4 ALTERNATIVES TO THE PROPOSED PLAN

Environmental impact reports (EIRs) are required to consider alternatives to the project that are capable of reducing or avoiding significant environmental impacts. Section 15126.6(f) of the California Environmental Quality Act (CEQA) Guidelines states:

> Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which 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.

Section 15126.6(a) of the Guidelines requires EIRs to describe "... a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the 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. An EIR is not required to consider alternatives that are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason. (See also CEQA Guidelines Section 15126.6[f].) This section of the CEQA Guidelines also provides guidance regarding what the alternatives analysis should consider.

The Guidelines require that an EIR include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the project. If an alternative would cause one or more significant effects in addition to those that would be caused by the project, the significant effects of the alternative must be discussed, but in less detail than the significant effects of the project as proposed (CEQA Guidelines Section 15126.6[d]). The Guidelines further require that the "no project" alternative be considered (CEQA Guidelines Section 15126.6[e]).

In defining "feasibility" (e.g.," ... feasibly attain most of the basic objectives of the project ..."), CEQA Guidelines Section 15126.6(f)(1) states, in part:

> Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives.

This chapter presents the alternatives development and screening process, describes the alternatives, and analyzes the three alternatives to the proposed Plan. Key features of each alternative are described. A discussion pertaining to each alternative's ability to meet the project objects and to lessen significant impacts of the project are provided (see Section 4.5, "Ability to Meet Project Objectives" and "Section 4.6, "Comparative Impact Analysis of Alternatives"). This alternatives analysis

contains a summary comparison of the proposed Plan and Plan alternatives and discussion of the environmentally superior alternative.

In determining the alternatives that should be considered in the EIR, it is important to consider the objectives of the project, the project's significant effects, and unique project considerations. These factors are crucial to the development of alternatives that meet the criteria specified in Section 15126.6(a). Although, as noted above, EIRs must contain a discussion of "potentially feasible" alternatives, the ultimate determination as to whether an alternative is feasible or infeasible is made by the lead agency's decision-making body—here, the MTC Commissioners and ABAG Executive Board. (See PRC Sections 21081.5, 21081[a] [3].)

Comments received on the Notice of Preparation provided recommendations for project elements and alternatives, including: consideration of the placement of development in relation to the wildland urban interface, avoiding flood zones, addressing the imbalance between jobs, housing, and other land uses, and proximity to transit hubs; adjustments to forecasted growth rates; recommendations for transit and other use of express lanes and high occupancy vehicle lanes as well as monitoring operations; suggestions for methods to identify priority growth areas (PDAs) and other growth geography areas, including proximity to transit criteria; strategies that address development of accessory dwelling units; consideration of transportation strategies such as increased telecommuting, reallocation of transportation investments, programs that address autonomous vehicles, and considerations for vehicular parking spaces; and transit opportunities adjacent to or located over existing highways and freeways.

The CEQA Guidelines note that comments received during the NOP scoping process can be helpful in "identifying the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in depth in an EIR and in eliminating from detailed study issues found not to be important." (CEQA Guidelines Section 15083.) Neither the CEQA Guidelines nor Statutes require a lead agency to respond directly to comments received in response to the NOP, but they do require that they be considered. Consistent with these requirements, the comments received in response to the NOP have been carefully reviewed and considered by MTC and ABAG in the preparation of the alternatives analysis presented in this section.

In some cases, these comments are already addressed by the Proposed plan. In others, they are included in the framework of the alternatives. Note that adjustments to the forecasted growth rate are not considered in either the Proposed plan or alternatives to the Proposed plan. The primary objectives of the Plan are to identify strategies that will enable the Bay Area to accommodate future growth and make the region more equitable and resilient in the face of unexpected challenges, such as the uncertainties posed by rising sea levels, economic cycles, and new technologies. A discussion of various suggested alternatives is provided below.

Appendix B includes all NOP comments received.

4.1 DEVELOPMENT OF THE ALTERNATIVES TO THE PROPOSED PLAN

4.1.1 Consideration of the Alternatives to the Proposed Plan

As discussed in Chapter 1.0, "Introduction," MTC and ABAG conducted a three-year plan development process that began with the Horizon initiative before advancing into the Blueprint phase. The Horizon initiative explored the efficacy of a suite of strategies to advance the region toward the plan's adopted vision, and the Blueprint phases served as drafts of the proposed Plan by advancing and integrating effective strategies. These Plan development phases solicitated public input and comment on the identification of strategies as well as the evaluation of their efficacy. The Final Blueprint's 35 strategies were designed to enable the Bay Area to accommodate future growth and make the region more equitable and resilient in the face of unexpected challenges, such as sea level rise.

