# 3.1 Alternatives

## Introduction and Overview

California Environmental Quality Act (CEQA) Guidelines require an Environmental Impact Report (EIR) to analyze a reasonable range of alternatives for any project. The purpose of the alternatives section is to provide decision-makers and the public with a discussion of alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly. Evaluation of alternatives should present the proposed action and all the alternatives in comparative form to define the issues and provide a clear basis for choice.

CEQA requires that the lead agency adopt mitigation measures or alternatives, where feasible, to substantially lessen or avoid significant environmental impacts that would otherwise occur. Where a lead agency has determined that even after adoption of all feasible mitigation measures, a project as proposed would still result in significant environmental effects that cannot be substantially lessened or avoided, the agency must first determine if there are alternatives that are both environmentally superior, and feasible. CEQA provides the following guidelines for discussing project alternatives:

- An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation (§15126.6(a)).
- An EIR is not required to consider alternatives which are infeasible (§15126.6(a)).
- The discussion of alternatives shall focus on alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project (§15126.6(b)).
- The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects (§15126.6(c)).
- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis and comparison with the proposed project (§15126.6(d)).

### Accomplishing Basic Project Objectives

CEQA requires an analysis of alternatives that would feasibly attain most of the basic objectives of the project. The 2017 Countywide Comprehensive Transportation Plan (2017 CTP) objectives

include, but are not limited to, the following goals listed in the Project Description, Chapter 1.2 of this EIR:

- Goal 1: Support the efficient, safe, and reliable movement of people and goods using all available travel modes.
- Goal 2: Manage growth to sustain Contra Costa's economy, preserve its environment, and support its communities.
- Goal 3: Expand safe, convenient, and affordable alternatives to the single-occupant vehicle.
- Goal 4: Maintain the transportation system.
- Goal 5: Continue to invest wisely to maximize the benefits of available funding.

## Reducing Significant and Unavoidable Project Impacts

CEQA also requires the identification and analysis of alternatives that would avoid or substantially lessen any of the significant effects of the Project. Significant unavoidable effects are those impacts that cannot be mitigated to a level of less than significant. As more fully discussed in Chapter 3.2, this EIR has found potentially significant and unavoidable effects, categorized as follows:

### No Feasible Mitigation

The following is a significant impact of the Project for which there is no feasible mitigation:

- Vehicle hours of delay

### Significant and Unavoidable Impacts, Mitigation Uncertain

The following are potentially significant impacts of the Project for which feasible mitigation measures are insufficient or uncertain as to their ability to reduce impacts below the level of significance in all cases:

- Sea level rise
- Particulate matter emissions
- Agricultural land conversion and Williamson Act conflicts
- Candidate, sensitive and special status species
- Sensitive Natural Communities
- Historic resources
- Archaeological and paleontological resources
- Tribal Cultural Resources
- Permanent residential or business disruption or displacement
- Construction noise and groundborne vibration
- Operational noise—traffic
- Operational noise—transit

- Views, scenic resources, and visual character
- Incongruous visual elements – soundwalls
- Light and glare

### Significant and Unavoidable Impacts, Mitigation cannot be Assured

The following are potentially significant impacts of the Project for which implementation of feasible mitigation measures would suffice to reduce impacts below the level of significance, but such measures cannot be compelled by CCTA:

- Indirect greenhouse gas emissions by 2040
- Construction-period emissions and fugitive dust
- Wildlife movement
- Hazardous materials sites
- Flood hazards
- Short-term disruption of residential or business land uses

## Overview of Alternatives Selected for Analysis

This EIR defines and analyzes a set of potentially feasible alternatives that are consistent with CEQA requirements as being "realistic and feasible," and that are consistent with the MTC CTP Guidelines, which recommend that CTPs include a financially constrained list of transportation investments that can support the adopted Sustainable Communities Strategy (SCS). The Alternatives considered for analysis in this EIR are described briefly here and further detailed below under "Alternatives Analysis."

### Alternative #1: No Project Alternative (2040)

Alternative 1: the No Project Alternative (2040), consists only of those transportation projects and programs that have already undergone individual project-specific environmental review, have been approved by local and/or sponsoring agencies, and have a committed funding source. Some of these projects are already under construction. It is expected that these projects and programs will be implemented irrespective of any decisions regarding adoption of the 2017 CTP.

### Alternative #2: 2013 RTP Alternative

Alternative 2: the 2013 Regional Transportation Plan (RTP) Alternative consists of those additional transportation projects and programs that are already included within MTC's 2013 RTP and are an integral part of *Plan Bay Area* (the 2013 RTP) and its SCS. These projects and programs were included in the Project Description of the *Plan Bay Area EIR* (2013) and were previously analyzed on a programmatic level. A number of these 2013 RTP transportation projects and programs have been completed, while others have undergone individual project-specific environmental review, have been (or are being) considered for approval by local and/or sponsoring agencies, and have an identified (if not fully committed) funding source. It is anticipated that these projects and programs

will be implemented unless changed or modified pursuant to the forthcoming 2017 RTP. The projects and programs included under this Alternative are those that can be funded through use of the $3.7 billion (2017 constant dollars) in expected revenue as assumed in the 2013 RTP.

### Alternative #3: Emphasis on Transit Improvement Projects

Alternative 3: the Emphasis on Transit Improvement Projects Alternative represents a prioritized list of projects and programs specifically intended to encourage transit use, walking, and bicycling, and intended to provide an approach to transportation that supports vibrant and healthy communities. The highest level of future investments under this Alternative occurs in transit capital and operations, including rail and express and local bus service. This Alternative maximizes investment in pedestrian and bicycle improvements, emphasizing improved transit, bicycle, and walking connections to work, schools, and businesses districts. Similar to the proposed Long-Range Transportation Investment Program (Investment Program; the Project), Alternative 3 builds upon those transportation projects and programs already included within MTC's 2013 RTP (see Alternative 2). This alternative adds $6.447 billion in new projects, and $1.55 billion in programs, for a total of $8 billion in capital and operational investments with a transit emphasis (2017 constant dollars).

### Alternative #4: Emphasis on Transit, Bicycle, and Pedestrian Programs

Alternative 4, the Emphasis on Transit, Bicycle, and Pedestrian Programs Alternative represents a program-oriented approach that focuses specifically on greenhouse gas (GHG) emissions reduction, mitigating the impacts of travel, and addressing climate change. The highest level of investment under this Alternative occurs in expanded and improved transit operations, intended to reduce vehicle miles traveled as well as overall vehicle trips. Roadway improvement projects are focused on those that emphasize safety. Similar to the proposed Investment Program (the Project), Alternative 4 builds upon those transportation projects and programs already included within MTC's 2013 RTP (see Alternative 2). Alternative 4 includes $1.52 billion in projects, and $6.472 billion in programs, for a total of $8 billion in new or expanded projects and programs (2017 constant dollars).

### Summary Comparison

**Table 3.1-1** compares the level of financing for transportation projects and programs for the Project and the alternatives. The No Project Alternative is not included in this comparison because the projects and programs, as well as the requisite funding for them, are either already committed, under construction, or completed.

| Table 3.1-1: Comparative Funding Summary by Mode (2017 $ In Millions) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Alternative 2: 2013 RTP Alternative | | 2017 CTP – Project | | Alternative 3: Emphasis on Transit Improvement Projects | | Alternative 4: Emphasis on Transit, Bicycle, and Pedestrian Programs | |
| | Total Cost | Percent of Total | Total Cost | Percent of Total | Total Cost | Percent of Total | Total Cost | Percent of Total |
| **Freeways and Roadway Projects** | | | | | | | | |
| Arterial/Roadway | $635 | 17.3% | $1,064 | 13.3% | $96 | 1.2% | $8 | 0.1% |
| Integrated Corridor Management | $85 | 2.3% | $49 | 0.6% | $264 | 3.3% | $480 | 6.0% |
| Freeway | $530 | 14.4% | $921 | 11.5% | — | — | — | — |
| Goods Movement | $19 | 0.5% | $42 | 0.5% | — | — | — | — |
| Interchange | $562 | 15.3% | $346 | 4.3% | $24 | 0.3% | — | — |
| Major Streets: Safety | — | — | $69 | 0.9% | $56 | 0.7% | $80 | 1.0% |
| High-occupancy Vehicles | $161 | 4.4% | $84 | 1.0% | — | — | — | — |
| Complete Streets | — | — | $177 | 2.2% | — | — | — | — |
| Local Streets & Roads | — | — | $697 | 8.7% | — | — | — | — |
| Operations | — | — | $293 | 3.7% | — | — | — | — |
| ***Subtotal*** | ***$1,991*** | ***54.2%*** | ***$3,742*** | ***46.8%*** | ***$440*** | ***5.5%*** | ***$568*** | ***7.1%*** |
| **Transit Projects** | | | | | | | | |
| BART Improvements and Expansion | $670 | 18.2% | $686 | 8.6% | $1,646 | 20.6% | $560 | 7.0% |
| Bus Improvements and Expansion | $81 | 2.2% | $198 | 2.5% | $216 | 2.7% | — | — |
| Capitol Corridor | — | — | — | — | $88 | 1.1% | $40 | 0.5% |
| Express Bus/Bus Rapid Transit | $44 | 1.2% | $291 | 3.6% | $536 | 6.7% | $352 | 4.4% |
| Ferries | $105 | 2.9% | $134 | 1.7% | $200 | 2.5% | — | — |
| I-680 Transit Investment Options Improvements | — | — | $377 | 4.7% | $576 | 7.2% | — | — |
| Paratransit | — | — | $5 | 0.1% | — | — | — | — |
| Park-and-Ride Projects | $2 | 0.0% | $28 | 0.3% | $112 | 1.4% | — | — |
| West County High Capacity Transit Investment | — | — | $380 | 4.7% | $576 | 7.2% | — | — |
| Other Transit | — | — | $52 | 0.7% | — | — | — | — |
| Regional Rail | $82 | 2.2% | — | — | — | — | — | — |

**Table 3.1-1: Comparative Funding Summary by Mode (2017 $ In Millions)**

| | Alternative 2: 2013 RTP Alternative | | 2017 CTP – Project | | Alternative 3: Emphasis on Transit Improvement Projects | | Alternative 4: Emphasis on Transit, Bicycle, and Pedestrian Programs | |
|---|---|---|---|---|---|---|---|---|
| | Total Cost | Percent of Total | Total Cost | Percent of Total | Total Cost | Percent of Total | Total Cost | Percent of Total |
| ***Subtotal*** | ***$982*** | ***26.8%*** | ***$2,150*** | ***26.9%*** | ***$3,952*** | ***49.5%*** | ***$952*** | ***12.0%*** |
| **Other Projects** | | | | | | | | |
| Innovation | — | — | $65 | 0.8% | — | — | — | — |
| Safe Routes to Schools | — | — | $290 | 3.6% | — | — | — | — |
| ***Subtotal*** | ***—*** | ***—*** | ***$355*** | ***4.4%*** | ***—*** | ***—*** | ***—*** | ***—*** |
| **Bicycle and Pedestrian Projects** | | | | | | | | |
| Bicycle and Pedestrian | $51 | 1.4% | — | — | — | — | — | — |
| **Projects Subtotal** | **$3,024** | **82.4%** | **$6,447** | **80.6%** | **$4,394** | **55.0%** | **$1,520** | **19.0%** |
| **Countywide and Subarea Programs** | | | | | | | | |
| BART Seismic Improvements | — | — | $197 | 2.9% | $232 | 2.9% | — | — |
| Paratransit Service | $183 | 5.0% | — | — | — | — | — | — |
| BART Rail Cars | — | — | $207 | 2.6% | — | — | — | — |
| Bus Transit Enhancement | — | — | $204 | 2.5% | — | — | — | — |
| Local Streets and Maintenance | — | — | $473 | 5.9% | $1,440 | 18.0% | $1,680 | 21.0% |
| Pedestrian, Bicycle, and Trails | $85 | 2.3% | $279 | 3.5% | $472 | 5.9% | $200 | 2.5% |
| Safe Transportation for Children | $36 | 1.0% | $44 | 0.5% | — | — | — | — |
| Transportation for Livable Communities | $117 | 3.2% | $69 | 1.2% | $104 | 1.3% | $532 | 6.9% |
| Transportation for Senior and people with Disabilities: Support for Ridesharing and Other Programs | — | — | $279 | 3.5% | — | — | — | — |
| School Bus Pass | $26 | 0.7% | — | — | — | — | — | — |
| School Bus Service | $200 | 5.4% | — | — | — | — | — | — |
| ***Subtotal*** | ***$648*** | ***17.6%*** | ***$1,555*** | ***19.4%*** | ***$2,248*** | ***28.0%*** | ***$2,432*** | ***30.4%*** |

**Table 3.1-1: Comparative Funding Summary by Mode (2017 $ In Millions)**

| | Alternative 2: 2013 RTP Alternative | | 2017 CTP – Project | | Alternative 3: Emphasis on Transit Improvement Projects | | Alternative 4: Emphasis on Transit, Bicycle, and Pedestrian Programs | |
|---|---|---|---|---|---|---|---|---|
| | Total Cost | Percent of Total | Total Cost | Percent of Total | Total Cost | Percent of Total | Total Cost | Percent of Total |
| **Other Countywide Programs (Alternatives 3 and 4)** | | | | | | | | |
| Administration | — | — | — | — | $24 | 0.3% | $24 | 0.3% |
| Bus Operations | — | — | — | — | $928 | 11.6% | $792 | 9.9% |
| Bus Pass for Middle School and High School Students and Fare Reduction | — | — | — | — | $8 | 0.1% | $520 | 6.5% |
| Bus Services to/from PDAs | — | — | — | — | — | — | $504 | 6.3% |
| Commute Alternatives | — | — | — | — | — | — | $160 | 2.0% |
| Congestion Management and Planning | — | — | — | — | $88 | 1.1% | $120 | 1.5% |
| PDA Displacement Prevention Program | — | — | — | — | $24 | 0.3% | $240 | 3.0% |
| PDA: Complete Streets | — | — | — | — | $24 | 0.3% | $400 | 5.0% |
| Regional Advanced Mitigation Program | — | — | — | — | — | — | $160 | 2.0% |
| Safe Transportation for Children | — | — | — | — | $152 | 1.9% | $360 | 4.5% |
| Subregional Needs | — | — | — | — | — | — | $120 | 1.5% |
| Transportation for Seniors and People with Disabilities | — | — | — | — | $104 | 1.3% | $640 | 8.0% |
| ***Subtotal*** | **—** | **—** | **—** | **—** | ***$1,352*** | ***17.0%*** | ***$4,040*** | ***50.6%*** |
| **Programs Subtotal** | **$648** | **17.6%** | **$1,555** | **19.4%** | **$3,600** | **45.0%** | **$6,472** | **81.0%** |
| **TOTAL** | **$3,672** | **100.0%** | **$8,002** | **100.0%** | **$8,002** | **100.0%** | **$8,002** | **100.0%** |

*Notes: Numbers may not add up to totals due to rounding.*

## Project Alternatives and Comparative Environmental Assessment

The following sections of this chapter provide a more detailed description of the alternatives selected for analysis, and a comparative discussion of the potential environmental effects associated with each alternative. As permitted by CEQA (CEQA Guidelines Section 15126.6[d]) the effects of the alternatives are discussed in less detail than the impact discussions of the Project. However, the alternatives analysis is conducted at a sufficient level of detail to provide the public, other public agencies, and decision-makers adequate information to fully evaluate the alternatives and possibly to enable the CCTA to consider approval of an alternative to the Project without further environmental review.

All of the alternatives reflect Contra Costa's portion of future year (2040) Bay Area land use forecasts as indicated in ABAG's *Projections 2013* and as presented in *Plan Bay Area*, as well as Contra Costa's share of assumed transportation system improvements as provided for under MTC's RTP and as also presented in *Plan Bay Area*.

For each of the alternatives, potentially significant impacts are compared to thresholds of significance. Mitigation measures identified for each potentially significant impact of the Project would also apply to each of the alternatives. These significance conclusions also indicate whether implementation of mitigation measures can be required, or if mitigation can only be recommended by the CCTA. The impacts of each alternative are compared to the impacts of the Project. These comparisons indicate:

- instances where the alternative would avoid or lessen a potentially significant impact of the Project, or result in a lesser degree of impact overall, as indicated with the symbol ↓
- instances where the alternative would result in a greater degree of impact overall than the impact of the Project, as indicated with the symbol ↑
- instances where the alternative would avoid or lessen certain impacts of the Project, but off-set those reduced impacts with greater impacts at a different location, as indicated with the symbol ↕
- The notation ↔ indicates that the magnitude of the alternative's impact would be relatively the same as that of the Project.

# Alternative 1: No Project Alternative (2040)

CEQA Guidelines Section 15126.6(e)(3)(A) states that:

> *"When the project is other than a land use or regulatory plan, for example a development project on identifiable property [such as the Project], the no project alternative is the circumstance under which the project does not proceed. Here the discussion would compare the environmental effects of the property remaining in its existing state against environmental effects that would occur if the project is approved. If disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this no project consequence should be discussed. In certain instances, the no project alternative means no build, wherein the existing environmental setting is maintained. However, where failure to proceed with the project will not result in preservation of existing environmental conditions, the analysis should identify the practical result of the project's non-approval and not create and analyze a set of artificial assumptions that would be required to preserve the existing environmental setting:.*

## Description of the No Project Alternative (2040)

Pursuant to CEQA Guidelines Section 15126.6 (e), the specific alternative of a "no project" shall be evaluated in an EIR. The purpose of describing and analyzing a no project alternative is to allow decision-makers to compare the impacts of approving the proposed Project (and/or alternatives) with the impacts of not approving a project. Specifically, CEQA Guidelines provide that, "when the project is the revision of an existing land use or regulatory plan, policy or on-going operation [such as the 2017 CTP] the 'no project' alternative will be the continuation of the existing plan, policy or operation into the future."

For purposes of this EIR, the No Project Alternative (2040) consists of those projects and programs deemed committed, as defined by MTC's Committed Funds and Projects Policy.[1] The committed projects included under the No Project Alternative (2040) are shown on **Figures 3.1-1** roadways and HOV Projects) and **Figure 3.1-2** (transit, Bicycle and Pedestrian Projects). Implementation of these projects is also assumed under each of the subsequent alternatives discussed herein.

These projects are not subject to further discretionary action at a program level by CCTA because the projects are fully funded and are too far along in the project development process to consider withdrawing support. In general, committed projects are projects that have received environmental clearance and have full funding plans or are funded exclusively with local funds. This definition is also consistent with the No Project Option as evaluated in the 2013 RTP/SCS in the *Plan Bay Area EIR*.[2]

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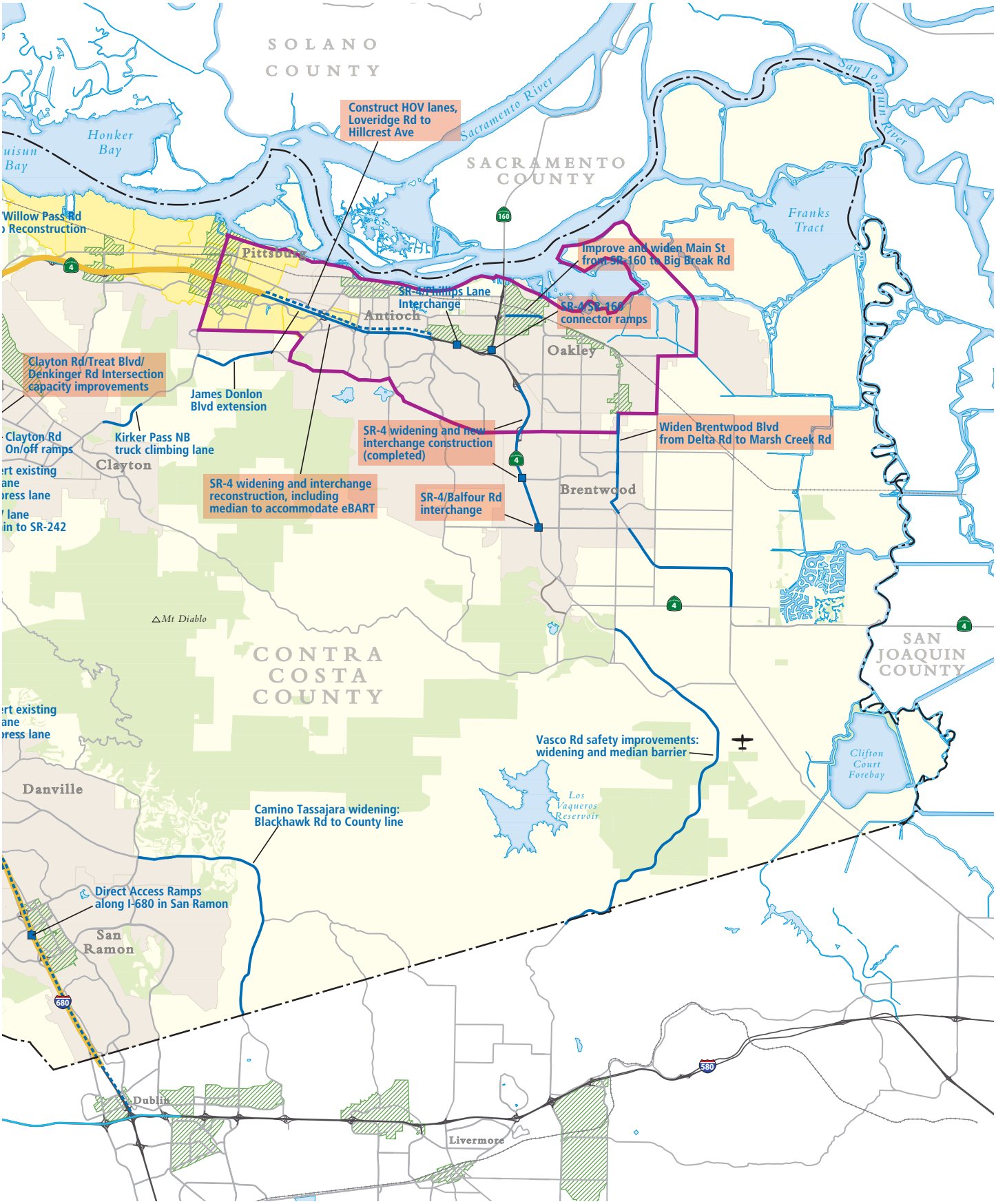
[1] MTC Resolution No. 4006, adopted April 2011

[2] ABAG and MTC. Plan Bay Area EIR. July, 2013. pp.1.2-51 – 52. Available online at: http://www.planbayarea.org/sites/default/files/pdf/Draft_Plan_Bay_Area/Draft_EIR.pdf.


**Figure 3-1**
**Alternative #1 (No Project) and Alternative #2 (2013 RTP) - Roadway and HOV Projects and Programs**




Source: 2017 CTP, Volume 1 Figure 4-1

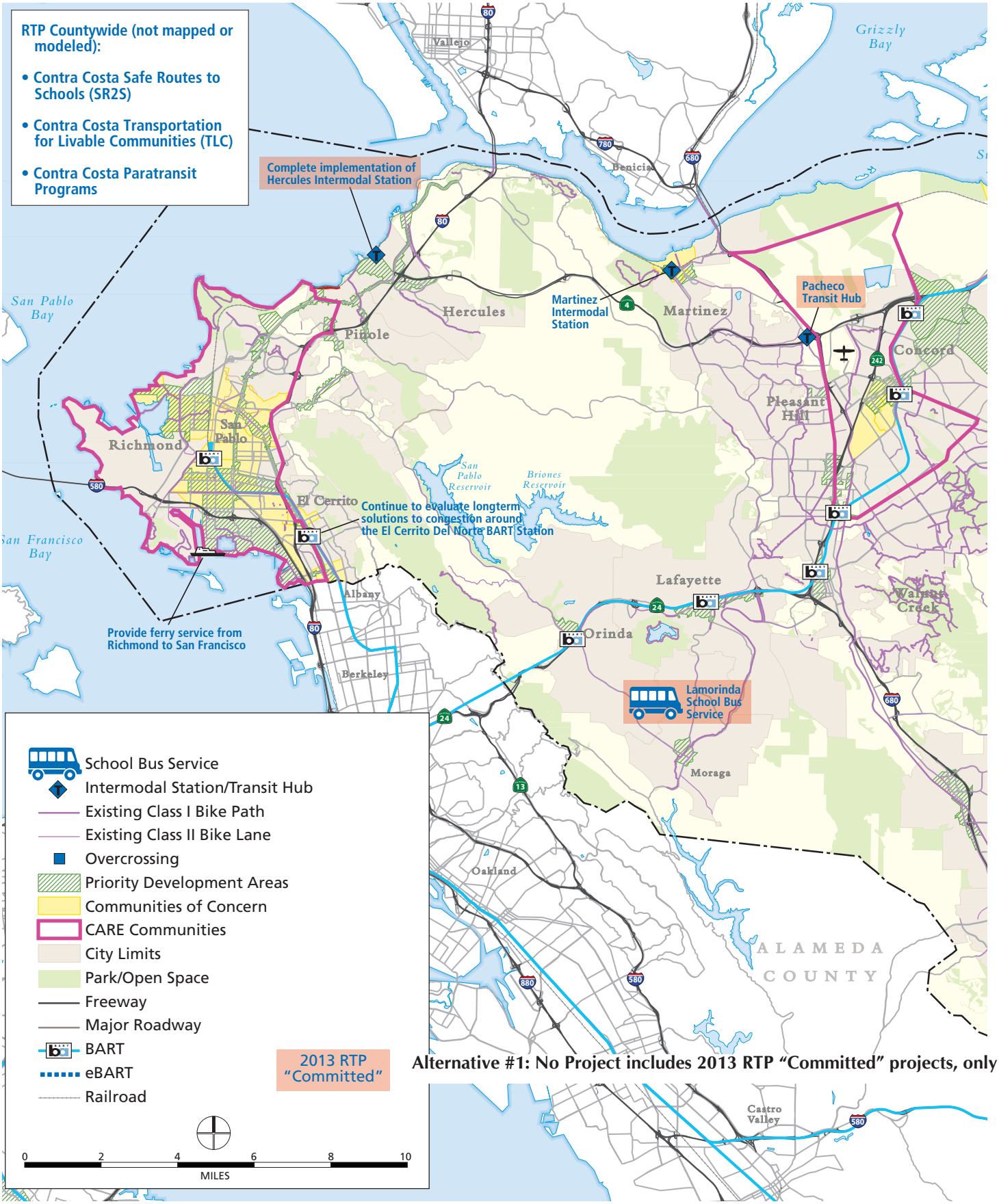
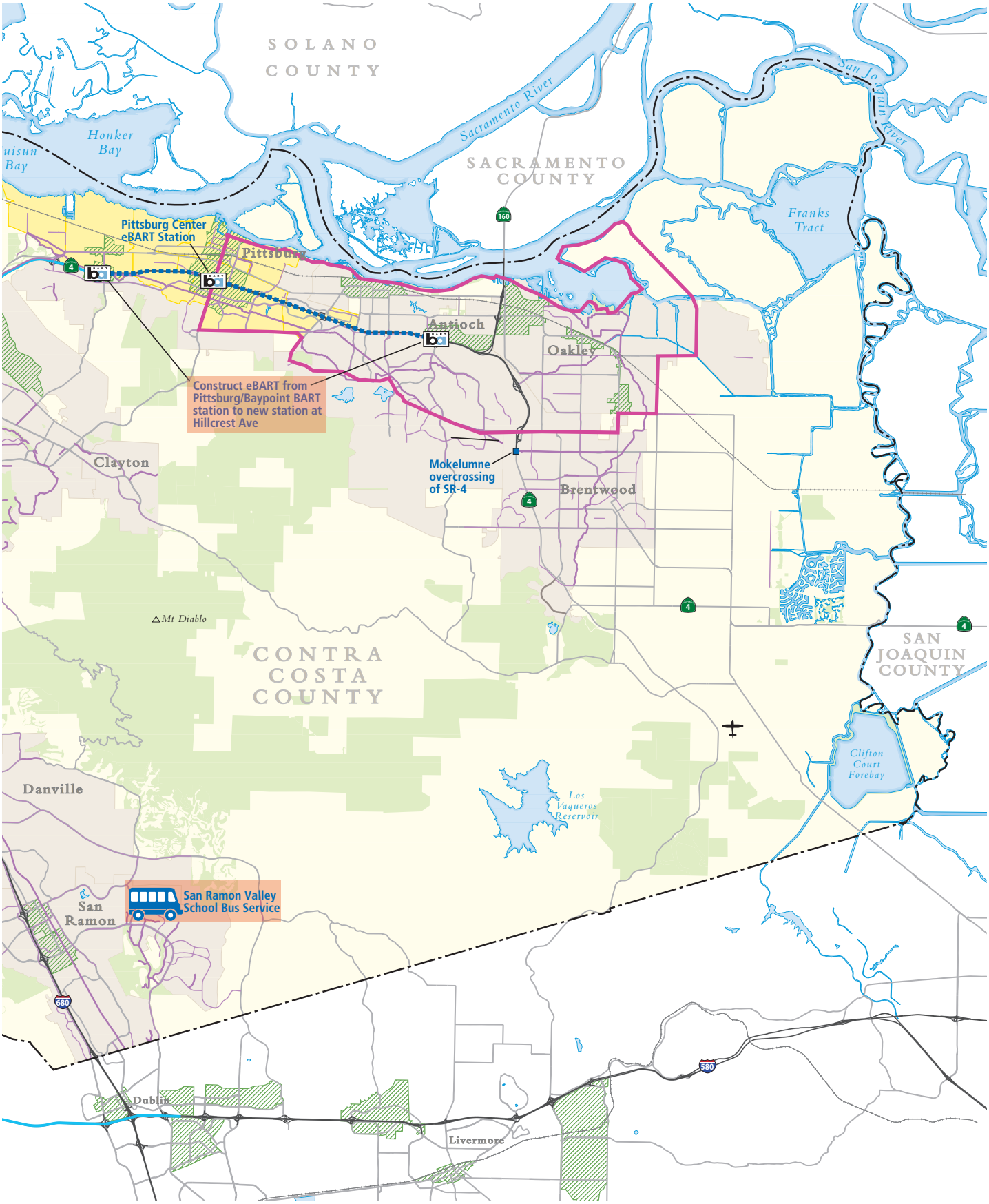



**Figure 3-2**
**Alternative #1 (No Project) and Alternative #2 (2013 RTP) Transit, Bicycle and Pedestrian Projects and Programs**




Source: 2017 CTP, Volume 1, Figure 4-2

A number of individual projects that were included in the 2013 RTP list of committed project have already been constructed, and are now included in the baseline condition. Transportation projects under the No Project Alternative (2040) have already been individually evaluated at a project-specific level, and no further environmental review at the countywide, programmatic scale is necessary. For informational and comparative purposes, additional detail is provided for the No Project Alternative (2040) with regard to the environmental topics of transportation and circulation, greenhouse gas emissions, and air quality.

## Ability to Accomplish Project Objectives

The No Project Alternative (2040) represents the possibility that the Project is not approved, and as such, it would not meet any of the Project objectives. The No Project Alternative does include those transportation projects and programs that have been deemed committed, and that are expected to be implemented irrespective of any decisions regarding adoption of the 2017 CTP.

## Comparative Impact Analysis

### Transportation and Circulation

#### Vehicle Miles Traveled per Capita

As shown in **Table 3.1-2**, total vehicle miles traveled (VMT) in Contra Costa County is expected to increase from approximately 22 million in 2013 to approximately 28 million by year 2040 under the No Project Alternative (a 27.1% increase, or nearly 6 million additional VMT). This increase is a result of expected countywide population and employment growth, which will cause increased travel throughout the County and the rest of the Bay Area region.

When normalized on a per-capita basis, projected per capita VMT under the No Project Alternative (2040) is expected to increase by only 0.1 VMT per capita, or an increase in per capita VMT of 0.5%. This low rate of increase in per capita VMT is a result of the underlying focused-growth land use strategy inherent in *Plan Bay Area's* land use assumptions for year 2040, as well as the transit expansion programs that have already been approved and are expected to become operational under the No Project Alternative (2040).

**Table 3.1-2: VMT Per Capita, No Project Alternative (2040)**

| | | | Change (2013 to 2040) | |
|---|---|---|---|---|
| **Scenario** | **Baseline Condition (2013)** | **No Project (2040)** | **Numerical Change** | **Percent Change** |
| Total Daily VMT | 22,040,884 | 28,009,826 | 5,968,942 | 27.1% |
| VMT Per Capita | 21.0 | 21.1 | 0.1 | 0.5% |

*Source: Compiled modeling results included as Appendix D.*

#### Vehicle Hours of Delay

As shown in **Table 3.1-3**, daily vehicle hours of delay (VHD) is projected to increase by over 252%, from about 71,600 hours in 2013 to nearly 252,600 hours pursuant to the No Project Alternative

(2040). Worsening roadway congestion reflects the additional travel demand generated from future population and employment growth, which cannot sufficiently be accommodated by the existing transportation system and the limited improvements in the efficiency and capacity of the regional transportation system under the No Project Alternative (2040).

**Table 3.1-3: Vehicle Hours Traveled and Vehicle Hours of Delay, No Project Alternative (2040)**

| Scenario | Baseline Condition (2013) | No Project (2040) | Change (2013 to 2040) Numerical Change | Change (2013 to 2040) Percent Change |
|---|---|---|---|---|
| Vehicle Hours Traveled | 569,023 | 897,592 | 328,569 | 57.7% |
| Vehicle Hours Traveled Per Capita | 0.5 | 0.7 | 0.2 | 40.0% |
| Vehicle Hours of Delay | 71,648 | 252,584 | 180,936 | 252.5% |

*Source: Compiled modeling results included as Appendix D.*

## Average Speeds

The total amount of vehicular travel in the County is expected to increase substantially by 2040. Because of the increase in overall demand for vehicular travel, average speeds on freeways and arterials are expected to decline under the No Project Alternative (2040), as compared to the baseline condition (2013) as shown in **Table 3.1-4**.

The reduced travel speeds reflect the effects of increased roadway demand, worsening congestion and the limited capacity of the future transportation infrastructure under the No Project Alternative (2040).

