install pedestrian countdown signal heads at 15 signalized intersections; and audible warnings at 11 of them	$ 20,000
FY 2005-06	Burlingame	Install pedestrian countdown signal heads with audible pedestrian warnings at 8 signalized intersections	$ 30,900
FY 2005-06	Menlo Park	Create bicycle lanes on Middlefield Road between Willow Road and San Francisquito Creek	$ 2,400
FY 2005-06	San Mateo	Install in-pavement lighted crosswalks: 5th Ave. at Central Park; Bovet Rd. betw. Borel Ave. and El Camino Real	$ 110,000
FY 2005-06	South San Francisco	Install pedestrian countdown signal heads at 12 existing signalized intersections throughout the city	$ 22,000
FY 2005-06	County of San Mateo	Bike detection loops, countdown signal heads with audible warnings, upgrade pedestrian signal actuators	$ 80,509
FY 2005-06	Sebastopol	Construct .5 mile Class I trail between Joe Rodota trail and Sebastopol Avenue and Morris Street intersection	$ 51,356
FY 2005-06	Santa Rosa	Construct connector ramp between Joe Rodota trail and Pierson Reach of Prince Memorial Greenway trail	$ 350,000
FY 2005-06	Windsor	Construct a 950 foot Class I trail within Keiser Park, including brdige crossing a tributary of Starr Creek	$ 112,000

TCM B: Bicycle/Pedestrian Program
TDA ARTICLE 3 [Transportation Development Act Funds for Bicycle and Pedestrian Projects]

	SPONSOR	PROJECT NAME	AMOUNT
FY 2005-06	Contra Costa County, Health Services	Provide bicycle and pedestrian safety education to low-income county residents, particularly children	$ 20,000
FY 2005-06	Concord	Constr't 500 foot Class I trail adjacent to Galindo Crk. + Ygnacio Valley Rd betw. Alberta Way + Pebble Glen Dr	$ 60,000
FY 2005-06	Lafayette	1030 feet x 5 feet sidewalk Sweet Dr. betw Walnut + Woodview; Woodview Dr. betw. St Mary's + Sweet Drive	$ 110,000
FY 2005-06	Antioch	Construct curb ramps and sidewalks at Hillcrest Avenue, Somersville Road, "G" Street, and Dallas Ranch Road	$ 110,000
FY 2005-06	Brentwood	Install pedestrian countdown signal heads + large diameter pedestrian push buttons at 12 signalized intersections	$ 66,000
FY 2005-06	Contra Costa County, Public Works	Construct 240 feet x 5 feet sidewalk and curb ramps on Camino Tassajara and on Hansen Lane	$ 20,000
FY 2005-06	Orinda	Replace 12 existing non-compliant curb ramps in downtown Orinda with ADA compliant ramps	$ 45,000
FY 2005-06	San Pablo	Install in-pavement lighted crosswalks: Market Avenue at 21st St.; 23rd St. at Wilcox Ave.; 23rd St. at Stanford Ave.	$ 180,000
FY 2005-06	Brentwood	Restripe Minnesota Ave. bike lane; install lighted crosswalk; construct 1300 feet of sidewalk, curb and gutter	$ 31,000
FY 2005-06	San Francisco	Public sidewalk repair and reconstruction	$ 180,000
FY 2005-06	San Francisco	Preliminary engineering of curb ramps	$ 270,000
FY 2005-06	San Francisco	Safety brochures, maps, public outreach concerning bicycle pavement arrows, hotline, and bicycle safety advertising	$ 45,000
FY 2005-06	San Francisco	Purchase and install bicycle racks at various locations in San Francisco as requested by the public	$ 100,000
FY 2005-06	San Francisco	Stripe and sign bike lanes: Conservatory Drive East, San Jose Avenue ramps, Townsend Street, and elsewhere	$ 305,000
FY 2005-06	Berkeley	Bicycle & Pedestrian Injury Prevention Program	$ 30,000
FY 2005-06	Berkeley	Ninth Street Bicycle Boulevard extension (Project from FY01/02)	$ 135,000
FY 2005-06	Oakland	ADA Compliant Wheelchair Accessible Ramps (Project Completed FY01/02)	$ 294,548
FY 2005-06	Oakland	Laurel Pedestrian Project, Phase I (Project Completed FY01/02)	$ 200,000
FY 2005-06	Oakland	MacArthur Blvd. Bicycle Lane Design (Project Completed FY01/02)	$ 55,000
FY 2005-06	Oakland	Grand Avenue Transit and Pedestrian Improvements (Project from FY 04/05)	$ 245,847
FY 2005-06	Oakland	ADA Compliant Wheelchair Accessible Ramps Program	$ 121,144
FY 2005-06	Oakland	Market Street Bikeway	$ 165,000
FY 2005-06	Oakland	Bancroft Bikeway Gap Closures	$ 25,000
FY 2005-06	Piedmont	ADA Wheelchair Accessible Ramps and Pedestrian enhancements at Rose/Arroyo & Grand Ave	$ 8,353
FY 2005-06	Hayward	ADA Wheelchair Accessible Ramps	$ 109,309

TCM B: Bicycle/Pedestrian Program
TDA ARTICLE 3 [Transportation Development Act Funds for Bicycle and Pedestrian Projects]

	SPONSOR	PROJECT NAME	AMOUNT
FY 2005-06	San Leandro	Pedestrian Accessibility Improvements & Sidewalk Gap Closures	$ 74,177
FY 2005-06	Fremont	Citywide ADA Compliant Wheelchair Accessible Ramps	$ 158,067
FY 2005-06	Newark	History Center Complex Sidewalks and ADA Wheelchair Accessible Ramps	$ 33,072
FY 2005-06	Union City	San Francisco Bay Trail Specific Plan (Project Completed FY01/02)	$ 63,585
FY 2005-06	Dublin	Bicycle Master Plan	$ 45,144
FY 2005-06	Livermore	Chestnut and N. P Street Bicycle Lanes	$ 113,044
FY 2005-06	Alameda Co. Congestion Management Agency	Alameda Countywide Bicycle Master Plan	$ 20,000
FY 2005-06	County of Alameda	Pedestrian Safety Improvements in the vicinity of Schools	$ 75,775
FY 2005-06	County of Alameda	Pedestrian Safety Improvement Projects - Sidewalk Improvements	$ 75,600
FY 2005-06	County of Alameda	Restriping Bicycle Lanes Along Various Roadways	$ 30,000
FY 2005-06	Benicia	Stripe and sign bike lanes: Military East between East 5th Street and Park Road	$ 25,000
FY 2005-06	Fairfield	Design McGary Road segment of Solano Bikeway Extension and complete extension feasibility study	$ 100,000
FY 2005-06	Suisun City	Construct curb ramps and sidewalks at Whispering Bay Lane and Francisco Dr.	$ 5,400
FY 2005-06	Suisun City	Replace existing non-compliant curb ramps in downtown Suisun City with ADA compliant ramps	$ 11,856
FY 2005-06	Solano County	Reconstruct deck and railings, seismic retrofit, lighting and pathways to railroad trestle bridge over Putah Creek	$ 180,000
FY 2005-06	Campbell	Implement bike lanes on Harriet Ave and Union Ave, Replace Los Gatos creek bridge, and widen Campbell Ave bridge	$ 27,859
FY 2005-06	Campbell	Design and construct sidewalk and bike lanes and edge striping, curb and gutter along Westmont Avenue	$ 39,992
FY 2005-06	Campbell	Widen Campbell Ave. bridge over Los Gatos Creek for bike lane and sidewalk; and reconstruct sidewalk under SR 17	$ 240,000
FY 2005-06	Cupertino	Construct pedestrian and bicycle bridge across Interstate 280 along Mary Avenue between Homestead Rd and Meteor Dr	$ 38,361
FY 2005-06	Los Altos Hills	Replace pedestrian bridge adjacent to the Foothill College entrance road connecting to El Monte Road	$ 11,310
FY 2005-06	Los Gatos	Replace existing College Avenue sidewalk and fencing; and repair Los Gatos Creek Trail footbridge decking	$ 20,000
FY 2005-06	Milpitas	Install ADA pedestrian ramps with truncated dome landings along suggested routes to schools	$ 47,112
FY 2005-06	Morgan Hill	Identify where additional bicycle and pedestrian trails can be established adjacent to creeks and streams	$ 32,000
FY 2005-06	Mountain View	Bicycle boulevard from Mayfield Mall area to Stevens Creek Trail, including signs, markings and signal modifications	$ 25,000

TCM B: Bicycle/Pedestrian Program
TDA ARTICLE 3 [Transportation Development Act Funds for Bicycle and Pedestrian Projects]