On September 28, 2020, in accordance with the CEQA Guidelines, MTC and ABAG filed the Notice of Preparation (NOP) of the EIR for Plan Bay Area 2050. The purpose of the NOP was to seek comments about the scope and content of the EIR, including solicitating feedback on EIR alternatives that should be evaluated. On Thursday, October 15, 2020, MTC and ABAG conducted an online public scoping meeting. At this meeting, a presentation by MTC/ABAG staff provided an overview of the proposed Plan, the CEQA process, and key environmental issues identified in the NOP. Oral and written comments were accepted during the meeting. Several written comment letters included suggestions for Plan alternatives. Comments pertaining to Plan alternatives were considered during development of the proposed Plan and Plan alternatives. (See Section 4.3, "Alternatives Considered but Not Analyzed in Detail").

The previously considered alternatives and adopted Plan Bay Area plans also helped inform and refine the alternatives considered in this EIR (see Section 4.1.3, "Previous Versions of the Bay Area RTP/SCS Plans and Alternatives"). In advancing the considerations of alternatives, any alternative must attain the underlying purpose of the Plan, including accommodating forecasted growth through 2050, as well as attaining most of the Plan's objectives (see Section 4.5, "Ability to Meet Project Objectives").

4.1.2 Project Objectives

The State CEQA Guidelines state that an EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, that would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen some of the significant effects of the project and that it shall evaluate the comparative merits of the alternatives (CEQA Guidelines Section 15126.6).

The proposed Plan's overall goal is to "ensure by the year 2050 that the Bay Area is affordable, connected, diverse, healthy, and vibrant for all." During the Horizon initiative, in conjunction with members of the public, partners, and elected officials between February and June 2018 through a wide range of public engagement, MTC and ABAG developed a set of guiding principles. In September 2019, MTC and ABAG both adopted the vision, guiding principles, and cross-cutting issues for the proposed Plan. MTC and ABAG further developed performance metrics associated with the guiding principles during the Blueprint planning phase. In addition, Senate Bill 375 mandates two performance targets related to housing the population and achieving greenhouse gas emissions reduction targets. Together, the guiding principles and performance metrics serve as the basis for the following CEQA objectives:

1. Address climate change by reducing carbon dioxide (CO_2) emissions pursuant to targets established by the California Air Resources Board (CARB); specifically, meet or exceed a 19-percent reduction in per-capita emissions from cars and light-duty trucks by 2035 relative to 2005 levels.

2. House 100 percent of the region's projected growth by income level, and with no increase in in-commuters over the proposed Plan baseline year.

3. Ensure that all current and future Bay Area residents and workers have sufficient housing options they can afford by reducing how much residents spend on housing and transportation and by producing and preserving more affordable housing.

4. Support an expanded, well-functioning, safe, and multimodal transportation system that connects the Bay Area by improving access to destinations and by ensuring residents and workers have a transportation system they can rely on.

5. Support an inclusive region where people from all backgrounds, abilities, and ages can remain in place with full access to the region's assets and resources by creating more inclusive communities and reducing the risk that Bay Area residents are displaced.

6. Conserve the region's natural resources, open space, clean water, and clean air with the intent of improving health of Bay Area residents and workers and improving the health of the environment locally and globally.

7. Support the creation of quality job opportunities for all and ample fiscal resources for communities by more evenly distributing jobs and housing in the Bay Area and by enabling the regional economy to thrive.

4.1.3 Previous Versions of the Bay Area RTP/SCS

The proposed Plan and Plan alternatives build upon previous version of the Bay Area's RTP/SCSs. The 2013 Plan Bay Area was the first Bay Area RTP to integrate the SCS, as required by SB 375 (MTC 2013). Plan Bay Area 2040 was an update to the 2013 Plan. As discussed in more detail in Section 1.6.3, "Federal and State Requirements," the Plan Bay Area is updated every four years, consistent with update requirements that pertain to RTPs (e.g., California Government Code Section 65080). The 2050 Plan Area extends the planning period from 2040 to 2050. Each update to the plan addresses evolving issues, including changes to the growth forecast and planning horizon.

Consideration of the alternatives to the proposed Plan builds upon prior transportation and land use plans adopted and alternatives considered in the 2013 and 2017 Plan Bay Area EIRs (MTC 2013, 2017). While the growth forecasts have changed over time, the planning horizons have been extended, and the processes to develop the 2013 Plan, Plan Bay Area 2040 (2017), and the proposed Plan differed in approach, each Bay Area RTP/SCS and the feasible alternatives identified for each were developed to meet the same overarching goals of achieving the GHG reduction targets and housing the projected population. In general, the prior plans and plan alternatives provide context for development of the alternatives to the proposed plan evaluated in this chapter.