**Table 3.1-4: Average Freeway and Arterials Speeds, No Project Alternative (2040)**

| Scenario | Baseline Condition (2013) | No Project (2040) | Change (2013 to 2040) Numerical Change | Change (2013 to 2040) Percent Change |
|---|---|---|---|---|
| Freeway Speeds | 55.6 | 51.6 | -4.0 | -7.2% |
| Arterial Speeds | 34.2 | 33.3 | -0.9 | -2.6% |

*Source: Compiled modeling results included as Appendix D.*

## Non-Single Occupant Vehicle Mode Share

The percentage of trips taken in single-occupant vehicles is projected to decline under the No Project Alternative (2040) as compared with the baseline condition (2013), while more trips are projected to occur by carpool and transit, as shown in **Table 3.1-5**. This decline is a reflection of the transit expansion programs that have already been approved and are expected to become operational under this No Project Alternative (2040), as well as the effects of congestion serving to make driving alone a less attractive option.

| Table 3.1-5: Daily Transportation Mode Share, No Project Alternative (2040) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Scenario | Drive Alone | Shared Ride, 2 | Shared Ride, 3+ | Transit | Bike | Walk | Total Non-SOV Mode Share |
| Baseline Condition (2013) | 59.0% | 24.2% | 8.9% | 2.7% | 0.5% | 4.7% | 41.0% |
| No Project (2040) | 58.1% | 24.8% | 8.8% | 3.3% | 0.5% | 4.6% | 42.0% |
| *Percent Change from Baseline Condition* | *-1.5%* | *+2.5%* | *-1.1%* | *+18.2%* | — | *-2.2%* | *+2.4%* |

*Source: Compiled modeling results included as Appendix D.*

### Transit Ridership

As shown in **Table 3.1-6**, the total number of trips taken on transit is projected to increase substantially under the No Project Alternative (2040), with transit ridership being about 48% higher than the baseline condition.

| Table 3.1-6: Transit Ridership, No Project Alternative (2040) | | | | |
|---|---|---|---|---|
| | | | Change (2013 to 2040) | |
| Scenario | Baseline Condition (2013) | No Project (2040) | Numerical Change | Percent Change |
| Transit Ridership, All Transit Modes | 101,033 | 149,325 | 48,292 | 47.8% |

*Source: Compiled modeling results included as Appendix D.*

## Greenhouse Gas Emissions

### Direct Transportation-Related GHG Emissions by 2040

Total direct on-road transportation GHG emissions would be expected to increase over time if no standards were put in place. With Pavley 1 regulations taken into account, overall transportation-related GHG emissions decline under the No Project Alternative (2040) by 34% as compared to baseline (2013) emission estimates, as shown in **Table 3.1-7**.

Annual GHG emissions are expected to decrease by more than approximately 1 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) from 2013 (i.e., baseline condition) to 2040 under the No Project Alternative (2040).

| Table 3.1-7: Annual Transportation Emissions, No Project Alternative (2040) | | |
|---|---|---|
| | **Baseline (2013)** | **No Project (2040)** |
| ***Annual Emissions ($MTCO_2e$/yr), no reductions for Advanced Clean Cars/Pavley*** | | |
| Passenger Vehicles | 2,616,225 | 3,409,288 |
| Light Trucks | 162,238 | 89,192 |
| Heavy Trucks | 259,040 | 302,804 |
| Bus | 56,640 | 70,251 |
| **Total** | **3,094,144** | **3,871,535** |
| % Change from Baseline | — | 25% |
| ***Annual Emissions ($MTCO_2e$/yr) with Advanced Clean Cars and Pavley*** | | |
| Passenger Vehicles | 2,560,343 | 1,554,349 |
| Light Trucks | 162,238 | 89,192 |
| Heavy Trucks | 259,040 | 302,804 |
| Bus | 56,640 | 70,251 |
| **Total** | **3,038,261** | **2,016,595** |
| ***Percent Change from Baseline (with Advanced Clean Cars and Pavley)*** | | |
| Passenger Vehicles | — | -39% |
| Light Trucks | — | -45% |
| Heavy Trucks | — | +17% |
| Bus | — | +24% |
| **Total** | — | **-34%** |

*Source: Compiled modeling results included as Appendix E.*

*Plan Bay Area used EMFAC2011 to quantify emissions from on-road mobile vehicles, which incorporated reductions in GHG emissions due to Pavley I and the LCFS.*

*Reductions due to the LCFS are removed from EMFAC2014 entirely. As discussed in the EMFAC2014 Users Guide, the reason for exclusion is that most of the emissions benefits due to LCFS come from the production cycle of the fuel rather than the combustion cycle (tailpipe).*

*EMFAC2014 also incorporates the following regulations that affect GHG emissions:*

** Advanced Clean Cars/Pavley, which contains decreasing light-duty vehicle standards out to model year 2025. Pavley I, incorporated in EMFAC2011, only contained decreasing vehicle standards out to model year 2016.*

** Tractor-Trailer GHG Regulation and Federal Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles*

*For simplicity and to parallel Plan Bay Area, only differences due to the Advanced Clean Cars/Pavley regulation are shown above. However, reductions due to the Tractor-Trailer GHG Regulation and Federal HD GHG Regulations have been incorporated in both annual emissions tables above (these regulations are not incorporated in Table 2.5-9 of Plan Bay Area).*

## Indirect Construction-Related GHG Emissions by 2040

Construction-related GHG emissions generated during implementation of transportation improvement projects pursuant to the No Project Alternative (2040) would contribute to indirect GHG emissions levels in the Bay Area. The transportation projects under the No Project Alternative (2040) that may result in a substantial contribution to indirect GHG emissions levels in the Bay Area have already been individually evaluated at a project-specific level. No further environmental review at the countywide, programmatic scale is necessary.

### Impede GHG Attainment Goals (Executive Order S-3-05 and Executive Order B-16-2012)

Vehicle GHG emissions are expected to continue on a downward trajectory beyond the 2040 horizon year under the No Project Alternative (2040) based on a continued rate of GHG emission reduction benefits over time resulting from similarly effective regulations and regional plans anticipated to be identified through State and local processes. This assessment does not include Pavley or low carbon fuel standards (LCFS) reductions, which would further contribute to greater vehicle emission reductions by 2050. It is reasonable to determine that the downward trajectories represent a reasonable expectation that Contra Costa (like the rest of the Bay Area) is more likely than not to achieve the Executive Orders' goals.

### Sea Level Rise

The construction of new or expanded transportation facilities pursuant to the No Project Alternative (2040) would place transportation and transit infrastructure in areas subject to inundation resulting from of sea level rise. This would expose such projects to a significant risk of deterioration or loss, and expose people to a significant risk of loss, injury or death involving flooding associated with sea level rise. The transportation projects under the No Project Alternative (2040) that may result in a net increase in transportation projects within areas projected to be regularly inundated by sea level rise by midcentury have already been individually evaluated at a project-specific level. No further environmental review at the countywide, programmatic scale is necessary.

## Air Quality

### Operational Criteria Pollutants

As shown in **Table 3.1-8**, the emissions for criteria pollutants reactive organic gases (ROG), oxides of nitrogen ($NO_x$; summertime and wintertime), carbon monoxide (CO), and fine particulate matter ($PM_{2.5}$) from mobile sources would decrease between baseline condition (2013) and the No Project Alternative (2040) horizon. ROG emissions are projected to reduce by 74%, $NO_x$ emissions are projected to be reduced by 84%, CO emissions are projected to be reduced by 77%, and $PM_{2.5}$ emissions are projected to be reduced by 15%, all as compared to baseline condition.

**Table 3.1-8: Emission Estimates for Criteria Pollutants (tons per day), No Project Alternative (2040)**

| | | Baseline (2013) | No Project (2040) |
|---|---|---|---|
| ROG | | 8.71 | 2.23 |
| | % Change from Baseline | — | -74% |
| $NO_x$ | | 16.49 | 2.66 |
| | % Change from Baseline | — | -84% |
| CO | | 69.80 | 16.01 |
| | % Change from Baseline | — | -77% |
| $PM_{2.5}$ | | 0.76 | 0.65 |
| | % Change from Baseline | — | -15% |

*Source: Compiled modeling results included as Appendix F.*

### Particulate Matter Emissions

As shown in **Table 3.1-9**, $PM_{10}$ emissions from all mobile sources would increase by 20% under the No Project Alternative (2040) as compared with the baseline condition. Additionally, $PM_{2.5}$ emissions from all mobile sources would increase by 2% as compared with the baseline condition. The higher levels of particulate matter emissions under the No Project Alternative (2040) condition are a result of these emissions being strongly influenced by projected growth in VMT (which directly affects entrained roadway dust), with some contributions from tire and brake wear, and exhaust.

**Table 3.1-9: Particulate Matter Emissions (tons per day), No Project Alternative (2040)**

| | | Baseline (2013) | No Project (2040) |
|---|---|---|---|
| Overall VMT | | 22,159,662 | 28,173,605 |
| | % Change from Baseline | | 27% |
| $PM_{10}$ | | | |
| | Vehicle Emissions | 1.51 | 1.58 |
| | Entrained Dust | 3.50 | 4.45 |
| | **Total** | **5.02** | **6.03** |
| | % Change from Baseline | | 20% |
| $PM_{2.5}$ | | | |
| | Vehicle Emissions | 0.76 | 0.65 |
| | Entrained Dust | 0.53 | 0.67 |
| | **Total** | **1.28** | **1.32** |
| | % Change from Baseline | | 2% |

*Source: Compiled modeling results included as Appendix F.*

The reason particulate matter emissions from mobile sources are not expected to increase at the same rate as VMT is the stringent emission controls that the California Air Resources Board (CARB) has adopted for new vehicle engines, particularly diesel engines, including the Truck and Bus Regulation. Daily VMT is projected to increase by 27% under the No Project Alternative (2040) as compared with the baseline condition, but this increase is offset to a certain degree by expected regulatory measures and fleet improvements. Particulate matter control programs implemented by the Air District also contribute to the emission reductions relative to VMT.

### Mobile Source Toxic Air Contaminant Emissions

As shown in **Table 3.1-10**, there would be a substantial decrease in diesel particulate matter (DPM), benzene, and 1,3-butadiene under the No Project Alternative (2040) as compared with the baseline condition. These reductions in toxic air contaminants (TACs) can be attributed to California state laws that control TAC emissions. These laws include Assembly Bill (AB) 1807 that created the Toxic Air Contaminant Identification and Control Act, Senate Bill (SB) 2588 that established the Air Toxics "HOT Spots" Information and Assessment Act, SB 656 that requires CARB and local Air Districts to identify control measures for particulate matter, as well as other state regulations that reduce other pollutants.

| Table 3.1-10: Toxic Air Contaminant Emissions (kg per day), No Project Alternative (2040) | | | |
|---|---|---|---|
| | | Baseline (2013) | No Project (2040) |
| **DPM** | | 198.53 | 6.87 |
| | % Change from Baseline | | -97% |
| **Benzene** | | 215.45 | 50.69 |
| | % Change from Baseline | | -76% |
| **1,3 Butadiene** | | 9.54 | 1.98 |
| | % Change from Baseline | | -79% |

*Source: Compiled modeling results included as Appendix F.*

## Relative Impacts on Communities of Concern

The transportation projects under the No Project Alternative (2040) that may result in disproportional impacts on communities of concern (COCs) have already been individually evaluated at a project-specific level. No further environmental review at the countywide, programmatic scale is necessary. For informational and comparative purposes, however, additional detail is provided.

TAC and $PM_{2.5}$ emissions were estimated along the major transportation corridors within all County COCs for the baseline condition (2013) and the No Project Alternative (2040) condition. Table **3.1-11** lists the results, expressed as a percentage change in exhaust emissions when compared with baseline emission levels.

Overall TAC and $PM_{2.5}$ exhaust emissions from diesel and gasoline vehicles decrease significantly throughout the County between the baseline condition (2013) and the No Project Alternative (2040). Under the No Project Alternative (2040), DPM emissions are projected to decrease by 97% countywide, benzene emissions are projected to decrease by 76% countywide, 1,3 butadiene emissions are projected to decrease by 79% countywide, and total $PM_{2.5}$ emissions[3] are projected to increase by 3% countywide. Most of the TAC emission reductions are largely attributed to implementation of CARB's On-Road Heavy-Duty Diesel Vehicle Regulations.

There would be no difference in DPM emissions between COCs and the County. The difference in benzene emissions (a 78% decrease) and 1,3 butadiene emissions (an 81% decrease) between COCs and the County would be 2%, and the difference in $PM_{2.5}$ emissions between COCs (a 4% decrease) and the County would be 5%.

While the percent difference in estimated TAC emissions is not substantial between COCs and the county as a whole, the analysis does indicate that the county's COC communities would generally realize similar or slightly greater reductions in the levels of $PM_{2.5}$ and TAC emission than is expected throughout the entire county.

[3] Total $PM_{2.5}$ includes exhaust from all vehicles, as well as re-entrained road dust, brake wear and tire wear, and does not include TACs from gasoline vehicles.

| Table 3.1-11: Relative Change in TAC Emissions, COCs versus Countywide, No Project Alternative (2040) | | |
|---|---|---|
| | | **No Project (2040)** |
| **VMT** | | |
| | Change Countywide | 28% |
| | Change within COCs | 23% |
| | Relative Difference, COCs as Compared to County Overall | -5% |
| **DPM** | | |
| | Change in Emissions, Countywide | -97% |
| | Change in Emissions, COCs | -97% |
| | Relative Difference, COCs as Compared to County Overall | same |
| **$PM_{2.5}$ (Exhaust)** | | |
| | Change in Emissions, Countywide | -87% |
| | Change in Emissions, COCs | -89% |
| | Relative Difference, COCs as Compared to County Overall | 2% |
| **Benzene** | | |
| | Change in Emissions, Countywide | -76% |
| | Change in Emissions, COCs | -78% |
| | Relative Difference, COCs as Compared to County Overall | 2% |
| **1,3 Butadiene** | | |
| | Change in Emissions, Countywide | -79% |
| | Change in Emissions, COCs | -81% |
| | Relative Difference, COCs as Compared to County Overall | 2% |
| **Total $PM_{2.5}$ (Exhaust and Entrained Dust)** | | |
| | Change in Emissions, Countywide | 3% |
| | Change in Emissions, COCs | -2% |
| | Relative Difference, COCs as Compared to County Overall | 5% |

*Source: Compiled modeling results included as Appendix F.*

*A positive relative difference in emissions indicates there is a greater reduction in COCs as compared to the County overall.*

These results may be explained primarily by the projected lower overall increase in VMT within the County's COCs, as compared to the anticipated increase in VMT for the county overall. The potential for disproportional impacts on COCs under the No Project Alternative (2040) is less than significant and of a lesser degree than the Project.

# Alternative 2: 2013 RTP Alternative

## Description of Alternative 2

*Plan Bay Area* (2013) currently serves as the region's adopted SCS as required under SB 375, and represents a transportation and land use "blueprint" for how the Bay Area can address its transportation mobility and accessibility needs, land development, and GHG emissions reduction requirements through the year 2040. *Plan Bay Area* also serves as the adopted 2040 RTP for the San Francisco Bay Area region, based upon ABAG *Projections 2013*.

Each of the nine county Congestion Management Agencies (CMAs) within the Bay Area prepared a long-range planning and policy document to assess transportation needs and to guide transportation priorities and funding decisions for that county over a 20- to 25-year horizon. These countywide plans identified transportation projects and programs that were forwarded to MTC for consideration in the long-range RTP. The MTC then assessed each transportation project and program against a Transportation Investment Strategy based on available funding through 2040; and the ability of these projects and programs to support *Plan Bay Area's* goals of reducing automobile dependency, promoting healthier communities through reduced pollution and cleaner air, addressing the mobility of people, and acknowledging the importance of goods movement corridors.

MTC estimated that it would have about $289 billion (year of expenditure dollars) in revenues to spend on transportation in the Bay Area through the year 2040. Most of these expected funds are allocated to already-committed projects (see Alternative 1 above) and conditioned discretionary expenditures, mainly transit operations and maintenance. Around 20% of the revenue was allocated for new transportation programs and strategies, as discretionary revenues available for new investments. MTC's Transportation Investment Strategy allocated these discretionary funds to prioritized transportation projects that support focused growth, mainly those projects that maintain and enhance existing infrastructure and transit service, with the remainder split between expansion of road, transit, and bike/pedestrian networks. This investment plan is guided by six strategies that support the "three E's" of sustainability (economy, environment, and equity). An estimated $57 billion in discretionary revenues were distributed among the following strategies, plus a $2 billion reserve:

- Maintaining and sustaining the existing transit system by funding timely transit vehicle replacement and other high priority transit capital needs, fund operating needs for existing transit services
- Building next generation transit by developing a regional funding strategy to implement transit projects that receive a high performance score
- Boosting transit and road efficiency of the existing transportation system by improving reliability and reducing delay in congested corridors, charging drivers a fee to drive in specific congested areas and using the revenue to fund transportation improvements, maximizing the efficiency and management of existing roadway infrastructure, and limiting roadway expansion to only the most essential locations

- Protecting the environment by making modest investments to support innovative policy initiatives to help the region achieve and possibly exceed its greenhouse gas emission reduction targets

MTC reviewed each of the un-committed or discretionary projects and programs submitted from each of the nine CMAs to identify high- and low-performing projects as compared to performance targets adopted by MTC and ABAG, as well as a benefit-cost assessment. Based on the results of the MTCs assessment, individual projects were identified and prioritized for funding in *Plan Bay Area* and for inclusion in the 2013 RTP.

The projects and programs for Contra Costa that were ultimately included in the 2013 RTP and that comprise Alternative 2 are listed in the above summary Table 3.1-1. They also are shown on Figure 3.1-1 (Roadways and HOV lanes) and Figure 3.1-2 (Transit, Bicycle, and Pedestrian Projects and Programs). Implementation of these projects is assumed under each of the subsequent alternatives discussed herein.

The 2013 RTP, or MTCs Preferred Transportation Investment Strategy of projects and programs in Contra Costa was fully analyzed in the *Plan Bay Area EIR* (2013), and represents the anticipated "future 2040 scenario," which was fully evaluated in a prior EIR, and against which additional transportation investment options can be compared.

## Ability to Accomplish Project Objectives

Alternative 2 (the 2013 RTP Alternative) would have the following ability to meet the Project objectives when compared with the Project:

- Alternative 2 would *meet to a lesser degree* the objective to support the efficient, safe, and reliable movement of people and goods using all available travel modes (Goal 1). It alternative would make fewer improvements overall and fewer improvements to the county's roadway system resulting in higher levels of vehicle delay and lower speeds. It also would not eliminate as many gaps in the transportation system or make the same level of investments in innovation included in the Project. Alternative 2 would not provide the same level of support for goods movement and economic development.
- Alternative 2 would *meet to a lesser degree* the objective to manage growth to sustain Contra Costa's economy, preserve its environment, and support its communities (Goal 2). It would provide less support for goods movement and improvements relied on in local general plans. Alternative 2 would also result in higher levels of GHG emissions; however, it would avoid some of the impacts resulting from construction of those improvements.
- Alternative 2 would *meet to a lesser degree* the objective to expand safe, convenient, and affordable alternatives to the single-occupant vehicle (Goal 3). It would provide fewer improvements that would support walking, bicycling, transit use, and carpooling.
- Alternative 2 would *meet to a lesser degree* the objective to maintain the transportation system (Goal 4). It would provide significantly less support for maintaining the transportation system.

- Alternative 2 would *meet to a lesser degree* the objective to continue to invest wisely to maximize the benefits of available funding (Goal 5). It would provide less overall funding and fewer opportunities for leveraging local investments and public/private partnerships.

While implementation of Alternative 2 could help achieve most of the basic Project Objectives, it would do so to a substantially lesser degree than the Project.

## Comparative Impact Analysis – Impacts Different than those of the Project

The following is a comparative analysis of those environmental impacts that would occur under Alternative 2, and for which there are differences between this alternative and the Project. In most instances, Alternative 2 would lessen the magnitude of potentially significant construction-related environmental effects as indicated for the Project because there are fewer transportation and transit improvement projects included in this alternative than in the Project. Impacts that would occur under Alternative 2 would be effectively reduced to less than significant through implementation of mitigation measures similar to those identified for the Project, except where noted as significant and unavoidable.

### Transportation and Circulation

#### Vehicle Miles Traveled per Capita (↓)

As indicated in **Table 3.1-12**, transportation projects and new or expanded transit projects under Alternative 2 would result in a slight decrease (-0.5%) in per capita VMT when compared with the baseline condition, which is less than the increase (+1%) projected under the Project. This reduction in per capita VMT reflects the effects of increased investments in multi-modal transportation options and the emphasis on locating new residential and commercial development within transit-accessible areas.

**Table 3.1-12: VMT Per Capita, Alternative 2 Comparison**

| Scenario | Total VMT | Vehicle Miles Traveled Per Capita | Comparison to Baseline (2013) | | Comparison To No Project (2040) | |
|---|---|---|---|---|---|---|
| | | | Numerical Change | Percent Change | Numerical Change | Percent Change |
| Baseline Condition (2013) | 22,040,884 | 21.0 | — | — | — | — |
| No Project (2040) | 28,009,826 | 21.1 | — | — | — | — |
| Investment Program, 2017 CTP | 28,119,444 | 21.2 | +0.2 | +1.0% | +0.1 | +0.5% |
| Alternative 2 | 27,803,110 | 20.9 | -0.1 | -0.5% | -0.2 | -1.0% |

*Source: Compiled modeling results included as Appendix D.*

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 2 is compared to the future No Project condition (2040) as well. When compared with the No Project (2040) condition, implementation of Alternative

2 would result in a slight decrease (-1.0%) in VMT per capita, which is less than the increase (+0.5%) projected under the Project.

Overall, implementation of Alternative 2 would not result in an appreciable increase in per capita VMT. The potential for impact related to per capita VMT under Alternative 2 is considered less than significant, and of a lesser degree than the Project.

### Vehicle Hours of Delay (↑)

As indicated in **Table 3.1-13**, transportation projects and new or expanded transit projects under Alternative 2 would result in an appreciable increase (208.7%) in VHD when compared with the baseline condition, which is greater than the increase (166.1%) projected under the Project. This increase would occur despite the increased transportation options made available under the 2013 RTP.

**Table 3.1-13: Vehicle Hours of Delay, Alternative 2 Comparison**

| | | Comparison to Baseline (2013) | | Comparison To No Project (2040) | |
|---|---|---|---|---|---|
| **Scenario** | **Vehicle Hours of Delay** | **Numerical Change** | **Percent Change** | **Numerical Change** | **Percent Change** |
| Baseline Condition (2013) | 71,648 | — | — | — | — |
| No Project (2040) | 252,584 | — | — | — | — |
| Investment Program, 2017 CTP | 190,685 | +119,037 | +166.1% | -61,899 | -24.5% |
| Alternative 2 | 221,166 | +149,518 | +208.7% | -31,418 | -12.4% |

*Source: Compiled modeling results included as Appendix D.*

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 2 is compared to the future No Project condition (2040) as well. When compared with the No Project (2040) condition, implementation of Alternative 2 would result in a decrease (12.4%) in VHD, which is less than the decrease (24.5%) projected under the Project.

Overall, implementation of Alternative 2 would result in an appreciable (greater than 5%) increase in VHD. No standard mitigation strategy to address VHD at the plan or regional level is considered feasible due to the variability in congestion characteristics, driver behavior, and cost limitations. The potential for impact related to VHD under Alternative 2 is therefore considered significant and unavoidable and of a greater degree than the Project.

### Average Speeds (↑)

As indicated in **Table 3.1-14**, the average speeds on freeways and arterials throughout Contra Costa County pursuant to Alternative 2 are expected to be slower (6.3% for freeways and 2% for arterials) than when compared with the baseline condition, which is greater overall than the slowdown projected under the Project (2.7% for freeways and 2.3% for arterials). The 6.3% decrease in freeway speeds is considered appreciable (i.e., greater than 5%) and this impact would be considered potentially significant.

| Table 3.1-14: Average Freeway and Arterial Speeds, Alternative 2 Comparison | | | | | |
|---|---|---|---|---|---|
| | | Comparison to Baseline (2013) | | Comparison to No Project (2040) | |
| Scenario | Average Speed | Numerical Change | Percent Change | Numerical Change | Percent Change |
| Baseline Condition (2013) | | | | | |
| Freeway | 55.6 | — | — | — | — |
| Arterial | 34.2 | — | — | — | — |
| No Project (2040) | | | | | |
| Freeway | 51.6 | — | — | — | — |
| Arterial | 33.3 | — | — | — | — |
| Investment Program, 2017 CTP | | | | | |
| Freeway | 54.1 | -1.5 | -2.7% | +2.5 | +4.8% |
| Arterial | 33.4 | -0.8 | -2.3% | +0.1 | +0.3% |
| Alternative 2 | | | | | |
| Freeway | 52.1 | -3.5 | -6.3% | +0.5 | +1.0% |
| Arterial | 33.5 | -0.7 | -2% | +0.2 | +0.6% |

*Source: Compiled modeling results included as Appendix D.*

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 2 is compared to the future No Project condition (2040) as well. When compared with the No Project (2040) condition, implementation of Alternative 2 would result in an increase in average speeds (1% for freeways and 0.6% for arterials), which is less overall than the increase (4.8% for freeways and 0.3% for arterials) projected under the Project. This increase in average speeds on roadways as compared to the No Project (2040) condition is due to those projects under the 2013 RTP that increase roadway capacity and/or that shift travel to non-roadway modes.

Overall, implementation of Alternative 2 would result in an appreciable (greater than 5%)decrease in average speeds on freeways, but would not result in an appreciable decrease in average speeds on arterials. CCTA cannot require local implementing agencies to adopt mitigation measures, and it is ultimately the responsibility of a lead agency to determine and adopt such mitigation. The potential for impact related to average speeds on freeways and arterials under Alternative 2 is therefore considered significant and unavoidable and of a greater degree than the Project.

### Non-Single Occupant Vehicle Mode Share (↑)

As indicated in **Table 3.1-15**, implementation of Alternative 2 would result in an overall increase (2.4%) in mode shares for transit, HOV, or other non-single occupancy vehicle (SOV) modes when compared with the baseline condition, which is slightly less than the increase (2.7%) achieved under the Project.

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 2 is compared to the future No Project condition (2040) as well. When compared with the No Project (2040) condition, implementation of Alternative

2 would not result in a change in mode shares for transit, HOV, or other non-SOV modes. The lack of change in mode share likely reflects the relative balance of roadway capacity and transit improvements that are included in the 2013 RTP.

**Table 3.1-15: Daily Transportation Mode Share, Alternative 2 Comparison**

| Scenario | Drive Alone | Shared Ride, 2 | Shared Ride, 3+ | Transit | Bike | Walk | Total Non-SOV Mode Share |
|---|---|---|---|---|---|---|---|
| Baseline Condition (2013) | 59.0% | 24.2% | 8.9% | 2.7% | 0.5% | 4.7% | 41.0% |
| Investment Program, 2017 CTP | 57.9% | 24.7% | 8.7% | 3.4% | 0.5% | 4.8% | 42.1% |
| Alternative 2 | 58.1% | 24.8% | 8.8% | 3.3% | 0.5% | 4.6% | 42.0% |
| *Percent Change from Baseline Condition* | *-1.5%* | *+2.5%* | *-1.1%* | *+22.2%* | — | *-2.1%* | *+2.4%* |
| No Project (2040) | 58.1% | 24.8% | 8.8% | 3.3% | 0.5% | 4.6% | 42.0% |
| Investment Program, 2017 CTP | 57.9% | 24.7% | 8.7% | 3.4% | 0.5% | 4.8% | 42.1% |
| Alternative 2 | 58.1% | 24.8% | 8.8% | 3.3% | 0.5% | 4.6% | 42.0% |
| *Percent Change from No Project* | — | — | — | — | — | — | — |

*Source: Compiled modeling results included as Appendix D.*

Overall, implementation of Alternative 2 would not result in an appreciable decrease in mode shares for transit, HOV, or other non-SOV modes. The potential for impact related to mode shares for transit, HOV, or other non-SOV modes under Alternative 2 is considered less than significant, and Alternative 2 would achieve a greater mode share for transit, HOV, or other non-SOV modes than would the Project.

### Transit Ridership (↑)

As indicated in **Table 3.1-16**, implementation of Alternative 2 would result in a substantial increase (49%) in daily transit ridership when compared with the baseline condition, although that increase would be less substantial than the increase (55.8%) under the Project.

**Table 3.1-16: Transit Ridership, Alternative 2 Comparison**

| | | Comparison to Baseline (2013) | | Comparison To No Project (2040) | |
|---|---|---|---|---|---|
| Scenario | Transit Ridership | Numerical Change | Percent Change | Numerical Change | Percent Change |
| Baseline Condition (2013) | 101,033 | — | — | — | — |
| No Project (2040) | 149,325 | — | — | — | — |
| Investment Program, 2017 CTP | 157,391 | 56,358 | 55.8% | 8,066 | 5.4% |
| Alternative 2 | 150,520 | 49,500 | 49.0% | 1,200 | 0.8% |

*Source: Compiled modeling results included as Appendix D.*

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 2 is compared to the future No Project condition

(2040) as well. When compared with the No Project (2040) condition, implementation of Alternative 2 would result in a marginal increase (0.8%) in daily transit ridership, which is less than the increase (5.4%) under the Project.

Overall, implementation of Alternative 2 would not result in an appreciable decrease in transit ridership. The potential for impact related to a decrease in transit ridership under Alternative 2 is considered less than significant, but Alternative 2 would not achieve as great transit ridership than would the Project.

## Greenhouse Gas Emissions

### Vehicle GHG Emission Reductions, per SB 375 (↓)

When compared with the baseline condition, implementation of Alternative 2 would result in slightly less per capita carbon dioxide ($CO_2$) emissions (an increase of 1.1%) than the Project (an increase of 3.1%), not accounting for any County share of MTC policy-based reductions (**Table 3.1-17**). Alternative 2 would similarly be consistent with SB 375's reduction targets. Thus, Alternative 2 would be consistent with SB 375's reduction targets and would not impede the Bay Area region's ability to reduce per capita passenger vehicle and light duty truck $CO_2$ emissions by 7% by 2020, or by 15% by 2035 as compared to regional 2005 baseline.

**Table 3.1-17: Daily $CO_2$ Emissions Per Capita, Alternative 2 Comparison**

| Scenario | Daily $CO_2$ Emissions Per Capita | Comparison to Baseline (2013) Percent Change | Comparison To No Project (2040) Percent Change | Comparison To *Plan Bay Area* (2040) Percent Change |
|---|---|---|---|---|
| Baseline Condition (2013) | 18 | — | — | — |
| No Project (2040) | 18.5 | — | — | — |
| *Plan Bay Area* (2040) | 18.2 | — | — | — |
| Alternative 2 | 18.2 | +1.1% | -1.6% | no change |

*Source: Compiled modeling results included as Appendix E.*

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 2 is compared to the future No Project condition (2040) as well. When compared with the No Project (2040) condition, implementation of Alternative 2 would result in slightly less per capita $CO_2$ emissions (an decrease of 1.6%) than the Project (an increase of 1%), not accounting for any County share of MTC policy-based reductions.

The population of Contra Costa and their associated total daily $CO_2$ emissions from cars and light duty trucks pursuant to Alternative 2 is expected to increase by 2040, but generally at a faster pace than the overall Bay Area. Data for per capita emissions in Contra Costa in 2005 is not available, but emissions pursuant to Alternative 2 are projected to be approximately 18.2 pounds per day per capita in 2040. This rate of daily per capita emissions in year 2040 represents Contra Costa's portion of the Bay Area's regional per capita emissions as projected in the *Plan Bay Area 2040 EIR*.

Alternative 2 would not impede the Bay Area region from being able to meet SB 375's emission reduction targets (i.e., would have a less than significant impact) based upon the following:

- The transportation improvements included in Alternative 2 represent all of the regional transportation system improvements included in MTC's 2013 RTP that are located within Contra Costa. In other words, those same transportation system improvements anticipated to be implemented in Contra Costa pursuant to *Plan Bay Area* are included in Alternative 2.
- Similarly, the land use projections assumed for Contra Costa as derived from ABAGs' *Projections 2013* and used in the *Plan Bay Area EIR* are the same land use projections assumed under Alternative 2.
- The *Plan Bay Area EIR* concluded that future land use development and transportation system improvements that are consistent with those called for under *Plan Bay Area* would result in even greater emission reductions than targeted by SB 375 for the years 2020 and 2035. Alternative 2 represents Contra Costa's portion of future land use development and transportation system improvements, consistent with those called for under *Plan Bay Area*.
- Contra Costa's year 2040 $CO_2$ emissions, as modeled for this EIR pursuant to Alternative 2, represent the county's share of all projected 2040 regional $CO_2$ emissions throughout the Bay Area. These Contra Costa emissions, aggregated with emissions from the other eight counties that represent the Bay Area region, have already been found to meet SB 375's targeted reductions for per capita car and light duty truck emissions.

Thus, the per capita $CO_2$ emissions from passenger vehicles and light duty trucks pursuant to Alternative 2 are consistent with SB 375's reduction targets. Moreover, per capita $CO_2$ emissions under Alternative 2 would be less than those under the Project and the impact would be less than significant.

### Direct Transportation-Related GHG Emissions by 2040 (↔)

As shown in **Table 3.1-18**, with the Pavley 1 regulations taken into account, overall transportation-related GHG emissions decline under Alternative 2 by 35% as compared with the baseline condition (2013) emission estimates.

Annual GHG emissions are expected to decrease by nearly 2 $MMTCO_2e$ from 2013 (i.e., baseline condition) to 2040 under Alternative 2. Since overall transportation-related GHG emissions are expected to decline from the baseline condition to 2040 under Alternative 2, this alternative would not result in an adverse impact, which is similar to the Project. For comparison purposes, Alternative 2 also shows a decrease in $CO_2e$ emissions as compared with the No Project Alternative.

| Table 3.1-18: Annual Transportation Emissions, Alternative 2 Comparison | | | |
|---|---|---|---|
| | Baseline (2013) | No Project (2040) | Alternative 2 (2040) |
| ***Annual Emissions ($MTCO_2e$/yr), no reductions for Advanced Clean Cars/Pavley*** | | | |
| Passenger Vehicles | 2,616,225 | 3,409,288 | 3,349,623 |
| Light Trucks | 162,238 | 89,192 | 88,154 |
| Heavy Trucks | 259,040 | 302,804 | 302,773 |
| Bus | 56,640 | 70,251 | 70,251 |
| **Total** | **3,094,144** | **3,871,535** | **3,810,801** |
| *% Change from Baseline* | | *25%* | *23%* |
| ***Annual Emissions ($MTCO_2e$/yr) with Advanced Clean Cars and Pavley*** | | | |
| Passenger Vehicles | 2,560,343 | 1,554,349 | 1,527,161 |
| Light Trucks | 162,238 | 89,192 | 88,154 |
| Heavy Trucks | 259,040 | 302,804 | 302,773 |
| Bus | 56,640 | 70,251 | 70,251 |
| **Total** | **3,038,261** | **2,016,595** | **1,988,340** |
| ***Percent Change from Baseline (with Advanced Clean Cars and Pavley)*** | | | |
| Passenger Vehicles | | -39% | -40% |
| Light Trucks | | -45% | -46% |
| Heavy Trucks | | +17% | 17% |
| Bus | | +24% | 24% |
| **Total** | | **-34%** | **-35%** |

*Source: Compiled modeling results included as Appendix E.*

*Plan Bay Area used EMFAC2011 to quantify emissions from on-road mobile vehicles, which incorporated reductions in GHG emissions due to Pavley I and the LCFS.*

*Reductions due to the LCFS are removed from EMFAC2014 entirely. As discussed in the EMFAC2014 Users Guide, the reason for exclusion is that most of the emissions benefits due to LCFS come from the production cycle of the fuel rather than the combustion cycle (tailpipe).*

*EMFAC2014 also incorporates the following regulations that affect GHG emissions:*

** Advanced Clean Cars/Pavley, which contains decreasing light-duty vehicle standards out to model year 2025. Pavley I, incorporated in EMFAC2011, only contained decreasing vehicle standards out to model year 2016.*

** Tractor-Trailer GHG Regulation and Federal Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles*

*For simplicity and to parallel Plan Bay Area, only differences due to the Advanced Clean Cars/Pavley regulation are shown above. However, reductions due to the Tractor-Trailer GHG Regulation and Federal HD GHG Regulations have been incorporated in both annual emissions tables above (these regulations are not incorporated in Table 2.5-9 of Plan Bay Area).*

### Indirect Construction-Related GHG Emissions by 2040 (↔)

Construction-related GHG emissions generated during implementation of transportation improvement projects pursuant to Alternative 2 would contribute to indirect GHG emissions levels in the Bay Area. Due to the project-specific nature of construction emissions, quantitative estimates are not included in the assessment. The additional increment of construction-related indirect emissions under Alternative 2 is considered significant on a cumulative basis. Implementation of

identified mitigation measures would normally reduce impacts to a level of less than significant. However, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Impacts would be significant and unavoidable, which is similar to the Project.