	SPONSOR	PROJECT NAME	AMOUNT
FY 2005-06	Mountain View	ADA Compliant Wheelchair Accessible Ramps Program	$ 17,000
FY 2005-06	Mountain View	Produce bicycle and pedestrian education and awareness materials, and a new bike map and multilingual flyers	$ 5,000
FY 2005-06	Mountain View	Install "bikes wrong way" signs on existing poles along California Street and adjacent streets	$ 5,217
FY 2005-06	Palo Alto	Bicycle boulevard along Maybell Ave and Donald Dr.: signs, markings, speed tables, & median refuge islands	$ 75,000
FY 2005-06	San Jose	Install sidewalk, curb and gutter to improve access to Lynhaven Elementary School	$ 90,000
FY 2005-06	San Jose	Install sidewalk, curb and gutter to fill gap on Borina Ave. at Saratoga Ave.	$ 70,000
FY 2005-06	San Jose	Install sidewalk, curb and gutter to improve access on both sides of Yerba Buena Road at Thompson Creek	$ 47,000
FY 2005-06	San Jose	Install sidewalk, curb, gutter and ADA ramps on Carola Avenue at Clarita Avenue	$ 110,000
FY 2005-06	San Jose	Install sidewalk, curb, gutter, pedestrian crossing and median island to provide access to Penitencia Creek County Park	$ 62,000
FY 2005-06	San Jose	Install sidewalk, curb and gutter on Senter Road at Burke Street	$ 58,000
FY 2005-06	San Jose	Install sidewalk, curb and gutter to improve access to Toyon Elementary School	$ 45,000
FY 2005-06	San Jose	Citywide ADA Compliant Wheelchair Accessible Ramps	$ 100,000
FY 2005-06	San Jose	Sign and stripe bicycle and pedestrian facilities, including bike lanes, bike routes, crosswalks, and bike paths	$ 58,397
FY 2005-06	San Jose	Provide bicycle and pedestrian safety education to elementary school children and adults, purchase educational material	$ 35,000
FY 2005-06	Santa Clara	Install and maintain bicycle and pedestrian facilities, including bike lanes, bike routes, crosswalks, and bike paths	$ 78,180
FY 2005-06	Saratoga	Acquire right-of-way to upgrade UPRR railroad crossing in a bulb configuration to allow bicycles to cross at 90 degrees	$ 95,000
FY 2005-06	Sunnyvale	Improve Calabazas Creek Trail with additional gates, signs, fences, ramp modifications, and a bridge across creek	$ 182,048
FY 2005-06	County of Santa Clara	Restripe four co. expressways' shoulders with 8 inch stripes and sign to allow functioning as bicycle shoulder	$ 50,000
FY 2005-06	Brentwood	Crosswalk and sidewalk improvements on Minnesota Avenue between Deer Creek and Sand Creek	$ 31,000
FY 2005-06	Union City	Construct 1750 feet by 15 feet textured decorative concrete sidewalks plus 5 foot bike lanes on both sides of 11th Street	$ 53,142
FY 2005-06	TAM	Update and complete bicycle and pedestrian master plans countywide and for cities and towns in Marin County	$ 160,000

TCM B: Bicycle/Pedestrian Program
TDA ARTICLE 3 [Transportation Development Act Funds for Bicycle and Pedestrian Projects]

	SPONSOR	PROJECT NAME	AMOUNT
FY 2005-06	Campbell	Construct bike lanes on Harriet Avenue north of Westmont Avenue and on Union Avenue south of Campbell Avenue	$ 24,308
FY 2005-06	Larkspur	Design + construct 13 ft wide Class I bike/pedestrian path and modify signals on Magnolia Ave. + Doherty Dr	$ 136,668
FY 2005-06	County of San Mateo	Develop bike route data for GIS, integrate into countywide GIS files, and maintain bike route GIS data	$ 40,000
FY 2005-06	City of Napa	Class I path along Napa Valley Wine Train right of way between Redwood Rd/SR 29 and Vallejo St/Soscol Av	$ 85,271
FY 2005-06	American Canyon	Construct bike lanes and Class I trail adjacent to Commerce Boulevard	$ 34,729
		Total	**$ 21,785,915**

TCM C: Transportation for Livable Communities

FY 2004-05 MTC TLC Planning Program

Project Sponsor	Project Title	TLC Grant
Alameda County		
City of Oakland	Revitalizing Foothill / Seminary: A Model for Oakland's Regional Transit Streets	$ 75,000
City of Berkeley	Downtown Berkeley BART Plaza and Transit Area	$ 75,000
Contra Costa County		
City of Lafayette	BART-Downtown Lafayette Pedestrian Linkages Project	$ 20,000
San Francisco County		
San Jose/Guerrero Coalition to Save Our Streets	The San Jose/Guerrero Neighborhood Plan	$ 75,000
San Mateo County		
Redwood City	Transit Station Sub-area Precise Plan	$ 71,760
SamTrans	Transforming the El Camino Real to Link Caltrain Stations with Vibrant Downtowns in Redwood City, San Carlos and Belmont	$ 63,840
Santa Clara County		
City of Sunnyvale	Murphy Avenue Streetscape Revitalization	$ 75,000
Sonoma County		
City of Santa Rosa	Downtown Pedestrian Linkages Study	$ 44,400
	Total	**$ 500,000**

FY 2004-05 MTC TLC Capital Program

Project Sponsor	Project Title	TLC Grant
City of Oakland, CEDA	Revive Chinatown – Phase 1	$ 2,200,000
City of Union City Public Works Dept.	Union City Intermodal Station –Pedestrian connections and New East Plaza	$ 1,124,000
Richmond Redevelopment Agency	Richmond Transit Village: Intermodal Transit Station	$ 1,581,000
County of Marin	Cal-Park Hill Tunnel Rehab and Class I Bikeway	$ 1,500,000
City of Gilroy	Monterey Streetscape Improvements – Fourth Street to Sixth Street	$ 2,500,000
City of Morgan Hill	Morgan Hill – Depot Street Capital Improvements	$ 2,627,000
Bay Area Rapid Transit District	Daly City BART- St. Charles Pedestrian & Bike Project	$ 501,000
City & Co. of San Francisco Dept. of Public Works	Broadway Streetscape Improvements Project – Phase II	$ 2,000,000
City of South San Francisco	BART Linear Park-Huntington Avenue to Orange Avenue	$ 1,933,000
City of Vallejo	Vallejo Station Pedestrian Links	$ 2,071,000
City of Petaluma/Eden Housing Inc.	Downtown River Apts Riverwalk and Streetscape Improvements	$ 358,000
	Total	***$ 18,394,000***

Contingency Projects

City of Union City Public Works Dept.	Union City Intermodal Station – West Plaza Enhancements	$ 1,713,500
City of Oakland, CEDA	MacArthur Transit Hub Streetscape Improvement Project	$ 1,918,000
Town of Los Gatos Parks & Public Works Dept.	Streetscape & Gateway	$ 2,400,000
City of San Leandro Community Dev. Dept.	East 14th Street South Area Revitalization Project – La Palma District	$ 1,600,000
County of Contra Costa Redevelopment Agency	North Richmond Third Street Upgrades	$ 1,966,000

TCM C: Transportation for Livable Communities

FY 2005-06 Marin County TLC Capital Program

Project Sponsor	Project Title	TLC Grant
Town of Fairfax	Center Boulevard Streetscape Redesign Project	$ 500,000
County of Marin	Fireside Pedestrian and Traffic Safety Project	$ 198,906
Town of Corte Madera	Bayside Trail Improvement Project	$ 371,826
	Total	**$ 1,070,732**

FY 2005-06 Alameda County TLC Capital Program

Project Sponsor	Project Title	TLC Grant
City of Oakland	Coliseum BART Streetscape	$ 500,000
City of Oakland	Oakland Coliseum Pedestrian Walkway	$ 885,000
City of Oakland	W. Oakland Transit Village Streetscape Project	$ 1,300,000
City of Oakland	MacArthur Entry Plaza & 40th Streetscape Project	$ 1,147,000
City of Berkeley	Ashby/Ed Roberts Bicycle/Pedestrian Improvements	$ 1,200,000
City of Union City	Pedestrian/Bicycle Improvements	$ 2,000,000
	Total	**$ 7,032,000**

FY 2005-06 Sonoma County TLC Capital Program

Project Sponsor	Project Title	TLC Grant
City of Petaluma	Petaluma Blvd. Pedestrian Enhancements	$ 485,000
City of Rohnert Park	Rohnert Park City Center Drive Improvements	$ 1,150,000
Town of Windsor	Windsor Pedestrian Enhancements & Traffic Calming	$ 235,000
Sonoma County Reg'l Parks	Sonoma County Santa Rosa Creek Trail	$ 550,000
Town of Windsor	Windsor Old Redwood Hwy Pedestrian Linkages	$ 338,000
Sonoma County Reg'l Parks	Sonoma County Bodega Bay Bicycle & Pedestrian Trail	$ 535,000
City of Santa Rosa	Santa Rosa Courthouse Square Off-Site Improvements & Gateway Street	$ 1,000,000
	Total	**$ 4,293,000**

	Grand Total	**$ 31,289,732**

TCM D: Additional Freeway Service Patrol

The Bay Area FSP is a joint project of the Metropolitan Transportation Commission Service Authority for Freeways and Expressways (MTC SAFE), the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans). The service is provided by private tow truck companies, selected through a competitive bid process, under contract to MTC SAFE. During the hours of operation, the vehicles and drivers are exclusively dedicated to patrolling their freeway beat. The program is intended to augment the MTC SAFE network of motorist-aid call boxes in the nine Bay Area counties.