2013 RTP/SCS

The adopted 2013 plan was designed to create a network of complete communities; increase the accessibility, affordability, and diversity of housing; create jobs to maintain and expand a prosperous

and equitable regional economy; and protect the region's unique natural environment. The transportation investments and policies in the Transportation Investment Strategy of the 2013 Plan Bay Area were based on available funding through 2040 and support the 2013 Plan Bay Area's goals by reducing automobile dependency and promoting healthier communities through reduced pollution and cleaner air.

The following alternatives were developed and evaluated in the 2013 EIR:

- **No Project Alternative:** The No Project Alternative represents the potential scenario if Plan Bay Area is not implemented. Under this alternative, no new regional policies would be implemented to influence local land use patterns, and no uncommitted transportation investments would be made.
- **Transit Priority Focus Alternative**: This alternative would develop a focused growth pattern primarily in the region's urban core by relying on Transit Priority Project eligible areas, which are areas with high-frequency transit service that are eligible for higher-density development streamlining, in accordance with Senate Bill (SB) 375. The Transit Priority Project framework is meant to leverage the significant investment that the region has made and continues to make in transit service.
- **Enhanced Network of Communities Alternative**: This alternative would provide sufficient housing for all people employed in the San Francisco Bay Area and would allow for more dispersed growth patterns than the proposed Plan.
- **Environment, Equity, and Jobs Alternative**: This alternative would seek to maximize affordable housing in high-opportunity urban and suburban areas through the use of incentives and housing subsidies. The suburban growth is supported by increased transit service to historically disadvantaged communities through a vehicle miles traveled (VMT) tax and higher bridge tolls.

PLAN BAY AREA 2040 EIR ALTERNATIVES

The adopted Plan Bay Area 2040 contains two components: (1) a regional strategy for accommodating household and employment growth projected to occur the Bay Area by 2040 and (2) a transportation strategy for the region based on expected revenues. It was developed to achieve targets for greenhouse gas (GHG) emissions reductions, consistent with the Sustainable Communities and Climate Protection Act of 2008 (SB 375), lawsuit settlement agreements, and other regional goals.

The following alternatives were evaluated in the 2017 EIR:

- **No Project Alternative:** The No Project Alternative illustrates trends assumed under adopted local general plans and zoning without an adopted regional SCS plan, and assuming no new transportation projects beyond those currently under construction or those that have both full funding and environmental clearance.
- **Main Street Scenario:** This alternative disperses future household and job growth into the downtowns of all Bay Area communities and emphasizes the expansion of express lanes, increases in highway capacity, and increases to suburban bus service to dispersed job centers.
- **Big Cities Scenario**: This alternative concentrates future household and job growth into the Bay Area's three largest cities (San Jose, San Francisco, and Oakland) and emphasizes core capacity and connectivity by expanding the South Bay transit system and linking regional rail systems into the heart of San Francisco and San Jose.

- **Equity, Environment, and Jobs Alternative:** This alternative was brought forward from the 2013 EIR and updated to reflect input submitted during the Notice of Preparation process and to adhere to the planning assumptions in the proposed Plan (e.g., regional forecasts and transportation projects). This alternative aims to reduce the risk of displacement in urban Equity Priority Communities (formerly known as "Communities of Concern") and reduce adverse environmental impacts related to the expansion of the transportation system. In comparison to the proposed Plan, the Equity, Environment, and Jobs Alternative would result in higher household growth in East Bay and South Bay counties and higher job growth in East Bay and Peninsula counties

4.2 ALTERNATIVES CONSIDERED BUT NOT EVALUATED FURTHER

Alternatives were considered during scoping of the proposed Plan, including suggestions from stakeholders. CEQA Guidelines Section 15126.6(c) identifies three factors that may be used to eliminate alternatives from detailed consideration in an EIR: failure to meet most of the basic project objectives, infeasibility, and inability to avoid significant environmental impacts. "Feasible" is defined as "capable of being accomplished within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors" (CEQA Guidelines Section 15364). The feasibility of an alternative may be determined based on a variety of factors, including economic viability, availability of infrastructure, and other plans or regulatory limitations (CEQA Guidelines Section 15126.6[f][1]). The following discussion briefly describes each alternative suggested during the scoping process that was not evaluated further and states the reason why each has not been included for analysis.