### Impede GHG Attainment Goals (Executive Order S-3-05 and Executive Order B-16-2012) (↔)

As described in Chapter 2.2, Greenhouse Gas Emission, this assessment evaluates consistency by identifying whether or not implementation of Alternative 2 is likely to impede attainment of Executive Orders S-3-05 and B-16-2012, which both identify GHG reduction targets.

Emissions under Alternative 2 are expected to continue on a downward trajectory beyond the 2040 horizon year. It is reasonable to determine that the anticipated downward trajectory represents a reasonable expectation that Contra Costa County (similar to the rest of the Bay Area) is more likely than not to achieve the Executive Orders' goals, and that Alternative 2, similar to the Project, is not likely to impede achievement of these goals.

Modeling tools currently available are not able predict emission levels by year 2050 for a variety of reasons, but the overall downward trajectory beyond 2040indicates that implementation of Alternative 2 would not impede achievement of GHG reduction goals of these Executive Orders, and the impacts associated with this Alternative would be less than significant, which is similar to the Project.

### Conflicts with GHG Reduction Policies (↔)

Implementation of Alternative 2 is not expected to conflict with any applicable plan, policy or regulation adopted with the intent to reduce GHG emissions. Specifically, and similar to the Project, Alternative 2 would not conflict with the GHG reduction goals of SB 375, AB 32, or Executive Order S-3-05 and Executive Order B-16-2012.

Alternative 2 is based on the compact land use pattern as anticipated pursuant to *Plan Bay Area's* population and land used development forecasts as derived from ABAG's *Projections 2013.* Alternative 2 is paired with targeted transportation investments within Contra Costa that are also fully consistent with the transportation investments embedded within *Plan Bay Area* as derived from MTC's 2013 RTP. Similar to the Project, Alternative 2 is fully consistent with *Plan Bay Area*, which was previously found (in the *Plan Bay Area 2040 EIR*) to be complimentary to GHG emission reductions as indicated under State goals and mandates. The *Plan Bay Area 2040 EIR* also concluded that the impacts of *Plan Bay Area* were not expected to substantially conflict with local climate action plans or local GHG reduction plans, and was considered to have no adverse conflicts with any applicable plan, policy or regulation adopted with the intent to reduce GHG emissions. Thus, Alternative 2 would similarly have no adverse conflicts with any applicable plan, policy or regulation adopted with the intent to reduce GHG emissions and the impact is less than significant, which is similar to the Project.

### Sea Level Rise (↓)

The construction of new or expanded transportation facilities pursuant to the Alternative 2 would place transportation and transit infrastructure in areas subject to inundation as a result of sea level rise, exposing such projects to a significant risk of deterioration or loss and exposing people to a significant risk of loss, injury or death involving flooding associated with sea level rise. There are a number of transportation projects under the Alternative 2 that are proposed for construction in areas projected to be subject to regular inundation by midcentury, but ultimately fewer than under the Project. Any increase in transportation investments within the sea level rise inundation zone is considered significant. CCTA cannot require local implementing agencies to adopt mitigation measures pertaining to local regulations and policies, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt such mitigation. In addition, there may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Therefore, the impact under Alternative 2 would be significant and unavoidable. Alternative 2 would have an overall lesser degree of impact than under the Project due to the lower total number of transportation projects in the projected inundation areas.

## Air Quality

### Consistency with the Clean Air Plan (↑)

Alternative 2 is generally consistent with those primary goals of the Bay Area 2010 Clean Air Plan to attain air quality standards, and to protect public health. As further demonstrated by the anticipated reductions in air quality emissions over time, Alternative 2 supports implementation of applicable control measures to reduce emission levels of criteria pollutants, particulate matter and TACs.

Implementation of Alternative 2 would result in improvements in relevant transportation parameters, including reductions in total daily VMT, increases in non-single occupant vehicles, and increases in transit ridership. Each of these improvements would lead to overall reduced emissions contributing to improved air quality and protection of public health.

The following provides an overview analysis of Alternative 2's relative consistency with individually applicable control measures of the 2010 Clean Air Plan. As demonstrated below, potential impacts under Alternative 2 would be less than significant, but would not attain the same level of consistency with the Clean Air Plan measures as would the Project due, to the overall lower level of investment in the transportation control measures under Alternative 2.

- **TCM A-1: Local and Area-Wide Bus Service Improvements:** Alternative 2 includes transportation projects and programs intended to sustain and improve bus service throughout the county. The investment level in projects and programs that would increase transportation mode share and transit safety would be lower under Alternative 2 (9.8%) than under the Project (14%).
- **TCM A-2: Local and Regional Rail Service Improvements:** Alternative 2 includes transportation projects and programs intended to sustain and expand rail service throughout the county. Alternative 2's relative total investment in rail service improvement projects and programs would be lower (14.4%) than under the Project (17.4%).

- **TCM B-1: Freeway and Arterial Operations Strategies:** Alternative 2 includes transportation projects and programs intended to sustain and expand rail service throughout the county. The investment level in freeway and arterial performance improvements under Alternative 2 would be substantially lower (0.1%) than under the Project (12.4%).
- **TCM B-2: Transit Efficiency and Use Strategies:** Alternative 2 includes transportation projects and programs intended to improve the efficiency and use of transit programs throughout the county. The investment level in projects and programs intended to improve the efficiency and use of transit services under Alternative 2 would be lower (0.7%) than under the Project (5.5%).
- **TCM B-3: Bay Area Express Lane Network:** Alternative 2 includes transportation projects and programs intended to implement the regional express lane network and provide express bus service throughout the county. The investment level in projects and programs intended to extend express lanes and express bus service would be lower under Alternative 2 (0.8%) than under the Project (4.6%).
- **TCM B-4: Goods Movement Improvements and Emission Reductions Strategies:** Alternative 2 includes transportation projects specifically intended to improve intermodal and arterial connections between regional trade corridors. None of these projects necessarily address incentives for diesel engine owners to reduce emissions. The investment level under Alternative 2 would be slightly lower (0.6%) than under the Project (0.7%).
- **TCM C-1: Voluntary Employer Trip-Reduction Programs, TCM C-3: Ridesharing Services and Incentives;** Alternative 2 includes programs intended to promote safe access for pedestrians and cyclists to schools and transit. The investment level in projects and programs intended to promote safe access would be greater under Alternative 2 (3.5%) than under the Project (1.6%).
- **TCM C-2: Safe Routes to School and Safe Routes to Transit Programs:** Alternative 2 includes projects and programs intended to promote safe access for pedestrians and cyclists to schools and transit. The investment level in projects and programs intended to implement Safe Routes to School programs would be lower under Alternative 2 (0.7%) than under the Project (2.7%).
- **TCM D-1: Bicycle Access and Facilities Improvements, TCM D-2: Pedestrian Access and Facilities Improvements:** Alternative 2 includes projects and programs intended to promote bicycle and pedestrian access and facility improvements. The investment level in projects and programs intended to improve bicycle and pedestrian facilities and access would be greater under Alternative 2 (8.8%) than under the Project (1.7%).
- **Mobile Source Measures:** Alternative 2 does not include funding to support innovation efforts in new technologies, or funding for "smart freeways" to better integrate connecting regional corridors and smooth traffic patterns. The investment level in these types of innovative technologies would therefore be lower under Alternative 2 (none) than under the Project (2.2%).

### Construction-Period Emissions and Fugitive Dust (↔)

The U.S. Environmental Protection Agency (EPA) and CARB have adopted stringent air emission regulations for new and existing fleets of construction equipment that is common to all construction sites. However, these regulations alone cannot assure that all projects pursuant to Alternative 2 will use only the lowest emission construction equipment, due primarily to the fleet averaging component of the regulations' compliance requirements. In addition, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of a lead agency to determine and adopt such mitigation. Therefore, construction impacts are considered significant and unavoidable, which is similar to the Project.

### Operational Criteria Pollutants (↔)

As shown in **Table 3.1-19**, the emissions for criteria pollutants ROG, $NO_x$ (summertime and wintertime), CO, and $PM_{2.5}$ from mobile sources would decrease between the baseline condition (2013) and the 2040 horizon pursuant to Alternative 2. ROG emissions are projected to reduce by 75%, $NO_x$ emissions are projected to be reduced by 84%, and CO emissions are projected to be reduced by 77%, and $PM_{2.5}$ emissions by 15% all as compared with the baseline condition. The reductions in operational criteria pollutant emissions under Alternative 2 would be similar to those that would occur under the Project, and the impact would be less than significant.

**Table 3.1-19: Emission Estimates for Criteria Pollutants (tons per day), Alternative 2 Comparison**

| | | Baseline (2013) | No Project (2040) | Alternative 2 (2040) |
|---|---|---|---|---|
| ROG | | 8.71 | 2.23 | 2.20 |
| | % Change from Baseline | | -74% | -75% |
| | % Change from No Project | | | -1% |
| $NO_x$ | | 16.49 | 2.66 | 2.63 |
| | % Change from Baseline | | -84% | -84% |
| | % Change from No Project | | | -1% |
| CO | | 69.80 | 16.01 | 15.79 |
| | % Change from Baseline | | -77% | -77% |
| | % Change from No Project | | | -1% |
| $PM_{2.5}$ | | 0.76 | 0.65 | 0.64 |
| | % Change from Baseline | | -15% | -15% |
| | % Change from No Project | | | -2% |

*Source: Compiled modeling results included as Appendix F.*

The threshold used in this EIR is based on a comparison to the baseline condition. For informational purposes, Alternative 2 is also compared to future year 2040 No Project condition. When compared with the No Project (2040) condition, criteria pollutant emissions under Alternative 2 would be reduced, largely due to the increasingly stringent emission controls that CARB has adopted for new vehicle engines and fuels, including the Truck and Bus Regulation which requires diesel trucks and buses to be upgraded to reduce emissions.

### Particulate Matter Emissions (↓)

As shown in **Table 3.1-20**, particulate matter emissions (as $PM_{10}$) from all mobile sources would increase by 19% by year 2040 as compared to the baseline (year 2013) condition, which is slightly less under Alternative 2 than the increase (21%) projected under the Project. Additionally, particulate matter emissions (as $PM_{2.5}$) from all mobile sources would increase by 2% by year 2040 as compared to the baseline (year 2013) condition, which is also slightly less than the increase (3%) projected under the Project. The higher levels of particulate matter emissions in 2040 conditions is because these emissions are strongly influenced by growth in VMT (which directly affects entrained roadway dust), with some contributions from tire and brake wear, and exhaust.

**Table 3.1-20: Particulate Matter Emissions (tons per day), Alternative 2 Comparison**

| | Baseline (2013) | No Project (2040) | Alternative 2 (2040) |
|---|---|---|---|
| Overall VMT | 22,159,662 | 28,173,605 | 27,966,888 |
| % Change from Baseline | | 27% | 26% |
| % Change from No Project | | | -1% |
| $PM_{10}$ | | | |
| Vehicle Emissions | 1.51 | 1.58 | 1.57 |
| Entrained Dust | 3.50 | 4.45 | 4.42 |
| **Total** | **5.02** | **6.03** | 5.99 |
| % Change from Baseline | | 20% | 19% |
| % Change from No Project | | | -1% |
| $PM_{2.5}$ | | | |
| Vehicle Emissions | 0.76 | 0.65 | 0.64 |
| Entrained Dust | 0.53 | 0.67 | 0.66 |
| **Total** | **1.28** | **1.32** | 1.31 |
| % Change from Baseline | | 2% | 2% |
| % Change from No Project | | | -1% |

*Source: Compiled modeling results included as Appendix F.*

The reason particulate matter emissions from mobile sources are not expected to increase at the same rate as VMT is the stringent emission controls that CARB has adopted for new vehicle engines, particularly diesel engines, including the Truck and Bus Regulation. Daily VMT is projected to increase by 26% under Alternative 2 as compared to the baseline condition, but these increases are offset to a certain degree by expected regulatory measures and fleet improvements. Particulate matter control programs implemented by the Air District also contribute to emission reductions relative to VMT. The overall increase in VMT associated with new population and employment growth will contribute to an increase in countywide particulate matter emissions that cannot be fully avoided. Furthermore, CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified for the Project. Therefore, this impact remains significant and unavoidable, but to a lesser degree than under the Project.

The threshold used in this EIR is based on a comparison to the baseline condition. For informational purposes, Alternative 2 is also compared to future year 2040 No Project conditions. When compared

with the No Project (2040) condition, particulate matter emissions under Alternative 2 would be reduced.

### Mobile Source Toxic Air Contaminant Emissions (↔)

Under Alternative 2, the percentage change from the baseline condition for DPM be a 97% decrease; for benzene, it would be a 77% decrease; and for 1,3 butadiene it would be an 80% decrease, all of which are the same as under the Project (**Table 3.1-21**).

**Table 3.1-21: Toxic Air Contaminant Emissions (kg per day), Alternative 2 Comparison**

| | Baseline (2013) | No Project (2040) | Alternative 2 (2040) |
|---|---|---|---|
| **DPM** | 198.53 | 6.87 | 6.82 |
| % Change from Baseline | | -97% | -97% |
| % Change from No Project | | | -1% |
| **Benzene** | 215.45 | 50.69 | 49.85 |
| % Change from Baseline | | -76% | -77% |
| % Change from No Project | | | -2% |
| **1,3 Butadiene** | 9.54 | 1.98 | 1.93 |
| % Change from Baseline | | -79% | -80% |
| % Change from No Project | | | -3% |

*Source: Compiled modeling results included as Appendix F.*

These reductions in TACs can be attributed to California state laws to evaluate and control TACs, as discussed in Chapter 2.3, Air Quality. Overall, the reduction in TAC emissions due to ongoing regulations and programs would ensure there would be no adverse impact pursuant to Alternative 2 and impacts would be less than significant, which is the same as for the Project.

The threshold used in this EIR is based on a comparison to the baseline condition. For informational purposes, Alternative 2 is also compared to future year 2040 No Project condition as well. Alternative 2 would result in less TAC emissions as compared to the No Project (2040) condition.

### Relative Impacts on Communities of Concern (↓)

TAC and $PM_{2.5}$ emissions were estimated along the major transportation corridors within all of the COCs for Alternative 2 under the baseline (2013) and No Project (2040) conditions. Overall TAC emissions from diesel and gasoline vehicles decrease significantly throughout the County between baseline condition in 2013 and No Project (2040) condition, while total $PM_{2.5}$ emissions would be marginally reduced.

As shown in **Table 3.1-22**, DPM emissions are projected to decrease by 97% countywide, which is the same under Alternative 2 as under the Project. There would be no difference in DPM emissions between COCs and the County, the same as under the Project.

| Table 3.1-22: Relative Change in TAC Emissions, COCs versus Countywide, Alternative 2 Comparison | | |
|---|---|---|
| | **No Project (2040)** | **Alternative 2 (2040)** |
| **VMT** | | |
| Change Countywide | 28% | 27% |
| Change within COCs | 23% | 20% |
| Relative Difference, COCs as Compared to County Overall | -5% | -7% |
| **DPM** | | |
| Change in Emissions, Countywide | -97% | -97% |
| Change in Emissions, COCs | -97% | -97% |
| Relative Difference, COCs as Compared to County Overall | same | same |
| **$PM_{2.5}$ (Exhaust)** | | |
| Change in Emissions, Countywide | -87% | -87% |
| Change in Emissions, COCs | -89% | -89% |
| Relative Difference, COCs as Compared to County Overall | 2% | 2% |
| **Benzene** | | |
| Change in Emissions, Countywide | -76% | -77% |
| Change in Emissions, COCs | -78% | -78% |
| Relative Difference, COCs as Compared to County Overall | 2% | 1% |
| **1,3 Butadiene** | | |
| Change in Emissions, Countywide | -79% | -80% |
| Change in Emissions, COCs | -81% | -81% |
| Relative Difference, COCs as Compared to County Overall | 2% | 1% |
| **Total $PM_{2.5}$ (Exhaust and Entrained Dust)** | | |
| Change in Emissions, Countywide | 3% | 3% |
| Change in Emissions, COCs | -2% | -4% |
| Relative Difference, COCs as Compared to County Overall | 5% | 6% |

*Source: Compiled modeling results included as Appendix F.*

*A positive relative difference in emissions indicates there is a greater reduction in COCs as compared to the County overall.*

Benzene emissions are projected to decrease by 77% countywide, which is the same as under the Project. The difference in benzene emissions between COCs (a 78% decrease) and the County would be 1%.

1,3 butadiene emissions are projected to decrease by 80% countywide, which is the same as under the Project. The difference in 1,3 butadiene emissions between COCs (an 81% decrease) and the County would be 1%.

Total $PM_{2.5}$ emissions[4] are projected to increase by 3% countywide, which is slightly less than under the Project. The difference in total $PM_{2.5}$ emissions between COCs and the County would be 6%, which is slightly greater than under the Project. These results may be explained primarily by the lower overall projected increase in VMTs within the county's COCs as compared to the anticipated

[4] Total $PM_{2.5}$ includes exhaust from all vehicles, as well as re-entrained road dust, brake wear and tire wear, and does not include TACs from gasoline vehicles.

increase in VMT for the county overall. The potential for disproportional impacts on COCs under Alternative 2 is less than significant and of a lesser degree than the Project.

## Agricultural Lands

### Agricultural Land Conversion, Williamson Act Conflicts, and other Changes Affecting Farmland (↓)

Most of the transportation projects that comprise Alternative 2 involve work within or along existing rights-of-way and projects within urbanized areas, all of which will have little or no impact on important agricultural land. However, all construction projects that are located through or adjacent to farmlands or grazing lands have the potential to convert important agricultural lands to transportation uses.

The transportation projects that may adversely affect agricultural lands under Alternative 2 are not located within the Primary Zone of the Delta, but do include the following:

- **Vasco Road Safety Improvements**: Widening of Vasco Road and installing a median barrier was analyzed by Contra Costa County.[5] The Mitigated Negative Declaration for this project concluded that lands adjacent to Vasco Road are designated Grazing Land and Farmland of Local Importance, and that the roadway alignment falls outside of Important Agricultural Lands as designated by the Contra Costa County General Plan. No Prime Farmland, Unique Farmland, or Farmland of Statewide Importance occur within or immediately adjacent to the project area, and there are no parcels under Williamson Act Land Conservation Contract adjoining the project area. Localized roadway improvements will convert a negligible amount of grazing land and farmland of local importance to road right of way, and these impacts were found to be less than significant.
- **Camino Tassajara Widening:** The widening of Camino Tassajara from Blackhawk Road to the County line was addressed in a CEQA Exemption prepared by Contra Costa County.[6] Lands adjacent to this road are identified as Farmland of Local Importance, only. The County's finding was that the project would have no significant environmental effect, including no adverse effects on agricultural lands.
- **Kirker Pass Northbound Truck Climbing Lane**: This project would add a truck-climbing lane in the northbound direction along Kirker Pass Road, within lands identified by the Farmland Mapping and Monitoring Program as grazing lands. Project-specific environmental review for this project has not been completed, and specific potential impacts on agricultural lands are not known.
- **James Donlon Boulevard Extension:** The James Donlon Boulevard Extension Final EIR found that this transportation project is located on land designated by the Farmland Mapping and Monitoring Program as Grazing Land.[7] The project does not include any land

[5] Contra Costa County, Vasco Road Safety Improvement Project Mitigated Negative Declaration.

[6] Contra Costa County, CEQA Notice of Exemption.

[7] City of Pittsburg, James Donlon Boulevard Extension Final EIR.

that is identified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The proposed road extension will bisect (or bifurcate) the Thomas Ranch, which is used for cattle ranch operations. It is estimated that approximately 70 acres of the overall 475-acre project area will be developed with the proposed roadway improvements. This will result in converting 70 acres of existing agriculture land (agricultural land and prime agricultural land, as defined under the Cortese-Knox-Hertzberg Act) to non-agricultural use. Portions of this project are also currently under an active Williamson Act contract, and other portions of the project are under a Williamson Act contract which is in "non-renewal" status and will expire in 2016.

The *Plan Bay Area EIR* found that the cumulative effects of these same transportation projects would potentially affect 189 acres of farmland, assuming a worst-case disturbance.[8] This represents a negligible proportion (approximately 0.2%) of all agricultural land in the county. Of the farmland converted to transportation uses, the majority (60%) is Grazing Land, 33% is Farmland of Local Importance, 6% is Prime Farmland, and less than 1% (or just 1 acre) is made up of Farmland of Statewide Importance and Unique Farmland.[9]

Any conversion of important agricultural or open space land resulting from a transportation project is considered significant. Given recent growth in East County and the related need to provide services and relieve congestion in the area, however, some projects may still have the potential to impact agricultural land, and site-specific or project-specific conditions may preclude the reduction of all project impacts to less than significant levels. Additionally, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Therefore, the impact of Alternative 2 on agricultural lands is considered significant and unavoidable, but to a lesser degree than under the Project.

## Biological Resources

### Candidate, Sensitive, and Special-Status Species (↓)

The construction of new or expanded transportation facilities pursuant to Alternative 2 could have a substantial adverse effect on candidate, sensitive, or special-status species either directly or through habitat modifications, which would result in a significant and unavoidable impact. To the extent that transportation projects pursuant to the 2017 CTP incorporate the mitigation measures identified for the Project, these measures would reduce significant impacts to candidate, sensitive, or special-status species. However, there may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to candidate, sensitive, or special-status species to less

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8 As assessed in *Plan Bay Area EIR*, impacts were based on a 100-foot buffer on either side of the centerline of a linear project and a 100-foot radius around the center of a point project, such as an intersection improvement resulting in a new configuration. Existing roadways are categorized as "roadway" and thus not counted in farmland impact totals.

9 ABAG and MTC. Plan Bay Area EIR. July, 2013. Available online at: http://www.planbayarea.org/sites/default/files/pdf/Draft_Plan_Bay_Area/Draft_EIR.pdf.

than significant levels, such that impacts may remain significant and unavoidable. Furthermore, CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified for the Project. Therefore, this impact remains significant and unavoidable for purposes of this program-level analysis.

### *Special-status Species*

No focused surveys were conducted to determine the locations and extent of special-status species populations. The analysis herein conservatively assumes that special-status species may be present within the impact footprint of a transportation project, if the project is within or transects a known species occurrence.

Implementation of Alternative 2 would increase roadway footprints and could result in direct and indirect impacts on candidate, sensitive, and special-status species. Because the majority of transportation improvements under the Alternative 2 are concentrated along existing transportation corridors, habitat loss and fragmentation would be lower than those projects sited in previously undeveloped areas. There are a number of transportation projects under the Alternative 2 that are proposed for construction near potentially occurring special status plant and animal species, but ultimately fewer than under the Project. Potential effects on special-status species would be similar to the types of impacts that would occur under the Project, as discussed in Chapter 2.5, Biological Resources.

Transportation projects under Alternative 2 would have a lesser degree of impact than under the Project due to the lower number of transportation project occurring in areas containing special status species.

### *Critical Habitat*

Alternative 2 includes fewer transportation projects than the Project that lie within, adjacent to or very near to areas designated by the U.S. Fish and Wildlife Service as critical habitat for federally listed species. Potential effects on critical habitat would be similar to the types discussed in Chapter 2.5, Biological Resources. Transportation projects under Alternative 2 may result in permanent and/or temporary impacts on designated critical habitat for federally listed species, but to a lesser degree than under the Project.

### *Migratory Bird Treaty Act Species and Nesting Birds*

Nesting habitat for raptors could occur near individual transportation improvement projects under Alternative 2. Potential effects on migratory and nesting bird species would be similar to the types discussed in Chapter 2.5, Biological Resources. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered a “take” by the California Department of Fish and Wildlife (CDFW) and would be considered a significant impact. Transportation projects under Alternative 2 have the potential to adversely affect nesting birds and Migratory Bird Treaty Act (MBTA) species, and in some cases would occur in or near sensitive habitat, but to a lesser degree than under the Project.

### Wildlife Movement (↓)

Many of the transportation projects under Alternative 2 are expansions or enhancements of existing highways or other transportation routes with existing urban corridors established along them. In these areas, migratory corridors have already been fragmented and degraded to the point that their function as linkages is either limited or has been lost altogether. Urban canyons, however, may serve as corridors to facilitate wildlife movement through urban areas. Potential effects on wildlife movement would be similar to the types discussed in Chapter 2.5, Biological Resources.

Several transportation projects pursuant to Alternative 2 are within, or in the immediate vicinity of Essential Connectivity Areas (ECA) as mapped in Contra Costa County. Future project-level analysis will need to be conducted to determine whether these or other future transportation projects pursuant to Alternative 2 would be within the ECA or near other wildlife corridors. Implementation of transportation projects under Alternative 2 could potentially result in reduced natural habitat and habitat fragmentation, particularly if they occur within the ECA mapped in Contra Costa County. Combined with the loss of breeding habitat, roadways can divide an animal's home range and adversely affect movement corridors as well as geographically isolate species populations. Transportation projects may directly encroach on wildlife corridors, particularly when direct habitat removal occurs or when sites are adjacent to open space or streams. Substantial encroachment on wildlife corridors would be considered a potentially significant impact. Implementation of identified mitigation measures would reduce impacts, but here may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Additionally, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Therefore, impacts on wildlife movement under Alternative 2 would be significant and unavoidable. The transportation projects under Alternative 2 that are within or in the immediate vicinity of the ECA mapped in Contra Costa County would be fewer in number than under the Project and thus result in a lesser degree of potential impact.

### Conflicts with State or Local Conservation Plans or Ordinances (↓)

The Bay Delta Conservation Plan aims to both stabilize water deliveries from the Sacramento–San Joaquin Delta and contribute to the recovery of 56 species of plants, fish, and wildlife over the 50-year life of the plan. No transportation projects included under Alternative 2 are within the primary zone of the Bay Delta Plan.

Pursuant to Alternative 2, there are several transportation projects are located within, across or in immediate proximity to the boundaries of the East Contra Costa County Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP). Projects that fall within the East Contra Costa County HCP/NCCP boundary must demonstrate consistency with the HCP and are subject to the Conditions on Covered Activities defined in that Plan, as discussed in Chapter 2.5, Biological Resources.

Fewer transportation projects are located within, across or in immediate proximity to the boundaries of the East Contra Costa County HCP/NCCP under Alternative 2 than under the Project, and thus result in a lesser degree of potential impact.

New transportation projects pursuant to Alternative 2 may also adversely affect protected trees, and would be required to comply with the County and local tree protection measures, including obtaining the necessary permits from the County and local jurisdictions within which the projects would be constructed.

Potential impacts related to conflicts with state or local conservation plans or ordinances would be considered significant, but to a lesser degree than under the Project. Implementation of mitigation measures would reduce these potential impacts to a level of less than significant.

## Cultural Resources

### Historical Resources (↓)

Transportation improvements under Alternative 2 could result in impacts on significant historical resources, including buildings and structures. Historical resources are by nature specific to their local context, and as such, impacts on these resources resulting from implementing transportation improvements would occur at the local level. As discussed in Chapter 2.6, Cultural Resources, projects in areas with known historical sites or in communities with established historic preservation programs would have the highest potential to result in significant historic resource impacts. Fewer transportation projects are included under Alternative 2 with the potential to conflict with historical resources than there are under the Project.

To the extent that transportation projects pursuant to the 2017 CTP, including those individual projects proposed under the Investment Program, incorporate all feasible mitigation measures identified for the Project, impacts related to historical resources would be reduced. However, there may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Furthermore, CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified for the Project. The potential for conflicts with historical resources related to transportation improvement projects included under Alternative 2 to result in historic resource impacts is therefore considered a significant and unavoidable impact, but to a lesser degree than the Project.

### Archaeological and Paleontological Resources (↓)

Transportation improvements under Alternative 2 could result in impacts on significant archaeological or paleontological resources if the projects include ground-disturbing construction activities.

As with historical resources, archaeological and paleontological resources are by nature specific to their local context, and as such, impacts on these resources resulting from implementing transportation improvements would occur at the local level. Transportation improvements could result in impacts on archaeological or paleontological resources if the projects include ground-disturbing construction activities, as discussed in Chapter 2.6, Cultural Resources. Fewer transportation projects are included under Alternative 2 with the potential conflict with archaeological or paleontological resources than there are under the Project.

CCTA cannot require local implementing agencies to adopt mitigation measures pertaining to local regulations and policies, and it is ultimately the responsibility of the local lead agency or project

sponsor to determine and adopt such mitigation. There may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. The potential for conflicts with archaeological or paleontological resources related to transportation improvement projects included under Alternative 2 to result in archaeological resource impacts is therefore considered a significant and unavoidable impact, but to a lesser degree than the Project.

### Human Remains (↓)

Transportation improvements under Alternative 2 could result in impacts on human burials or remains if the projects include ground-disturbing construction activities. As with cultural resources, impacts on human remains are by nature specific to their local context, and as such, impacts on these resources resulting from implementing transportation improvements would occur at the local level. Impacts related to discover or disturbance of human remains would be similar to those discussed in Chapter 2.6, Cultural Resources.

There are fewer transportation projects included under Alternative 2 with the potential conflict with archaeological or paleontological resources than there are under the Project. Given the extent and location of several transportation improvements under Alternative 2, including projects involving construction activities, the potential exists for significant impacts on human burials. Individual projects under Alternative 2 are subject to existing federal, state, and local regulations that would partially reduce these impacts; however, the potential for adverse effects remains.

The potential for discovery or disturbance of human remains related to construction of transportation improvement projects included under Alternative 2 is considered significant and of a lesser degree than the Project. Implementation of mitigation measures would reduce these potential impacts to a level of less than significant.

### Tribal Cultural Resources (↓)

As with other cultural resource impacts, impacts on tribal cultural resources are by nature specific to their local context, and as such, impacts could occur at the local level. The potential for transportation improvement projects included under Alternative 2 to result in impacts on tribal cultural resources is considered significant. Implementation of mitigation measures would reduce these potential impacts; however, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Impacts would therefore be significant and unavoidable, but to a lesser degree than under the Project.

## Geology and Soils

### Seismic Hazards (↓)

The potential for exposure of people or structures to potential damaging geologic forces resulting in increased risk due to rupture of a known earthquake fault, severe groundshaking and/or liquefaction under Alternative 2 is considered significant. Implementation of mitigation measures would reduce these potential impacts to a level of less than significant.

### *Surface Fault Rupture*

Improvements associated with the transportation projects within the county would include a variety of different projects that could potentially be exposed to hazards as a result of surface fault rupture. Potential impacts related to surface fault rupture would be similar to those discussed in Chapter 2.7, Geology and Soils. The only transportation project under Alternative 2 that is directly susceptible to fault rupture is limited to the I-80 Integrated Corridor Mobility (ICM) Project. According to the Mitigated Negative Declaration/Environmental Assessment prepared for the I-80 ICM project, the project is located in a seismically active region, and without proper seismic engineering, improvements located adjacent to or spanning I-80 could collapse onto the freeway, on-ramps, or other structures or facilities as a result of strong ground shaking or liquefaction.[10]

Projects such as interchange improvements at existing roadways located within an Alquist-Priolo Zone may not represent a substantially changed risk or hazard, but would nonetheless be required to fully evaluate the level of potential damage from fault rupture as part of a site-specific geotechnical investigation. Overall, the potential for significant impacts related to surface fault rupture would be less under Alternative 2 than under the Project.

### *Ground Shaking*

Contra Costa is within the seismically active Bay Area, and all parts of the county may be subject to strong to severe shaking in the event of a major earthquake, particularly an earthquake that may be centered on a fault line within the county. Overall, the potential for significant impacts related to ground shaking would be less under Alternative 2 than under the Project.

### *Liquefaction*

Improvements associated with the transportation projects within the region would include a variety of transit and roadway modifications that could increase the number of people and transit corridors that could potentially be exposed to liquefaction hazards. Potential impacts related to liquefaction would be similar to those discussed in Chapter 2.7, Geology and Soils. The potential for impacts related to liquefaction is reduced under Alternative 2 when compared with the Project due to the fewer number of projects that are located in high to very high liquefaction zones. Overall, the potential for significant impacts related to liquefaction would be less under Alternative 2 than under the Project.

## Soil Erosion (↓)

Transportation projects pursuant to Alternative 2 would include earthwork activities that would disturb underlying soils during construction, potentially exposing them to erosion and loss of topsoil. There is a lower potential for construction of these projects included under Alternative 2 to result in soil erosion than under the Project due to the number, location, extent, and/or type of transportation projects for this Alternative. The potential for loss of topsoil and erosion impacts at the countywide and local level related to transportation improvement projects included in

[10] Caltrans, Interstate 80 ICM Project, Initial Study/Mitigated Negative Declaration/Environmental Assessment/Finding of No Significant Impact.

Alternative 2 is considered potentially significant, but to a lesser degree than under the Project. Implementation of mitigation measures would reduce these potential impacts to a level of less than significant.

## Hazards and Hazardous Materials

### Hazardous Materials Transport (↓)

New transportation projects pursuant to Alternative 2 include a variety of transportation improvements that may increase the county transportation system's capacity to transport hazardous materials. Alternatively, roadway improvements under Alternative 2 would also improve road safety, as well as pedestrian and bicycle safety, potentially reducing or offsetting the potential for transportation-related hazardous materials risks. Hazardous materials impacts related to transportation improvements under Alternative 2 are thus considered potentially significant, but to a lesser degree than under the Project due to fewer transportation projects under this Alternative. Implementation of mitigation measures would reduce these potential impacts to a level of less than significant.

### Hazardous Materials Sites (↓)

There is a lower potential for the transportation projects included under Alternative 2 to result in exposure to previous hazardous materials contamination than under the Project due to the number, location, extent, and/or type of transportation projects for this Alternative.

Earthwork activities for these projects could potentially result in exposure to previous hazardous materials contamination, causing potentially significant adverse effects on construction workers, the public or the environment. Implementation of mitigation measures would reduce these potential impacts; however, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Impacts would therefore be significant and unavoidable, but to a lesser degree than under the Project.

## Hydrology and Water Resources

### Water Quality (↓)

There is a lower potential for the transportation projects included under Alternative 2 to result in a violation of water quality standards or waste discharge requirements or otherwise substantially degrade water quality than under the Project due to the number, location, extent, and/or type of transportation projects for this Alternative.