Current Profile (as of February 2009)
A fleet of 83 trucks patrols some 550 miles of the Bay Area's freeways. Patrol routes are selected based on several factors, including a high rate of traffic and congestion, frequent accidents or stalls, and lack of shoulder space for disabled vehicles.

The FSP tow trucks operate primarily during morning and afternoon commute hours, generally from 6 a.m. to 9 a.m. or 10 a.m. and from 3 p.m. to 6 p.m. or 7 p.m., Monday through Friday. Weekend service is provided in Napa, as well as seasonally along Highway 17, and in some other locations on Sunday.

FSP tow trucks are equipped for nearly any contingency. In addition to the standard auto repair and towing equipment, they carry 5 gallons of diesel fuel, 5 gallons of unleaded gasoline, and 5 gallons of water, as well as an external speaker and public address system.

Funding
The tow trucks are financed with federal, state and local moneys. Local funds come from the MTC SAFE, which is financed by a $1 annual vehicle registration fee in participating counties. The service costs approximately $7 million a year to operate. Another $2 million is invested in sophisticated communications equipment, including an automatic vehicle location system that enables CHP and Caltrans to monitor the location of the trucks and improve dispatching efficiency.

Implementation Plan
See the attached Implementation Plan, which is also available at:
http://www.fsp-bayarea.org/implementation_plan/Iplan.pdf

BAY AREA FREEWAY SERVICE PATROL PROGRAM
IMPLEMENTATION PLAN

Revised 06/01/07

BEAT ID	CONTRACTOR	LOCATION COUNTY	LOCATION ROUTE	BEAT LIMITS	CALTRANS ONE WAY LENGTH (IN MILES)	START DATE	ENDING DATE	WEEKDAYS AM SHIFT	WEEKDAYS MIDDAY SHIFT	WEEKDAYS PM SHIFT	SUNDAY PM SHIFT	# OF TOW TRUCKS	# OF PICKUP TRUCKS	# OF FLATBED TRUCKS	# OF BACKUP TRUCK	NOTES	TOTAL CONTRACT HOURS	BEAT ID
1	Redhill Towing	ALA	980	Interstate 580 to Interstate 880	2.03	07/01/07	07/26/09	6:00-10:00		15:00-18:30	13:00-19:00	2	1			b	12,395	1
		ALA	880	7th Street to Jackson Street	2.04													
		ALA	24	Interstate 580 to Contra Costa County Line	4.39													
		CC	24	Contra Costa County Line to Oak Hill Road	6.25													
		CC/ALA	*13*	*State Route 24 to Redwood Avenue*	(4.23)											e		
2	A-One Towing Service	ALA	80	Powell Street to Contra Costa County Line	4.25	07/01/07	07/26/09	6:00-10:00	10:00-15:00	15:00-19:00	13:00 - 19:00	2	1		1	a, b, c	15,755	2
		CC	80	Alameda County Line to San Pablo Dam Road	4.34													
		ALA/CC	580	Interstate 80 to Western Drive/Pt. Molate	6.01													
3	Palace Garage	ALA	880	Alvarado-Niles Road to State Route 238	7.66	06/25/07	06/26/11	06:00-10:00		15:00-19:00	13:00-19:00	2				b,c	17,132	3
		ALA	92	Interstate 880 to Clawiter Road	1.91													
4	Palace Garage	ALA	880	Broadway to State Route 238	10.55	07/01/07	07/26/09	6:00-10:00		15:00-19:00	13:00-19:00	2	1			b	13,170	4
		ALA	238	Interstate 880 to Interstate 580	2.11													
5	K&S Tow	CC	680	Stone Valley Road to Marina Vista Road	13.89	07/02/07	07/04/11	06:00-09:00		14:00-18:30		2	1		1	b	22,523	5
		CC	24	Oak Hill Road U/C to Interstate 680	2.87													
6	B&A Body Works & Towing	SM	101	State Route 92 to SF City Limit/101 to Foster City Boulevard	14.23	07/01/07	07/05/09	6:00-10:00	10:00-15:00	15:00-19:00		2	2		1	a, b	18,754	6
		SM	92	Interstate 101 to Foster City Boulevard	1.47													
7	Redhill Towing	MRN	101	Alexander to 3rd Street/Irwin Street (Central San Rafael Exit)	10.28	07/03/05	07/06/08	6:00-10:00		15:00-19:00	13:00 - 19:00	2			1	b, c	13,090	7
		MRN	580	Highway 101 to Interstate 580 San Quetin	1.60													
8	Campbell's Towing	SCL	101	Blossom Hill Road to Ellis Street	18.40	07/01/07	07/05/09	6:00-10:00		15:00-19:00	13:00 - 19:00	2	2		1	b, c	16,808	8
		SCL	237	Highway 101 to Lawrence Expressway	2.12													
9	Campbell's Towing	SCL	280	Interstate 680/Highway 101 to Foothill Exp.	11.45	06/11/07	06/10/11	6:00-10:00		15:00-19:00		3	1		1	b	32,032	9
		SCL	85	Junction Route 280 to El Camino Real	3.3													
		SCL	87	State Route 85 to Hwy. 101	9.22													
10	Sunrise Enterprise 87	SCL-SM	101	Ellis Street to State Route 92	17.44	06/11/07	06/10/11	6:00-10:00		15:00-19:00		2	1			a, b	24,024	10
		SCL	92	Junction Route 101 to El Camino Real	0.93													
11	B&A Body Works & Towing	SF	101	Cesar Chavez to San Mateo Co. Line	2.92	06/11/07	06/12/11	6:00-10:00	10:00-15:00	15:00-19:00	10:00-16:00	2				a, b,c	22,473	11
		SF	280	San Mateo Co. Line to Highway 101	4.34													
		SM	101	Harney Way to San Francisco Co. Line	0.41													
		SM	280	Geneva/Ocean Avenue to San Francisco Co. Line	1.77													
	(Bridge Tow Coverage)	*SF*	*280*	*Highway 101/Interstate 280 Interchange to Sixth Street*	(3.2)											e		
	(Bridge Tow Coverage)	*SF*	*80*	*Cesar Chavez to Interstate 80/Fourth Street*	(1.5)											e		
12	Ken Betts Towing	CC	80	San Pablo Dam Road to Cummings Skyway	8.39	07/09/07	07/10/11	6:00-10:00	10:00-15:00	15:00-19:00	13:00-19:00	2				a, b, c	22,473	12
13	Bill's Towing	MRN	101	Interstate 580 to Junction Route 37	9.13	06/25/07	06/26/11	6:00-10:00		14:30-18:30	13:30-18:30	2				b, c	17,282	13
14	All Ways Tow & Transport	ALA	880	Mowry Avenue to Alvarado Niles Road	5.84	07/01/07	07/24/09	6:00-10:00		15:00-19:00		2				b	8,272	14
		ALA	84	Thornton Avenue to Interstate 880	2.26													
15	Yarbrough Bros. Towing	SON	101	Wilfred Avenue to River Road	10.8	07/02/07	07/01/11	6:30-9:30		15:30-18:30		1					6,006	15
16	Lima Tow	SCL	17	Junction Route 9 to Summit Road	7.07	07/09/07	07/10/11	6:30-9:30		15:30-18:30	See separate beat 16/SC schedule	1				b, c, f	7,974	16
17	Sierra Hart	SOL	12	Interstate 80 to Napa Co. Line	2.95	07/23/07	07/24/11	6:00-10:00		15:00 -19:00	8:00-16:30 Sat. & Sun.	1 wkdy, 2 wknd			1 wkdy		15,573	17
		NAP	12	Napa Co. Line to Sonoma Co. Line	11.60													
		NAP	29	State Route 37 to Oakville Cross Road	24.0													
		SON	12	Sonoma Co. Line to Junction 116	4.90													
		NAP	*29*	*Oakville Cross Road to State Route 128*	(1.8)											e		
18	All Ways Tow & Transport	SCL	880	Junction Route 237 to Alameda County Line	2.08	07/01/07	07/10/09	6:00-10:00		15:00-19:00		2				b	8,112	18
		ALA	880	SCL County Line to Mowry Avenue	7.18													
19	Lima Tow	SCL	880	Junction Route 237 to Junction Route 17	8.42	07/01/07	07/10/09	6:00-9:00		15:00-19:00		2	1			b	10,647	19
		SCL	17	Junction Interstate 880 to Junction Route 9	6.88													
		SCL	237	Junction Interstate 880 to Lawrence Expressway	4.70													
20	Nelson's Tow	SM	280	*Geneva/Ocean Avenue* to Interstate 380	8.18	07/01/07	07/10/09	6:30-9:30		15:00-18:00		2				b	6,084	20
		SM	380	Interstate 280 to Highway 101	1.67													
21	Matos Towing & Transport	ALA	680	Scott Creek to Alcosta Boulevard	21.35	07/01/07	07/10/09	5:30-9:30		15:00-19:00		1	1	1	1	b	12,168	21
22	Palace Garage	ALA	580	Vasco Road to Santa Rita	8.25	07/23/07	07/24/11	5:30-9:30		15:30-19:00	13:00-19:00	2	1			b, c, d	25,685	22
		ALA	580	Grant Line Road to Vasco Road	8.23													
23	Campbell's Towing	SCL/ALA	680	Highway 101 to Scott Creek Road	10.17	07/01/07	07/10/09	5:30-9:30		15:00-19:00		2				b	8,112	23
24	Roadrunner Tow	SOL	680	Interstate 80 to Junction 780	14.30	07/23/07	07/22/11	6:00-9:00		15:30-18:30		1				g	6,036	24
		SOL	780	Junction 680 to Junction 80	6.42													
25	B&D Towing	CC	4	Hillcrest Avenue to Pacheco Blvd.	20.39	07/01/07	07/17/09	5:30-9:30		15:30-19:00		2	1			b	11,520	25
		CC	242	State Route 4 to Interstate 680	3.4													
26	A-One Tow Service	ALA	580	Harrison Street/Oakland Avenue to Junction Route 238	13.47	07/01/07	07/17/09	6:30-9:30		15:30-18:30		1		1		b	6,144	26
		ALA	*13*	*Redwood Avenue to Interstate 580*	(0.0)											e		
27	Palace Garage	ALA	580	Santa Rita Road to Junction 238	12.86	06/25/07	06/26/11	6:00-9:30		15:30-18:30	13:00-19:00	2	1			b,c	21,020	27
28	Bill's Towing	MRN/SON	101	State Route 37 to East Washington Boulevard	13.1	07/01/07	07/17/09	5:30-9:30		15:30-18:30		1				b	3,584	28
29	Roadrunner Tow	SOL	80	Magazine Street to Abernathy Road	14.04	07/09/07	07/10/11	6:00-9:00		15:30-18:30	13:00-19:00	2				b, c, h	15,020	29
					0													
30	Nelson's Tow	SM	92	State Route 1 to Highway 280	8.03	07/23/07	07/22/11	6:00-9:30		15:30-18:30		2				b	13,013	30
		SM	280	Interstate 380 to State Route 92	10.20													
		SM	92	Interstate 280 to Highway 101	4.83													
31	Campbell's Towing	SCL	101	Blossom Hill Road to East Dunne Avenue	12.6	07/01/07	07/19/09	6:00-9:00		16:00-19:00	13:00 - 19:00	2				b, c	6,900	31
32	Dick's Automotive Transport	SCL	85	Interstate 280 to Cottle Road	16.48	07/01/07	07/17/09	6:00-9:00		16:00-19:00		2				b	6,144	32
33	Yarbrough Bros. Towing	SON	101	East Washington Boulevard to Wilfred Avenue	10.26	07/24/05	07/20/08	6:00-9:00		15:30-18:30		1				b	4,482	33
34	Vacaville Tow	SOL	80	Abernathy Road to I-505 Vaca Valley Road	12.54	07/09/07	07/10/11	6:00-9:00		15:30-18:30	13:00-19:00	2				b, c, h	15,020	34
35	Palace Garage	CC	680	Alcosta Boulevard to Stone Valley Road	10.36	07/09/07	07/08/11	6:00-9:00		15:00-18:30		1				b	6,507	35
36	Ken Betts Towing	CC	4	Interstate 80 to Pacheco Blvd.	11.8	07/23/07	07/22/11	6:00-9:30		15:30-19:00		1					7,007	36
37	Vacaville Tow	SOL	80	Junction I-505 to Richards Blvd.	16.4	07/23/07	07/24/11	6:00-9:00		15:30-18:30	13:00-19:00	2				b, c, h	15,032	37
					539.67							**65 wkdy, 66 wknd**	**15**	**2**	**8 wkdy, 7 wknd**		**493,973**	