4.2.1 COVID-19 Alternative

The City of Palo Alto and the Santa Clara Valley Transportation Authority suggested an alternative whereby the region did not recover from the COVID-19 pandemic, resulting in lower regional growth and transportation revenues. Each of the alternatives is constrained by the same planning assumptions as the proposed Plan and housing units maintain the same regional growth forecasts—population, employment, households—and maintains the same forecast of reasonably available transportation revenues. These planning assumptions are considered exogenous factors and ensure the alternatives analysis provides an "apples to apples" comparison with the proposed Plan. In addition, the proposed Plan is obligated to set forth a forecasted development pattern for the region that includes the Regional Housing Control Total, as explained in **Table 1-1**. Because this alternative would be legally infeasible, it is not identified for further study in the EIR.

4.2.2 Lower Transportation Funding

The Sierra Club and Pat Pias suggested an alternative that did not include new transportation revenues from a regional "mega-measure." This alternative would result in lower transportation funding for investments. Each of the alternatives is constrained by the same planning assumptions as the proposed Plan that housing units maintain the same regional growth forecasts—population, employment, households—and maintain the same forecast of reasonably available transportation revenues. In addition, Alternative 1, Alternative 2, and the No Project Alternative have smaller

transportation footprints than the proposed Plan. Because this alternative would not contribute to a reasonable range of alternatives, it is not identified for further study in the EIR.

4.2.3 Lower Regional Growth Alternative(s)

The Sierra Club and TRANSDEF suggested alternatives with lower levels or regional population, household, and employment growth. Each of the alternatives is constrained by the same planning assumptions as the proposed Plan. These planning assumptions are considered exogenous factors and ensure the alternatives analysis provides an "apples to apples" comparison with the proposed Plan. In addition, the proposed Plan is obligated to set forth a forecasted development pattern for the region that includes the Regional Housing Control Total, as explained in **Table 1-1**. Because this alternative would be legally infeasible, it is not identified for further study in the EIR.

4.2.4 Wildland-Urban Interface Avoidance Alternative

The Midpeninsula Regional Open Space District (Midpen) suggested a Wildland-Urban Interface Avoidance Project Alternative that shifts all Growth Geographies outside of the wildland-urban interface (WUI) zone, including the WUI located within rural and sparsely developed portions of unincorporated counties. This alternative is expected to perform similar to the proposed Plan and Alternative 1. Because this alternative would not contribute to a reasonable range of alternatives, it is not identified for further study in the EIR.

4.2.5 Equal City Growth Rate Alternative

This alternative was suggested by the City of Palo Alto in its scoping comment letter. The City suggested an alternative whereby each city jurisdiction in the Bay Area grows at the same rate, except for the three largest cities (San Francisco, San Jose, and Oakland). This potential alternative would result in a less compact development pattern, compared to the proposed Plan, it may increase certain impacts related to increased commute distance, such as impacts related to air quality; climate change, GHG, and energy; and transportation. This alternative would not be expected to reduce significant environmental effects compared to the proposed Plan. Thus, it is not considered in further detail in this EIR.

4.2.6 Reduced Housing Development Alternative

This alternative was recommended by the City of Palo Alto in its scoping comment letter. It assumes that the South Bay and West Bay cities do not meet their regional housing needs assessment targets of the next cycle and subsequent cycles and/or do not build as much housing as anticipated in Plan Bay Area 2050. This alternative would be inconsistent with objectives of the Plan to accommodate projected population growth through 2050. As discussed in Chapter 1, "Introduction," ABAG is responsible for identifying areas in the region sufficient to house an 8-year projection of the regional housing need for the region pursuant to California Government Code Section 65584. In addition, the proposed Plan is obligated to set forth a forecasted development pattern for the region that includes the Regional Housing Control Total, as explained in **Table 1-1**. Because this alternative would be legally infeasible, it is not identified for further study in the EIR.

4.2.7 Moratorium on Flood Zone Development Alternative

This alternative was recommended in the Citizens Committee to Complete the Refuge's scoping comment letter. Placing a moratorium on flood zone development would limit the area of developable land within the Plan area. Although the majority of growth under the proposed Plan would take place outside these hazard areas, there are areas within the land use growth footprint and TPAs that have been mapped as being in the 100-year and 500-year flood hazard zones. Developments proposed within the 100-year flood zone would be required to meet local, State, and federal flood control design requirements, including avoiding the 100-year flood zones or providing building pads elevated above the flood zone. As discussed in Section 3.10, "Hydrology and Water Quality," impacts related to development in the flood zones would not result in significant impacts. Because this alternative would not reduce significant environmental effects compared to the proposed Plan, it is not considered in further detail in this EIR.