Transportation improvements that would add impervious surfaces would result in increased runoff and the potential for that runoff to carry pollutants to receiving waters, as discussed in Chapter 2.9, Hydrology and Water Resources. An increase in stormwater runoff and nonpoint-source pollutants would be a potential significant mitigable impact. Short-term significant mitigable impacts could occur in association with any of the individual transportation improvement projects that involve construction activities. Transportation improvements where there is no substantial change in the

drainage patterns or exposure to stormwater pollutants, would have no effect on water quality in stormwater runoff.

As discussed in Chapter 2.9, Hydrology and Water Resources, existing local Stormwater Management Plans and policies and State Water Resources Control Board requirements would prevent these potential impacts from rising to a level of significance. Transportation improvement projects would be required to comply with existing federal, state, and local water quality and stormwater regulations.

To the extent that transportation projects included in Alternative 2 incorporate mitigation measures identified for the Project, impacts related to water quality would be reduced to levels of less than significant. These measures are tied to existing regulations that are law and binding on responsible agencies and project sponsors, and it is reasonable to determine that they would be implemented for all future transportation projects pursuant to the 2017 CTP, including those transportation projects proposed to be implemented under the Investment Program. Therefore, the potential for the transportation projects included under Alternative 2 to result in a violation of water quality standards or waste discharge requirements or otherwise substantially degrade water quality is considered less than significant with implementation of these mitigation measures.

### Flood Hazards (↓)

There is a lower potential for transportation projects included under Alternative 2 to involve placement of structures within a 100-year flood hazard area or exposure of people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam than under the Project due to the number, location, extent, and type of transportation projects for this Alternative.

Construction of new transportation projects that intersect areas mapped within the 100-year flood hazard area would potentially increase the ability to obstruct or exacerbate floodwaters, exposing structures to future flooding and resulting in potential damage or human risk. Potential effects related to flood hazards would be similar to those discussed in Chapter 2.9, Hydrology and Water Resources.

Individual projects shall comply with Caltrans, Contra Costa Flood Control and Water Conservation District and local regulatory agency design standards for projects within a Federal Emergency Management Agency-designated 100-year flood zone. Federal, state, and local floodplain requirements combined with ongoing flood protection projects would minimize the potential impact of the transportation projects at the regional and local level. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Therefore, it cannot be ensured that these mitigation measures would be implemented in all cases.

Several transportation projects under Alternative 2 may either be in or pass through previously identified flood-prone areas, resulting in significant and unavoidable flood hazard impacts but to a lesser degree than under the Project.

## Land Use

### Residential or Business Disruption or Displacement (↓)

The analysis involves assumptions based on limited available information, since in most cases the transportation projects pursuant to Alternative 2 are in the early planning phases rather than specific project-level. Alternative 2 includes a variety of transportation projects including the construction of new arterials, the widening of freeways, new commuter rail facilities, funding for bus operations and express bus service, the expansion of school bus programs and other transportation improvements within the county that increase accessibility and connectivity in the county as a whole. In general, most of the projects that comprise Alternative 2 also involve work within existing rights-of-way, which are assumed less likely to disrupt existing homes, businesses, and neighborhoods. Those projects that require a new alignment or the extension of an existing right of way occur largely on the edges of urban areas and form connections between existing routes. Overall, 45 of transportation projects in the County pursuant to Alternative 2 are identified as projects with potential physical impacts on land use, based on general characteristics such as widening, construction, and new roadway configurations. New road or highway projects, transit infrastructure extension projects and major interchange projects are assumed to have a higher potential to divide existing communities, while areas with road widening and other projects along established transportation rights-of-way are assumed to have a lower potential to divide existing communities or neighborhoods in the long-term.

The potential for permanent community disruption caused by implementation of Alternative 2 is minimal for the following reasons:

- Historically, transportation improvements with the highest risk of community disruption are new freeways, expressways or rail lines on alignments that pass through existing urban areas or pockets of development in rural areas. Only a few of the projects under Alternative 2 fit this historical mold.
- Many projects under Alternative 2 expand inter-connections between neighborhoods and communities through improved bus service, bike lanes, sidewalks, transit connections and other similar improvements.
- Long-term division and displacement of existing land uses is less likely to occur because of the CCTA's priority for transportation improvements that are consistent with local general plans.

It is possible, however, that the final designs of certain projects pursuant to Alternative 2 may result in the displacement of existing homes and businesses, and possibly new divisions within existing neighborhoods. For example, certain highway widening projects may convert stretches of fairly narrow local roads to a much larger roadway with diminished pedestrian accessibility and visibility from one side to the other. Alternative 2 is therefore considered to have a cumulative impact related to residential or business disruption, or displacement of substantial numbers of existing population and housing. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. There may be instances, however, in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Furthermore, CCTA cannot require implementing agencies and individual project sponsors to adopt

the mitigation measures identified for the Project. Impacts would therefore be significant and unavoidable, but to a lesser degree than under the Project.

## Visual Resources

### Views, Scenic Resources and Visual Character (↓)

There is a lower potential for projects included under Alternative 2 to result in adverse impacts on important views or vistas when compared with the Project. The construction of transportation projects under Alternative 2 could result in regional short-term visual impacts from the blockage of public views by construction equipment and scaffolding, temporary lighting, and exposed excavation and slope faces. Many of the transportation projects under Alternative 2 will not result in significant construction impacts, as they involve transit route improvements, road operations and maintenance, and pedestrian and bicycle improvements, which all involve minimal construction, if any. Due to the short-term nature of construction-related impacts, they would be considered less than significant.

There are numerous major projects included under Alternative 2 that could result in potentially significant long-term visual impacts. These major projects included five roadway extension projects, 24 road-widening projects, and nine new roadway projects. The majority of these transportation projects are along existing rights-of-way or in existing communities, although a few would add or expand roadways in rural or open space areas. Highway widening and new construction associated with major transportation projects pursuant to Alternative 2 would have the potential to affect views of rural or open space areas, damage scenic resources along designated or eligible scenic highways, and/or to substantially degrading the existing visual character or quality of the site and its surroundings. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. Given the extent of new roadways considered for development in undeveloped areas of the County, some of those projects may still have the potential to affect views and scenic vistas, and site-specific or project-specific conditions may preclude the reduction of visual impacts to less than significant levels. Additionally, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. The impact of Alternative 2 on important views or vistas is therefore considered significant and unavoidable, but to a lesser degree than under the Project.

### Light and Glare (↓)

There is a lower potential for projects included under Alternative 2 to result in adverse impacts related to light and glare than under the Project. It is not anticipated that new transportation projects pursuant to Alternative 2 would significantly increase the amount of light and glare at the countywide or local level, as most improvements would occur on existing facilities that already are existing sources of light and glare.

A limited number of new roadways in rural areas could introduce a new source of light and glare, but the marginal increases in light and glare from additional vehicle headlights, new reflective signage, new streetlights, new intersection control devices, and other potential improvements are considered less than significant. In most cases, new transportation projects would be aligned with

planned development projects and other existing facilities, which would help reduce potential impacts. Since Alternative 2 does include several new transportation projects in rural areas that could introduce light and glare where no sources currently exist, potential impacts would be significant. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. There may be instances, however, in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Additionally, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. The impact of Alternative 2 related to light and glare is therefore considered significant and unavoidable, but to a lesser degree than under the Project.

## Impacts Similar to those of the Project

The following potentially significant environmental effects pursuant to Alternative 2 are similar to those effects expected to occur under the Project. These impacts would be effectively reduced through implementation of mitigation measures similar to those identified for the Project, except where noted as significant and unavoidable.

### Biological Resources (↔)

- Sensitive Natural Communities and Wetlands (SU)

### Geology and Soils (↔)

- Geologic Instability and Soil Expansion (Less than Significant [LTS] with Mitigation)

### Hazards and Hazardous Materials (↔)

- Construction-period Hazardous Materials Use (LTS with Mitigation)
- Airport Hazards (LTS)
- Emergency Response and Evacuation (LTS)
- Wildland Fire Hazards (LTS)

### Hydrology and Water Resources (↔)

- Groundwater (LTS)
- Drainage and Runoff (LTS with Mitigation)

### Land Use (↔)

- Growth Inducement (LTS)
- Construction-Related Community Disruption (Significant and Unavoidable [SU])
- Community Separation (LTS)
- Conflicts with Land Use Plans and Policies (LTS)

### Noise (↔)

- Construction Noise and Groundborne Vibration (SU)
- Operational Noise – Traffic (SU)
- Operational Noise – Transit (SU)

### Visual Resources (↔)

- Incongruous Visual Elements – Soundwalls (SU)

# Alternative 3: Emphasis on Transit Improvements Alternative

## Description of the Alternative

Alternative 3, the Emphasis on Transit Improvement Projects Alternative, is specifically intended to promote safe, efficient and accessible operations for all users, and to create thriving local communities. Under this alternative, the CCTA would prioritize future investments in projects and programs that would increase transportation mode share and safety of transit and non-motorized users, and seek to improve community health. Investments under this alternative would be increased for major transit capital projects, and non-auto countywide capital and maintenance programs. For example, the Transportation for Livable Communities program, which includes a collection of projects that would increase mobility for walking, bicycling and transit use, would be emphasized in this alternative. Other countywide programs that encourage bicycling and walking would receive increased funding as well. Examples of priority-funded improvements under Alternative 3 include:

- supporting expanded transit service through investment in transit capital projects, including BART and rail, as well as the construction of bus stops, shelters and other access improvements where appropriate and needed;
- new sidewalks, trails and bike paths that help create a connected system of pedestrian and bicycle facilities throughout Contra Costa;
- promoting walkability; and
- supporting opportunities to re-purpose public and private rights-of-way to enhance connectivity for cyclists, pedestrians and transit users, particularly to schools, parks, employment centers and shopping districts.

Consistent with California's Active Transportation Program, this alternative also would provide priority funding and set-asides for Communities of Concern and for jurisdictions that have yet to prepare bike and Safe Routes to School plans, as well as support for planning for "end-of-trip" facilities for alternative modes of travel. The highest level of investments under Alternative 3 occurs in transit operations including rail, and express and local bus service. This alternative also maximizes investment in pedestrian and bicycle improvements emphasizing improved transit, bicycle, and walking connections to work, schools and businesses districts.

The projects and programs included under Alternative 3 (which are in addition to those under Alternative 2/the 2013 RTP Alternative) are listed in the above summary Table 3.1-1. They also are shown on **Figure 3.1-3** (Roadways and HOV lanes) and **3.1-4** (Transit, Bicycle, and Pedestrian Projects and Programs).

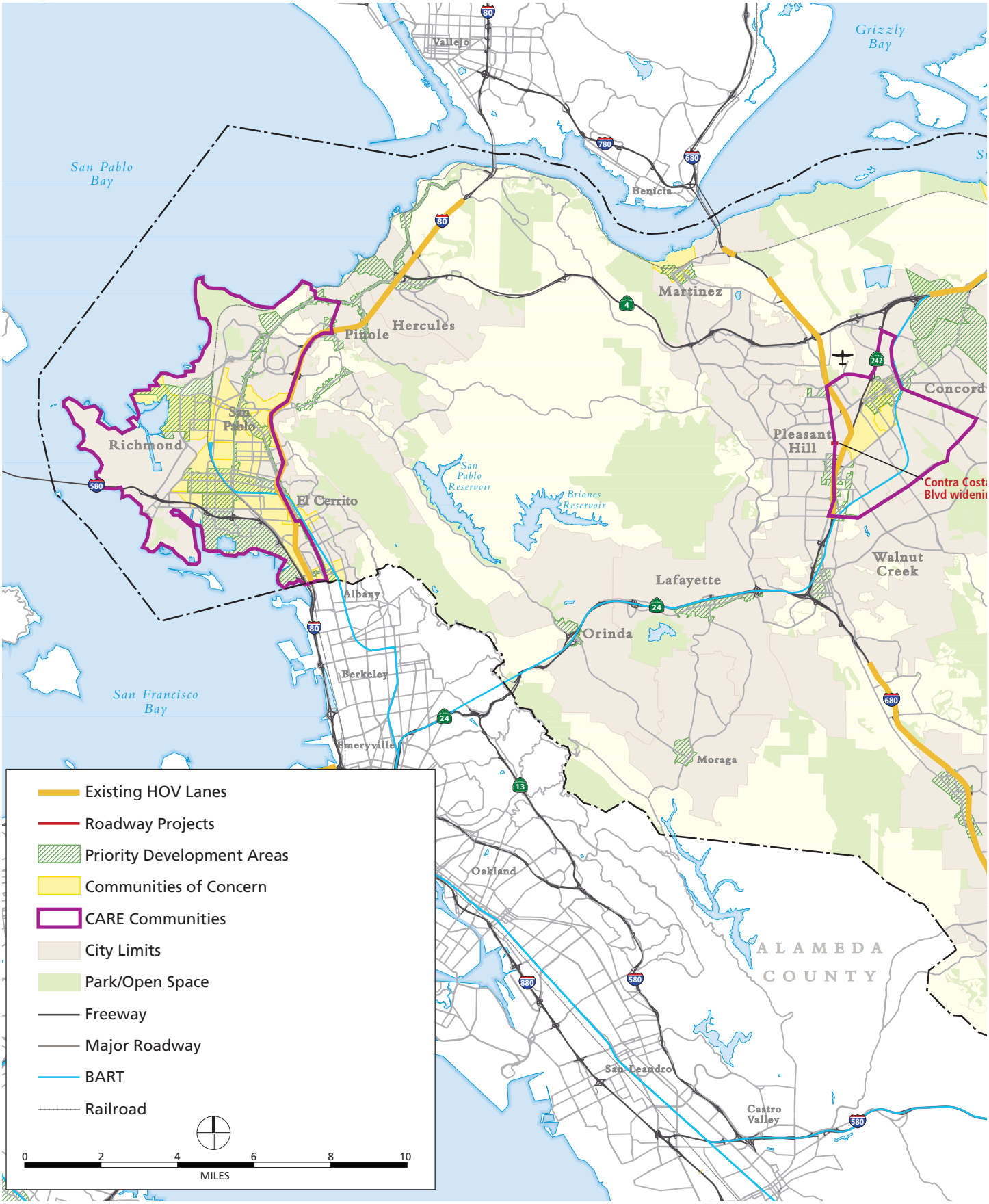



**Figure 3-3**
**Alternative 3 - Roadway and HOV Projects and Programs**

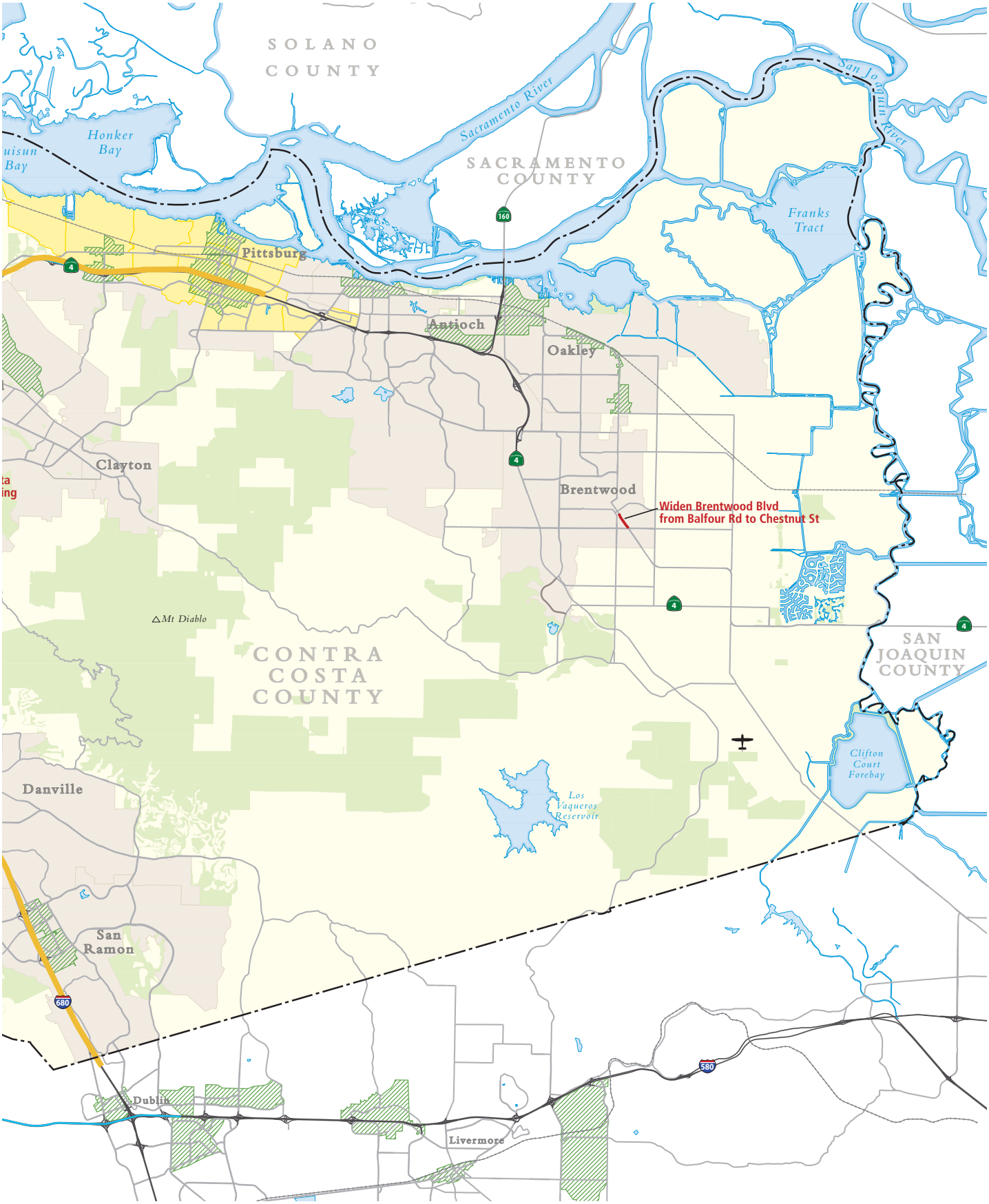
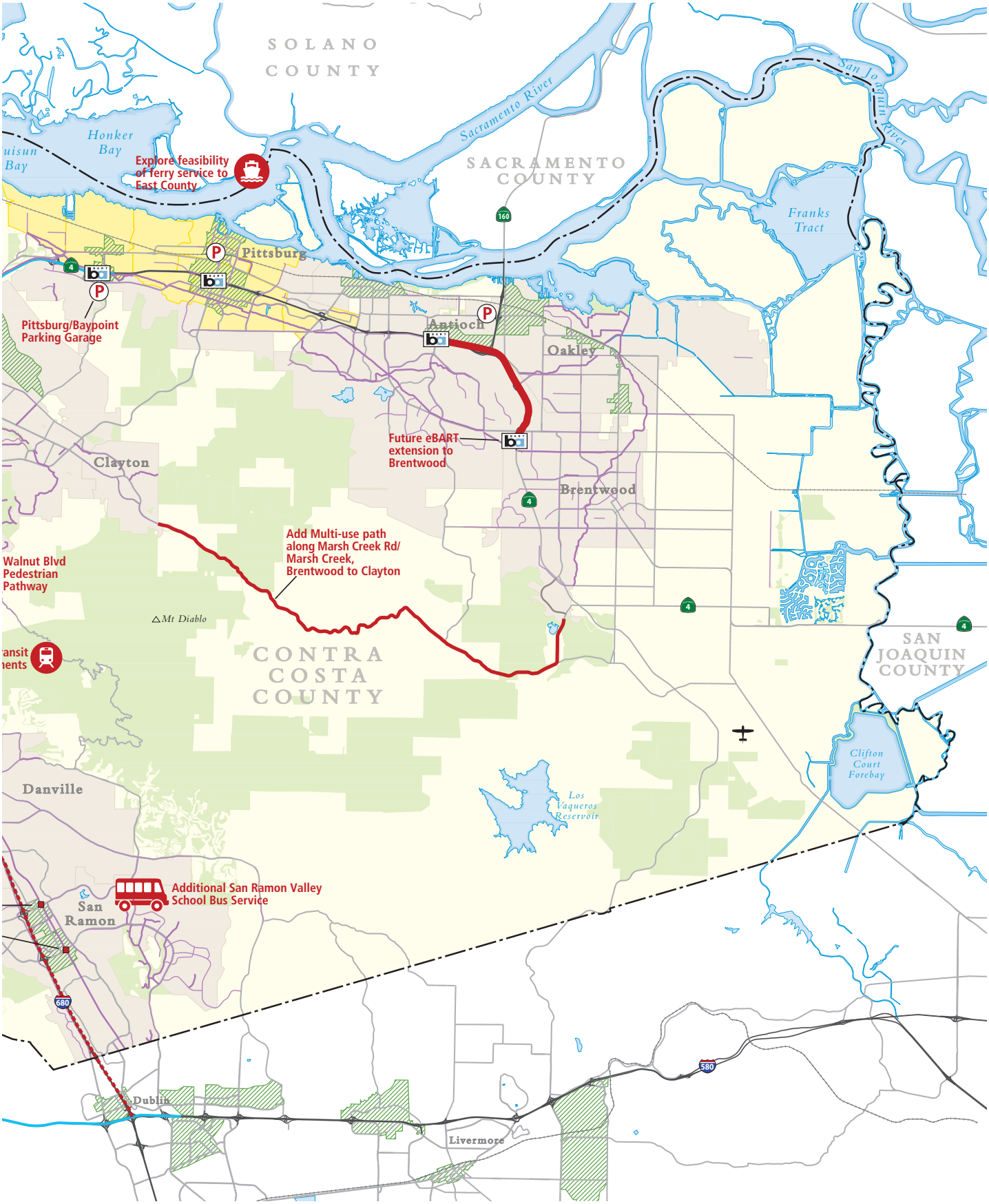

SOLANO COUNTY
Honker Bay
uisun Bay
Sacramento River
SACRAMENTO COUNTY
San Joaquin River
Franks Tract
Pittsburg
Antioch
Oakley
Clayton
Brentwood
Widen Brentwood Blvd from Balfour Rd to Chestnut St
Mt Diablo
CONTRA COSTA COUNTY
SAN JOAQUIN COUNTY
Clifton Court Forebay
Los Vaqueros Reservoir
Danville
San Ramon
Dublin
Livermore
160
4
680
580


**Figure 3-4**
**Alternative #3 - Bicycle and Pedestrian Projects and Programs**


SOLANO COUNTY
Honker Bay
uisun Bay
Explore feasibility of ferry service to East County
Sacramento River
SACRAMENTO COUNTY
San Joaquin River
Franks Tract
Pittsburg
Pittsburg/Baypoint Parking Garage
Antioch
Oakley
Future eBART extension to Brentwood
Clayton
Brentwood
Add Multi-use path along Marsh Creek Rd/ Marsh Creek, Brentwood to Clayton
Walnut Blvd Pedestrian Pathway
Mt Diablo
ansit ents
CONTRA COSTA COUNTY
SAN JOAQUIN COUNTY
Clifton Court Forebay
Los Vaqueros Reservoir
Danville
Additional San Ramon Valley School Bus Service
San Ramon
Dublin
Livermore

## Ability to Accomplish Project Objectives

Alternative 3 would have the following ability to meet the Project objectives compared to the Project:

- Alternative 3 would *meet to a lesser degree* the objective to support the efficient, safe, and reliable movement of people and goods using all available travel modes (Goal 1). This alternative would make fewer improvements overall and fewer improvements to the county's roadway system resulting in higher levels of vehicle delay and lower speeds. It also does not eliminate as many gaps in the transportation system or make the same level of investments in innovation included in the Project. This alternative also does not provide the same level of support for goods movement and economic development. This alternative would, however, reduce VMT per capita relative to the Project, and make more investments in transit facilities and operation.
- Alternative 3 would *meet to a similar degree* the objective to manage growth to sustain Contra Costa's economy, preserve its environment, and support its communities (Goal 2). This alternative would provide fewer benefits for goods movement and roadway reliability than the Project and would not support roadway innovation and operational improvements to the same degree as the Project. It would, however result in fewer GHG emissions and lessened impacts from forecast increases in vehicle miles traveled per capita.
- Alternative 3 would *meet to a greater degree* the objective to expand safe, convenient, and affordable alternatives to the single-occupant vehicle (Goal 3). The emphasis on transit improvement projects under this alternative would lead to increased rates of transit use and walking in the county.
- Alternative 3 would *meet to a lesser degree* the objective to maintain the transportation system (Goal 4). This alternative would provide less support to maintain the transportation system.
- Alternative 3 would *meet to a lesser degree* the objective to continue to invest wisely to maximize the benefits of available funding (Goal 5). This alternative would not provide the opportunities for public/private partnerships that the Project would provide nor the extent of opportunities for leveraging given the types of projects that would be funded.

Alternative 3, the Transit Improvement Project Emphasis Alternative, would further all of the Project objectives. While it would support alternatives to driving and better air quality results due to its emphasis on transit projects and programs, it would meet to a lesser degree the objectives of system reliability, reduced delay, and support for economic development and innovation than the Project, due to its inclusion of fewer transportation projects and programs than the Project.

## Comparative Impact Analysis – Impacts Different than those of the Project

The following is a comparative analysis of those environmental impacts that would occur under Alternative 3, and for which there are comparative differences between this alternative and the Project. In many instances, Alternative 3 would lessen the magnitude of potentially significant environmental effects as indicated for the Project because Alternative 3 has a greater emphasis on transit-related project and programs than the Project. Impacts that would occur under Alternative 3

would be effectively reduced to less than significant through implementation of mitigation measures similar to those identified for the Project, except where noted as significant and unavoidable.

## Transportation and Circulation

### Vehicle Miles Traveled per Capita (↓)

As indicated in **Table 3.1-23**, transportation projects and new or expanded transit projects under Alternative 3 would result in a slight decrease (1%) in per capita VMT when compared with the baseline condition, which is less than the increase (1%) projected under the Project. This reduction in per capita VMT reflects the effects of increased investments in multi-modal transportation options.

**Table 3.1-23: VMT Per Capita, Alternative 3 Comparison**

| Scenario | Total VMT | Vehicle Miles Traveled Per Capita | Comparison to Baseline (2013) | | Comparison To No Project (2040) | |
|---|---|---|---|---|---|---|
| | | | Numerical Change | Percent Change | Numerical Change | Percent Change |
| Baseline Condition (2013) | 22,040,884 | 21.0 | — | — | — | — |
| No Project (2040) | 28,009,826 | 21.1 | — | — | — | — |
| 2017 Investment Program | 28,119,444 | 21.2 | +0.2 | +1.0% | +0.1 | +0.5% |
| Alternative 3 | 27,568,170 | 20.8 | -0.2 | -1.0% | -0.3 | -1.4% |

*Source: Compiled modeling results included as Appendix D.*

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 3 is compared to the future No Project condition (2040) as well. When compared with the No Project (2040) condition, implementation of Alternative 2 would result in a slight decrease (1.4%) in VMT per capita, which is less than the increase (0.5%) projected under the Project.

Overall, implementation of Alternative 3 would not result in an appreciable increase in per capita VMT. The potential for impact related to per capita VMT under Alternative 3 is considered less than significant, and Alternative 3 would result in fewer per capita VMT than would the Project.

### Vehicle Hours of Delay (↑)

As indicated in **Table 3.1-24**, implementation of Alternative 3 would result in an appreciable increase (192.5%) in VHD when compared with the baseline condition, which is greater than the increase (166%) projected under the Project.

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 3 is compared to the future No Project condition (2040) as well. When compared with the No Project (2040) condition, implementation of Alternative 3 would result in a decrease (17%) in VHD, which is less than the decrease (24.5%) projected under the Project.

**Table 3.1-24: Vehicle Hours of Delay, Alternative 3 Comparison**

| Scenario | Vehicle Hours Of Delay | Comparison to Baseline (2013) | | Comparison To No Project (2040) | |
|---|---|---|---|---|---|
| | | Numerical Change | Percent Change | Numerical Change | Percent Change |
| Baseline Condition (2013) | 71,648 | — | — | — | — |
| No Project (2040) | 252,584 | — | — | — | — |
| 2017 CTP Investment Program | 190,685 | +119,037 | +166.0% | -61,900 | -24.5% |
| Alternative 3 | 209,535 | +137,887 | +192.5% | -43,049 | -17.0% |

*Source: Compiled modeling results included as Appendix D.*

Overall, implementation of Alternative 3 would result in an appreciable increase in VHD. No standard mitigation strategy to address VHD at the plan or regional level is considered feasible due to the variability in congestion characteristics, driver behavior, and cost limitations. The potential for impact related to VHD under Alternative 3 is therefore considered significant and unavoidable and of a greater degree than the Project.

### Average Speeds (↑)

As indicated in **Table 3.1-25**, the average speeds on freeways and arterials throughout Contra Costa County pursuant to Alternative 3 are expected to be slower (5.4% for freeways and 2.3% for arterials) than when compared with the baseline condition, which is greater overall than the slowdown projected under the Project (2.7% for freeways and 2.3% for arterials). The 5.4% increase in freeway speeds is considered appreciable (i.e., greater than 5%) and this impact would be considered potentially significant.

**Table 3.1-25: Average Freeway and Arterial Speeds, Alternative 3 Comparison**

| Scenario | Average Speed | Comparison to Baseline (2013) | | Comparison to No Project (2040) | |
|---|---|---|---|---|---|
| | | Numerical Change | Percent Change | Numerical Change | Percent Change |
| Baseline Condition (2013) | | | | | |
| Freeway | 55.6 | — | — | — | — |
| Arterial | 34.2 | — | — | — | — |
| No Project (2040) | | | | | |
| Freeway | 51.6 | — | — | — | — |
| Arterial | 33.3 | — | — | — | — |
| 2017 CTP Investment Program | | | | | |
| Freeway | 54.1 | -1.5 | -2.7% | +2.5 | +4.8% |
| Arterial | 33.4 | -0.8 | -2.3% | +0.1 | +0.3% |
| Alternative 3 | | | | | |
| Freeway | 52.6 | -3.0 | -5.4% | +1.0 | +1.9% |
| Arterial | 33.4 | -0.8 | -2.3% | +0.1 | +0.3% |

*Source: Compiled modeling results included as Appendix D.*

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 3 is compared to the future No Project condition (2040) as well. When compared with the No Project (2040) condition, implementation of Alternative 3 would result in an increase in average speeds (1.9% for freeways and 0.3% for arterials), which is less overall than the increase (4.8% for freeways and 0.3% for arterials) projected under the Project.

Overall, implementation of Alternative 3 would result in an appreciable decrease in average speeds on freeways, but would not result in an appreciable decrease in average speeds on arterials. CCTA cannot require local implementing agencies to adopt mitigation measures, and it is ultimately the responsibility of a lead agency to determine and adopt such mitigation. The potential for impacts related to average speeds on freeways and arterials under Alternative 3 is therefore considered significant and unavoidable, and to a greater degree than the Project.

### Non-Single Occupant Vehicle Mode Share (↓)

As indicated in **Table 3.1-26**, implementation of Alternative 3 would result in an overall increase (4.2%) in mode shares for transit, HOV, or other non-SOV modes when compared with the baseline condition, which is greater than the increase (2.7%) achieved under the Project.

**Table 3.1-26: Daily Transportation Mode Share, Alternative 3 Comparison**

| Scenario | Drive Alone | Shared Ride, 2 | Shared Ride, 3+ | Transit | Bike | Walk | Total Non-SOV Mode Share |
|---|---|---|---|---|---|---|---|
| Baseline Condition (2013) | 59.0% | 24.2% | 8.9% | 2.7% | 0.5% | 4.7% | 41.0% |
| 2017 CTP Investment Program | 57.9% | 24.7% | 8.7% | 3.4% | 0.5% | 4.8% | 42.1% |
| Alternative 3 | 57.3% | 24.7% | 8.7% | 3.7% | 0.5% | 5.1% | 42.7% |
| *Percent Change from Baseline Condition* | *-2.9%* | *+2.1%* | *-2.3%* | *+37.0%* | — | *+8.5%* | *+4.2%* |
| No Project (2040) | 58.1% | 24.8% | 8.8% | 3.3% | 0.5% | 4.6% | 42.0% |
| 2017 CTP Investment Program | 57.9% | 24.7% | 8.7% | 3.4% | 0.5% | 4.8% | 42.1% |
| Alternative 3 | 57.3% | 24.7% | 8.7% | 3.7% | 0.5% | 5.1% | 42.7% |
| *Percent Change from No Project* | *-1.4%* | *-0.4%* | *-1.1%* | *+12.1%* | — | *+10.9%* | *+1.7%* |

*Source: Compiled modeling results included as Appendix D.*

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 3 is compared to the future No Project condition (2040) as well. When compared with the No Project (2040) condition, implementation of Alternative 3 would result in an overall increase (1.7%) in mode shares for transit, HOV, or other non- SOV modes that would be greater than the overall increase (0.2%) under the Project.

Overall, implementation of Alternative 3 would result in an increase in mode shares for transit, HOV, or other non-SOV modes. The potential for impact related to mode shares for transit, HOV, or other non-SOV modes under Alternative 3 is considered less than significant, and would result in greater mode share of transit, HOV, or other non-SOV modes than would the Project.

### Transit Ridership (↓)

As indicated in **Table 3.1-27**, implementation of Alternative 3 would result in a substantial increase (73.1%) in daily transit ridership when compared with the baseline condition, and that increase would be more substantial than the increase (55.8%) under the Project. This increase reflects the emphasis on increasing travel choices and improving the frequency and availability of transit services throughout Contra Costa and the emphasis on transit improvement projects included within Alternative 3.

**Table 3.1-27: Transit Ridership, Alternative 3 Comparison**

| | | Comparison to Baseline (2013) | | Comparison To No Project (2040) | |
|---|---|---|---|---|---|
| Scenario | Transit Ridership | Numerical Change | Percent Change | Numerical Change | Percent Change |
| Baseline Condition (2013) | 101,033 | — | — | — | — |
| No Project (2040) | 149,325 | — | — | — | — |
| 2017 CTP Investment Program | 157,391 | 56,358 | 55.8% | 8,066 | 5.4% |
| Alternative 3 | 174,932 | 73,899 | 73.1% | 25,607 | 17.2% |

*Source: Compiled modeling results included as Appendix D.*

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 3 is compared to the future No Project condition (2040) as well. When compared with the No Project (2040) condition, implementation of Alternative 3 would result in an increase (17.2%) in daily transit ridership, which is greater than the increase (5.4%) under the Project.

Overall, implementation of Alternative 3 would result in an increase in transit ridership. The potential for impact related to a decrease in transit ridership under Alternative 3 is considered less than significant, and Alternative #3 would result in increased transit ridership as compared to the Project.

## Greenhouse Gas Emissions

### Vehicle GHG Emission Reductions, per SB 375 (↓)

When compared with the baseline condition, implementation of Alternative 3 would result in virtually no change in per capita $CO_2$ emissions and a larger decrease in $CO_2$ emissions as compared with the Project, not accounting for any County share of MTC policy-based reductions (**Table 3.1-28**). Thus, Alternative 3 would be consistent with SB 375's reduction targets and would not impede the Bay Area region's ability to reduce per capita passenger vehicle and light duty truck $CO_2$ emissions by 7% by 2020, or by 15% by 2035 as compared to regional 2005 baseline.