TCM E: Transit Access to Airports

BART to San Francisco International Airport:
S. San Francisco: From Colma BART station to the new SFO station; Extend BART system to the San Francisco International Airport.

BART Fares and Schedules
The latest BART fares and schedules (as of January 2008) can be found at: http://www.bart.gov/guide/brochures.aspx

Service Adjustments
See attached document for service adjustments overtime since June 2003 through December 2006.

SFO Service Changes Over Time

Below is a list and description of service changes that have been implemented since the San Francisco Extension opening on June 22, 2003 through December 31, 2006. Some of these changes are major system changes. Other changes are more minor involving train sizing.

June 22, 2003 - SFO Initial Service

Bay Point trains provide service to Millbrae during all hours of operation, all week. Dublin trains provide service to the San Francisco Airport (SFO) during all hours of operation, all week. These routes operate on 15 minute headways during the weekday, and on 20 minute headways during evenings and on weekends. A shuttle train provides service between Millbrae and SFO on 20 minute headways during all hours of operation, all week. In addition to the base 15 minute service, three AM peak period rush trains provide service from Bay Point to Daly City, then operate express from Daly City to SFO. These three trains return during the evening peak period and operate express from SFO to Daly City, then on to Bay Point.

1. Direct service to/from Millbrae and direct service to/from SFO
2. Peak rush trains provide Bay Point line passengers direct service to/from SFO during the peak periods
3. 20 minute shuttle does not synch with the 15 minute base service during the day

February 9, 2004

Bay Point trains provide direct service to SFO, then continue to Millbrae. On the return trip these trains follow the same route back to Bay Point. This service route has been called the "Reverse L" service because the shape of the service on the SFO extension resembles a backward or reverse "L" shape. During the 3-1/2 hour AM and PM peak period on weekdays, Richmond trains provide direct service to Millbrae, then continue to SFO. On the return trip these trains follow the same route back to Richmond. This service route is referred to as the "L" service. The Richmond trains do not operate on the weekend. When the Richmond trains are operating on the extension during the week the Bay Point trains terminate at SFO and do not continue to Millbrae. At all other times (off-peak, evenings and weekends) the Bay Point trains complete the "Reverse L" service pattern. There are no other direct peak period rush trains. Service during the day (and during the peak rush) is 15 minutes, while evenings and weekends operate at 20 minute headways.

1. Provides for direct service on all extension routes to Millbrae and SFO, no need to transfer
2. 20 minute shuttle (during normal 15 minute service) replaced by 15 minute direct trains
3. During off-peak, evenings and weekends, direct service to Millbrae is through the SFO station

March 8, 2004

Train sizing adjustments: Train 361 increased from 4 to 5-car train off-peak. Train 441 changed to 10-car peak size for all PM trips instead of breaking to 5-car train on last trip. Other minor adjustments were made to the 200s and 500s.

September 13, 2004

Bay Point trains provide direct service to SFO, then continue to Millbrae. This service provides "Reverse L" service and operates during all hours of operation, all week. During the 3 hour AM and PM peak period on weekdays, Richmond trains provide direct service to SFO, then continue to Millbrae in a "Reverse L" service configuration. During the 3 hour AM and PM peak period (weekdays only) the Richmond and Bay Point trains both provide service directly to and from Millbrae/SFO. The Richmond trains do not operate on the weekend. Service during the day on each route (and during the peak rush) is 15 minutes, while evenings and weekends operate at 20-minute headways.

1. Provides for direct service on all extension routes to Millbrae and SFO, no need to transfer

2. During all hours, direct service to Millbrae is through the SFO station (but is effectively every 7.5 minutes during the 3 hour AM and PM peak periods)

December 13, 2004
Train sizing adjustments were made to better match capacity with demand, generally to shorter trains.

April 23, 2005
Train sizing adjustments: The 300 series trains on Saturday were increased from 8 to 9-car trains.

June 13, 2005
Train lengths were generally shortened to an 8-car plan in two phases, in June and August, 2005, with peak size trains running all day on the Bay Point line.

August 15, 2005
Second phase of implementing the "8-car" plan.

September 12, 2005
Dublin trains provide direct service to SFO, then continue to Millbrae in a "Reverse L" service configuration. Only the Dublin trains will provide service to the extension on weekdays and weekends. Richmond and Bay Point trains will truncate at Daly City. Service during the day (and during the peak rush) is 15 minutes, while evenings and weekends operate at 20-minute headways. Although direct service from Bay Point has been replaced with this new service, the transfer time from a Bay Point base train to SFO train (from Dublin) is only 3-4 minutes in each direction.

September 22, 2005
Extend service from Richmond and lengthen trains. Up to six consists will be lengthened from 4 to 8-car trains. Richmond trains to Daly City will be extended to Colma for two hours in the morning and two hours in the evening.