4.2.8 Reduced-Emissions Alternative

This alternative was suggested by TRANSDEF. A series of elements were identified to reduce or eliminate growth in VMT and GHG emissions. The elements in the scoping letter align with strategies included in the proposed Plan, Alternative 1, and/or Alternative 2. Express buses in HOV lanes, unbundling parking from housing, mixed-flow freeway tolling, parking fees, and reduced transit fares are consistent with the proposed Plan. Eliminating or reducing funding for express lanes and highway capacity is consistent with Alternative 1, as is increasing funding on transit. Eliminating funding for megaprojects and imposing a regional transportation mitigation fee are consistent with Alternative 2. The elements of this alternative are anticipated to have similar environmental effects as the proposed Plan, Alternative 1, and/or Alternative 2. Because this alternative would not contribute to a reasonable range of alternatives, it is not considered in further detail in this EIR.

4.2.9 "Climate Smart Alternative"

Together Bay Area, Save the Bay, and Greenbelt Alliance suggested the "Climate Smart Alternative" in their joint scoping letter. The suggested alternative incorporates climate mitigation and adaptation measures into all proposed Plan strategies, including a focus on natural solutions for climate resilience. This alternative is anticipated to perform similar to the proposed Plan. Because this alternative would not contribute to a reasonable range of alternatives, it is not considered in further detail in this EIR.

4.2.10 Plan Bay Area 2040 (2017 RTP/SCS)

This alternative is a variation of the No Project Alternative. It assumes that implementation of the previous Plan Bay Area would continue to be in effect. This alternative includes a similar land use distribution and a similar mix of transportation projects and programs, relative to the proposed Plan. However, compared to all the other alternatives, this alternative has a lower amount of anticipated growth of households and employment, as well as a lower amount of transportation revenues for investments in highways and transit.

Implementing this alternative is expected to result in similar types of environmental impacts as the proposed Plan. However, because of the lower assumed development and infrastructure investment

under this alternative, it would not meet the requirement to house 100 percent of the region's projected growth. Because it would not reduce or avoid significant environmental impacts relative to the proposed Plan and because it would be legally infeasible, this alternative is not identified for further study in this EIR.

This Alternative differs from the No Project Alternative because it would involve continuation of Plan Bay Area 2040, whereas the No Project Alternative assumes that there would be no RTP/SCS.

4.2.11 Other Suggested Alternatives

Numerous alternatives were suggested to modify or add strategies to the proposed Plan. These alternatives are anticipated to perform similar to the proposed Plan or alternatives and therefore would not reduce significant environmental impacts nor contribute to a reasonable range of alternatives. As a result, the following alternatives are not considered in further detail in this EIR:

- **Modified EN7 Alternative:** The City of Palo Alto, City and County of San Francisco, County of San Mateo, Santa Clara Valley Transportation Authority, and a joint letter by SPUR, TransForm, Seamless Bay Area, and Friends of Caltrain comments suggested alternatives that modified Strategy EN07 and telecommuting assumptions.
- **Modified EC1 Alternative:** The City of Palo Alto suggested an alternative that evaluates the effects of not including Strategy EC1.
- **Modified EC5 Alternative:** The City of Palo Alto suggested an alternative that would increase the investment in Strategy EC5 and shift more jobs to housing-rich areas.
- **Modified T01 Alternative:** A joint comment letter by SPUR, TransForm, Seamless Bay Area, and Friends of Caltrain suggested an alternative that brings transit service levels up to 2019 levels on a faster timeline than assumed in Strategy T01.
- **Modified T05 Alternative:** The County of San Mateo suggested an alternative that implemented Strategy T05 to be implemented when transit alternatives are funded rather than planned.
- **Modified T06 Alternative:** The City and County of San Francisco and a joint comment letter by SPUR, TransForm, Seamless Bay Area, and Friends of Caltrain suggested alternatives that would reduce investments in Strategy T06 and instead increase investments in transit strategies (T10, T11, T12).
- **Modified T08/T09 Alternative:** The County of San Mateo suggested an alternative to remove Strategy T09 and instead using funding to augment Strategy T8.
- **Modified T10, T11, T12 Alternative:** This alternative was suggested in Tom Conlin's scoping letter. This alternative would increase funding to transit strategies (T10, T11, T12).
- **Modified T12 Alternative:** This alternative was suggested in a joint comment letter by SPUR, TransForm, Seamless Bay Area, and Friends of Caltrain. This alternative would modify Strategy T12 to prioritize lane conversions in building out the express lane network and redirect investments to transit strategies.
- **Regional Parking Tax Alternative:** The City and County of San Francisco and SPUR suggested alternatives that would implement a regional parking tax on vehicular parking spaces, which could be in the form of an indirect source rule.

- **Bay Area Transit Assessment District Fiscal Alternative:** This alternative was suggested in TRANSDEF's scoping letter. The alternative would explore a more reliable source of revenue for transit districts.