**Table 3.1-28: Daily $CO_2$ Emissions Per Capita, Alternative 3 Comparison**

| Scenario | Daily $CO_2$ Emissions Per Capita | Comparison to Baseline (2013) Percent Change | Comparison To No Project (2040) Percent Change | Comparison To *Plan Bay Area* (2040) Percent Change |
|---|---|---|---|---|
| Baseline Condition (2013) | 18.0 | — | — | — |
| No Project (2040) | 18.5 | — | — | — |
| *Plan Bay Area* (2040) | 18.2 | — | — | — |
| Alternative 3 | 18.0 | no change | -2.7% | -1.1% |

*Source: Compiled modeling results included as Appendix E.*

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 3 is also compared to the future No Project condition (2040). When compared with the No Project (2040) condition, implementation of Alternative 3 would result in slightly less per capita $CO_2$ emissions (a decrease of 2.7%) than the Project (a decrease of 1.1%), not accounting for any County share of MTC policy-based reductions.

Per capita $CO_2$ emissions under Alternative 3 would be less than those under the Project and the impact would be less than significant.

### Direct Transportation-Related GHG Emissions by 2040 (↔)

With Pavley 1 regulations taken into account, overall transportation-related GHG emissions decline under Alternative 3 by 34% as compared with the baseline condition (2013) emission estimates, which is the same for the Project (**Table 3.1-29**).

Annual GHG emissions are expected to decrease by more than approximately 1 $MMTCO_2e$ from 2013 (i.e., baseline condition) to 2040 under Alternative 3, similar to the Project. Since overall transportation-related GHG emissions are expected to decline from 2013 to 2040 under Alternative 3, the impact would be less than significant. For informational comparison purposes, Alternative 3 also shows a decrease in $CO_2e$ emissions as compared to the No Project scenario.

| Table 3.1-29: Annual Transportation Emissions, Alternative 3 Comparison | | | |
|---|---|---|---|
| | Baseline (2013) | No Project (2040) | Alternative 3 |
| ***Annual Emissions ($MTCO_2e$/yr), no reductions for Advanced Clean Cars/Pavley*** | | | |
| Passenger Vehicles | 2,616,225 | 3,409,288 | 3,316,047 |
| Light Trucks | 162,238 | 89,192 | 87,288 |
| Heavy Trucks | 259,040 | 302,804 | 301,310 |
| Bus | 56,640 | 70,251 | 93,881 |
| **Total** | **3,094,144** | **3,871,535** | **3,798,526** |
| % Change from Baseline | | *25%* | *23%* |
| ***Annual Emissions ($MTCO_2e$/yr) with Advanced Clean Cars and Pavley*** | | | |
| Passenger Vehicles | 2,560,343 | 1,554,349 | 1,511,859 |
| Light Trucks | 162,238 | 89,192 | 87,288 |
| Heavy Trucks | 259,040 | 302,804 | 301,310 |
| Bus | 56,640 | 70,251 | 93,881 |
| **Total** | **3,038,261** | **2,016,595** | **1,994,338** |
| ***Percent Change from Baseline (with Advanced Clean Cars and Pavley)*** | | | |
| Passenger Vehicles | | -39% | -41% |
| Light Trucks | | -45% | -46% |
| Heavy Trucks | | +17% | 16% |
| Bus | | +24% | 66% |
| **Total** | | **-34%** | **-34%** |

*Source: Compiled modeling results included as Appendix E.*

*Plan Bay Area used EMFAC2011 to quantify emissions from on-road mobile vehicles, which incorporated reductions in GHG emissions due to Pavley I and the LCFS.*

*Reductions due to the LCFS are removed from EMFAC2014 entirely. As discussed in the EMFAC2014 Users Guide, the reason for exclusion is that most of the emissions benefits due to LCFS come from the production cycle of the fuel rather than the combustion cycle (tailpipe).*

*EMFAC2014 also incorporates the following regulations that affect GHG emissions:*

** Advanced Clean Cars/Pavley, which contains decreasing light-duty vehicle standards out to model year 2025. Pavley I, incorporated in EMFAC2011, only contained decreasing vehicle standards out to model year 2016.*

** Tractor-Trailer GHG Regulation and Federal Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles*

*For simplicity and to parallel Plan Bay Area, only differences due to the Advanced Clean Cars/Pavley regulation are shown above. However, reductions due to the Tractor-Trailer GHG Regulation and Federal HD GHG Regulations have been incorporated in both annual emissions tables above (these regulations are not incorporated in Table 2.5-9 of Plan Bay Area).*

### Indirect Construction-Related GHG Emissions by 2040 (↔)

Construction-related GHG emissions generated during implementation of transportation improvement projects pursuant to Alternative 3 would contribute to indirect GHG emissions levels in the Bay Area, the same as for the Project. Due to the project-specific nature of construction emissions, quantitative estimates are not included in the assessment. The additional increment of construction-related indirect emissions under Alternative 3 is considered significant on a cumulative

basis. CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of a lead agency to determine and adopt such mitigation. Impacts would be significant and unavoidable, which is similar to the Project.

### Impede GHG Attainment Goals (Executive Order S-3-05 and Executive Order B-16-2012) (↔)

This assessment evaluates Alternative 3 for its likelihood to impede implementation of Executive Orders S-3-05 and B-16-2012, which both identify GHG reduction targets for 2050 (80% reduction as compared to 1990 levels for overall GHG emissions and transportation sector emissions, respectively). These Executive Orders target a point in time that is 10 years beyond that analyzed in this EIR. Therefore, this assessment evaluates consistency by identifying whether or not implementation of Alternative 3 is likely to impede attainment of the identified Orders by considering the future trajectory (through 2050) of per capita car and light duty truck $CO_2$ emissions pursuant to Alternative 3.

Emissions are expected to continue on a downward trajectory beyond the 2040 horizon year under Alternative 3. This assessment does not include Pavley or LCFS reductions, which further contribute to greater vehicle emission reductions by 2050. The downward trajectory represents a reasonable expectation that Contra Costa (like the rest of the Bay Area) is more likely than not to achieve the Executive Orders' goals, and that Alternative 3, is not likely to impede achievement of the GHG reduction goals of these Executive Orders. The impact would be less than significant.

### Conflicts with GHG Reduction Policies (↓)

Alternative 3 is not expected to conflict with any applicable plan, policy or regulation adopted with the intent to reduce GHG emissions. Specifically, Alternative 3 would not conflict with the GHG reduction goals of SB 375, AB 32, or Executive Order S-3-05 and Executive Order B-16-2012.

Alternative 3 is based on a compact land use pattern as anticipated pursuant to *Plan Bay Area* (2013). It also includes a set of transportation investment strategies that are heavily prioritized on transit capital improvements. This Alternative would result in lower overall vehicle miles travelled and lower per capita vehicle miles travelled than the Project, generating less GHG emissions from passenger vehicles and other on-road sources than the Project. Therefore, the consistency of Alternative 3 with applicable plans, policies, and regulations adopted with the intent to reduce GHG emissions would be greater than under the Project. The impact would be less than significant.

### Sea Level Rise (↓)

New or expanded transportation facilities pursuant to the Alternative 3 would place transportation and transit infrastructure in areas subject to inundation from sea level rise, exposing such projects to a significant risk of deterioration or loss. It would also expose people to a significant risk of loss, injury or death involving flooding associated with sea level rise. There are a number of transportation projects under the Alternative 3 that are proposed for construction in areas projected to be subject to regular inundation by midcentury, but ultimately fewer than under the Project. Any increase in transportation investments within the sea level rise inundation zone is considered significant. CCTA cannot require local implementing agencies to adopt mitigation measures pertaining to local regulations and policies, and it is ultimately the responsibility of the local lead

agency or project sponsor to determine and adopt such mitigation. In addition, there may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Therefore, the impact under Alternative 3 would be significant and unavoidable, although Alternative 3 would have an overall lesser degree of impact than the Project due to the lower total number of transportation projects in the projected inundation areas.

## Air Quality

### Consistency with the Clean Air Plan (↓)

Alternative 3 is generally consistent with those primary goals of the Bay Area 2010 Clean Air Plan to attain air quality standards, and to protect public health. As further demonstrated by the anticipated reductions in air quality emissions over time, Alternative 3 supports implementation of applicable transportation control measures to reduce emission levels of criteria pollutants, particulate matter, and TACs.

Implementation of Alternative 2 would result in improvements in relevant transportation parameters, including reductions in total daily VMT, increases in non-single occupant vehicles, and increases in transit ridership. Each of these improvements would lead to overall reduced emissions contributing to improved air quality and protection of public health.

The following provides an overview analysis of Alternative 3's relative consistency with individually applicable control measures of the 2010 Clean Air Plan. As demonstrated below, potential impacts under Alternative 3 would be less than significant and represent a greater degree of consistency under the Project, due to an overall greater level of investment in transportation control measures under Alternative 3.

- **TCM A-1: Local and Area-Wide Bus Service Improvements:** Alternative 3 includes transportation projects and programs intended to sustain and improve bus service throughout the county. Alternative 3's prioritization of investments in projects and programs that would increase transportation mode share and transit safety would provide for substantially greater investment (38.8%) in increased bus services than under the Project (14%).
- **TCM A-2: Local and Regional Rail Service Improvements:** Alternative 3 includes transportation projects and programs intended to sustain and expand rail service throughout the county. Alternative 3's relative total investment in rail service improvement projects and programs would provide for greater investment (21.7%) than under the Project (17.4%).
- **TCM B-1: Freeway and Arterial Operations Strategies:** Alternative 3 includes transportation projects and programs intended to sustain and expand rail service throughout the county. The investment level in freeway and arterial performance improvements under Alternative 3 would be substantially lower (2.3%) than under the Project (12.4%).
- **TCM B-2: Transit Efficiency and Use Strategies:** Alternative 3 includes transportation projects and programs intended to improve the efficiency and use of transit programs throughout the county. The investment level in projects and programs intended to improve the efficiency and use of transit services under Alternative 3 would be substantially greater (13.2%) than under the Project (5.5%).

- **TCM B-3: Bay Area Express Lane Network:** Alternative 3 includes transportation projects and programs intended to implement the regional express lane network and provide express bus service throughout the county. The investment level in projects and programs intended to extend express lanes and express bus service would be greater under Alternative 3 (10%) than under the Project (4.6%).
- **TCM B-4: Goods Movement Improvements and Emission Reductions Strategies:** Alternative 3 does not include transportation projects specifically intended to improve intermodal and arterial connections between regional trade corridors. The investment level under Alternative 3 would therefore be lower (none) than under the Project (0.7%).
- **TCM C-1: Voluntary Employer Trip-Reduction Programs, TCM C-3: Ridesharing Services and Incentives:** Alternative 3 includes programs intended to promote safe access for pedestrians and cyclists to schools and transit. The investment level in projects and programs intended to promote safe access would be slightly lower under Alternative 3 (1.4%) than under the Project (1.6%).
- **TCM C-2: Safe Routes to School and Safe Routes to Transit Programs:** Alternative 3 includes projects and programs intended to promote safe access for pedestrians and cyclists to schools and transit. The investment level in projects and programs intended to implement Safe Routes to School programs would be slightly greater under Alternative 3 (3.3%) than under the Project (2.7%).
- **TCM D-1: Bicycle Access and Facilities Improvements, TCM D-2: Pedestrian Access and Facilities Improvements:** Alternative 3 includes projects and programs intended to promote bicycle and pedestrian access and facility improvements. The investment level in projects and programs intended to improve bicycle and pedestrian facilities and access would be greater under Alternative 3 (7.5%) than under the Project (1.7%).
- **Mobile Source Measures:** Alternative 3 includes a relatively small contribution of funding to support innovation efforts in new technologies, and funding for "smart freeways" to better integrate connecting regional corridors and smooth traffic patterns. The investment level in these types of innovative technologies would be slightly lower under Alternative 3 (1.1%) than under the Project (2.2%).

### Construction-Period Emissions and Fugitive Dust (↔)

The EPA and CARB have adopted stringent air emission regulations for new and existing fleets of construction equipment that is common to all construction sites. However, these regulations alone cannot assure that all projects pursuant to Alternative 3 will use only the lowest emission construction equipment, due primarily to the fleet averaging component of the regulations' compliance requirements. CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of a lead agency to determine and adopt such mitigation. Therefore, construction-period impacts on air quality under Alternative 3 are similar to those that would occur under the Project, and are considered potentially significant and unavoidable.

### Operational Criteria Pollutants (↓)

As shown in **Table 3.1-30**, emissions for criteria pollutants ROG, $NO_x$ (summertime and wintertime), CO, and $PM_{2.5}$ from mobile sources would decrease between the baseline condition (2013) and the 2040 horizon pursuant to Alternative 3, whereas emissions of $PM_{10}$ would increase (as discussed below). Under Alternative 3, ROG emissions are projected to be reduced by 75%, $NO_x$ emissions are projected to be reduced by 84%, CO emissions are projected to be reduced by 78%, and $PM_{2.5}$ emissions are projected to be reduced by 15%, all as compared to the baseline condition. The reductions in CO and $PM_{2.5}$ emissions under Alternative 3 would be slightly greater (by 1%) than those under the Project, and the impact would be less than significant.

**Table 3.1-30: Emission Estimates for Criteria Pollutants (tons per day), Alternative 3 Comparison**

| | | Baseline (2013) | No Project (2040) | Alternative 3 (2040) |
|---|---|---|---|---|
| ROG | | 8.71 | 2.23 | 2.18 |
| | % Change from Baseline | — | -74% | -75% |
| | % Change from No Project | — | — | -2% |
| $NO_x$ | | 16.49 | 2.66 | 2.66 |
| | % Change from Baseline | — | -84% | -84% |
| | % Change from No Project | — | — | 0% |
| CO | | 69.80 | 16.01 | 15.69 |
| | % Change from Baseline | — | -77% | -78% |
| | % Change from No Project | — | — | -2% |
| $PM_{2.5}$ | | 0.76 | 0.65 | 0.65 |
| | % Change from Baseline | — | -15% | -15% |
| | % Change from No Project | — | — | 0% |

*Source: Compiled modeling results included as Appendix F.*

The threshold used in this EIR is based on a comparison to the baseline condition. For informational purposes, Alternative 3 is also compared to future year 2040 No Project condition. When compared with the No Project (2040) condition, criteria pollutant emissions under Alternative 3 would be reduced, largely due to the increasingly stringent emission controls that CARB has adopted for new vehicle engines and fuels, including the Truck and Bus Regulation that require diesel trucks and buses to be upgraded to reduce emissions.

### Particulate Matter Emissions (↓)

Under Alternative 3, particulate matter emissions (as $PM_{10}$) from all mobile sources would increase by 19% by year 2040 as compared to the baseline (year 2013) condition, which is slightly less than the increase (21%) projected under the Project (**Table 3.1-31**). Additionally, particulate matter emissions (as $PM_{2.5}$) from all mobile sources would increase by 2% by year 2040 as compared to the baseline (year 2013) condition, which is also slightly less than the increase (3%) projected under the Project. The higher levels of particulate matter emissions in 2040 conditions are a result of these emissions being strongly influenced by projected growth in VMT (which directly affects entrained roadway dust), with some contributions from tire and brake wear, and exhaust. The overall increase in VMT associated with new population and employment growth will contribute to an increase in

countywide particulate matter emissions that cannot be fully avoided. Furthermore, CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified for the Project. Therefore, this impact remains significant and unavoidable, but to a lesser degree than under the Project.

**Table 3.1-31: Particulate Matter Emissions (tons per day), Alternative 3 Comparison**

| | Baseline (2013) | No Project (2040) | Alternative 3 (2040) |
|---|---|---|---|
| Overall VMT | 22,159,662 | 28,173,605 | 27,773,853 |
| % Change from Baseline | — | 27% | 25% |
| % Change from No Project | — | — | -1% |
| $PM_{10}$ | | | |
| Vehicle Emissions | 1.51 | 1.58 | 1.58 |
| Entrained Dust | 3.50 | 4.45 | 4.39 |
| **Total** | **5.02** | **6.03** | 5.97 |
| % Change from Baseline | — | 20% | 19% |
| % Change from No Project | — | — | -1% |
| $PM_{2.5}$ | | | |
| Vehicle Emissions | 0.76 | 0.65 | 0.65 |
| Entrained Dust | 0.53 | 0.67 | 0.66 |
| **Total** | **1.28** | **1.32** | 1.31 |
| % Change from Baseline | — | 2% | 2% |
| % Change from No Project | — | — | -1% |

*Source: Compiled modeling results included as Appendix F.*

The threshold used in this EIR is based on a comparison to the baseline condition. For informational purposes, Alternative 3 is also compared to future year 2040 No Project conditions. When compared with the No Project (2040) condition, particulate matter emissions under Alternative 3 would be reduced.

### Mobile Source Toxic Air Contaminant Emissions (↔)

Under Alternative 3, the percentage change from the baseline condition for DPM be a 96% decrease, which is marginally less than would be achieved under the Project (97%). As shown in **Table 3.1-32**, the percentage change from the baseline condition for benzene would be a 77% decrease and for 1,3 butadiene it would be an 80% decrease, both of which are the same as under the Project. These reductions in TACs can be attributed to California state laws to evaluate and control TACs, as well as other state regulations that reduce smog or other pollutants that also reduce TACs, and regional programs in place to address PM in general and TACs in particular.

| Table 3.1-32: Toxic Air Contaminant Emissions (kg per day), Alternative 3 Comparison | | | |
|---|---|---|---|
| | Baseline (2013) | No Project (2040) | Alternative 3 (2040) |
| **DPM** | 198.53 | 6.87 | 7.53 |
| % Change from Baseline | — | -97% | -96% |
| % Change from No Project | — | — | 10% |
| **Benzene** | 215.45 | 50.69 | 49.39 |
| % Change from Baseline | — | -76% | -77% |
| % Change from No Project | — | — | -3% |
| **1,3 Butadiene** | 9.54 | 1.98 | 1.91 |
| % Change from Baseline | — | -79% | -80% |
| % Change from No Project | — | — | -4% |

*Source: Compiled modeling results included as Appendix F.*

Overall, the reduction in TAC emissions due to ongoing regulations and programs would ensure there would be no adverse impact pursuant to Alternative 3 and impacts would be less than significant, which is the same as for the Project.

The threshold used in this EIR is based on a comparison to the baseline condition. For informational purposes, Alternative 3 is also compared to the 2040 No Project condition as well. Alternative 3 would result in less TAC emissions as compared to the No Project (2040) condition.

### Relative Impacts on Communities of Concern (↓)

TAC and $PM_{2.5}$ emissions were estimated along the major transportation corridors within all of the County's COCs for Alternative 3 under baseline (2013) and future horizon year (2040) conditions. As shown in **Table 3.1-33**, overall TAC emissions from diesel and gasoline vehicles decrease significantly throughout the County between the baseline condition in 2013 and future year conditions in 2040, while $PM_{2.5}$ emissions would be marginally reduced.

Under Alternative 3, DPM emissions are projected to decrease by 96% countywide, which is slightly less than under the Project. There would be no difference in DPM emissions between COCs and the County. There would be no difference between Alternative 3 and the Project.

Benzene emissions are projected to decrease by 77% countywide, which is the same as under the Project. The difference in benzene emissions between COCs (a 79% decrease) and the County would be slightly greater than under the Project.

1,3 butadiene emissions are projected to decrease by 80% countywide, which is the same as under the Project. The difference in 1,3 butadiene emissions between COCs (an 81% decrease) and the County would be the same as achieved under the Project.

| Table 3.1-33: Relative Change in TAC Emissions, COCs versus Countywide, Alternative 3 Comparison | | |
|---|---|---|
| | **No Project (2040)** | **Alternative 3 (2040)** |
| **VMT** | | |
| Change Countywide | 28% | 27% |
| Change within COCs | 23% | 19% |
| Relative Difference, COCs as Compared to County Overall | -5% | -8% |
| **DPM** | | |
| Change in Emissions, Countywide | -97% | -96% |
| Change in Emissions, COCs | -97% | -96% |
| Relative Difference, COCs as Compared to County Overall | same | same |
| **$PM_{2.5}$ (Exhaust)** | | |
| Change in Emissions, Countywide | -87% | -87% |
| Change in Emissions, COCs | -89% | -89% |
| Relative Difference, COCs as Compared to County Overall | 2% | 2% |
| **Benzene** | | |
| Change in Emissions, Countywide | -76% | -77% |
| Change in Emissions, COCs | -78% | -79% |
| Relative Difference, COCs as Compared to County Overall | 2% | 2% |
| **1,3 Butadiene** | | |
| Change in Emissions, Countywide | -79% | -80% |
| Change in Emissions, COCs | -81% | -81% |
| Relative Difference, COCs as Compared to County Overall | 2% | 1% |
| **Total $PM_{2.5}$ (Exhaust and Entrained Dust)** | | |
| Change in Emissions, Countywide | 3% | 3% |
| Change in Emissions, COCs | -2% | -4% |
| Relative Difference, COCs as Compared to County Overall | 5% | 7% |

*Source: Compiled modeling results included as Appendix F.*

*A positive relative difference in emissions indicates there is a greater reduction in COCs as compared to the County overall.*

Total $PM_{2.5}$ emissions[11] are projected to increase by 4% countywide. The difference in total $PM_{2.5}$ emissions between COCs and the County would be 7%, which is slightly greater than the 5% difference under the Project.

These results may be explained primarily by the lower overall increase in VMTs within the county's COCs, as compared to the anticipated increase in VMT for the county overall. The potential for disproportional impacts on COCs under Alternative 3 is less than significant and of a lesser degree than the Project.

[11] Total $PM_{2.5}$ includes exhaust from all vehicles, as well as re-entrained road dust, brake wear and tire wear, and does not include TACs from gasoline vehicles.

## Agricultural Lands

### Agricultural Land Conversion, Williamson Act Conflicts and Other Changes Affecting Farmland (↓)

With the focus of Alternative 3 being directed towards new transit projects and programs rather than transportation (roadway) projects, there are fewer transportation projects that would impact important agricultural land when compared with the Project. Alternative 3 does include widening of a short segment of Brentwood Boulevard from Balfour to Chestnut, but this road segment is within lands identified as Urban, not agricultural. The cumulative effects of Alternative 3 would be limited to only those impacts resulting from transportation projects assumed under the 2013 baseline and would be less than under the Project. Any conversion of important agricultural or open space land resulting from transportation projects is considered significant. Given recent growth in East County and the related need to provide services and relieve congestion in the area, however, some projects may still have the potential to impact agricultural land, and site-specific or project-specific conditions may preclude the reduction of all project impacts to less than significant levels. Additionally, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Therefore, the impact of Alternative 3 on agricultural lands is considered significant and unavoidable, but to a lesser degree than under the Project.

## Biological Resources

### Candidate, Sensitive, and Special-Status Species (↓)

The construction of new or expanded transportation facilities pursuant to Alternative 3 could have a substantial adverse effect on candidate, sensitive, or special-status species either directly or through habitat modifications, which would result in a significant and unavoidable impact. To the extent that transportation projects pursuant to the 2017 CTP incorporate the mitigation measures identified for the Project, these measures would reduce significant impacts to candidate, sensitive, or special-status species. However, there may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to candidate, sensitive, or special-status species to less than significant levels, such that impacts may remain significant and unavoidable. Furthermore, CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified for the Project.

#### *Special-status Species*

This analysis conservatively assumes that special-status species would be present within the impact footprint of a transportation project if that project is within, transects or is in immediate proximity to a known special status species occurrence. Some transportation projects that comprise Alternative 3 involve new or expanded transit projects that would result in impacts on special-status species. Potential effects on special-status species would be similar to the types discussed in Chapter 2.5, Biological Resources. Transportation projects under Alternative 3 would have a lesser degree of impact overall than under the Project due to the fewer number of transportation (roadway) projects in areas containing special status species.

### *Critical Habitat*

Transportation projects under Alternative 3 may lie within or adjacent to areas that are designated by the U.S. Fish and Wildlife Service as critical habitat for federally listed species. Potential effects on critical habitat would be similar to the types discussed in Chapter 2.5, Biological Resources. Transportation projects under Alternative 3 may result in permanent and/or temporary impacts on designated critical habitat for federally listed species, but to a lesser degree than under the Project.

### *Migratory Bird Treaty Act Species and Nesting Birds*

Nesting habitat for raptors and habitat for MBTA species could occur near individual transportation improvement projects under Alternative 3. Potential effects on migratory and nesting bird species would be similar to the types discussed in Chapter 2.5, Biological Resources. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered a take by the CDFW and would be considered a significant impact. Transportation projects under Alternative 3 have the potential to adversely impact nesting birds and MBTA species, and in some cases would occur in or near sensitive habitat, but to a lesser degree than under the Project.

## Wildlife Movement (↓)

Certain transportation projects that comprise Alternative 3 involve new or expanded transit projects that could result in impacts on wildlife movement. Potential effects on wildlife movement would be similar to the types discussed in Chapter 2.5, Biological Resources.

Implementation of transit and transportation projects under Alternative 3 could potentially result in reduced natural habitat and habitat fragmentation, particularly if projects are within the ECA mapped in Contra Costa County. Substantial encroachment on wildlife corridors would be considered a potentially significant impact. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. There may be instances, however, in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Additionally, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Therefore, impacts on wildlife movement under Alternative 3 would be significant and unavoidable. The transportation projects under Alternative 3 that are within or in the immediate vicinity of the ECA mapped in Contra Costa County would be fewer in number than under the Project and thus result in a lesser degree of potential impact.

## Conflicts with State or Local Conservation Plans or Ordinances (↓)

Pursuant to Alternative 3, no transportation projects are within the primary zone of the Bay Delta Plan.

Some transportation projects that comprise Alternative 3 involve new or expanded transit projects that could result in conflicts with local policies and ordinances protecting biological resources, including the provisions of the East Contra Costa County HCP/NCCP. Alternative 3 would result in fewer transportation projects being located within, across, or in immediate proximity to the boundaries of the East Contra Costa County HCP/NCCP, than under the Project. This would result in a lesser degree of potential impact. Potential impacts would be considered significant.

Implementation of mitigation measures would reduce these potential impacts to a level of less than significant.

New transportation projects pursuant to Alternative 3 may also adversely affect protected trees, and would be required to comply with the County and local tree protection measures, including obtaining the necessary permits from the County and local jurisdictions within which the projects would be constructed.

Potential impacts related to conflicts with state or local conservation plans or ordinances would be considered significant under Alternative 3, but to a lesser degree than under the Project. Implementation of mitigation measures would reduce these potential impacts to a level of less than significant.

## Geology and Soils

### Seismic Hazards (↓)

The potential for exposure of people or structures to potential damaging geologic forces resulting in increased risk due to rupture of a known earthquake fault, severe groundshaking and/or liquefaction under Alternative 3 is considered significant. Implementation of mitigation measures would reduce these potential impacts to a level of less than significant.

#### *Surface Fault Rupture*

Most of the transit-related projects that comprise Alternative 3 involve new or improved transit facilities that are not located within an Alquist-Priolo Zone, and most transit-based projects under Alternative 3 do not represent a substantially changed risk or hazard resulting from surface fault rupture. However, Alternative 3 does include the I-680 Transit Investment program, where work within or along the I-680 corridor could potentially be exposed to hazards as a result of surface fault rupture by crossing, or being located within an identified Alquist-Priolo Zone. The Calaveras fault line runs parallel to I-680 through much of the southerly half of the county, and is particular near I-680 through the City of San Ramon.

Projects such as enhancement of existing transit corridors that are located within or near Alquist-Priolo Zones may not represent a substantially changed risk or hazard, but would nonetheless be required to consider detailed geotechnical investigations to evaluate the level of potential damage from fault rupture. Overall, the potential for significant impacts related to surface fault rupture would be less under Alternative 3 than under the Project.

#### *Ground Shaking*

An earthquake on any one of the active faults in the Bay Area region could cause a large degree of ground shaking in the region, resulting in damage to those transit improvements associated with Alternative 3 if they are not engineered appropriately. Overall, the potential for significant impacts related to ground shaking would be less under Alternative 3 than under the Project.

#### *Liquefaction*

The potential for impacts related to liquefaction is increased under Alternative 3 than under the Project due to the number of transit, bike, and pedestrian projects that are located in high to very

high liquefaction zones. Overall, the potential for significant impacts related to liquefaction would be greater under Alternative 3 than under the Project.

### Soil Erosion (↓)

Transit, bicycle, and pedestrian facility improvement projects pursuant to Alternative 3 would include earthwork activities that would disturb underlying soils during construction, potentially exposing them to erosion and loss of topsoil. There is a lower potential for construction of these projects included under Alternative 3 to result in soil erosion than under the Project due to the number, location, extent, and/or type of transportation projects for this Alternative. The potential for additional loss of topsoil and erosion impacts at the countywide and local level related to transportation improvement projects included in Alternative 3 is considered potentially significant, but to a lesser degree than under the Project. Implementation of mitigation measures would reduce these potential impacts to a level of less than significant.

## Hazards and Hazardous Materials

### Hazardous Materials Transport (↓)

Alternative 3 represents a prioritized list of projects and programs specifically intended to encourage transit use, walking, and bicycling. The highest level of investments under this Alternative occurs in transit operations, including rail and express and local bus service. This scenario also maximizes investment in pedestrian and bicycle improvements, emphasizing improved transit, bicycle, and walking connections to work, schools, businesses districts. As such, Alternative 3 includes only a limited number of transportation projects that have the potential to increase the county transportation system's capacity to transport hazardous materials, and would have less potential for impacts related to hazardous materials transport than the Project. However, any increases in hazardous material transport could conceivably result in increased upset and accident conditions. Hazardous materials impacts related to transportation improvements under Alternative 3 are thus considered potentially significant, but of a lesser degree than under the Project. Implementation of mitigation measures would reduce these potential impacts to a level of less than significant.

### Hazardous Materials Sites (↓)

There is a lower potential for the transportation projects included under Alternative 3 to result in exposure to previous hazardous materials contamination than under the Project due to the number, location, extent, and/or type of transportation projects for this Alternative. No site specific or project-specific studies were conducted for Alternative 3 other than a broad comparison to nearby sites with known prior releases of hazardous materials as recorded in existing databases, and generalized assumptions about land use characteristics. However, Alternative 3 includes two new roadway improvement projects that are located in mixed-use areas considered to have a moderate potential to encounter hazardous materials during construction. These projects are in areas that have at least a moderate clustering of sites containing known prior contamination as listed in the Department of Toxic Substance Control EnviroStor and the State Water Resources Control Board Geotracker websites.

Alternative 3 also contains several transit, bicycle, and pedestrian improvements that are located in industrial areas of the western part of the county that are considered to have a high potential to encounter hazardous conditions, and in areas that have at dense clustering of sites containing known prior contamination as listed in the EnviroStor and the Geotracker websites. Implementation of mitigation measures would reduce these potential impacts; however, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Impacts would therefore be significant and unavoidable, but to a lesser degree than under the Project.

## Hydrology and Water Resources

### Water Quality (↑)

There is a higher potential for the transportation projects included under Alternative 3 to result in a violation of water quality standards or waste discharge requirements or otherwise substantially degrade water quality than under the Project due to the number, location, extent, and/or type of transportation projects for this Alternative. Several of the transit-related projects that comprise Alternative 3 involve new or expanded transit and freeway and roadway projects that would result some increase in impervious areas and the increased potential for polluted runoff. To the extent that transportation projects included in Alternative 3 incorporate mitigation measures identified for the Project, impacts related to water quality would be reduced to levels of less than significant. These measures are tied to existing regulations that are law and binding on responsible agencies and project sponsors, and it is reasonable to determine that they would be implemented for all future transportation projects pursuant to the 2017 CTP, including those transportation projects proposed to be implemented under the Investment Program. Therefore, the potential for the transportation projects included under Alternative 3 to result in a violation of water quality standards or waste discharge requirements or otherwise substantially degrade water quality is considered less than significant with implementation of these mitigation measures.

### Flood Hazards (↑)

There is a higher potential for the transportation projects included under Alternative 3 to place structures within a 100-year flood hazard area or expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam than under the Project. CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Therefore, it cannot be ensured that mitigation measures would be implemented in all cases. Several transportation projects under Alternative 3 may either be in or pass through previously identified flood-prone areas, resulting in significant and unavoidable flood hazard impacts and to a greater degree than under the Project.

## Land Use

### Growth Inducement (↕)

Alternative 3, similar to the other alternatives, is intended to fit to the land use plan as envisioned pursuant to *Plan Bay Area*, and is integrally linked to and balanced with the housing and

employment forecast for the County as presented in *Projections 2013*. Rather than eliminating obstacles to growth, Alternative 3 accommodates anticipated growth based on land use policy that is outside the regulatory control or jurisdiction of CCTA. It is unlikely that Alternative 3 will provide transportation system improvements of sufficient magnitude to stimulate new growth beyond that forecast for the county. However, Alternative 3 has a greater emphasis on transit-related project and programs than the Project, and would result in an approximately 73% increase in total daily transit trips and only a 19% increase in drive-alone vehicle trips, when compared with existing mode split characteristics. As such, Alternative 3 may affect certain aspects of urban development differently than the Project, as summarized below:

- *Location:* While the transit improvements pursuant to Alternative 3 are not expected to increase the rate of development within the county, they may change where new development chooses to locate. The emphasis on transit improvements pursuant to Alternative 3 may shift previous development patterns within the county towards greater development within core cities and within PDA-focused population and employment growth areas where improved transit connections become are available, rather than in outlying suburban areas where transit is less accessible.
- *Intensity and Use:* Greater transit accessibility may also make currently underutilized but transit-accessible sites within urban locations more suitable for new, more intense land use. This may necessitate changes to local city general plans, as these General Plans dictate the types and intensities of uses permitted, similar to what has previously occurred around some BART stations.

These potential changes in land use and development patterns within the County are fully consistent with the changes anticipated pursuant to *Plan Bay Area* 2013), and with those General Plans of existing cities within the County seeking to revitalize urban centers. Impacts related to growth inducement under Alternative 3 would be less than significant, with the potential degree of difference being both greater and less than the Project.

## Noise

### Operational Noise – Traffic (↓)

Alternative 3 encompasses primarily transit, bicycle, and pedestrian facility improvement projects, but does include two road widening projects—Contra Costa Boulevard and Brentwood Boulevard. Impacts would be localized to the project. There is a lower potential for projects included under Alternative 3 to result in noise exceedances than under the Project due to the number, location, extent, and/or type of transportation projects for this Alternative. The potential for the operation of transportation improvement projects included under Alternative 3 to result in highway noise levels that exceed the FHWA noise abatement criteria or increase above existing levels is considered significant and of a lesser degree than the Project. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. There may be instances, however, in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Furthermore, it is ultimately the responsibility of implementing agencies and individual project sponsors to determine and adopt mitigation. CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified

for the Project. Overall, these operational traffic noise impacts under Alternative 3 are considered potentially significant and unavoidable, but to a lesser degree than the Project.