October 10, 2005
The following adjustments were made:

Weekday
100s - three trains lengthened
200s - one train lengthened, Make/Break timing changed
300s - several trains lengthened with a few trains reduced in size
400s - one train lengthened
500s - No change since September 22, 2005 (Make/Break timing)

Saturday
300s - some trains lengthened

Sunday
300s - some trains lengthened

December 5, 2005
The following adjustments were made:

Weekday
100s – 115 becomes the last AM Break train
300s – Train 323 and 363 increased from 8-car to 9-car trains

Saturday
200s – All trains are now 6-car trains during the day

January 30/31, 2006e
The following adjustments were made:

Weekday
100 Series Trains (net +1)
Train 101 +1 (9 to 10 cars) peak increase
Train 115 off peak increase 4 to 5 cars

200 Series Trains (net 0)
No change

300 Series Trains (net –2)
Train 365 off peak decrease only on dispatches of 20:58, 22:19, and 23:38
Train 367 +1 (9 to 10 cars) off peak decrease only on dispatches of 21:18, 22:39, and 24:00
Train 371 –1 (10 to 9 cars)
Train 377 –1 (10 to 9 cars)
Train 381 –1 (10 to 9 cars)
Train 331 -2 (10 to 8 cars)
Train 335 +2 (8 to 10 cars)

400 Series Trains (net +2)
Train 443 –1 (9 to 8 cars) for AM peak period only
Train 445 +1 (8 to 9 cars)
Train 453 –1 (9 to 8 cars) for PM peak period only
Train 455 +2 (8 to 10 cars) and off peak increase 4 to 5 cars

500 Series Trains (net +10)
Train 501 +1 (8 to 9 cars) peak increase and off peak increase 4 to 5 cars
Train 503 +1 (8 to 9 cars) peak increase and off peak increase 4 to 5 cars
Train 505 +1 (8 to 9 cars) peak increase
Train 507 +1 (8 to 9 cars) peak increase
Train 509 +1 (8 to 9 cars) peak increase
Train 511 +1 (8 to 9 cars) peak increase
Train 513 +1 (8 to 9 cars) peak increase and off peak decrease 8 to 5 cars
Train 519 +1 (8 to 9 cars) peak increase
Train 521 +1 (8 to 9 cars) peak increase and off peak increase 4 to 5 cars
Train 523 +1 (8 to 9 cars) peak increase

Saturday
100s – no change
200s – no change
300s – All 8-car trains are now 9-car trains
400s – no change
500s – Four trains increased from 4 to 5-cars (501, 505, 511, and 515)

Sunday
200s – no change
300s – no change
500s – All trains 9-car midday and some offpeak increased from 4 to 5-cars (503, 505, and 515)

Appendix F

Methodology for Bay Area Conformity Determinations

Winston H. Hickox
Agency Secretary

Air Resources Board

Alan C. Lloyd, Ph.D.
Chairman
1001 I Street • P.O. Box 2815 • Sacramento, California 95812 • www.arb.ca.gov

Gray Davis
Governor

November 30, 2001

Mr. Wayne Nastri
Regional Administrator
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

Dear Mr. Nastri:

The Air Resources Board (ARB/Board) hereby transmits the Bay Area emission factor model (SF Bay Area-EMFAC 2000) to the U.S. Environmental Protection Agency (U.S. EPA) for approval and use in the 2001 San Francisco Bay Area State Implementation Plan (Bay Area SIP) and subsequent Bay Area conformity determinations.

SF Bay Area-EMFAC 2000 is tailored specifically to the San Francisco Bay Area. The emission factors contained in SF Bay Area-EMFAC 2000, along with updated activity data from the Metropolitan Transportation Commission (MTC), provide the basis for the mobile source emissions budgets in the 2001 Bay Area SIP. SF Bay Area-EMFAC 2000 will be used for subsequent Bay Area conformity determinations. At a public meeting on November 1, 2001 the ARB Board approved SF Bay Area-EMFAC 2000 for these purposes following a 30-day public notice. At the time the Bay Area SIP was being developed, this model was the most current emission factor model available. SF Bay Area-EMFAC 2000 was based on EMFAC2000. The documentation for EMFAC2000 was publicly available beginning in May 2000 and made available for use by the Bay Area Air Quality Management District when it began developing the 2001 Bay Area SIP in November 2000.

The three Bay Area co-lead agencies responsible for developing the Bay Area SIP have committed to do a mid-course review of the Bay Area SIP by December 31, 2003 and revise the 2001 SIP by March 2004. ARB has committed to submit the revised Bay Area SIP to U.S. EPA by April 15, 2004. The mid-course review will use the most current emission factor model available at that time to develop the mobile source emissions budgets. This model will be EMFAC2001 or its successor.

This transmittal provides documentation of the emission factors and activity data used in SF Bay Area-EMFAC 2000 to develop the 2001 Bay Area SIP. In addition, it includes the methodology ARB will be using to conduct Bay Area conformity determinations.

SF Bay Area-EMFAC 2000 Emission Factor Model Documentation

Comparison between MVEI7F/7G and SF Bay Area-EMFAC 2000

The emission factors used in the SF Bay Area-EMFAC 2000 emission factor model represent a major improvement over emission factors used in older models such as MVEI7F and MVEI7G. SF Bay Area-EMFAC 2000 exhaust hydrocarbon emission rates are significantly higher than the emission rates included in the older models. The increase in exhaust hydrocarbon rates is mainly a result of the following changes:

- More accurately reflecting real-world driving by using the Unified Cycle (UC) driving cycle rather than the Federal Test Procedure (FTP);
- Using new speed adjustment factors to better reflect how emissions change as average driving speeds change;
- Representing 45 model years, rather than only 35; and
- Incorporating new vehicle test data.

Evaporative hydrocarbon emission rates in SF Bay Area-EMFAC 2000 are also significantly higher than the older models' emission rates. The most important changes causing the increase in evaporative hydrocarbon emission rates include:

- Higher hot soak emission rates, especially for older catalyst-equipped vehicles;
- Higher running loss emission rates, based on new data; and
- Including emissions for vehicles with liquid fuel leaks.

Emission rates for oxides of nitrogen (NOx) are also significantly higher in SF Bay Area-EMFAC 2000 than in the older models. The increased estimates of NOx emission rates are primarily due to the following changes:

- Inclusion of "off-cycle NOx" (i.e., NOx emissions that were not represented in the certification driving cycle); and
- Incorporation of new vehicle test data for catalyst equipped passenger cars and light trucks.

Incorporation of Latest Standards

SF Bay Area-EMFAC 2000 also includes the effects of recently adopted standards on the emissions of the on-road fleet. The future year emission rates in SF Bay Area-EMFAC 2000 reflect the adopted standards described below.

<u>Supplemental Federal Test Procedure</u>
Two supplemental test procedures to the FTP were adopted by the Board in July of 1997. These new standards are applicable to passenger cars, light-duty trucks, and medium-duty vehicles weighing 8,500 pounds or less. These standards require the

control of excess emission of hydrocarbon and oxides of nitrogen during “off-cycle” operations (high speed and hard acceleration), and excess emissions associated with the use of air conditioning. The new standards are to be phased-in between 2001 and 2005.

Low Emission Vehicles (LEVII)

The second phase of Low Emission Vehicle Standards (LEVII) was adopted by the Board in November of 1998. This action imposed more stringent hydrocarbon, carbon monoxide, NOx and exhaust particulate matter emissions standards for passenger cars, light-duty trucks and medium-duty vehicles up to 14,000 pounds sold in California beginning in 2003.

Near Zero Evaporative Standards

Also in November 1998, the Board adopted new standards for the emissions of evaporative hydrocarbons (diurnal, hot soak and resting loss). The standards were reduced from 2 grams per test (hot soak plus diurnal) for passenger cars, to 0.5 grams per test.

New On-Road Motorcycle Standards

In December of 1998, the Board adopted lower exhaust emission standards for on-road motorcycles. These standards, which may require future motorcycles to utilize catalytic converters, are applicable to new motorcycles sold in California beginning in 2004.

Off-Cycle NOx Mitigation

In a settlement reached between the federal government, the Air Resources Board and heavy-duty engine manufacturers, several mitigation measures were agreed to regarding off-cycle NOx emissions. In addition to ending the practice of defaulting to an advanced timing condition during extended cruise operation, several manufacturers have agreed to perform “low emission” rebuilds for in-use engines. These rebuilds will lower the emissions of the in-use fleet.

New Exhaust Emissions Standards for Urban Transit Buses

In February of 2000, the Board adopted a regulation that allows transit agencies the choice between either a diesel or alternative fuel “path” to lower emissions. Beginning in 2002, over the course of 10 years, this regulation requires increased introduction of

cleaner engine buses in transit agencies' fleets, use of cleaner diesel fuel, retrofits to reduce exhaust particulate matter (PM) emissions from older diesel buses, and use of zero-emission buses (ZEBs).

Public Review

The emission factors used in SF Bay Area-EMFAC 2000 were developed in a 3-year process and were subject to public review and comment during three workshops held in 1998, 1999, and 2000. Throughout the comment period, ARB received a number of written and verbal comments, which were addressed in the development of the emission factor model.

Further detail regarding the development of the SF Bay Area-EMFAC 2000 emission factor model may be found in the attached Technical Support Documentation. The Technical Support Documentation refers to broader work on the statewide EMFAC2000 emission factor model, but also applies to the region specific SF Bay Area-EMFAC2000.

Activity Data Documentation

The Bay Area vehicle miles traveled (VMT), VMT growth rates, and VMT-speed distributions incorporated into SF Bay Area-EMFAC 2000 represent the best current activity data estimates available. The derivation of these estimates are explained below.