- **CA/AV Alternative:** The City and County of San Francisco suggested an alternative that would revise assumptions and strategies regarding autonomous vehicles so that these vehicles are connected, electric, and shared.

- **Modified PDA (Sonoma) Alternative:** This alternative was suggested in Victoria DeSmet's scoping letter. This alternative would remove Sonoma County's Springs Specific Plan as a PDA and as proposed Plan growth geography.

4.3 ALTERNATIVES SELECTED FOR DETAILED ANALYSIS

The proposed Plan's core strategy is "focused growth" in existing communities along the existing transportation network, as well as in communities with well-resourced schools and easy access to jobs, parks, and other amenities. This approach is evidenced by the descriptions and general locations of the growth geographies described below. This focused growth strategy helps to achieve key regional economic, environmental, and equity goals by building upon existing community characteristics and leveraging existing infrastructure while reducing effects on areas with less development. The proposed Plan designates specific geographic areas—known as growth geographies—in order to guide where future household and job growth would be focused under the proposed Plan's strategies over the next 30 years. The growth geographies are a mix of a) Areas designated by local jurisdictions—Priority Development Areas (PDAs) and Priority Production Areas (PPAs); and b) areas defined by criteria related to transit service and access to opportunity—Transit-Rich Areas (TRAs) and High-Resource Areas (HRAs).

The following alternatives to the proposed Plan are analyzed in this EIR:

- No Project Alternative,
- Alternative 1 - Transit-Rich Area (TRA) Focus Alternative, and
- Alternative 2 - High-Resource Area (HRA) Focus Alternative.

Similar to the proposed Plan, the alternatives are defined by a unique set of strategies across the four elements—housing, the economy, transportation, and the environment—to accommodate future growth. These differences in strategies result in different future conditions, including forecasted land use development pattern ("land use growth footprint"), sea level rise adaptation infrastructure ("sea level rise adaptation footprint"), and transportation projects and programs ("transportation projects footprint"). Each of the alternatives is constrained by the same planning assumptions as the proposed Plan and maintain the same regional growth forecasts—population, employment, households, and housing units—and maintains the same forecast of reasonably available transportation revenues. These planning assumptions are considered exogenous factors and ensure the alternatives analysis provides an "apples to apples" comparison with the proposed Plan. These alternatives represent a reasonable range of alternatives to the proposed Plan. A comparison of the performance of the alternatives is presented in Section 4.4, "Alternatives Comparisons."

4.3.1 No Project Alternative

Analysis of the No Project Alternative is required under CEQA (CEQA Guidelines, Section 15126.6[e]). The purpose of the No Project Alternative is to allow a comparison of the environmental impacts of approving the proposed project with the effects of not approving it. This alternative represents a future land use pattern and suite of transportation and resilience investments if the proposed Plan is not adopted.

Under the No Project Alternative, growth is assumed to occur consistent with local general plans and zoning without an adopted RTP/SCS, and assumes no new transportation or sea level infrastructure projects beyond those currently under construction or those that have both full funding and environmental clearance ("committed"). Under the No Project Alternative, housing growth would be more dispersed, while job growth would be slightly more concentrated in the region's two largest job centers of San Francisco and Silicon Valley. In comparison to the proposed Plan, the No Project Alternative would result in higher household growth primarily in Contra Costa County, with higher job growth in San Francisco and Santa Clara Counties.

NO PROJECT ALTERNATIVE: TRANSPORTATION MODELING ASSUMPTIONS

The No Project Alternative includes substantially lower investments for transportation strategies than the proposed Plan. It does not advance the new policies included in the proposed Plan, such as all-lane tolling, seamless transfers, or reduced speed limits, and it assumes implementation only of committed regionally-significant transportation and sea level infrastructure projects. This alternative would result in a substantially smaller transportation project footprint than the proposed Plan.

NO PROJECT ALTERNATIVE: HOUSING AND ECONOMY MODELING ASSUMPTIONS

Unlike the proposed Plan, the No Project Alternative includes no regional strategies to focus growth in specific geographic areas within the region. Instead, growth would occur consistent with current general plans and zoning, and without consideration of a consolidated strategy that considers all nine counties and 101 cities in the Bay Area.

NO PROJECT ALTERNATIVE: ENVIRONMENT MODELING ASSUMPTIONS

The No Project Alternative includes substantially lower funding for environment strategies than the proposed Plan because it funds only committed resilience investments. This alternative would result in less construction of sea level rise adaptation infrastructure and subsequently a substantially smaller sea level rise adaptation footprint than the proposed Plan. As a result, communities at risk without committed investments would be inundated by rising sea levels. At the same time, local jurisdictions would be anticipated to expand urban growth boundaries in line with historical growth rates, increasing the land use footprint of this EIR alternative.