### Visual Resources

#### Views, Scenic Resources, and Visual Character (↓)

There is a lower potential for projects included under Alternative 3 to result in adverse impacts on important views or vistas when compared with the Project due to the focus of this Alternative being directed towards new transit projects and programs rather than transportation (roadway) projects. Alternative 3 does include widening of a short segment of Brentwood Boulevard, but this road segment is within the urban area of Brentwood. The cumulative effects of Alternative 3 would be limited to only those impacts resulting from transportation and transit projects assumed under the 2013 baseline. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. Given the extent of new roadways considered for development in undeveloped areas of the County, some of those projects may still have the potential to impact views and scenic vistas, and site-specific or project-specific conditions may preclude the reduction of visual impacts to less than significant levels. Additionally, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. The impact of Alternative 3 on important views or vistas is considered significant and unavoidable, but to a lesser degree than under the Project.

#### Light and Glare (↓)

There is a lower potential for projects included under Alternative 3 to result in adverse impacts related to light and glare than under the Project due to the number, location, extent, and/or type of transportation projects for this Alternative. With the focus of Alternative 3 being directed towards new transit projects and programs that will (for the most part) use existing transportation corridors, Alternative 3 does not include additional transportation projects that would substantially increase adverse light and glare impacts. The cumulative effects of Alternative 3 would be limited to only those impacts resulting from transportation and transit projects assumed under the 2013 baseline. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. There may be instances, however, in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Additionally, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. The impact of Alternative 3 related to light and glare is considered significant and unavoidable, but to a lesser degree than under the Project.

## Impacts Similar to those of the Project

The following potentially significant environmental effects that would occur under Alternative 3 are similar to those expected to occur under the Project. These impacts would be effectively reduced through implementation of mitigation measures similar to those identified for the Project, except where noted as significant and unavoidable.

### Biological Resources (↔)

- Sensitive Natural Communities and Wetlands (SU)

### Cultural Resources (↔)

- Historical Resources (SU)
- Archaeological and Paleontological Resources (SU)
- Human Remains (LTS with Mitigation)
- Tribal Cultural Resources (SU)

### Geology and Soils (↔)

- Geologic Instability and Soil Expansion (LTS with Mitigation)

### Hazards and Hazardous Materials (↔)

- Construction-period Hazardous Materials Use (LTS with Mitigation)
- Airport Hazards (LTS)
- Emergency Response and Evacuation (LTS)
- Wildland Fire Hazards (LTS)

### Hydrology and Water Resources (↔)

- Groundwater (LTS)
- Drainage and Runoff (LTS with Mitigation)

### Land Use (↔)

- Residential or Business Disruption or Displacement (SU): Alternative 3 includes transportation improvements of the type that generate the highest risk of community disruption (e.g., rail lines), and that are on alignments that pass through existing urban areas or pockets of development in rural areas. Projects pursuant to Alternative 3 may result in displacement of existing homes and businesses, and possibly new divisions within existing neighborhoods. These impacts related to residential or business disruption, or displacement of substantial numbers of existing population and housing under Alternative 3 are similar to those that would occur under the Project and are considered cumulatively significant. Impacts would remain significant and unavoidable, similar to the Project.
- Construction-Related Community Disruption (SU): Construction-related activities associated with Alternative 3 are likely to cause short-term disruption of adjoining land uses, similar to those discussed in Chapter 2.10, Land Use. Short-term construction-period impacts under Alternative 3 are considered significant. Impacts would remain significant and unavoidable, similar to the Project.
- Community Separation (LTS)

- Conflicts with Land Use Plans and Policies (LTS): Each transportation improvement and program under Alternative 3 has been scrutinized at a local level and found consistent with applicable General Plans. Projects and programs pursuant to Alternative 3 are consistent with local plans, and would be reviewed for consistency as they move toward implementation. Alternative 3, similar to the Project, would not significantly conflict with applicable land use or regional land use plans, and the impact is considered less than significant.

### Noise (↔)

- Construction Noise and Groundborne Vibration (SU)
- Operational Noise – Transit (SU)

### Visual Resources (↔)

- Incongruous Visual Elements – Soundwalls (SU)

# Alternative 4: Emphasis on Transit, Bicycle, and Pedestrian Programs Alternative

## Description of the Alternative

Under Alternative 4, the CCTA would not fund highway and roadway capital projects, but instead would invest available funds primarily into programs designed to reduce the generation of greenhouse gases, consistent with regional goals and strategies of *Plan Bay Area* (2013). The investments under Alternative 4 constitute a major shift from capital investment projects (as described for the Project and other Alternatives), to transit operations programs. These programs are intended to benefit transit users; numerous countywide programs designed to enhance and improve local streets for pedestrians, bicycles and trails; and related programs such as safe transportation for children, programs for seniors and people with disabilities, and other programs to provide additional transportation benefits for minority and low-income residents and to communities of concern. Examples of priority programs to be funded under Alternative 4 include:

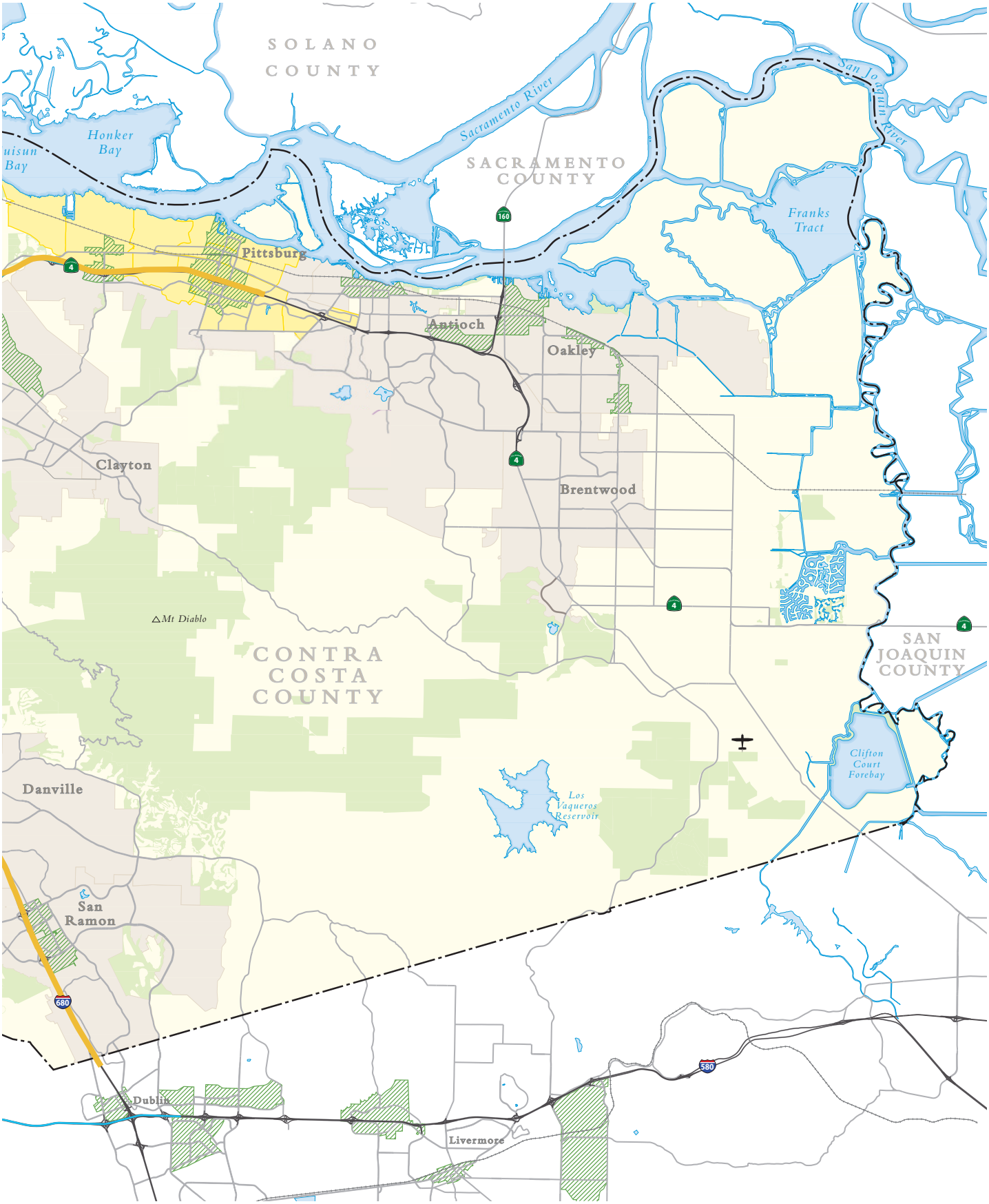
- countywide transit improvement;
- local street maintenance and improvement;
- improved bus services to and within PDAs; and
- bus passes for students.

Alternative 4 would fund programs to ensure that a fair share of transportation benefits go to minority and low-income residents and to Communities of Concern, consistent with the principles of social equity and environmental justice. Alternative 4 could provide higher funding levels for Countywide programs because there would be lower capital investments in transit, roadway, and freeway projects. In addition, this alternative would increase funding for Integrated Corridors ("smart freeways") and high-capacity transit improvements; improved bus services to and within PDAs; bus passes for middle school and high school students; transportation for seniors and persons with disabilities; and Complete Streets projects in PDAs.

Two revolving funds would be supported: one to minimize displacement of low-income residents from PDAs, and the other to increase funding of a Regional Advanced Mitigation Program for the mitigation of future transportation projects beyond that funded for the Project. Alternative 4 would make a substantial investment in Transportation for Livable Communities projects to address past disparities in funding, benefiting minority and low-income neighborhoods and Communities of Concern, as well as supporting use of alternative modes, which could further reduce GHG generation. Finally, Alternative 4 would provide priority funding and set-asides for Communities of Concern and for jurisdictions that have yet to prepare bike and Safe Routes to School plans and support for planning for "end-of-trip" facilities for alternative modes of travel.

The projects and programs included under Alternative 4 (which are in addition to those under Alternative 2/the 2013 RTP Alternative) are listed in the above summary Table 3.1-1. They also are shown on **Figure 3.1-5** (Roadways and HOV lanes) and **3.1-6** (Transit, Bicycle, and Pedestrian Projects and Programs).


**Figure 3-5**
**Alternative 4 - Roadway and HOV Projects and Programs**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Clayton
Brentwood
Mt Diablo
CONTRA COSTA COUNTY
SAN JOAQUIN COUNTY
Clifton Court Forebay
Los Vaqueros Reservoir
Danville
San Ramon
Dublin
Livermore
160
4
680
580

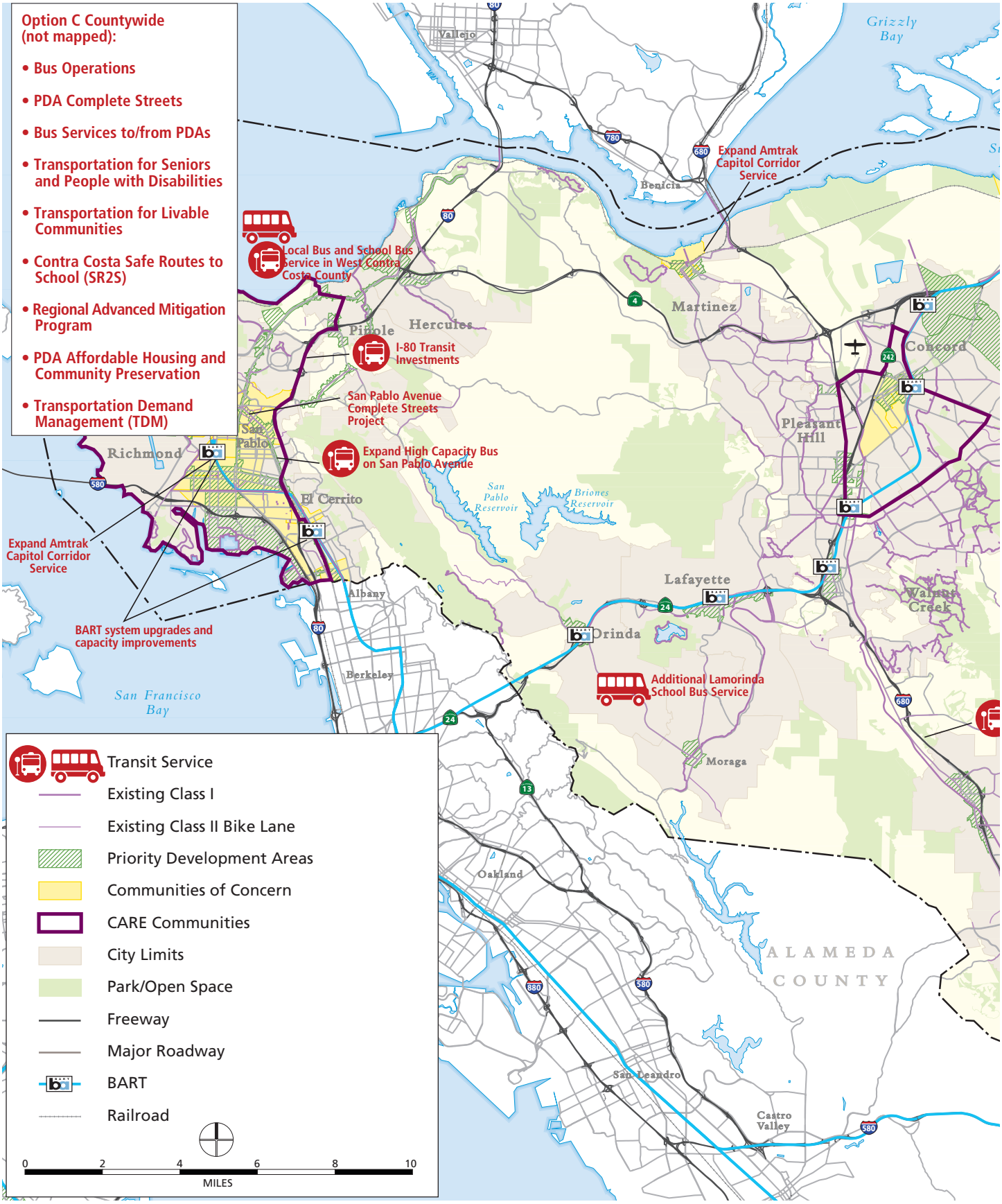


**Figure 3-6**
**Alternative #4 - Bicycle and Pedestrian Projects and Programs**


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SACRAMENTO COUNTY
San Joaquin River
Franks Tract
Pittsburg
Antioch
Oakley
Clayton
Brentwood
Mt Diablo
CONTRA COSTA COUNTY
SAN JOAQUIN COUNTY
Improve Bus Transit on I-680 Corridor
Clifton Court Forebay
Danville
Los Vaqueros Reservoir
Additional San Ramon Valley School Bus Service
San Ramon
Dublin
Livermore
160
4
680
580

## Ability to Accomplish Project Objectives

Alternative 4 would have the following ability to meet the Project objectives compared to the Project

- Alternative 4 would *meet to a lesser degree* the objective to support the efficient, safe, and reliable movement of people and goods using all available travel modes (Goal 1). This alternative would make fewer improvements overall and fewer improvements to the county's roadway system resulting in higher levels of vehicle delay and lower speeds. It also would not eliminate as many gaps in the transportation system or make the same level of investments in innovation included in the Project. This alternative would not provide the same level of support for goods movement and economic development. This alternative would, however, reduce VMT per capita relative to the Project, and make more investments in bicycle and pedestrian facilities.
- Alternative 4 would *meet to a similar degree* the objective to manage growth to sustain Contra Costa's economy, preserve its environment, and support its communities (Goal 2). This alternative would, on the one hand, lessen air quality and GHG impacts and support community livability through pedestrian and bicycle improvements. It also would include support for a regional advance mitigation program. On the other hand, it would not provide the improvements to roadway safety and operations and goods movement that would support economic vitality in the county. It also lacks the emphasis on innovation.
- Alternative 4 would *meet to a greater degree* the objective to expand safe, convenient, and affordable alternatives to the single-occupant vehicle (Goal 3). This alternative would increase investments in bicycle and pedestrian improvements compared to the Project and would result in higher levels of walking, bicycling and transit use.
- Alternative 4 would *meet to a lesser degree* the objective to maintain the transportation system (Goal 4). This alternative would provide less support to maintain the transportation system.
- Alternative 4 would *meet to a lesser degree* the objective to continue to invest wisely to maximize the benefits of available funding (Goal 5). This alternative would not provide the opportunities for public/private partnerships that the Project would provide nor the extent of opportunities for leveraging given the types of projects that would be funded. It would allow similar opportunities for the use of performance measures in selecting projects for funding.

Alternative 4 would further all of the Project objectives, though some objectives would be met to a lesser degree than under the Project.

## Comparative Impact Analysis – Impacts Different than those of the Project

The following is a comparative analysis of those environmental impacts that would occur under Alternative 4, and for which there are comparative differences between this alternative and the Project. In most instances, Alternative 4 would lessen the magnitude of potentially significant environmental effects as indicated for the Project because of its emphasis on transit, bicycle, and pedestrian improvement programs over capital investments in highway and transit infrastructure projects. Impacts that would occur under Alternative 4 would be effectively reduced to less than

significant through implementation of mitigation measures similar to those identified for the Project, except where noted as significant and unavoidable.

## Transportation and Circulation

### Vehicle Miles Traveled per Capita (↓)

As indicated in **Table 3.1-34**, transportation projects and new or expanded transit projects under Alternative 4 would result in a slight decrease in per capita (-1%) VMT when compared with the baseline condition, which is less than the increase (+1%) projected under the Project. This reduction in per capita VMT reflects the effects of increased investments in multi-modal transportation options and the emphasis on locating new residential and commercial development within transit-accessible areas.

**Table 3.1-34: VMT Per Capita, Alternative 4 Comparison**

| Scenario | Total VMT | Vehicle Miles Traveled Per Capita | Comparison to Baseline (2013) | | Comparison To No Project (2040) | |
|---|---|---|---|---|---|---|
| | | | Numerical Change | Percent Change | Numerical Change | Percent Change |
| Baseline Condition (2013) | 22,040,884 | 21.0 | — | — | — | — |
| No Project (2040) | 28,009,826 | 21.1 | — | — | — | — |
| 2017 Investment Program | 28,119,444 | 21.2 | +0.2 | +1.0% | +0.1 | +0.5% |
| Alternative 4 | 27,657,211 | 20.8 | -0.2 | -1.0% | -0.3 | -1.4% |

*Source: Compiled modeling results included as Appendix D.*

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 4 is compared to the future No Project condition (2040) as well. When compared with the No Project (2040) condition, implementation of Alternative 4 would result in a decrease (-1.4%) in VMT per capita, which is less than the increase (+0.5%) projected under the Project.

Overall, implementation of Alternative 4 would not result in an appreciable increase in per capita VMT. The potential for impacts related to per capita VMT under Alternative 4 is considered less than significant, and of a lesser degree than the Project.

### Vehicle Hours of Delay (↑)

As indicated in **Table 3.1-35**, implementation of Alternative 4 would result in an appreciable increase (200.1%) in VHD when compared with the baseline condition, which is greater than the increase (166%) projected under the Project.

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 4 is compared to the future No Project condition (2040) as well. When compared with the No Project (2040) condition, implementation of Alternative 4 would result in a decrease (-14.9%) in VHD, which is less than the decrease (-24.5%) projected under the Project.

**Table 3.1-35: Vehicle Hours of Delay, Alternative 4 Comparison**

| Scenario | Vehicle Hours Of Delay | Comparison to Baseline (2013) | | Comparison To No Project (2040) | |
|---|---|---|---|---|---|
| | | Numerical Change | Percent Change | Numerical Change | Percent Change |
| Baseline Condition (2013) | 71,648 | — | — | — | — |
| No Project (2040) | 252,584 | — | — | — | — |
| 2017 CTP Investment Program | 190,685 | +119,037 | +166.0% | -61,900 | -24.5% |
| Alternative 4 | 215,015 | -143,367 | +200.1% | -37,569 | -14.9% |

*Source: Compiled modeling results included as Appendix D.*

Overall, implementation of Alternative 4 would result in an appreciable increase in VHD. No standard mitigation strategy to address VHD at the countywide or regional level is considered feasible due to the variability in congestion characteristics, driver behavior, and cost limitations. The potential for impact related to VHD under Alternative 4 is therefore considered significant and unavoidable and of a greater degree than the Project.

### Average Speeds (↑)

As indicated in **Table 3.1-36**, the average speeds on freeways and arterials throughout Contra Costa County pursuant to Alternative 4 are expected to be slower (5.9% for freeways and 2.1% for arterials) than when compared with the baseline condition. This slowdown of traffic is greater overall than the slowdown projected for freeways under the Project (2.7%), but slightly less (2.3%) than the slowdown projected for arterials. The 5.9% decrease in freeway speeds under Alternative 4 is considered appreciable (i.e., greater than 5%) and this impact would be considered potentially significant.

**Table 3.1-36: Average Freeway and Arterial Speeds, Alternative 4 Comparison**

| Scenario | Average Speed | Comparison to Baseline (2013) | | Comparison to No Project (2040) | |
|---|---|---|---|---|---|
| | | Numerical Change | Percent Change | Numerical Change | Percent Change |
| Baseline Condition (2013) | | | | | |
| Freeway | 55.6 | — | — | — | — |
| Arterial | 34.2 | — | — | — | — |
| No Project (2040) | | | | | |
| Freeway | 51.6 | — | — | — | — |
| Arterial | 33.3 | — | — | — | — |
| 2017 CTP Investment Program | | | | | |
| Freeway | 54.1 | -1.5 | -2.7% | +2.5 | +4.8% |
| Arterial | 33.4 | -0.8 | -2.3% | +0.1 | +0.3% |
| Alternative 4 | | | | | |
| Freeway | 52.3 | -3.3 | -5.9% | +0.7 | +1.4% |
| Arterial | 33.5 | -0.7 | -2.1% | +0.2 | +0.6% |

*Source: Compiled modeling results included as Appendix D.*

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 4 is compared to the future No Project condition (2040) as well. When compared with the No Project (2040) condition, implementation of Alternative 4 would result in an increase in average speeds (1.4% for freeways and 0.6% for arterials), which is less overall than the increase for freeways (4.8%), but greater than the increase (0.3%) for arterials under the Project.

Overall, implementation of Alternative 4 would result in an appreciable decrease in average speeds on freeways, but would not result in an appreciable decrease in average speeds on arterials. CCTA cannot require local implementing agencies to adopt mitigation measures, and it is ultimately the responsibility of a lead agency to determine and adopt such mitigation. The potential for impact related to average speeds on freeways and arterials under Alternative 4 is therefore considered significant and unavoidable and of a greater degree than the Project.

### Non-Single Occupant Vehicle Mode Share (↓)

As indicated in **Table 3.1-37**, implementation of Alternative 4 would result in an overall increase (5.1%) in mode shares for transit, HOV, or other non-SOV modes when compared with the baseline condition, which is greater than the increase (2.7%) achieved under the Project. This increase in non-SOV mode reflects this Alternative's emphasis on transit, bicycle, and pedestrian improvement programs rather than new roadway construction or roadway capacity improvements.

**Table 3.1-37: Daily Transportation Mode Share, Alternative 4 Comparison**

| Scenario | Drive Alone | Shared Ride, 2 | Shared Ride, 3+ | Transit | Bike | Walk | Total Non-SOV Mode Share |
|---|---|---|---|---|---|---|---|
| Baseline Condition (2013) | 59.0% | 24.2% | 8.9% | 2.7% | 0.5% | 4.7% | 41.0% |
| 2017 CTP Investment Program | 57.9% | 24.7% | 8.7% | 3.4% | 0.5% | 4.8% | 42.1% |
| Alternative 4 | 56.9% | 24.7% | 8.7% | 3.5% | 0.6% | 5.6% | 43.1% |
| *Percent Change from Baseline Condition* | *-3.6%* | *+2.1%* | *-2.3%* | *+29.6%* | *+20.0%* | *+19.2%* | *+5.1%* |
| No Project (2040) | 58.1% | 24.8% | 8.8% | 3.3% | 0.5% | 4.6% | 42.0% |
| 2017 CTP Investment Program | 57.9% | 24.7% | 8.7% | 3.4% | 0.5% | 4.8% | 42.1% |
| Alternative 4 | 56.9% | 24.7% | 8.7% | 3.5% | 0.6% | 5.6% | 43.1% |
| *Percent Change from No Project* | *-2.1%* | *-0.4%* | *-1.1%* | *+6.1%* | *+20.0%* | *+21.7%* | *+2.6%* |

*Source: Compiled modeling results included as Appendix D.*

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 4 is compared to the future No Project condition (2040) as well. When compared with the No Project (2040) condition, implementation of Alternative 4 would result in an overall increase (2.6%) in alternative mode shares for transit, HOV, or other non-SOV modes, which is greater than the overall increase (0.2%) under the Project.

Overall, implementation of Alternative 4 would result in an increase in mode shares for transit, HOV, or other non-SOV modes. The potential for impact related to mode shares for transit, HOV, or other non-SOV modes under Alternative 4 is considered less than significant, and would achieve greater mode share split for single-occupant vehicles than the Project.

### Transit Ridership (↓)

As indicated in **Table 3.1-38**, implementation of Alternative 4 would result in a substantial increase (59.7%) in daily transit ridership when compared with the baseline condition, which is greater than the increase (55.8%) under the Project.

**Table 3.1-38: Transit Ridership, Alternative 4 Comparison**

| | | Comparison to Baseline (2013) | | Comparison To No Project (2040) | |
|---|---|---|---|---|---|
| **Scenario** | **Transit Ridership** | **Numerical Change** | **Percent Change** | **Numerical Change** | **Percent Change** |
| Baseline Condition (2013) | 101,033 | — | — | — | — |
| No Project (2040) | 149,325 | — | — | — | — |
| 2017 CTP Investment Program | 157,391 | 56,358 | 55.8% | 8,066 | 5.4% |
| Alternative 4 | 161,387 | 60,354 | 59.7% | 12,062 | 8.1% |

*Source: Compiled modeling results included as Appendix D.*

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 4 is compared to the future No Project condition (2040) as well. When compared with the No Project (2040) condition, implementation of Alternative 4 would result in an increase (8.1%) in daily transit ridership, which is greater than the increase (5.4%) under the Project.

Overall, implementation of Alternative 4 would result in an increase in transit ridership. The potential for impacts related to transit ridership under Alternative 4 is less than significant, and would achieve greater transit ridership than would the Project.

## Greenhouse Gas Emissions

### Vehicle GHG Emission Reductions, per SB 375 (↓)

When compared with the baseline condition, implementation of Alternative 4 would result in slightly less per capita $CO_2$ emissions (an increase of 0.6%) than the Project (an increase of 3.1%), not accounting for any County share of MTC policy-based reductions (**Table 3.1-39**). Thus, Alternative 4 would be consistent with SB 375's reduction targets and would not impede the Bay Area region's ability to reduce per capita passenger vehicle and light duty truck $CO_2$ emissions by 7% by 2020, or by 15% by 2035 as compared to regional 2005 baseline.

**Table 3.1-39: Daily $CO_2$ Emissions Per Capita, Alternative 4 Comparison**

| Scenario | Daily $CO_2$ Emissions Per Capita | Comparison to Baseline (2013) Percent Change | Comparison To No Project (2040) Percent Change | Comparison To *Plan Bay Area* (2040) Percent Change |
|---|---|---|---|---|
| Baseline Condition (2013) | 18.0 | — | — | — |
| No Project (2040) | 18.5 | — | — | — |
| *Plan Bay Area* (2040) | 18.2 | — | — | — |
| Alternative 4 | 18.1 | +0.6% | -2.2% | -0.6% |

*Source: Compiled modeling results included as Appendix E.*

The threshold used in this EIR is based on a comparison with the baseline condition (2013). However, for informational purposes, Alternative 4 is compared to the future No Project condition (2040) as well. When compared with the No Project (2040) condition, implementation of Alternative 4 would result in slightly less per capita $CO_2$ emissions (an decrease of 2.2%) than the Project (an increase of 1%), not accounting for any County share of MTC policy-based reductions.

The per capita $CO_2$ emissions from passenger vehicles and light duty trucks pursuant to Alternative 4 are consistent with SB 375's reduction targets. Moreover, per capita $CO_2$ emissions under Alternative 4 would be less than those under the Project, and the impact would be less than significant.

### Direct Transportation-Related GHG Emissions by 2040 (↔)

With the growing number of residents and jobs in the county, total direct on-road transportation GHG emissions are expected to increase over time if no standards were put in place. With Pavley 1 regulations taken into account, overall transportation-related GHG emissions decline under Alternative 4 by 35% as compared to baseline (2013) emission estimates (**Table 3.1-40**). This is a slightly greater decline (by -1%) than under the Project. While GHG emissions from larger trucks and other heavy vehicles do continue to increase over time, these modes make a relatively small contribution to overall on-road GHG emissions in comparison to cars and light-duty trucks.

Annual GHG emissions are expected to decrease by more than approximately 1 $MMTCO_2e$ from 2013 (i.e., the baseline condition) to 2040 under Alternative 4, similar to the Project. Since overall transportation-related GHG emissions are expected to decline from the baseline condition to 2040 under Alternative 4, the impact would be less than significant. For informational comparison purposes, Alternative 4 also shows a decrease in $CO_2e$ emissions as compared to the No Project scenario.

| Table 3.1-40: Annual Transportation Emissions, Investment Program, Alternative 4 Comparison | | | |
|---|---|---|---|
| | Baseline (2013) | No Project (2040) | Alternative 4 (2040) |
| ***Annual Emissions ($MTCO_2e$/yr), no reductions for Advanced Clean Cars/Pavley*** | | | |
| Passenger Vehicles | 2,616,225 | 3,409,288 | 3,331,829 |
| Light Trucks | 162,238 | 89,192 | 87,684 |
| Heavy Trucks | 259,040 | 302,804 | 301,665 |
| Bus | 56,640 | 70,251 | 77,820 |
| **Total** | **3,094,144** | **3,871,535** | **3,798,998** |
| % Change from Baseline | | *25%* | *23%* |
| ***Annual Emissions ($MTCO_2e$/yr) with Advanced Clean Cars and Pavley*** | | | |
| Passenger Vehicles | 2,560,343 | 1,554,349 | 1,519,053 |
| Light Trucks | 162,238 | 89,192 | 87,684 |
| Heavy Trucks | 259,040 | 302,804 | 301,665 |
| Bus | 56,640 | 70,251 | 77,820 |
| **Total** | **3,038,261** | **2,016,595** | **1,986,222** |
| ***Percent Change from Baseline (with Advanced Clean Cars and Pavley)*** | | | |
| Passenger Vehicles | | -39% | -41% |
| Light Trucks | | -45% | -46% |
| Heavy Trucks | | +17% | 16% |
| Bus | | +24% | 37% |
| **Total** | | **-34%** | **-35%** |

*Source: Compiled modeling results included as Appendix E.*

*Plan Bay Area used EMFAC2011 to quantify emissions from on-road mobile vehicles, which incorporated reductions in GHG emissions due to Pavley I and the LCFS.*

*Reductions due to the LCFS are removed from EMFAC2014 entirely. As discussed in the EMFAC2014 Users Guide, the reason for exclusion is that most of the emissions benefits due to LCFS come from the production cycle of the fuel rather than the combustion cycle (tailpipe).*

*EMFAC2014 also incorporates the following regulations that affect GHG emissions:*

** Advanced Clean Cars/Pavley, which contains decreasing light-duty vehicle standards out to model year 2025. Pavley I, incorporated in EMFAC2011, only contained decreasing vehicle standards out to model year 2016.*

** Tractor-Trailer GHG Regulation and Federal Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles*

*For simplicity and to parallel Plan Bay Area, only differences due to the Advanced Clean Cars/Pavley regulation are shown above. However, reductions due to the Tractor-Trailer GHG Regulation and Federal HD GHG Regulations have been incorporated in both annual emissions tables above (these regulations are not incorporated in Table 2.5-9 of Plan Bay Area).*

### Indirect Construction-Related GHG Emissions by 2040 (↔)

Construction-related GHG emissions generated during implementation of transportation improvement projects pursuant to Alternative 4 would contribute to indirect GHG emissions levels in the Bay Area. Project-level details regarding each transportation project's construction would be required to assess these individual construction-related impacts, and these details ae not known or available. Due to the project-specific nature of construction emissions, quantitative estimates are not

included in the assessment. The additional increment of construction-related indirect emissions under Alternative 4 is considered significant on a cumulative basis. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. However, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Impacts would be significant and unavoidable, which is similar to the Project.

### Impede GHG Attainment Goals (Executive Order S-3-05 and Executive Order B-16-2012) (↔)

This assessment evaluates Alternative 4 for its likelihood to impede implementation of Executive Orders S-3-05 and B-16-2012, which identify GHG reduction targets for 2050 (80% reduction as compared to 1990 levels for overall GHG emissions and transportation sector emissions, respectively). These Orders target a point in time that is ten years beyond that analyzed in this EIR. Therefore, this assessment evaluates consistency by identifying whether or not implementation of Alternative 4 is likely to impede attainment of the identified Orders, and looks at the future trajectory (through 2050) of per capita car and light duty truck $CO_2$ emissions pursuant to Alternative 4.

Emissions are expected to continue on a downward trajectory beyond the 2040 horizon year under Alternative 4. This assessment does not include Pavley or LCFS reductions, which are expected to contribute to greater vehicle emission reductions by 2050. The downward trajectory represents a reasonable expectation that Contra Costa (like the rest of the Bay Area) is more likely than not to achieve the Executive Orders' goals, and that, similar to the Project, Alternative 4 is not likely to impede achievement of the GHG reduction goals of these Executive Orders. The impact would be less than significant.

### Conflicts with GHG Reduction Policies (↓)

Alternative 4 is not expected to conflict with any applicable plan, policy or regulation adopted with the intent to reduce GHG emissions. Specifically, Alternative 4 would not conflict with the GHG reduction goals of SB 375, AB 32, or Executive Order S-3-05 and Executive Order B-16-2012.

Alternative 4 is based on the compact land use pattern as anticipated pursuant to the *Plan Bay Area* (2013). It also includes a set of transportation investment strategies that are more heavily prioritized on transit improvements and alternative mode enhancement programs. This Alternative would result in lower overall vehicle miles travelled and lower per capita vehicle miles travelled than the Project, generating less GHG emissions from passenger vehicles and other on-road sources than the Project. Therefore, the consistency of Alternative 4 with applicable plans, policies, and regulations adopted with the intent to reduce GHG emissions would be greater than under the Project. The impact would be less than significant.

### Sea Level Rise (↓)

With the focus of Alternative 4 being directed towards new transportation and transit programs rather than transportation projects, Alternative 4 does not include any additional transportation projects not already analyzed in *Plan Bay Area* 2013 that would be placed in areas subject to inundation as a result of sea level rise. Therefore, Alternative 4 represents avoidance of otherwise

potential impacts related to a net increase in transportation projects within areas projected to be regularly inundated by sea level rise by midcentury.

## Air Quality

### Consistency with the Clean Air Plan (↓)

Alternative 4 is generally consistent with those primary goals of the Bay Area 2010 Clean Air Plan to attain air quality standards, and to protect public health. As further demonstrated by the anticipated reductions in air quality emissions over time, Alternative 4 supports implementation of applicable control measures to reduce emission levels of criteria pollutants, particulate matter, and TACs.