Vehicle Miles of Travel

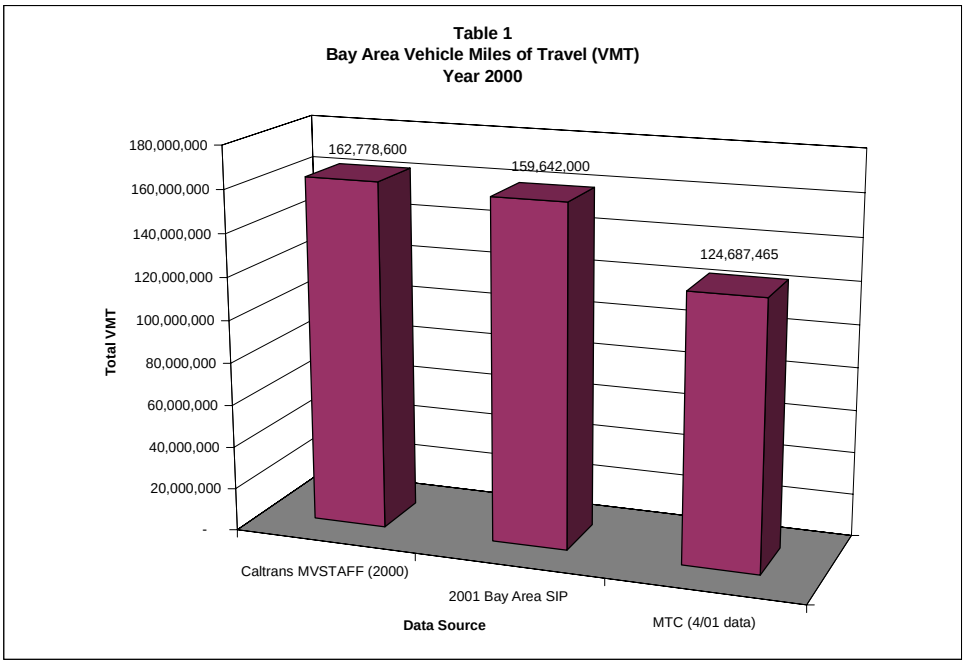
Bay Area VMT estimates for calendar year 2000 are based on the ARB VMT estimation methodology using mileage accrual rates derived from Smog Check odometer data and Department of Motor Vehicle vehicle populations (see Section 7 of the attached Technical Support Documentation for further detail on the ARB VMT estimation methodology).

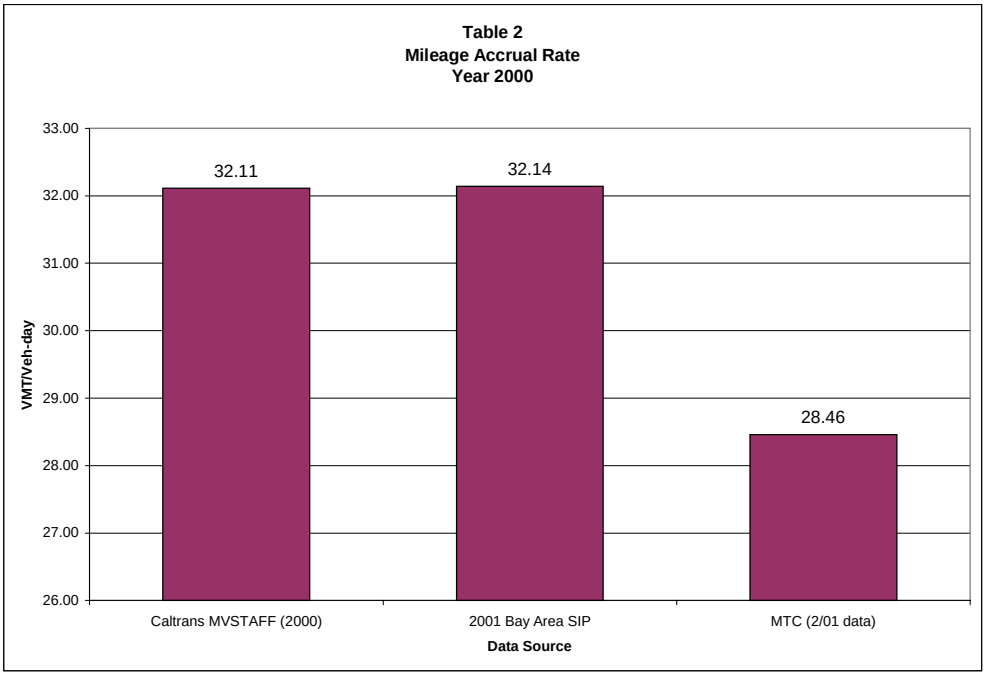
The decision to use ARB's VMT estimate instead of the VMT estimate from MTC's BAYCAST-90 travel demand model for calendar year 2000 was made in an agreement between MTC and ARB. As Table 1 illustrates, MTC's 2000 VMT estimate for the region is about 22 percent lower than both ARB and Caltrans' estimates. The ARB and Caltrans[1] methods for estimating VMT were developed independently of each other, yet fall within 1 percent of each other.
Additional justification for using the ARB VMT estimation methodology is found in the estimate of the number of miles driven by each vehicle per day (i.e., the mileage accrual

[1] Caltrans' VMT estimate was taken from the annual "Motor Vehicle Stock, Travel, and Fuel Forecast" (MVSTAFF) report. The MVSTAFF report forecasts statewide VMT based on statewide vehicle population data from the DMV, fuel consumption estimates from the Board of Equalization, and fuel economy estimates derived from the national fuel economy standards. Statewide VMT estimates are then disaggregated to the county level using county auto registration and road system mileage ratios.

rate). Table 2 compares mileage accrual rates from various data sources. MTC's estimates appear too low to be consistent with odometer readings collected in the Smog Check program. MTC's mileage accrual estimates are 11 percent lower than both Caltrans' ARB's estimates for the Bay Area.

For the purposes of the 2001 Bay Area SIP, MTC agreed to use ARB's 2000 VMT estimate. It was also agreed that the difference in VMT between ARB's and MTC's calendar year 2000 VMT estimates would be used as a "correction" for all future analysis years.





VMT Growth Rates

In the agreement between ARB and MTC, ARB agreed to use MTC's VMT growth rate as implied by the VMT estimates produced by BAYCAST-90. The rationale for this is that while ARB questions the level of travel in calendar year (CY) 2000 as estimated by MTC's travel demand model, ARB is not questioning future year growth projections included in the travel demand model.

VMT-Speed Distributions

The final pieces of activity data provided by MTC and incorporated into SF Bay Area-EMFAC 2000 are the VMT-speed distributions for two calendar years (2000 and 2005). Based on consultation between MTC and ARB staff, ARB incorporated the VMT-speed distributions into SF Bay Area-EMFAC 2000 by applying CY2000 speed distributions to CYs 2000-2003, and CY2005 speed distributions to CYs 2004+.

Methodology for Bay Area Conformity Determinations

For all Bay Area conformity determinations based on the mobile source emissions budgets set in the Bay Area SIP (using SF Bay Area-EMFAC 2000), the following step-wise methodology will be followed:

1. MTC will submit to ARB updated VMT-speed distributions and updated VMT estimates by county for all relevant analysis years. ARB will follow the procedures below for analysis years for which MTC does not submit new activity data (i.e. for which activity data does not change from MTC's original SIP submittal):
    - ARB will use the speed distributions submitted by MTC for the most recent calendar year prior to the analysis year of interest. For example, if MTC submits new VMT-speed distributions for 2005 and 2010, but not for the 2006 analysis year, the 2006 analysis year will use the speed distributions submitted for 2005. VMT-speed distributions will not be interpolated.
    - The VMT estimate for each county will be interpolated using county-specific compounded growth rates.[2] The interpolated VMT will then be used for the following steps.

2. ARB will calculate VMT for the portions of Sonoma and Solano Counties that fall in the San Francisco (S.F.) Air Basin. This is necessary since the SIP budgets are based on the S.F. Air Basin (which covers only the southern portions of Solano and Sonoma Counties), while the MTC VMT estimates include the full nine Bay Area counties. The county portions will be calculated by multiplying the full county VMT submitted by MTC by the VMT ratio (partial county/county) derived from SF Bay Area-EMFAC 2000.[3] In year 2000, about 71 percent of Solano County, and 77 percent of Sonoma County VMT occurred in the S.F. Basin.

3. ARB will calculate the year 2000 difference in VMT between the VMT estimate included in the SF Bay Area-EMFAC 2000 runs[4] and the VMT estimate submitted by MTC for conformity.[5] The resulting differences by county represent the VMT "correction" between ARB and MTC's VMT estimates.

4. The VMT correction will be added by county to the submitted VMT for all analysis years, resulting in the "target" VMT estimate that will be used for the conformity modeling runs.[6]

---

[2] For example, 2006 VMT is interpolated from 2005 and 2010 VMT estimates submitted by MTC by the following equation: $VMT_{2006} = (VMT_{2010} / VMT_{2005})^{0.2} * VMT_{2005}$

[3] For the S.F. Basin portions of Solano and Sonoma County VMT:
S.F. Basin County Portion VMT_{MTC} = [S.F. Basin County Portion $VMT_{SFBayArea\text{-}EMFAC2000}$ / Total County VMT $_{SFBayArea\text{-}EMFAC2000}$] * Total County VMT_{MTC}

[4] SF Bay Area-EMFAC 2000 calculates VMT based on Smog Check odometer readings and DMV vehicle registration data for light duty vehicle classes, and instrumented truck data for the truck classes.