4.3.2 Alternative 1 – TRA Focus Alternative

The TRA Focus Alternative would concentrate growth in areas that contain high-quality transit services. This alternative is characterized as providing a compact growth pattern, with the greatest share of housing and job growth in TRAs within walking distance of regional rail stations. To support this more urban-oriented growth pattern, additional core capacity transit investments are funded in

lieu of highway projects that add lane-mileage to the system. This alternative would result in higher levels of household and job growth in the growth geographies than under the proposed Plan, with substantially more housing growth in TRAs. In comparison to the proposed Plan, the TRA Focus Alternative would result in higher household growth in San Francisco and San Mateo Counties and higher job growth in Contra Costa County.

ALTERNATIVE 1 - TRA FOCUS ALTERNATIVE: TRANSPORTATION STRATEGIES

The TRA Focus Alternative modifies three strategies in the proposed Plan in order to accommodate demand for local transit services in the urban core, while reducing funding for highway expansion projects to reduce environmental impacts.

The modifications are as follows:

- **Modify Strategy: Improve Interchanges and Address Highway Bottlenecks:** Remove $3.4 billion in funding for interchange expansion projects at I-80/I-680/SR 12, I-680/SR 4, and U.S. 101/I-580 and for widening projects on SR 262, SR 37, SR 4, and SR 239.
- **Modify Strategy: Enhance Local Transit Frequency, Capacity and Reliability:** Add $8.1 billion in funding for core capacity frequency increases on crowded lines operated by the San Francisco Municipal Transportation Agency, Santa Clara Valley Transportation Authority, and AC Transit, and add $1.8 billion in funding for programmatic transit signal priority and other operational improvements to boost the speed and reliability of bus service.
- **Modify Strategy: Build an Integrated Regional Express Lane and Express Bus Network:** Remove $1.5 billion in funding for express lane projects, and convert all uncommitted express lane widening projects to general-purpose lane conversions unless there are only two existing general-purpose lanes.

ALTERNATIVE 1 - TRA FOCUS ALTERNATIVE: HOUSING STRATEGIES

The TRA Focus Alternative modifies four strategies in the proposed Plan in order to focus a greater share of housing growth near high-quality transit services and to grow the amount of affordable housing in TRAs. The modifications are as follows:

- **Modify Strategy: Allow a Greater Mix of Housing Densities and Types in Growth Geographies**: Further increase allowable developable capacity in TRAs.
- **Modify Strategy: Build Adequate Affordable Housing to Ensure Homes for All:** Increase the share of deed-restricted affordable housing units located in TRAs.
- **Modify Strategy: Transform Aging Malls and Office Parks into Neighborhoods**: Remove mall and office park redevelopment projects outside of TRAs.
- **Modify Strategy: Accelerate Reuse of Public and Community-Owned Land for Mixed-Income Housing and Essential Services**: Remove public land projects outside of TRAs.

ALTERNATIVE 1 - TRA FOCUS ALTERNATIVE: ECONOMY STRATEGIES

The TRA Focus Alternative modifies one strategy in and adds one strategy to the proposed Plan in order to focus a greater share of job growth near frequent regional rail stations and to discourage office construction in locations with high levels of VMT per worker. The modifications are as follows:

- **Modify Strategy: Allow Greater Commercial Densities in Growth Geographies:** Further increase allowable developable capacity in TRAs with the most frequent regional rail services.
- **Add Strategy: Charge a Regional Office Development Fee:** Implement regional development fees for new office construction based upon the workplace VMT impacts (previously referred to as an indirect source rule).

ALTERNATIVE 1 – TRA FOCUS ALTERNATIVE: ENVIRONMENT STRATEGIES

The TRA Focus Alternative modifies two strategies in the proposed Plan in order to reduce environmental impacts from resilience projects that involve new highway capacity and to reduce the size of the urban footprint by protecting unincorporated areas from lower-density growth. The modifications are as follows:

- **Modify Strategy: Adapt to Sea Level Rise:** Remove $5.1 billion in funding for highway widening/resilience projects on SR 37.
- **Modify Strategy: Shrink Urban Growth Boundaries:** Shrink current urban growth boundaries to align with existing city boundaries, and eliminate unincorporated county growth areas approved by voters.

4.3.3 Alternative 2 – HRA Focus Alternative

This alternative focuses a substantially higher share of growth in HRAs, especially in the South Bay. To support this growth pattern and advance regional equity goals, infrastructure funding for major regional and interregional rail expansion projects would be reduced, and greater funding would be provided to local bus frequency increases, new express bus lines, expanded transit fare discount programs, and enhanced nonmotorized infrastructure.