The following provides an overview analysis of Alternative 4's relative consistency with individually applicable transportation control measures of the 2010 Clean Air Plan. As demonstrated below, potential impacts under Alternative 4 would be less than significant, and represent greater consistency with the Clean Air Plan than the Project, due to the overall greater level of investment in transportation control measures.

- **TCM A-1: Local and Area-Wide Bus Service Improvements:** Alternative 4 includes transportation projects and programs intended to sustain and improve bus service throughout the county. Alternative 4's prioritization of investments in projects and programs that would increase transportation mode share and transit safety would provide for greater investment (33.1%) in increased bus services than under the Project (14%).
- **TCM A-2: Local and Regional Rail Service Improvements:** Alternative 4 includes transportation projects and programs intended to sustain and expand rail service throughout the county. The investment level in projects and programs intended to improve rail service would be substantially lower (7.5%) than under the Project (17.4%).
- **TCM B-1: Freeway and Arterial Operations Strategies:** Alternative 4 includes transportation projects and programs intended to sustain and expand rail service throughout the county. The investment level in freeway and arterial performance improvements under Alternative 4 would be substantially lower (1.6%) than under the Project (12.4%).
- **TCM B-2: Transit Efficiency and Use Strategies:** Alternative 4 includes transportation projects and programs intended to improve the efficiency and use of transit programs throughout the county. The investment level in projects and programs intended to improve the efficiency and use of transit services under Alternative 4 would be substantially greater (28.1%) than under the Project (5.5%).
- **TCM B-3: Bay Area Express Lane Network:** Alternative 4 includes transportation projects and programs intended to implement the regional express lane network and provide express bus service throughout the county. The investment level in projects and programs intended to extend express lanes and express bus service would be greater under Alternative 4 (10.4%) than under the Project (4.6%).
- **TCM B-4: Goods Movement Improvements and Emission Reductions Strategies:** Alternative 4 does not include transportation projects specifically intended to improve intermodal and arterial connections between regional trade corridors. The investment level under Alternative 4 would therefore be lower (none) than under the Project (0.7%).

- **TCM C-1: Voluntary Employer Trip-Reduction Programs, TCM C-3: Ridesharing Services and Incentives:** Alternative 4 includes programs intended to promote safe access for pedestrians and cyclists to schools and transit. The investment level in projects and programs intended to promote safe access would be slightly greater under Alternative 4 (2%) than under the Project (1.6%).
- **TCM C-2: Safe Routes to School and Safe Routes to Transit Programs:** Alternative 4 includes projects and programs intended to promote safe access for pedestrians and cyclists to schools and transit. The investment level in projects and programs intended to implement Safe Routes to School programs would be substantially greater under Alternative 4 (19%) than under the Project (2.7%).
- **TCM D-1: Bicycle Access and Facilities Improvements, TCM D-2: Pedestrian Access and Facilities Improvements:** Alternative 4 includes projects and programs intended to promote bicycle and pedestrian access and facility improvements. The investment level in projects and programs intended to improve bicycle and pedestrian facilities and access would be substantially greater under Alternative 4 (14.4%) than under the Project (1.7%).
- **Mobile Source Measures:** Alternative 4 includes a relatively small contribution of funding to support innovation efforts in new technologies, and funding for "smart freeways" to better integrate connecting regional corridors and smooth traffic patterns. The investment level in these types of innovative technologies would be slightly lower under Alternative 4 (1.5%) than under the Project (2.2%).

### Construction-Period Emissions and Fugitive Dust (↔)

The EPA and CARB have adopted stringent air emission regulations for new and existing fleets of construction equipment that is common to all construction sites. However, these regulations alone cannot assure that all projects pursuant to Alternative 4 will use only the lowest emission construction equipment, due primarily to the fleet averaging component of the regulations' compliance requirements. CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of a lead agency to determine and adopt such mitigation. Therefore, construction-period impacts on air quality under Alternative 4 are considered potentially significant and unavoidable.

### Operational Criteria Pollutants (↔)

The emissions for criteria pollutants ROG, $NO_x$ (summertime and wintertime), CO, and $PM_{2.5}$ from mobile sources would decrease between the baseline condition (2013) and the 2040 horizon pursuant to Alternative 4, whereas emissions of $PM_{10}$ would increase (**Table 3.1-41**). Under Alternative 4, ROG emissions are projected to be reduced by 75%, $NO_x$ emissions are projected to be reduced by 84%, CO emissions are projected to be reduced by 78%, and $PM_{2.5}$ emissions are projected to be reduced by 15%, all as compared to the baseline condition. The reductions in CO and $PM_{2.5}$ emissions under Alternative 4 would be the same as those under the Project, and the impact would be less than significant.

| Table 3.1-41: Emission Estimates for Criteria Pollutants (tons per day), Alternative 4 Comparison | | | |
|---|---|---|---|
| | Baseline (2013) | No Project (2040) | Alternative 4 (2040) |
| ROG | 8.71 | 2.23 | 2.19 |
| % Change from Baseline | — | -74% | -75% |
| % Change from No Project | — | — | -2% |
| $NO_x$ | 16.49 | 2.66 | 2.63 |
| % Change from Baseline | — | -84% | -84% |
| % Change from No Project | — | — | -1% |
| CO | 69.80 | 16.01 | 15.70 |
| % Change from Baseline | — | -77% | -78% |
| % Change from No Project | — | — | -2% |
| $PM_{2.5}$ | 0.76 | 0.65 | 0.64 |
| % Change from Baseline | — | -15% | -15% |
| % Change from No Project | — | — | -2% |

*Source: Compiled modeling results included as Appendix F.*

The threshold used in this EIR is based on a comparison to the baseline condition. For informational purposes, Alternative 4 is also compared to future year 2040 No Project conditions. When compared with the No Project scenario, criteria pollutant emissions under Alternative 4 would be reduced as compared to the No Project scenario, largely due to the increasingly stringent emission controls that CARB has adopted for new vehicle engines and fuels, including the Truck and Bus Regulation that requires diesel trucks and buses to be upgraded to reduce emissions.

### Particulate Matter Emissions (↓)

Under Alternative 4, particulate matter emissions (as $PM_{10}$) from all mobile sources would increase by 19% by year 2040 as compared to the baseline (year 2013) condition (**Table 3.1-42**), which is slightly less than the increase (21%) projected under the Project. Additionally, particulate matter emissions (as $PM_{2.5}$) from all mobile sources would increase by 2% by year 2040 as compared to the baseline (year 2013) condition, which is also slightly less than the increase (3%) projected under the Project. The higher levels of particulate matter emissions in 2040 conditions are a result of these emissions being strongly influenced by projected growth in VMT (which directly affects entrained roadway dust), with some contributions from tire and brake wear, and exhaust. The overall increase in VMT associated with new population and employment growth will contribute to an increase in countywide particulate matter emissions that cannot be fully avoided. Furthermore, CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified for the Project. Therefore, this impact remains significant and unavoidable, but to a lesser degree than under the Project.

| Table 3.1-42: Particulate Matter Emissions (tons per day), Alternative 4 Comparison | | | |
|---|---|---|---|
| | Baseline (2013) | No Project (2040) | Alternative 4 (2040) |
| Overall VMT | 22,159,662 | 28,173,605 | 27,834,412 |
| % Change from Baseline | — | 27% | 26% |
| % Change from No Project | — | — | -1% |
| $PM_{10}$ | | | |
| Vehicle Emissions | 1.51 | 1.58 | 1.57 |
| Entrained Dust | 3.50 | 4.45 | 4.40 |
| **Total** | **5.02** | **6.03** | 5.97 |
| % Change from Baseline | — | 20% | 19% |
| % Change from No Project | — | — | -1% |
| $PM_{2.5}$ | | | |
| Vehicle Emissions | 0.76 | 0.65 | 0.64 |
| Entrained Dust | 0.53 | 0.67 | 0.66 |
| **Total** | **1.28** | **1.32** | 1.30 |
| % Change from Baseline | — | 2% | 2% |
| % Change from No Project | — | — | -2% |

*Source: Compiled modeling results included as Appendix F.*

The threshold used in this EIR is based on a comparison to the baseline condition. For informational purposes, Alternative 4 is also compared to future year 2040 No Project conditions. When compared with the No Project scenario, particulate matter emissions under Alternative 4 would be reduced.

### Mobile Source Toxic Air Contaminant Emissions (↔)

Under Alternative 4, the percentage change from the baseline condition for DPM would be a 96% decrease (**Table 3.1-43**), which is marginally less than would be achieved under the Project (97%). The percentage change from the baseline condition for benzene would be a 77% decrease, and for 1,3 butadiene it would be an 80% decrease, both of which are the same as under the Project. These reductions in TACs can be attributed to California state laws to evaluate and control TACs, as well as other state regulations that reduce smog or other pollutants that reduce TAC emissions, and regional programs in place to address particulate matter in general and TACs in particular.

Overall, the reduction in TAC emissions due to ongoing regulations and programs would ensure there would be no adverse impact pursuant to Alternative 4, and impacts would be less than significant, which is the same as for the Project.

| Table 3.1-43: Toxic Air Contaminant Emissions (kg per day), Alternative 4 Comparison | | | |
|---|---|---|---|
| | Baseline (2013) | No Project (2040) | Alternative 4 (2040) |
| **DPM** | 198.53 | 6.87 | 7.03 |
| % Change from Baseline | — | -97% | -96% |
| % Change from No Project | — | — | 2% |
| **Benzene** | 215.45 | 50.69 | 49.54 |
| % Change from Baseline | — | -76% | -77% |
| % Change from No Project | — | — | -2% |
| **1,3 Butadiene** | 9.54 | 1.98 | 1.92 |
| % Change from Baseline | — | -79% | -80% |
| % Change from No Project | — | — | -3% |

*Source: Compiled modeling results included as Appendix F.*

The threshold used in this EIR is based on a comparison to the baseline condition. For informational purposes, Alternative 4 is also compared to future year 2040 No Project conditions as well. Alternative 4 would result in less TAC emissions as compared to the No Project scenario, with the exception of an approximately 2% increase in DPM emissions as compared to No Project conditions.

### Relative Impacts on Communities of Concern (↓)

TAC and $PM_{2.5}$ emissions were estimated along the major transportation corridors within all of the County's COCs for Alternative 4 under baseline (2013) and future horizon year (2040) conditions. Overall TAC emissions decrease significantly throughout the County and COCs between the baseline condition in 2013 and future year conditions in 2040, as shown in **Table 3.1-44** and discussed below.

Under Alternative 4, DPM emissions are projected to decrease by 96% countywide, which is slightly less (by 1%) than under the Project. There would be no difference in DPM emissions between COCs and the County, and there would similarly be no difference under the Project.

Benzene emissions are projected to decrease by 78% countywide, which is the same as under the Project. The difference in benzene emissions between COCs (a 78% decrease) and the County would be 1%, which is the same as under the Project.

1,3 butadiene emissions are projected to decrease by 80% countywide, which is the same as under the Project. The difference in 1,3 butadiene emissions between COCs (a 81% decrease) and the County would be 1%, which is the same as under the Project.

Total $PM_{2.5}$ emissions[12] are projected to increase by 2% countywide, which is slightly less (by 2%) than under the Project. The difference in total $PM_{2.5}$ emissions between COCs (a 2% decrease) and the County would be 4%, which is slightly greater than the 5% difference under the Project.

[12] Total $PM_{2.5}$ includes exhaust from all vehicles, as well as re-entrained road dust, brake wear and tire wear, and does not include TACs from gasoline vehicles.

| Table 3.1-44: Relative Change in TAC Emissions, COCs versus Countywide, Alternative 4 Comparison | | |
|---|---|---|
| | No Project (2040) | Alternative 4 (2040) |
| **VMT** | | |
| Change Countywide | 28% | 26% |
| Change within COCs | 23% | 22% |
| Relative Difference, COCs as Compared to County Overall | -5% | -4% |
| **DPM** | | |
| Change in Emissions, Countywide | -97% | -96% |
| Change in Emissions, COCs | -97% | -96% |
| Relative Difference, COCs as Compared to County Overall | same | same |
| **$PM_{2.5}$ (Exhaust)** | | |
| Change in Emissions, Countywide | -87% | -87% |
| Change in Emissions, COCs | -89% | -89% |
| Relative Difference, COCs as Compared to County Overall | 2% | 2% |
| **Benzene** | | |
| Change in Emissions, Countywide | -76% | -77% |
| Change in Emissions, COCs | -78% | -78% |
| Relative Difference, COCs as Compared to County Overall | 2% | 1% |
| **1,3 Butadiene** | | |
| Change in Emissions, Countywide | -79% | -80% |
| Change in Emissions, COCs | -81% | -81% |
| Relative Difference, COCs as Compared to County Overall | 2% | 1% |
| **Total $PM_{2.5}$ (Exhaust and Entrained Dust)** | | |
| Change in Emissions, Countywide | 3% | 2% |
| Change in Emissions, COCs | -2% | -2% |
| Relative Difference, COCs as Compared to County Overall | 5% | 4% |

*Source: Compiled modeling results included as Appendix F.*

*A positive relative difference in emissions indicates there is a greater reduction in COCs as compared to the County overall.*

These results may be explained primarily by the lower overall projected increase in VMTs within the county's COCs, as compared to the anticipated increase in VMT for the county overall. The potential for disproportional impacts on COCs under Alternative 4 is less than significant and of a lesser degree than the Project.

## Agricultural Lands

### Agricultural Land Conversion, Williamson Act Conflicts and Other Changes Affecting Farmland (↓)

With the focus of Alternative 4 being directed towards new transportation and transit programs rather than transportation projects, Alternative 4 does not include any additional transportation projects that would impact important agricultural land. The cumulative effects of Alternative 4 would be limited to only those impacts resulting from transportation projects under the 2013 baseline. Given recent growth in East County and the related need to provide services and relieve congestion in the area, however, some projects may still have the potential to impact agricultural

land, and site-specific or project-specific conditions may preclude the reduction of all project impacts to less than significant levels. Additionally, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Impacts would therefore be significant and unavoidable, but to a lesser degree than under the Project.

## Biological Resources

### Candidate, Sensitive, and Special-Status Species (↓)

Most of the transportation and transit programs that comprise Alternative 4 do not involve new or expanded transit or freeway or roadway projects not already analyzed in *Plan Bay Area* 2013 that would result in adverse effects to special status species, critical habitat, or migratory and nesting birds. The potential for adverse special-status species impacts related to transit and other alternative travel mode improvements programs under Alternative 4 is considered less than significant, and to a lesser degree than under the Project, where impacts are considered significant and unavoidable. The potential for adverse critical habitat impacts related to transit and other alternative travel mode improvement programs under Alternative 4 is also considered less than significant and to a lesser degree than under the Project, where impacts are considered significant and unavoidable.

#### *Migratory Bird Treaty Act Species and Nesting Birds*

Improvements associated with funding programs under Alternative 4 may include a variety of transit improvements and other programs that encourage new development within identified PDAs, and those PDAs could potentially include nesting habitat for MBTA species. Project-related disturbances could result in the direct loss of nests, fertile eggs, or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered a take by the CDFW. Impacts on nesting birds and MBTA species under Alternative 4 would be potentially significant, but to a lesser degree than under the Project where impacts are considered significant and unavoidable. Implementation of mitigation measures would reduce these potential impacts to a level of less than significant.

### Sensitive Natural Communities and Wetlands (↓)

Because Alternative 4 is focused on transportation improvement programs that would use existing transit and transportation corridors, it has a small list of physical improvement projects. However, Alternative 4 does include a limited set of new improvements intended to transform existing roadways into "complete streets," within identified PDAs, and includes a number of local bicycle and pedestrian improvements projects. These local projects could result in impacts on sensitive natural communities and wetlands from local project under Alternative 4 would be potentially significant. Implementation of mitigation measures would reduce these potential impacts; however, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Impacts would therefore be significant and unavoidable, but to a lesser degree than under the Project.

### Wildlife Movement (↓)

The focus of Alternative 4 is on new and expanded transportation programs that would have limited physical changes to the environment. Most of these programs do not involve transit and roadway improvements or modifications that would alter wildlife corridors. It is unlikely that most of the transportation improvements indicated in Alternative 4, which are specifically targeted for portions of the county that are within identified PDAs, would be within a mapped ECA or result in habitat fragmentation and adversely affect wildlife corridors. However, Alternative 4 does include the expansion and continuation of bicycle routes and pedestrian pathways and trails that could potentially adversely affect wildlife corridors and fragment habitat.

Substantial encroachment on wildlife corridors would be considered a potentially significant impact. The transportation projects under Alternative 4 that are within or in the immediate vicinity of the ECA mapped in Contra Costa County would be fewer in number than under the Project and thus result in a lesser degree of potential impact. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. There may be instances, however, in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Additionally, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Potential impacts on wildlife movement under Alternative 4 would be significant and unavoidable.

### Conflicts with State or Local Conservation Plans or Ordinances (↓)

The transportation and transit programs that comprise Alternative 4 do not involve new or expanded transit or freeway and roadway projects that would intersect areas mapped within the East Contra Costa County HCP/NCP area. However, certain transit, bikeway and pedestrian improvements pursuant to Alternative 4 could potentially impact protected trees, including removal, damage during construction, and tree mortality.

Overall, there would be fewer transportation projects located within, across, or in immediate proximity to the boundaries of the East Contra Costa County HCP/NCCP under Alternative 4 than under the Project and would thus result in a lesser degree of potential impact than under the Project. Potential impacts would be less than significant under Alternative 4.

## Cultural Resources

### Historical Resources (↓)

Most of the transportation and transit programs that comprise Alternative 4 do not involve new or expanded transit or freeway and roadway projects that would result in ground-disturbing activities. Alternative 4 does include several financing programs that are intended to direct that new development within the county occur within identified PDAs. Specific locations of potential future projects and programs invested within these PDA under Alternative 4 are not known at this time. As discussed in Chapter 2.6, Cultural Resources, projects in areas with known historical sites or in communities with established historic preservation programs would have the highest potential to result in significant historic resource impacts. The potential for adverse historical resources impacts related to transit and other alternative travel mode improvements projects under Alternative 4 is

considerably less under Alternative 4 than under the Project, but is still a potentially significant impact. To the extent that transportation projects pursuant to the 2017 CTP, including those individual projects proposed under the Investment Program, incorporate all feasible mitigation measures described above, impacts related to historical resources would be reduced to levels of less than significant. However, there may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Furthermore, CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified for the Project. Overall, the potential for conflicts with historical resources related to transportation improvement projects included under Alternative 4 to result in historic resource impacts is therefore considered significant and unavoidable, but to a lesser degree than the Project.

### Archaeological and Paleontological Resources (↓)

Impacts on archaeological or paleontological resources resulting from implementing transportation improvements under Alternative 4 could occur at the local level, particularly for those additional transportation projects that include ground-disturbing construction activities, as discussed in Chapter 2.6, Cultural Resources.

Most of the transportation and transit programs that comprise Alternative 4 do not involve new or expanded transit or freeway and roadway projects that would result in ground-disturbing activities. However, certain program investments under Alternative 4 may be used to help finance projects that would result in ground-disturbing activities that have the potential to result in significant cultural resource impacts should they occur. CCTA cannot require local implementing agencies to adopt mitigation measures pertaining to local regulations and policies, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt such mitigation. There may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels.

Overall, the potential for conflicts with archaeological or paleontological resources related to transportation improvement projects included under Alternative 4 to result in archaeological resource impacts is considered significant and unavoidable, but to a lesser degree than the Project.

### Human Remains (↓)

Alternative 4 could result in impacts on human remains. In general, potential impacts on human remains could occur under circumstances similar to those discussed for archaeological and paleontological resource impacts. New development and transportation improvements involving ground-disturbing construction activities would have the greatest likelihood to encounter human remains.

The potential for discovery or disturbance of human remains related to construction of transportation improvement projects included under Alternative 4 to result in impacts on human remains is considered significant and of a lesser degree than the Project. Implementation of mitigation measures would reduce these potential impacts to a level of less than significant.

### Tribal Cultural Resources (↓)

As with other cultural resource impacts, impacts on tribal cultural resources are by nature specific to their local context, and as such, impacts could occur at the local level. The potential for transportation improvement projects included under Alternative 4 to result in impacts on tribal cultural resources is considered significant. Implementation of mitigation measures would reduce these potential impacts; however, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Impacts would therefore be significant and unavoidable, but to a lesser degree than under the Project.

## Geology and Soils

### Seismic Hazards (↓)

The potential for exposure of people or structures to potential damaging geologic forces resulting in increased risk due to rupture of a known earthquake fault, severe groundshaking and/or liquefaction under Alternative 4 is considered significant. Implementation of mitigation measures would reduce these potential impacts to a level of less than significant.

#### *Surface Fault Rupture*

Most of the transportation and transit programs that comprise Alternative 4 do not involve new physical improvements and would not be subject to the requirements of the Alquist-Priolo Act, and most projects and programs under Alternative 4 do not represent a substantially changed risk or hazard resulting from surface fault rupture. However, Alternative 4 does include several financing programs that are intended to direct that new development within the county to occur within identified PDAs, some of which either fully or partially intersect with the Alquist-Priolo Zone.

Specific locations of potential future projects and program investments pursuant to Alternative 4 and that are located within these PDA are not known at this time. Overall, the potential for significant impacts related to surface fault rupture could be less under Alternative 4 than under the Project.

#### *Groundshaking*

Improvements associated with funding programs under Alternative 4 may include a variety of transit improvements and other programs that encourage new development within identified PDAs, and that could increase the number of people that could potentially be exposed to ground shaking hazards. Overall, the potential for significant impacts related to ground shaking could be greater under Alternative 4 than under the Project.

#### *Liquefaction*

Most of the transportation, transit and other programs that comprise Alternative 4 do not involve new physical improvements, and would not be subject to hazards related to liquefaction. However, Alternative 4 does include several financing programs that are intended to improve transit opportunities, create complete streets, and implement other Transportation for Livable

Communities improvements within identified PDAs of the county. Several of these PDAs are located within areas known to be subject to high or very high liquefaction hazards.

The potential for impacts related to liquefaction is increased under Alternative 4 than under the Project due to the number of transit, bike, and pedestrian projects that are located in high to very high liquefaction zones. Overall, the potential for significant impacts related to liquefaction would be greater under Alternative 4 than under the Project.

### Soil Erosion (↓)

Alternative 4 is focused on transportation improvement programs that would utilize existing transit and transportation corridors, and has a much smaller list of physical improvement projects than the Project. However, Alternative 4 does include a limited set of new improvements to transform existing roadways into "complete streets," to facilitate new development in identified PDAs. It also includes a number of local bicycle and pedestrian improvements projects, which would involve additional earthwork activities that that would disturb underlying soils during construction, potentially exposing them to erosion and loss of topsoil. There is a lower potential for construction of these projects included under Alternative 4 to result in soil erosion than under the Project due to the number, location, extent, and/or type of transportation projects for this Alternative. The potential for additional loss of topsoil and erosion impacts at the countywide and local level related to transportation improvement projects included in Alternative 4 is considered potentially significant, but to a lesser degree than under the Project. Implementation of mitigation measures would reduce these potential impacts to a level of less than significant.

## Hazards and Hazardous Materials

### Hazardous Materials Transport (↓)

Alternative 4 represents a prioritized list of projects and programs specifically intended to focus future investment in transportation programs that reduce greenhouse gas emissions, mitigate the impacts of travel, and address climate change. The highest level of investment under this scenario occurs in expanded and improved transit operations, thereby reducing vehicle miles traveled as well as overall vehicle trips. Roadway improvement projects are focused on those that emphasize safety. As such, Alternative 4 includes only a limited number of additional transportation projects that have the potential to increase the county transportation system's capacity to transport hazardous materials, and would have less potential for impacts related to hazardous materials transport than the Project. With the focus of new roadway improvements being on improved safety, Alternative 4 has the potential to reduce or offset the potential for transportation-related hazardous materials risks when compared with the Project. However, any increases in hazardous material transport could conceivably result in increased upset and accident conditions. Hazardous materials impacts related to transportation improvements under Alternative 4 are thus considered potentially significant, but of a lesser degree than under the Project. Implementation of mitigation measures would reduce these potential impacts to a level of less than significant.

### Hazardous Materials Sites (↓)

There is a lower potential for the transportation projects included under Alternative 4 to result in exposure to previous hazardous materials contamination than under the Project due to the number, location, extent, and/or type of transportation projects for this Alternative.

Earthwork activities for the limited number of transit, bicycle, or pedestrian improvement projects could potentially result in exposure to previous hazardous materials contamination, causing potentially significant adverse effects on construction workers, the public or the environment. Implementation of mitigation measures would reduce these potential impacts; however, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Impacts would therefore be significant and unavoidable, but to a lesser degree than under the Project.

## Hydrology and Water Resources

### Water Quality (↓)

There is a lower potential for the transportation projects included under Alternative 4 to result in a violation of water quality standards or waste discharge requirements or otherwise substantially degrade water quality than under the Project due to the number, location, extent, and/or type of transportation projects for this Alternative.

Most of the transportation and transit programs that comprise Alternative 4 do not involve new or expanded transit and freeway and roadway projects that would result in an increase in impervious areas and the increased potential for polluted runoff. However, improvements associated with funding programs under Alternative 4 may include a variety of transit improvements and other programs that encourage new development within identified PDAs, and that could increase impervious areas and the potential for polluted runoff.

Specific locations of potential future projects and programs invested within these PDA under Alternative 4 are not known at this time. Program investments under Alternative 4 may be used to help finance projects that would result in an increase in impervious areas and the increased potential for polluted runoff, the impacts related to water quality are considered potentially significant. To the extent that transportation projects included in Alternative 4 incorporate mitigation measures identified for the Project, impacts related to water quality would be reduced to levels of less than significant. These measures are tied to existing regulations that are law and binding on responsible agencies and project sponsors, and it is reasonable to determine that they would be implemented for all future transportation projects pursuant to the 2017 CTP, including those transportation projects proposed to be implemented under the Investment Program. Therefore, the potential for the transportation projects included under Alternative 4 to result in a violation of water quality standards or waste discharge requirements or otherwise substantially degrade water quality is considered less than significant with implementation of these mitigation measures and of a lesser degree than under the Project.

### Drainage and Runoff (↓)

The potential for the transportation projects included under Alternative 4 to increase erosion by altering the existing drainage patterns of a site and contributing to sediment loads of streams and drainage facilities, create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff is considered significant.

Transportation projects under Alternative 4 include a variety of transit and roadway improvements and modifications that could alter drainage patterns, adversely affect stormwater drainage systems, or increase polluted runoff. The focus of Alternative 4 is on new and expanded transportation programs that would have limited physical changes to the environment, but does include a limited set of new improvements to transform existing roadways into "complete streets," facilitating new development in identified PDAs, and local bicycle and pedestrian improvements projects. Most of these do not involve transit and roadway improvements and modifications that could alter drainage patterns, adversely affect stormwater drainage systems, or increase polluted runoff. However, Alternative 4 does include several financing programs that are intended to direct that new development within the county occur within identified PDAs. Specific locations of potential future projects and programs invested within these PDA under Alternative 4 are not known at this time.

In general, many of the transportation projects would be located in areas where previous roads or other improvements have occurred, and the potential for these conditions would have been addressed at the time of original construction. Not all of the transportation projects would involve earthwork activities and some, such as changes to HOV lane designations or BART improvements, would have no changes to drainage patterns when compared to the baseline condition. Transportation projects that would have the potential to alter drainage patterns would be subject to local, regional, and state requirements to minimize the potential effects of the projects.

The potential for the transportation projects included under Alternative 4 to result in impacts related to drainage and runoff is considered potentially significant but of a lesser degree than under the Project. Implementation of mitigation measures would reduce these potential impacts to a level of less than significant.

### Flood Hazards (↓)

There is a lower potential for the transportation projects included under Alternative 4 to place structures within a 100-year flood hazard area or expose people or structures to a significant risk of loss, injury or death involving flooding, than under the Project. This is due to the lower number, location, extent, and/or type of transportation projects for this Alternative.

Most of the transportation and transit programs that comprise Alternative 4 do not involve new or expanded transit and freeway and roadway projects that would intersect areas mapped within the 100-year flood hazard area. However, Alternative 4 does include several financing programs that are intended to direct that new development within the county occur within identified PDAs.

Specific locations of potential future projects and programs invested within these PDA under Alternative 4 are not known at this time. Improvements associated with funding programs under Alternative 4 may include a variety of transit improvements and other programs that encourage new development within identified PDAs, and those PDAs could be within identified flood hazard

areas. Program investments under Alternative 4 may be used to help finance projects that would result in development in areas mapped within a 100-year flood hazard area (e.g., in coastal areas), potentially increasing the ability to obstruct or exacerbate floodwaters, and exposing structures to future flooding and resulting in potential damage or human risk, resulting in significant flood hazard impacts. However, this would occur to a lesser degree than under the Project. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Therefore, it cannot be ensured that these mitigation measures would be implemented in all cases. Impacts would remain significant and unavoidable.

## Land Use

### Growth Inducement (↓)

Pursuant to Alternative 4, CCTA would not fund highway or roadway capital projects, but instead would invest available funds primarily into programs designed to improve transit operation programs that benefit transit users. Alternative 4 also includes programs designed to enhance and improve local streets for pedestrians, bicycles and trails, and, consistent with the principles of social equity and environmental justice, programs that provide transportation benefits for minority and low-income residents and to Communities of Concern. In addition, Alternative 4 would increase funding for Integrated Corridors ("smart freeways") and high-capacity transit improvements; improved bus services to and within PDAs; bus passes for middle school and high school students; transportation for seniors and persons with disabilities; and Complete Streets projects in PDAs.

As such, Alternative 4 is likely to promote a compact, mixed-use development pattern that encourages PDA-focused population and employment growth where transit connections are available, but does not actively stimulate additional growth in more suburban areas by not improving roadway capacity. Impacts related to growth inducement under Alternative 4 would be less than significant and of a lesser degree than under the Project.

### Residential or Business Disruption or Displacement (↓)

Alternative 4 is almost entirely reliant on transportation projects and programs that would use existing established transportation rights-of-way and that are assumed to have a lower potential to divide existing communities or neighborhoods, or that provide expanded interconnections between neighborhoods and communities through improved bus service, bike lanes, sidewalks, transit connections, and other similar improvements.

Additionally, Alternative 4 exclusively includes a program intended to fund development, preservation and/or operation of housing that is affordable to lower-income households to ensure that a high-propensity transit riders can live near transit stops, to combat suburban poverty and to offset the indirect effects of economic displacement within identified PDAs.

These impacts related to residential or business disruption, or displacement of substantial numbers of existing population and housing under Alternative 4 would be of a lesser degree than those that would occur under the Project. While impacts under the Project were found to be significant and unavoidable, impacts under Alternative 4 are considered less than significant.

### Community Separation (↓)

The potential for an individual transportation project to result in separation of a neighborhood or community is by nature location-specific, and impacts resulting from Alternative 4 would occur at the local level. Most of the major transportation projects identified under Alternative 4 are located within existing rights-of-way and would not cause any new separation within existing communities.

Certain projects under Alternative 4 would improve or expand interconnections between neighborhoods and communities that are currently separated by major transportation corridors. Examples include bridges or under-crossings of commuter rail lines (with bike lanes), bicycle/pedestrian overcrossings of freeways, and urban trail and pathway projects. Safe Routes to School projects also improve accessibility to schools within communities. Many of the transit projects identified under Alternative 4 are intended to relieve expected traffic congestion resulting from regional population growth and may improve community connectivity.

Overall, impacts related to community separation under Alternative 4 would be less than significant and of a lesser degree than under the Project.

## Noise

### Operational Noise – Traffic (↓)

Most of the transportation and transit programs that comprise Alternative 4 do not involve new or expanded transit or freeway and roadway projects. Alternative 4 does include several financing programs that are intended to direct that new development within the county occur within identified PDAs. Specific locations of potential future projects and programs invested within these PDA under Alternative 4 are not known at this time. Although it is not certain that program investments under Alternative 4 may be used to help finance projects that could have significant local noise impacts from an associated increase in traffic volume, resulting in highway noise levels that exceed the FHWA noise abatement criteria or increase above existing levels. The potential for adverse noise impacts related to transportation improvements projects under Alternative 4 is considerably less than under the Project, but is still a potentially significant impact.

Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. There may be instances, however, in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Furthermore, it is ultimately the responsibility of implementing agencies and individual project sponsors to determine and adopt mitigation. CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified for the Project. For purposes of a conservative analysis, therefore, this impact is considered significant and unavoidable.

### Operational Noise – Transit (↓)

The potential for the operation of transportation improvement projects included under Alternative 4 to result in transit noise levels that exceed the allowable noise exposure permitted under the FTA criteria is considered potentially significant. The focus of Alternative 4 is on new and expanded transportation and transit programs that would have limited physical changes to the environment, but does include a limited set of new improvements to transform existing roadways into “complete

streets," facilitating new development in identified PDAs, and local bicycle and pedestrian improvements projects. Most of these do not involve transit improvements and modifications that could involve transit-related noise. However, Alternative 4 does include several financing programs that are intended to direct that new development within the county occur within identified PDAs. Specific locations of potential future projects and programs invested within these PDA under Alternative 4 are not known at this time. The potential for adverse noise impacts related to transit and other alternative travel mode improvements projects under Alternative 4 is considerably less than under the Project, but is still a potentially significant impact.

Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. There may be instances, however, in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Furthermore, it is ultimately the responsibility of implementing agencies and individual project sponsors to determine and adopt mitigation. CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified for the Project. For purposes of a conservative analysis, therefore, this impact is considered significant and unavoidable.

## Visual Resources

### Views, Scenic Resources and Visual Character (↓)

There is a lower potential for projects included under Alternative 4 to result in adverse impacts on important views or vistas when compared with the Project. With the focus of Alternative 4 being directed towards new bicycle, pedestrian, and transit programs rather than capital infrastructure projects, Alternative 4 does not include any new transportation projects that would impact important views or vistas. The cumulative effects of Alternative 4 pertaining to scenic resources would be limited to only those impacts resulting from those minor transportation projects assumed under the 2017 CTP. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. There may be instances, however, in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Additionally, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. The impact of Alternative 4 on important views or vistas is therefore considered significant and unavoidable, but to a lesser degree than under the Project.

### Light and Glare (↓)

There is a lower potential for projects included under Alternative 4 to result in adverse impacts related to light and glare than under the Project. With the focus of Alternative 4 being directed towards new transportation and transit programs rather than transportation projects, Alternative 4 does not include any transportation projects that would significantly add to light or glare impacts. The cumulative effects of Alternative 4 regarding light and glare would be limited to only those impacts resulting from transportation projects assumed under the "baseline" 2017 CTP. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. There may be instances, however, in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Additionally,

CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. The impact of Alternative 4 related to light and glare is considered less than significant with mitigation, whereas the Project would result in significant and unavoidable impacts.

## Impacts Similar to those of the Project

The following potentially significant environmental effects that would occur under Alternative 4 are similar to those expected to occur under the Project. These impacts would be effectively reduced through implementation of mitigation measures similar to those identified for the Project, except where noted as significant and unavoidable.