[5] VMT $correction_{county\ a}$ = SIP VMT_{CY2000} – MTC VMT_{CY2000}

[6] Target $VMT_{county\ a}$ = MTC $VMT_{county\ a}$ + VMT $correction_{county\ a}$

5. The county-specific target VMT in the conformity modeling runs will be achieved in SF Bay Area-EMFAC 2000 by modifying the county-specific vehicle populations in SF Bay Area-EMFAC 2000 using the What-if-Scenario (WIS) option. Since vehicle population and VMT are linearly related in SF Bay Area-EMFAC 2000, to obtain the "target" vehicle population, ARB staff will take the ratio between the SIP VMT estimates and the target VMT for each analysis year and apply them to the SIP vehicle population estimates for each respective analysis year.[7]

6. Once the target vehicle populations have been calculated, ARB staff will run SF Bay Area-EMFAC 2000 using the WIS option to adjust vehicle populations by county, and incorporate any updated speed distributions.

7. ARB staff will then apply control factors to the model output to adjust for emission reduction measures not included in the SF Bay Area-EMFAC 2000 emission factor model or changed since the model was developed.

8. Finally, ARB staff will compare the results to the SIP budgets for the conformity demonstration.

If you have questions regarding this submittal, you may contact me at (916) 445-4383, or have your staff contact Ms. Cynthia Marvin, Chief of the Air Quality and Transportation Planning Branch, at (916) 322-7236.

Sincerely,

/s/

Michael P. Kenny
Executive Officer

Enclosures

cc: See next page.

[7] Target Veh Pop = [((Target VMT – SIP VMT) / SIP VMT) * SIP Veh Pop] + SIP Veh Pop

cc: (w/o Enclosures)
Mr. Jack Broadbent, Director
Air Division
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105

Ms. Ellen Garvey, Executive Officer
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

Mr. Steve Heminger, Executive Director
Metropolitan Transportation Commission
101 Eighth Street
Oakland, California 94607

Mr. Eugene Leong, Executive Officer
Association of Bay Area Governments
101 Eighth Street
Oakland, California 94607

Ms. Cynthia Marvin
Air Resources Board

January 2003

Recommended Methods for Use of EMFAC2002 To Develop Motor Vehicle Emissions Budgets and Assess Conformity

As the agency charged with estimating motor vehicle emissions for air quality plans, the Air Resources Board (ARB) has improved the EMFAC modeling tool for use in combination with estimates of vehicle population and activity to develop motor vehicle emissions budgets and assess transportation conformity. The most recent version of this tool, EMFAC2002, has been transmitted to the U.S. Environmental Protection Agency (U.S. EPA) for approval for use in State Implementation Plans (SIPs) and conformity assessments. This paper describes the recommended practices for ARB, air districts, metropolitan planning agencies (MPOs) and regional transportation planning agencies (RTPAs) to use vehicle activity in conjunction with EMFAC2002 emission rates to calculate emissions budgets and conduct conformity assessments.

The vehicle activity indicators commonly used to develop emissions inventories are vehicle trips and vehicle miles of travel (VMT) by speed, vehicle class and time of day. Though not a direct measure of travel activity, vehicle population may also be a variable for these purposes, as described below.

Vehicle trips. In California, MPOs and RTPAs use demographic forecasts and travel demand models to develop estimates of current and future daily VMT, daily vehicle trips and average travel speeds for links in the transportation network. ARB separately estimates daily vehicle trips, but defines trips as the number of times a vehicle is started, rather than a number of specific daily destinations. This distinction is important; ARB and U.S. EPA studies find that vehicles are started five to six times per day, while trips associated with destinations as reported through travel surveys and predicted in travel demand models occur three to four times per day. Because start emissions and the duration of time between starts are crucial to emissions estimation, ARB equates vehicle trips with vehicle starts. Though EMFAC2002 permits model users to alter estimates of vehicle trips used to estimate emissions, ARB recommends that the model's default estimates of vehicle trips (starts), developed from instrumented vehicle studies, be used for air quality planning and conformity purposes.[1] Alternatively, for vehicle classes where appropriate local data are made available for review through the interagency consultation process, use of trip factoring or other methods to fully account for vehicle starts may be employed. Such alternative approaches should be discussed in the interagency consulation process.

[1] An exception would occur when a user chooses to factor these start-based trips to account for trip reduction programs. EMFAC2002 start-based trips rather than destination-based trips should serve as the baseline for this adjustment. The adjustment would be made through the What-If Scenario (WIS) function of EMFAC2002 as follows, where TRS denotes the trip reduction scenario:

*WIS Input TRS Trips = EMFAC Default Trips * (RTPA TRS Trips / RTPA Baseline Trips)*

Vehicle speeds. Most travel demand models provide output of estimated average speed by time period and link that may be summarized for use in EMFAC2002. For each major vehicle class and up to 24 hourly time periods, total VMT is divided into 13 different speed "bins" (5 mph through 65 mph) and used as input to EMFAC2002. ARB recommends continuation of this current practice to develop emissions budgets and assess conformity. Travel from intrazonal trips should be assigned to the appropriate speed bin based on the speed assigned to that travel in the travel demand model. VMT for each speed bin and time period can be used as input through the WIS function of EMFAC2002. It is also possible to input this data specific to vehicle class if adequate and defensible local data are available.

Vehicle population. Vehicle trips (starts) in EMFAC2002 are estimated as a function of the number of vehicles, or vehicle population, by county. The population of each class of motor vehicle is estimated and forecast from Department of Motor Vehicles (DMV) registration data. EMFAC2002 assumes there is a relationship between vehicle population and VMT, carried through mileage accrual rates.[2] In the default case, the model assumes *vehicle population * mileage accrual = VMT.* ARB-preferred practice is to maintain this internal consistency, for reasons explained below.

Vehicle miles of travel. Daily VMT is both an emissions model input usually provided by MPOs/RTPAs and a model output used to estimate exhaust emissions. ARB staff reviews MPO/RTPA estimates of VMT and vehicle speeds, and supports these estimates for use in air quality plans whenever we agree they are reasonable and defensible. Use of the latest estimates of MPO/RTPA VMT and speeds in plan development facilitates the subsequent federal transportation conformity process. This is particularly important for any year for which the plan creates emissions budgets, as conformity rules allow no emissions budget exceedance, regardless of how small. As there may be some variance between default EMFAC2002 VMT and more recent MPO/RTPA estimates to be used for SIP development, we are recommending a procedure to more exactly incorporate into emissions budgets revised VMT estimates for emissions budget analysis years.

Although it is possible to directly input VMT into EMFAC2002 through the model's WIS function, it is generally not recommended to do this independent of vehicle population because of the desire to properly estimate start and evaporative emissions tied to the size of the vehicle fleet. A change in total forecasted miles of travel implies a change either in the number of vehicles traveling those miles or in mileage accrual rates. For future years, we generally recommend making vehicle population the variable, rather than mileage accrual. Thus, VMT adjustment would usually occur through vehicle population adjustment in the model's WIS function, according to this formula:

*WIS Input Population = EMFAC Default Population * (RTPA VMT / EMFAC Default VMT)*

[2] Accrual rates are miles traveled per year as a function of vehicle age, derived from the Bureau of Automotive Repair Smog Check database as described in Section 7.1 of the EMFAC2000 Technical Support Document, found via http://www.arb.ca.gov/msei/on-road/latest_revisions.htm#pcaccrual.

The result of this modification is that emissions estimates more precisely incorporate the daily VMT provided by each MPO/RTPA to calculate exhaust emissions, and vehicle population is adjusted for consistency with this assumption of higher or lower VMT, providing similarly modified start and evaporative emissions.[3] Though the emissions impact of using this approach will often be small, we believe the approach is appropriate given the desire to fully reflect the impacts of changes in travel activity on all emissions processes. Use of consistent methods in air quality plans and conformity assessments will both reduce potential conformity problems and preserve the integrity of the SIP and conformity processes.

Alternatively, local data may indicate that changes in VMT are tied more closely to changes in household or business rates of travel than to changes in vehicle ownership. Or, improved travel demand modeling may project auto ownership rates with a high degree of confidence. In such cases it may be appropriate to adjust total mileage accrual rather than vehicle population. It is also possible to derive a modified VMT forecast from adjustments to both variables in EMFAC2002. Planning agencies are encouraged to present alternative approaches for consideration in the interagency consultation process.

Recommendations

1. ARB recommends that the EMFAC2002 default estimates of vehicle trips, based on starts per day, be used for SIP development and conformity purposes. Model defaults for trips may be factored to account for trip reduction scenarios, but should not be replaced with estimates that do not account for all vehicle starts. Alternative approaches, such as the factoring of travel demand model trip outputs for appropriate classes to account for additional starts, may be considered through interagency consultation.

2. We recommend continuation of current practices for input of latest speed distributions for SIPs and conformity assessments. Travel from intrazonal trips should be assigned to the appropriate speed bin based on the speed assigned to that travel in the travel demand model.

3. To fully reflect the impacts of modified VMT forecasts on all emissions processes, in the calculation of SIP emissions budgets, and in the assessment of conformity with those budgets, vehicle population should be adjusted in EMFAC2002 proportional to the estimated VMT change. Local circumstances may alternatively support adjustment of mileage accrual rates, subject to interagency consultation.

[3] After adjusting VMT through use of the population variable in the WIS function of EMFAC, a user who desires to match VMT even more exactly (to the mile instead of the tens of miles) can then adjust VMT in the WIS without disturbing the population adjustment. This is unlikely to have a discernible impact on emissions, however.

Appendix G

Glossary

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Area Source Small stationary and non-transportation pollution sources that are too small and/or numerous to be included as point sources but may collectively contribute significantly to air pollution (e.g., dry cleaners).

Attainment Area An area considered to have air quality that meets or exceeds the U.S. EPA national ambient air quality standards, which EPA establishes according to the requirements of the Clean Air Act. An area may be an attainment area for one pollutant and a nonattainment area for others. Nonattainment areas are areas designated by EPA as not meeting a standard for a pollutant.

Carbon Monoxide (CO) A colorless, odorless, tasteless gas formed in large part by incomplete combustion of fuel. Human activities (e.g., transportation or industrial processes) are largely the source for CO contamination in ambient air.

Congestion Management and Air Quality Improvement (CMAQ) Program A categorical funding program under the Federal-aid Highway Program. CMAQ directs funding to projects that contribute to meeting or maintaining national ambient air quality standards in nonattainment and maintenance areas. CMAQ funds generally may not be used for projects that result in the construction of new capacity available to SOVs (single-occupant vehicles).

Emissions Inventory A complete list of sources and amounts of pollutant emissions within a specific area and time interval.

Environmental Protection Agency (EPA) The Federal regulatory agency responsible for administering and enforcing Federal environmental laws including the Clean Air Act, the Clean Water Act, the Endangered Species Act, and others.

Federal Highway Administration (FHWA) An agency of the U.S. Department of Transportation that provides financial and technical support for constructing, improving, and preserving America's highway system.

Federal Transit Administration (FTA) An agency of the U.S. Department of Transportation that provides stewardship of combined formula and discretionary programs to support a variety of locally planned, constructed, and operated public transportation systems throughout the United States.

High Occupancy Vehicles (HOVs) Generally applied to vehicles carrying two or more people; freeways, expressways, and other large volume roads may have lanes designated for use by carpools, vanpools, and buses. The term HOV is also sometimes used to refer to high-occupancy vehicle lanes themselves.

Highway Term applies to roads, streets, and parkways, and also includes rights-of-way, bridges, railroad crossings, tunnels, drainage structures, signs, guardrails, and protective structures in connection with highways.

Hydrocarbons (HC) Colorless gaseous compounds originating from evaporation and the incomplete combustion of fossil fuels.

Inspection and Maintenance Program (I/M) An emissions testing and inspection program implemented to ensure that the catalytic or other emissions control devices on in-use vehicles are properly maintained over time.

Land Use Refers to the manner in which portions of land or the structures on them are used (i.e., commercial, residential, retail, industrial, etc.).

Lapse Means that the conformity determination for a metropolitan transportation plan or TIP has expired, and thus there is no currently conforming metropolitan transportation plan and TIP.

Maintenance Area Any geographic region of the United States previously designated nonattainment pursuant to the CAA Amendments of 1990 and subsequently re-designated to attainment subject to the requirement to develop a maintenance plan under Section 175A of the CAA, as amended.

Metropolitan Planning Organization (MPO) The policy board of an organization created and designated to carry out the metropolitan transportation planning process.

Metropolitan Transportation Plan The official multimodal metropolitan transportation plan addressing no less than a 20-year planning horizon that is developed, adopted, and updated by the MPO through the metropolitan transportation planning process.

Metropolitan Transportation Plan/TIP Amendment A revision to a metropolitan transportation plan or TIP that involves a major change to a project included in a metropolitan transportation plan or TIP including the addition or deletion of a project or a major change in project cost, project/project phase initiation dates, or a major change in design concept or design scope (e.g., changing project termini or the number of through traffic lanes). Changes to projects that are included only for illustrative purposes do not require an amendment. An amendment is a revision that requires public review and comment, re-demonstration of fiscal constraint, or a conformity determination (for those involving "non-exempt" projects in nonattainment and maintenance areas).

Metropolitan Transportation Plan/TIP Update Making current a metropolitan transportation plan or TIP through a comprehensive review. Updates require public review and comment, a 20-year horizon year for the metropolitan transportation plan, a four-year program period for TIPs, demonstration of fiscal constraint, and a conformity determination (in nonattainment and maintenance areas).

Mobile Sources Include motor vehicles, aircraft, seagoing vessels, and other transportation modes. The mobile source related pollutants are carbon monoxide, hydrocarbons or volatile organic compounds, nitrogen oxides, and particulate matter.

Mode A form of transportation such as an automobile, bus, or bicycle.

Motor Vehicle Emissions Budget (MVEB) That portion of the total allowable emissions defined in the submitted or approved control strategy implementation plan revision or maintenance plan for a certain date for the purpose of meeting reasonable further progress milestones or demonstrating attainment or maintenance of the NAAQS, for any criteria pollutant or its precursors, allocated to highway and transit vehicle use and emissions.

National Ambient Air Quality Standards (NAAQS) Those standards established pursuant to Section 109 of the CAA. Conformity applies in areas that are nonattainment or maintenance for one or more of the NAAQS of the transportation-related pollutants: ozone, carbon monoxide, nitrogen dioxide, and particulate matter.

National Environmental Policy Act (NEPA) The National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.). It is the major legislation that requires Federal actions to address potential environmental impacts.

Nitrogen Oxides (NO_x) A group of highly reactive gases that contain nitrogen and oxygen in varying amounts. Many of the nitrogen oxides are colorless and odorless. NO_x is formed when the oxygen and nitrogen in the air react with each other during combustion. The primary sources of nitrogen oxides are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels.

Nonattainment Area Geographic region of the United States that the EPA has designated as not meeting the NAAQS.

Oxygenated Gasoline Gasoline enriched with oxygen-bearing liquids to reduce CO production by permitting more complete combustion.

Ozone (O_3) A pollutant that is not directly emitted from transportation sources. It is a secondary pollutant formed when HC and NO_x combine in the presence of sunlight. Ozone is associated with smog or haze conditions. Although the ozone in the upper atmosphere protects us from harmful ultraviolet rays, ground-level ozone produces an unhealthy environment in which to live. Ozone is created by human and natural sources.

Particulate Matter (PM, $PM_{2.5}$, PM_{10}) Any material that exists as solid or liquid in the atmosphere. Particulate matter may be in the form of fly ash, soot, dust, fog, fumes, etc. Particulate matter can be of such a small size that it cannot be filtered by the nose and lungs. PM_{10} is particulate matter that is less than 10 microns in size. $PM_{2.5}$ is particulate matter that is less than 2.5 microns in size. A micron is one millionth of a meter.

Parts Per Million (PPM) A measure of air pollutant concentrations.

Public Participation The active and meaningful involvement of the public in the development of metropolitan transportation plans and programs.

Public Transportation Generally refers to passenger service provided to the general public along established routes with fixed or variable schedules at published fares. Related terms include: public transit, mass transit, urban transit, and paratransit.

Reformulated Gasoline (RFG) Gasoline specifically developed to reduce undesirable combustion products.

State Implementation Plan (SIP) The State air quality plan for meeting the National Ambient Air Quality Standards ("NAAQS" or "air quality standards"). It is a compilation of legally enforceable rules and regulations prepared by a State or local air quality agency and submitted by the State's governor to EPA for approval. A SIP is designed to achieve better air quality by attaining, making progress toward attaining, or maintaining the NAAQS.

Stationary Source Relatively large, fixed sources of emissions (e.g., chemical process industries, petroleum refining and petrochemical operations, or wood processing).

Telecommuting The substitution, either partially or completely, of transportation to a conventional office through the use of computer and telecommunications technologies (e.g., telephones, personal computers, modems, facsimile machines, electronic mail).

Transportation Conformity Process to assess the compliance of any metropolitan transportation plan, program, or project with air quality implementation plans. The conformity process is defined by the Clean Air Act and regulated by the conformity rule.

Transportation Control Measures (TCMs) Any measure that is specifically identified and committed to in the applicable implementation plan, including a substitute or additional TCM that is incorporated into the applicable SIP through the process established in the CAA Section 176(c)(8), that is either one of the types listed in Section 108 of the CAA, or any other measure for the purpose of reducing emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. Notwithstanding the first sentence of this definition, vehicle technology-based, fuel-based, and maintenance-based measures that control the emissions from vehicles under fixed traffic conditions are not TCMs for the purposes of transportation conformity.

Transportation Improvement Program (TIP) A prioritized listing/program of transportation projects covering a period of four years that is developed and formally adopted by an MPO as part of the metropolitan transportation planning process, consistent with the metropolitan transportation plan, and required for projects to be eligible for funding under Title 23 USC and Title 49 USC Chapter 53.

Vehicle Miles Traveled (VMT) The sum of distances traveled by all motor vehicles in a specified region.

Volatile Organic Compounds (VOCs) VOCs come from vehicle exhaust, paint thinners, solvents, and other petroleum-based products. A number of exhaust VOCs are toxic, with the potential to cause cancer.

Source: FHWA 2017