### Geology and Soils (↔)

- Geologic Instability and Soil Expansion (LTS with Mitigation)

### Hazards and Hazardous Materials (↔)

- Construction-period Hazardous Materials Use (LTS with Mitigation)
- Airport Hazards (LTS)
- Emergency Response and Evacuation (LTS)
- Wildland Fire Hazards (LTS)

### Hydrology and Water Resources (↔)

- Groundwater (LTS)

### Land Use (↔)

- Construction-Related Community Disruption (SU)
- Conflicts with Land Use Plans and Policies (LTS)

### Noise (↔)

- Construction Noise and Groundborne Vibration (SU)

### Visual Resources (↔)

- Incongruous Visual Elements – Soundwalls (SU)

# Summary of the Alternatives Analysis

**Table 3.1-45** provides a summary comparison of the impacts of the alternatives relative to those of the Project. For each impact discussion found within the Draft EIR chapters, this table identifies the extent to which this impact would be significant under each alternative, for example:

- no impact (No Impact)
- less than significant (LTS)
- less than significant with implementation of mitigation measures recommended for the Project (LTS w/Mitigation)
- significant and unavoidable (SU)

Table 3.1-45 also compares the magnitude of the impact of each alternative relative to the proposed Project. For example:

- the symbol "↓" indicates that the alternative would have a less substantial impact relative to the Project, even if the CEQA conclusion is similar for both the Project and the alternative (e.g., an alternative could have a less substantial adverse effect than the Project, even though both levels of impacts can be addressed through recommended mitigation measures);
- the symbol "↑" indicates that the alternative's impact would be more substantial than the proposed Project;
- the symbols "↕" indicate that the alterative would have a less substantial specific impact relative to the Project, but would off-set that environmental benefit by causing a more substantial impact elsewhere, and
- the notation "↔" indicates that the magnitude of the alternative's impact would be relatively the same or similar to that of the proposed Project.

Impacts are stated as levels of significance assuming required implementation of mitigation measures as identified in this EIR (as may be applicable) for each alternative.

The following comparative analysis is organized by CEQA topic, in the same order as presented in this EIR. The final section of this comparative analysis highlights the environmentally superior alternative.

| Table 3.1-45: Summary of Impacts for Each Alternative, and Relative Comparison to the Project | | | | |
|---|---|---|---|---|
| **Environmental Topic** | **Project** | **Alternative 2: 2013 RTP Alternative** | **Alternative 3: Emphasis on Transit Improvement Projects** | **Alternative 4: Emphasis on Transit, Bicycle, and Pedestrian Programs** |
| **Transportation and Circulation** | | | | |
| Vehicle Miles Traveled per Capita | LTS | LTS (↓) | LTS (↓) | LTS (↓) |
| Vehicle Hours of Delay | SU | SU (↑) | SU (↑) | SU (↑) |
| Average Speeds | LTS | SU (↑) | SU (↑) | SU (↑) |
| Non-Single Occupant Vehicle Mode Share | LTS | LTS (↑) | LTS (↓) | LTS (↓) |
| Transit Ridership | LTS | LTS (↑) | LTS (↓) | LTS (↓) |
| **Greenhouse Gas Emissions** | | | | |
| Vehicle GHG Emission Reductions, per SB 375 | LTS | LTS (↓) | LTS (↓) | LTS (↓) |
| Direct Transportation-Related GHG Emissions by 2040 | LTS | LTS (↔) | LTS (↔) | LTS (↔) |
| Indirect Construction-Related GHG Emissions by 2040 | SU | SU (↔) | SU (↔) | SU (↔) |
| Impede GHG Attainment Goals (Executive Order S-3-05 and Executive Order B-16-2012) | LTS | LTS (↔) | LTS (↔) | LTS (↔) |
| Conflicts with GHG Reduction Policies | LTS | LTS (↔) | LTS (↓) | LTS (↓) |
| Sea Level Rise | SU | SU (↓) | SU (↓) | SU (↓) |
| **Air Quality** | | | | |
| Consistency with the Clean Air Plan | LTS | LTS (↑) | LTS (↓) | LTS (↓) |
| Construction-Period Emissions and Fugitive Dust | SU | SU (↔) | SU (↔) | SU (↔) |
| Operational Criteria Pollutants | LTS | LTS (↔) | LTS (↓) | LTS (↔) |
| Particulate Matter Emissions | SU | SU (↓) | SU (↓) | SU (↓) |
| Mobile Source Toxic Air Contaminant Emissions | LTS | LTS (↔) | LTS (↔) | LTS (↔) |
| Relative Impacts to Communities of Concern | LTS | LTS (↓) | LTS (↓) | LTS (↓) |
| **Agricultural Lands** | | | | |
| Agricultural Land Conversion, Williamson Act Conflicts, and Other Changes Affecting Farmland | SU | SU (↓) | SU (↓) | SU (↓) |
| **Biological Resources** | | | | |
| Candidate, Sensitive and Special-Status Species | SU | SU (↓) | SU (↓) | SU (↓) |

**Table 3.1-45: Summary of Impacts for Each Alternative, and Relative Comparison to the Project**

| Environmental Topic | Project | Alternative 2: 2013 RTP Alternative | Alternative 3: Emphasis on Transit Improvement Projects | Alternative 4: Emphasis on Transit, Bicycle, and Pedestrian Programs |
|---|---|---|---|---|
| Sensitive Natural Communities and Wetlands | SU | SU (↔) | SU (↔) | SU (↓) |
| Wildlife Movement | SU | SU (↓) | SU (↓) | SU (↓) |
| Conflicts with State or Local Conservation Plans or Ordinances | LTS w/Mitigation | LTS w/Mitigation (↓) | LTS w/Mitigation (↓) | LTS (↓) |
| **Cultural Resources** | | | | |
| Historical Resources | SU | SU (↓) | SU (↔) | SU (↓) |
| Archaeological and Paleontological Resources | SU | SU (↓) | SU (↔) | SU (↓) |
| Human Remains | LTS w/Mitigation | LTS w/Mitigation (↓) | LTS w/Mitigation (↔) | LTS w/Mitigation (↓) |
| Tribal Cultural Resources | SU | SU (↓) | SU (↔) | SU (↓) |
| **Geology and Soils** | | | | |
| Seismic Hazards | LTS w/Mitigation | LTS w/Mitigation (↓) | LTS w/Mitigation (↓) | LTS w/Mitigation (↑) |
| Soil Erosion | LTS w/Mitigation | LTS w/Mitigation (↓) | LTS w/Mitigation (↓) | LTS w/Mitigation (↓) |
| Geologic Instability and Soil Expansion | LTS w/Mitigation | LTS w/Mitigation (↔) | LTS w/Mitigation (↔) | LTS w/Mitigation (↔) |
| **Hazards and Hazardous Materials** | | | | |
| Hazardous Materials Transport | LTS w/Mitigation | LTS w/Mitigation (↓) | LTS w/Mitigation (↓) | LTS w/Mitigation (↓) |
| Hazardous Materials Sites | SU | SU (↓) | SU (↓) | SU (↓) |
| Construction-Period Hazardous Materials Use | LTS w/Mitigation | LTS w/Mitigation (↔) | LTS w/Mitigation (↔) | LTS w/Mitigation (↔) |
| Airport Hazards | LTS | LTS (↔) | LTS (↔) | LTS (↔) |
| Emergency Response and Evacuation | LTS | LTS (↔) | LTS (↔) | LTS (↔) |
| Wildland Fire Hazards | LTS | LTS (↔) | LTS (↔) | LTS (↔) |
| **Hydrology and Water Resources** | | | | |
| Water Quality | LTS w/Mitigation | LTS w/Mitigation (↓) | LTS w/Mitigation (↑) | LTS w/Mitigation (↓) |
| Groundwater | LTS | LTS (↔) | LTS (↔) | LTS (↔) |

**Table 3.1-45: Summary of Impacts for Each Alternative, and Relative Comparison to the Project**

| Environmental Topic | Project | Alternative 2: 2013 RTP Alternative | Alternative 3: Emphasis on Transit Improvement Projects | Alternative 4: Emphasis on Transit, Bicycle, and Pedestrian Programs |
|---|---|---|---|---|
| Drainage and Runoff | LTS w/Mitigation | LTS w/Mitigation (↔) | LTS w/Mitigation (↔) | LTS w/Mitigation (↓) |
| Flood Hazards | SU | SU (↓) | SU (↑) | SU (↓) |
| **Land Use** | | | | |
| Growth Inducement | LTS | LTS (↔) | LTS (↕) | LTS (↓) |
| Residential or Business Disruption or Displacement | SU | SU (↓) | SU (↔) | SU (↓) |
| Construction-Related Community Disruption | SU | SU (↔) | SU (↔) | SU (↔) |
| Community Separation | LTS | LTS (↔) | LTS (↔) | LTS (↓) |
| Conflicts with Land Use Plans and Policies | LTS | LTS (↔) | LTS (↔) | LTS (↔) |
| **Noise** | | | | |
| Construction Noise and Groundborne Vibration | SU | SU (↔) | SU (↔) | SU (↔) |
| Operational Noise – Traffic | SU | SU (↔) | SU (↓) | SU (↓) |
| Operational Noise – Transit | SU | SU (↔) | SU (↔) | SU (↓) |
| **Visual Resources** | | | | |
| Views, Scenic Resources and Visual Character | SU | SU (↓) | SU (↓) | SU (↓) |
| Incongruous Visual Elements - Soundwalls | SU | SU (↔) | SU (↔) | SU (↔) |
| Light and Glare | SU | SU (↓) | SU (↓) | SU (↓) |

## Environmentally Superior Alternative

CEQA Guidelines Section 15126.6 requires that the EIR identify an environmentally superior alternative capable of reducing or avoiding, to the greatest extent, the environmental impacts associated with the proposed Project. Consideration of the environmentally superior alternative is based on the extent to which each of the CEQA alternatives reduces or avoids the significant impacts of the Project.

Significant and unavoidable impacts were identified under the proposed Project and each of the Alternatives. Overall, most differences between the proposed Project and the Alternatives are a matter of degree, rather than of significance as compared to CEQA thresholds. Alternative 4 reduced the potential for significant and unavoidable impacts under the following topics: Agriculture, Candidate, Sensitive, and Special-Status Species (Biological Resources); Residential or Business Disruption or Displacement (Land Use); and Light and Glare (Visual Resources). All other Project-related impacts are either less than significant or can be reduced to less than significant with implementation of mitigation measures identified in this EIR.

### No Project

In this instance, failure to approve the Project as proposed is unlikely to result in preservation of the existing environmental conditions. The No Project Alternative consists of those transportation projects and programs that have already undergone individual project-specific environmental review, have been approved by a local and/or sponsoring agency, have a committed funding source, and some of which are already under construction. Not approving the Project would not have any effect on these projects and programs, which will be implemented irrespective of any decisions regarding adoption of the 2017 CTP. The practical result of not approving the Project would be a delay in the CCTA's adoption of a CTP update. The Measure J Growth Management Program, which was approved by the voters of Contra Costa in November 2004, requires that CCTA periodically update the CTP. Postponing the adoption of the CTP update would most likely result the existing 2009 CTP becoming more obsolete, would impede the ability of the RTPCs to implement the Action Plans, and would impede the CCTA's abilities to implement the strategies needed to address the current transportation and growth issues facing Contra Costa County, and the resultant environmental impacts. There are no practical assumptions or reasonable scenarios that would result in permanent preservation of the existing environmental setting.

### Alternative 4: Emphasis on Transit, Bicycle, and Pedestrian Programs

The environmental effects of Alternative 4 would be similar to those of the Project, but the focus on multimodal programs rather than capital projects would result in fewer on-the-ground projects, which would in turn reduce the relative magnitude of many environmental effects as compared with the proposed Project. As shown in Table 3.1-45, Alternative 4 would reduce significant and unavoidable impacts of the Project for sea level rise (GHG Emissions and Climate Change), candidate, sensitive and special-status species (Biological Resources), residential or business disruption or displacement (Land Use), and light and glare (Visual Resources). Alternative 4 would also lessen the degree of Project-related impacts pertaining to the following topics:

- Transportation and circulation (VMT, non-SOV mode share, and transit ridership)
- GHG emissions (vehicle GHGs, conflicts with GHG reduction policies)
- Air quality (consistency with Clean Air Plan, particulate matter emissions, and relative impacts to COCs)
- Agricultural lands
- Biological resources (sensitive natural communities, wildlife movement, conflicts with state or local conservation plans)
- Cultural resources
- Geology and soils (soil erosion)
- Hazards and hazardous materials (hazardous materials transport, hazardous material sites)
- Hydrology and water resources (water quality, drainage and runoff, flood hazards)
- Land use (growth inducement, community separation)
- Noise (operational noise – traffic, operational noise – transit)
- Visual resources (views, scenic resources, and visual character)

Alternative 4 is environmentally superior as compared with the Project.

On balance, the environmental effects of Alternative 4 are comparatively less than those of the Project. Impacts to special status species and impacts related to increased light and glare (which are identified as significant impacts of the Project) can be avoided under Alternative 4. Because Alternative 4 would result in impacts that are reduced as compared with the Project, it is environmentally superior to the Project and all other alternatives considered in this EIR.

# 3.2

# CEQA Required Conclusions

This chapter summarizes the impacts of the 2017 Countywide Comprehensive Transportation Plan (2017 CTP) in several subject areas specifically required by the California Environmental Quality Act (CEQA), including significant irreversible changes, significant unavoidable impacts, growth inducing impacts, cumulative impacts, and impacts found to be not significant. These subject areas are evaluated based on the analysis in Chapter 2: Settings, Impacts, and Mitigation Measures, of this Environmental Impact Report (EIR).

## Significant Unavoidable Effects

Significant unavoidable effects are those impacts that cannot be mitigated to a level of less than significant. This EIR has found potentially significant and unavoidable effects, categorized as follows:

### Significant, No Feasible Mitigation

The following is a significant impact of the Project for which there is no feasible mitigation:

#### Vehicle Hours of Delay

Travelers on major roadways throughout Contra Costa County would experience an appreciable increase in total vehicle hours of delay as compared with the baseline condition. An appreciable increase in vehicle hours of delay is defined as greater than 5 percent. No feasible mitigation measures are identified. Therefore, this impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Trans-2*)

### Significant and Unavoidable Impacts, Mitigation Uncertain

The following are potentially significant impacts of the Project for which feasible mitigation measures are insufficient or uncertain as to their ability to reduce impacts below the level of significance in all cases:

#### Sea Level Rise

New or expanded transportation facilities pursuant to the 2017 CTP could result in a net increase in transportation projects within areas projected to be inundated by sea level rise by midcentury. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. There may be instances, however, in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Additionally,

Contra Costa Transportation Authority (CCTA) cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Therefore, it cannot be ensured that these mitigation measures would be implemented in all cases. This impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact GHG-6)*

### Particulate Matter Emissions

New or expanded transportation facilities pursuant to the 2017 would result in a net increase in emissions of coarse particulate matter from on-road mobile sources (including entrained dust) as well as a net increase in emissions of fine particulate matter entrained dust, as compared to the baseline condition. Implementation of identified mitigation measures would reduce impacts, but the overall increase in vehicle miles traveled associated with new population and employment growth will contribute to an increase in countywide particulate matter emissions that cannot be fully avoided. Furthermore, CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified for the Project. Therefore, this impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Air-4*)

### Agricultural Land Conversion and Williamson Act Conflicts

Construction of transportation projects included in the 2017 CTP would potentially convert important agricultural lands to transportation uses. Implementation of identified measures would reduce impacts related to agricultural conversions. Given recent growth in East County and the related need to provide services and relieve congestion in the area, some transportation projects pursuant to the Investment Program may still convert agricultural lands, and site-specific or project-specific conditions may preclude the reduction of all project impacts to less than significant levels. Additionally, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Therefore, it cannot be ensured that these mitigation measures would be implemented in all cases. This impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Ag-1*)

### Candidate, Sensitive and Special Status Species

Construction of transportation projects included in the 2017 CTP could potentially result in impacts on special status species, Migratory Bird Treaty Act species, and nesting raptors, as well as result in adverse habitat modifications for these protected species. Implementation of identified mitigation measures could reduce such impacts, but there may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Additionally, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Therefore, it cannot be ensured that these mitigation measures would be implemented in all cases. This impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Bio-1*)

### Sensitive Natural Communities

The construction of new or expanded transportation facilities pursuant to the 2017 CTP could have a substantial adverse effect on sensitive natural communities or on federally protected wetlands. Implementation of identified mitigation measures could reduce such impacts, but there may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Additionally, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Therefore, it cannot be ensured that these mitigation measures would be implemented in all cases. This impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Bio-2*)

### Historic Resources

Construction of new or expanded transportation facilities pursuant to the 2017 CTP could cause a substantial adverse change in the significance of a historical resource. To the extent that transportation projects pursuant to the 2017 CTP, including those individual projects proposed under the Investment Program, incorporate all feasible mitigation measures, impacts could be reduced. However, there may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified for the Project. Therefore, this impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Cul-1*)

### Archaeological and Paleontological Resources

The construction of new or expanded transportation facilities pursuant to the 2017 CTP could cause a substantial adverse change in the significance of an archaeological or paleontological resource. To the extent that transportation projects pursuant to the 2017 CTP, including those individual projects proposed under the Investment Program, incorporate all feasible mitigation measures described above, impacts related to archeological or paleontological resources would be reduced. However, there may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified for the Project. Therefore, this impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Cul-2*)

### Tribal Cultural Resources

The construction of new or expanded transportation facilities pursuant to the 2017 CTP could cause a substantial adverse change in the significance of a tribal cultural resource. To the extent that transportation projects pursuant to the 2017 CTP, including those individual projects proposed under the Investment Program, incorporate all feasible mitigation measures described above, impacts related to tribal cultural resources would be reduced. However, there may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. CCTA cannot require implementing agencies and individual project sponsors

to adopt the mitigation measures identified for the Project. Therefore, this impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Cul-4*)

### Permanent Residential or Business Disruption or Displacement

The construction of new or expanded transportation facilities pursuant to the 2017 CTP could result in substantial permanent residential or business disruption, or displacement of substantial numbers of existing population and housing. Implementation of identified mitigation measures would reduce impacts, but there may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Additionally, CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified for the Project. Therefore, this impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact LU-2*)

### Construction Noise and Groundborne Vibration

Construction of transportation projects included in the 2017 CTP would potentially result in a localized increase in ambient noise levels in the areas surrounding those projects. Construction activities with the potential for significant construction-related noise or vibration impacts would be those for which pile driving or other similar invasive foundation work would be required. Implementation of identified mitigation measures would reduce impacts, but due to the uncertainty of the level of construction activity and distances to sensitive receptors, some of those projects may still have the potential to result in significant construction noise and groundborne vibration impacts, and site-specific or project-specific conditions may preclude the reduction of visual impacts to less than significant levels. Furthermore, it is ultimately the responsibility of implementing agencies and individual project sponsors to determine and adopt mitigation. CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified for the Project. Therefore, this impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Noise-1*)

### Operational Noise – Traffic

Construction of new roadways and roadway extensions included in the 2017 CTP would potentially result in an increase in freeway and expressway miles approaching the Federal Highway Administration noise abatement criteria or in substantial increases in noise above existing levels. Implementation of identified mitigation measures would reduce impacts, but there may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Furthermore, it is ultimately the responsibility of implementing agencies and individual project sponsors to determine and adopt mitigation. CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified for the Project. Therefore, this impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Noise-2*)

### Operational Noise – Transit

Extension of rail transit service to new areas of Contra Costa County could result in exposure of existing sensitive land uses to noise levels in excess of standards developed by the Federal Transit Administration. Implementation of identified mitigation measures would reduce impacts, but there

may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Furthermore, it is ultimately the responsibility of implementing agencies and individual project sponsors to determine and adopt mitigation. CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified for the Project. Therefore, this impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Noise-3*)

### Views, Scenic Resources, and Visual Character

Construction of transportation projects included in the 2017 CTP would potentially result in long-term visual impacts, including affecting views of rural or open space areas, damaging scenic resources along designated or eligible scenic highways, and/or to substantially degrading the existing visual character or quality of the site and its surroundings. Implementation of identified mitigation measures would reduce impacts, but given the extent of new roadways considered for development in undeveloped areas of the County, some of those projects may still have the potential to impact views and scenic vistas. Site-specific or project-specific conditions may preclude the reduction of visual impacts to less than significant levels. CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt appropriate mitigation measures. Therefore, it cannot be ensured that these mitigation measures would be implemented in all cases. This impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Vis-1*)

### Incongruous Visual Elements – Soundwalls

New or expanded transportation facilities pursuant to the 2017 CTP could result in the construction of new soundwalls along arterials could add visual elements that are incongruous with the existing character of an area. Implementation of identified mitigation measures would reduce impacts, but site conditions are unique and it cannot be concluded with certainty that all visual impacts associated with potential soundwalls could be avoided. There may be instances in which the visual impacts of new or expanded soundwalls would remain significant and unavoidable. CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Therefore, it cannot be ensured that these mitigation measures would be implemented in all cases. This impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Vis-2*)

### Light and Glare

Construction of transportation projects included in the 2017 CTP would potentially result in the introduction of light and glare in areas where no sources currently exist, particularly from new roadways in rural or open space areas. Implementation of identified mitigation measures would reduce impacts, but there may be instances in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Additionally, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt appropriate mitigation measures. Therefore, it cannot be ensured that these mitigation measures

would be implemented in all cases. This impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Vis-3*)

## Significant and Unavoidable Impacts, Mitigation cannot be Assured

The following are potentially significant impacts of the Project for which implementation of feasible mitigation measures would suffice to reduce impacts below the level of significance, but such measures cannot be compelled by CCTA:

### Indirect Greenhouse Gas Emissions by 2040

The construction of new or expanded transportation facilities pursuant to the 2017 CTP could result in a net increase in indirect construction-related greenhouse gas emissions in 2040 when compared with the baseline condition. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt appropriate mitigation measures. Therefore, it cannot be ensured that these mitigation measures would be implemented in all cases. This impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact GHG-3*)

### Construction-Period Emissions and Fugitive Dust

Construction of new or expanded transportation facilities pursuant to the 2017 could result in a substantial net increase in construction-related emissions. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. However, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt mitigation. Therefore, it cannot be ensured that these mitigation measures would be implemented in all cases. This impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Air-2*)

### Wildlife Movement

Construction of transportation projects included in the 2017 CTP would potentially result in reduced natural habitat and habitat fragmentation, interfering with or impeding wildlife movement or use of native wildlife nursery sites. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. There may be instances, however, in which site-specific or project-specific conditions preclude the reduction of all project impacts to less than significant levels. Additionally, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt appropriate mitigation measures. Therefore, it cannot be ensured that these mitigation measures would be implemented in all cases. This impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Bio-3*)

### Hazardous Materials Sites

The construction of new or expanded transportation facilities pursuant to the 2017 CTP could result in projects located on sites that are included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. However, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt appropriate mitigation measures. Therefore, it cannot be ensured that these mitigation measures would be implemented in all cases. This impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Haz-2*)

### Flood Hazards

New or expanded transportation facilities pursuant to the 2017 CTP could place new structures and facilities within a 100-year flood hazard area, which would impede or redirect flood flows; or expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. Implementation of identified mitigation measures would normally reduce impacts to a level of less than significant. However, CCTA cannot require local implementing agencies to adopt the recommended mitigation measures, and it is ultimately the responsibility of the local lead agency or project sponsor to determine and adopt appropriate mitigation measures. Therefore, it cannot be ensured that these mitigation measures would be implemented in all cases. This impact remains significant and unavoidable (SU) for purposes of this program-level analysis. (*Impact Hydro-4*)

### Short-Term Disruption of Residential or Business Land Uses

Construction-related activities associated with new transportation projects pursuant to the 2017 CTP are likely to cause short-term disruption of adjoining land uses. To the extent that transportation projects pursuant to the 2017 CTP, including those individual projects listed under the Investment Program, incorporate Mitigation Measure(s) above, these measures would reduce significant disruption of adjoining residential or business land uses. However, CCTA cannot require implementing agencies and individual project sponsors to adopt the mitigation measures identified. Therefore, this impact remains significant and unavoidable (SU) for purposes of this program-level analysis. *(Impact LU-3)*

## Significant Irreversible Environmental Changes

Significant irreversible environmental changes are those irretrievable commitments that consign nonrenewable resources to uses that future generations will probably be unable to reverse. Irretrievable commitments of non-renewable resources associated with transportation improvements in the 2017 CTP would include:

- Consumption of significant amounts of nonrenewable energy for construction, maintenance, and operation of transportation improvements, even if energy use rates do not exceed existing use rates

- Use of building materials, fossil fuels, and other resources for construction, maintenance, and operation of transportation improvements
- Conversion of some resource lands, such as agricultural land, habitat areas, and other undeveloped lands into transportation uses
- Degradation of ambient air quality through the increase of harmful particulate matter caused by a cumulative increase in vehicle exhaust
- Emission of greenhouse gases that will contribute to global climate change

# Growth-inducing Impacts

Growth-inducing impacts are ways in which the 2017 CTP may remove obstacles to growth or foster economic or population growth directly or indirectly in the surrounding environment. Transportation projects provide an indirect yet important contribution by making traveling within a region and between regions easier, cheaper, and/or more attractive.

This section analyzes the potential of the 2017 CTP to generate population and employment growth beyond levels currently anticipated in regional and local plans. It includes the projected population and employment growth for Contra Costa County and the Bay Area through the year 2040.

This EIR must examine the potential growth-inducing impacts of the 2017 CTP. More specifically, CEQA Guidelines require that EIRs "discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly" (CEQA Guidelines Section 15126.2(d)). This analysis must also consider the removal of obstacles to population growth, such as improvements in the regional transportation system. Examples of projects likely to have growth-inducing impacts include extensions or expansions of infrastructure systems beyond what is needed to serve project-specific demand.

The CEQA Guidelines are clear that while an analysis of growth-inducing effects is required, it should not be assumed that induced growth is necessarily significant or adverse.

## Growth Projections

Contra Costa County, already one of the most populous counties in the Bay Area, is expected to grow substantially between now and 2040. The Association of Bay Area Governments (ABAG) provides forecasts of where new households and jobs will likely occur in the Bay Area based on overall regional forecasts developed by the California Department of Finance. As shown in **Table 3.2-1**, *Projections 2013* forecast a substantial increase in population, households, jobs, and employed residents within Contra Costa County and the Bay Area as a whole from 2010 to 2040. Many of the impacts identified in Chapters 2.1 through 2.12 of this EIR stem from this growth.

**Table 3.2-1: Summary of ABAG Growth Projections, 2010—2040, for Contra Costa County and the Bay Area**

| | 2010 | | 2040 | | Percent Change | |
|---|---|---|---|---|---|---|
| | Contra Costa | Bay Area | Contra Costa | Bay Area | Contra Costa | Bay Area |
| Population | 1,049,025 | 7,150,739 | 1,338,400 | 9,299,100 | 28% | 30% |
| Households | 375,364 | 2,608,023 | 464,150 | 3,308,090 | 24% | 27% |
| Jobs | 344,920 | 3,385,300 | 467,390 | 4,505,230 | 36% | 33% |
| Employed residents | 455,540 | 3,268,680 | 592,060 | 4,350,070 | 30% | 33% |

*Source: ABAG and Metropolitan Transportation Commission 2013*

## Growth-inducing Effects of 2017 CTP

The quality of the transportation system serving Contra Costa County has a limited role in stimulating overall growth compared to factors related to land use policy. Various studies have examined the effect of transportation improvements that have increased accessibility to land use. These studies have investigated both rail systems (including Bay Area Rapid Transit) and freeways. Generally, these studies have found a clear and significant relationship only for the early freeways. Rail studies and studies of more recent freeways have not always shown a consistent relationship. These studies suggest several reasons why recent transportation improvements have had such minor impacts on land use. They include the following:

- Local general plans and other land use regulations (such as the Measure J Growth Management Plan), zoning, and local political attitudes limit the ability of developers to respond to changes in accessibility.
- The significant amount of development already in place means that changes in land use that respond to changes in accessibility could take many years to become evident.
- The availability of vacant or developable land will mean that some developers can respond more quickly to changes in accessibility.
- Most important, recent changes in accessibility have been too small to change the cost of travel significantly within the urban area.
- In a majority of instances in Contra Costa County, transportation improvements are merely "catching up" to serve existing or planned development, rather than influencing the pattern of development.

It is unlikely that the transportation improvements contemplated in the 2017 CTP and its investment Program would be of sufficient magnitude (especially compared to the in-place transportation system), to stimulate new growth beyond the projected 28% increase in population and 36% increase in jobs forecast for the County or the 30% increase in population and 33% increase in jobs forecast for the Bay Area as a whole. This is due to the following factors:

1. Historically, transportation investment in general, and increased transportation capacity in particular, lag behind growth. The proposed CTP's Investment Program adds approximately 53 lane miles to the baseline of over 12,450 lane miles within the County, for a total of only a

+0.04% increase in lane miles. The proposed CTP's Investment Program includes improvements to approximately 89 lane miles of freeways and arterials within the County, for a total of only a +0.07% increase in land mile improvement, most of which are Express Lanes and high-occupancy vehicle lanes on many of the County's most congested freeway corridors. These roadway improvements and lane mile increases occur at lower rates than the projected 28% increase in population and 36% increase in jobs for Contra Costa County. The situation is likely to continue with the limited fiscal resources for expansion of transportation system capacity.

2. Due to the maturity of development in the County, and the existing transportation system and mode choices already available, incremental corridor improvements are expected to play a minimal role in attracting or inducing new development. The regional health of the economy, the diversity of arts and cultural activities, the stature of the educational system, the strength of local, regional and international markets, and inter-regional transportation costs are all more likely to influence location decisions.
3. The cost of gasoline coupled with a burgeoning concern for sustainable development and climate change seem to be resulting in changes in local land use and investment decision-making geared toward fewer car trips, smaller cars, transit accessibility, infill development, and overall reduced environmental impacts.

Overall mobility in Contra Costa will be more constrained in 2040 than it was in 2010, even with implementation of the 2017 CTP. There will be more peak period congestion and more total vehicle hours of delay. The increases in total countywide travel activity, however, are not caused by implementation of the 2017 CTP. The levels of vehicle hours of delay and average delay per trip are higher under the No Project condition that they would be under the Investment Program, indicating that these impacts are due to projected regional growth in population, jobs, and workers, rather than the transportation infrastructure of the 2017 CTP. To the extent that the transportation network has a substantial effect on countywide growth, it is likely that insufficient transportation infrastructure may decrease, rather than increase the projected rates of population and employment growth.

The 2017 CTP would result in significant investments and improvements in the regional transportation system in support of planned growth. Many of the projects under the 2017 CTP would involve repairing or upgrading existing transportation facilities within urban areas. Numerous projects involve improving transit, bicycle and pedestrian access, including Safe Routes to School projects, and most of the arterial projects focus on operational improvements, such as improving intersections and signals, or on "complete streets" improvements. In almost all cases, these projects are designed to maintain or improve facilities within the urban limit lines adopted per the Measure J Growth Management Program to serve the needs of existing development and planned growth, including the growth identified in *Plan Bay Area*, the Regional Transportation Plan adopted by ABAG and Metropolitan Transportation Commission in 2013.

### Potential Exceptions

There are two new roadway projects included in the 2017 CTP, which may be exceptions to these general rules pertaining to growth inducement.

The 2017 CTP (as well as the 2013 Regional Transportation Plan) includes construction of an extension of James Donlon Boulevard, providing an improved connection between the City of Pittsburg (in East County) and the cities of Concord and Clayton (in West County). This roadway extension is intended to serve existing transportation demand and alleviate existing congestion of other roadways, but would create a new arterial road through currently undeveloped lands. There is potential for this roadway to induce additional growth and development within these adjacent undeveloped areas. However, such development would not be consistent with the growth limitations of the Urban Limit Lines of each of these respective jurisdictions.

Secondly, the 2017 CTP includes construction of a new, 4-lane freeway (State Route 239 – Tri-Link) from the City of Brentwood to the Interstate 205/Interstate 580 interchange, with associated interchange improvements. Construction of this new freeway represents the largest component of the CTP Investment Program's addition to countywide lane miles. There are significant limitations to any new development along this freeway (e.g., the Measure J Urban Limit Line in Contra Costa County, and Measure D[1] in Alameda County). However, this new freeway would create a new regional connection between Contra Costa and Alameda/San Joaquin Counties, and would potentially relieve a certain amount of congestion, at least in the short-term, on I-580 over the Altamont pass, on Byron Highway, and on Vasco Road. For employed residents in East Contra Costa, SR-239 would improve access to jobs located in San Joaquin County; employed residents in San Joaquin County would experience improved access to jobs in East and Central Contra Costa. The SR-239 Project, however, is proposed to adhere to the Measure J Urban Limit Line constraints, and will have strict access control; only one interchange (at the Airport Connector) is proposed between I-205/I-580 and SR-4. Furthermore, the SR-239 Project would be financially feasible only if operated as a toll facility. The cost of the toll, coupled with limited access to new developable lands, would adequately mitigate any growth-inducing effects.

## Cumulative Impacts

Section 15130 of the CEQA Guidelines requires that an EIR evaluate potential environmental impacts that are individually limited but cumulatively significant. CEQA defines cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines § 15355). "'Cumulatively considerable' means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (CEQA Guidelines § 15065(a)(3)). This means that cumulative impacts can result from individually minor but collectively significant projects taking place over time.

[1] To reduce development pressure on open space and agricultural lands in Alameda County, voters approved the Save Agriculture and Open Space Lands Initiative (Measure D; effective December 22, 2000). Measure D amended portions of the County General Plan to preserve and enhance agriculture and agricultural lands, and to protect the natural qualities, wildlife habitats, watersheds, and open space in Alameda County. Measure D establishes an Urban Growth Boundary for the County, focusing urban-type development in and near existing cities.

The 2017 CTP, which includes countywide transportation improvements in support of planned growth, is a cumulative plan by definition. As such, the environmental analysis included throughout this EIR is a cumulative analysis compliant with the requirements of CEQA and the CEQA Guidelines. All of the impacts addressed in Chapters 2.1 through 2.12 are considered cumulative and therefore are not repeated here.

## Impacts Found Not to be Significant

This EIR focuses on potentially significant impacts. CEQA requires that an EIR provide a brief statement indicating why various possible significant impacts were determined to not be significant and were not discussed in detail. For the issue areas addressed in Chapters 2.1 through 2.12, all potential impacts are identified. Non-significant impacts are those effects that have no significant adverse impact on the environment. Issue areas determined to be less than significant and not addressed further in this EIR include the following:

- **Mineral Resources:** Implementation of transportation improvements under the 2017 CTP is not anticipated to affect any mineral resources since no substantive mineral resources have been identified in areas where new transportation projects would occur.

- **Public Services:** Implementation of transportation improvements under the 2017 CTP is not anticipated to cause a significant increase in demand for public services.

- **Recreation:** No adverse effects on recreational uses or facilities are expected. Minor short-term effects may occur if construction of transportation improvements under the 2017 CTP occurs near recreational resources.

- **Utilities:** Implementation of transportation improvements under the 2017 CTP is not anticipated to cause a significant increase in demand for utilities.