This alternative features levels of household and job growth in growth geographies similar to those of the proposed Plan, with substantially more housing growth and substantially less job growth in HRAs. In comparison to the proposed Plan, Alternative 2 would result in higher household growth in Santa Clara County and higher job growth in San Francisco County.

ALTERNATIVE 2 – HRA FOCUS ALTERNATIVE: TRANSPORTATION STRATEGIES

The HRA Focus Alternative modifies five strategies in the proposed Plan to align transportation funding with projects that advance equity and climate goals. Transportation investments under this alternative would seek to support additional lower-VMT growth in historically exclusionary job-rich areas while funding express bus projects to provide regional connectivity without contributing to urban displacement pressures.

The modifications are as follows:

- **Modify Strategy: Reform Regional Transit Fare Policy:** Add $9.5 billion in funding to expand eligibility for means-based fare discount to all lower-income households.
- **Modify Strategy: Build a Complete Streets Network:** Add $3.0 billion in funding for pedestrian infrastructure with a focus on job-rich and job-rich-adjacent communities.

- **Modify Strategy: Enhance Local Transit Frequency, Capacity, and Reliability:** Add $9.0 billion in funding for priority development areas and HRA frequency boosts to reach 15-minute headways in all Growth Geographies and 5-minute headways in job-rich and job-rich-adjacent Growth Geographies, and add $4.9 billion in funding for Santa Clara Valley Transportation Authority Orange Line frequency boosts and grade separations in north Santa Clara County.

- **Modify Strategy: Expand and Modernize the Regional Rail Network:** Remove $33.8 billion in funding for regional and interregional rail projects; delay Period 1 projects (Caltrain Downtown Extension, Valley Link, South Bay Connect) to Period 2, and remove Period 2 projects (Link21, Dumbarton Group Rapid Transit, Caltrain/HSR Modernization-Tamien to Pacheco Pass).

- **Modify Strategy: Build an Integrated Regional Express Lane and Express Bus Network:** Add $7.3 billion in funding to achieve 15-minute or better AC Transit transbay frequencies, increased ReX Green Line frequencies (Vallejo to SFO), and upgrades to the ReX Blue Line project (Salesforce Transit Center to Diridon Station) to create a premium high-frequency service.

ALTERNATIVE 2 - HRA FOCUS ALTERNATIVE: HOUSING STRATEGIES

The HRA Focus Alternative modifies four strategies in the proposed Plan in order to focus a greater share of housing growth near job-rich exclusionary jurisdictions identified in the Regional Housing Need Allocation process, while discouraging housing growth in Equity Priority Communities, to address concerns associated with displacement risk. The modifications are as follows:

- **Modify Strategy: Allow a Greater Mix of Housing Densities and Types in Growth Geographies:** Further increase allowable developable capacity in job-rich exclusionary cities and neighboring cities, and do not increase allowable developable capacity beyond the capacity allowed under existing local zoning in Equity Priority Communities.

- **Modify Strategy: Build Adequate Affordable Housing to Ensure Homes for All:** Increase the share of deed-restricted affordable housing units located in HRAs

- **Modify Strategy: Transform Aging Malls and Office Parks into Neighborhoods:** Scale back the number of mall and office park redevelopment projects outside of HRAs.

- **Modify Strategy**: Accelerate Reuse of Public and Community-Owned Land for Mixed-Income Housing and Essential Services: Scale back the number of public land projects outside of HRAs.

ALTERNATIVE 2 - HRA FOCUS ALTERNATIVE: ECONOMY STRATEGIES

The HRA Focus Alternative removes one strategy from and adds one strategy to the proposed Plan in order to discourage additional job growth in job-rich cities and to ensure maximum developable capacity for housing in these communities. The modifications are as follows:

- **Remove Strategy: Allow Greater Commercial Densities in Growth Geographies:** Do not increase allowable developable capacity beyond the capacity allowed under existing local zoning.

- **Add Strategy: Implement Office Development Caps in Job-Rich Cities:** Disallow construction of new office buildings in jurisdictions with a jobs-housing ratio of 2.0 or higher.

ALTERNATIVE 2 - HRA FOCUS ALTERNATIVE: ENVIRONMENT STRATEGIES

The HRA Focus Alternative would contain the same sea level rise adaptation infrastructure as the proposed Plan.

4.4 ALTERNATIVES COMPARISONS

4.4.1 Comparative Demographic Forecasts

All of the alternatives are designed to accommodate the same population and employment in the year 2050 based on the regional growth forecast adopted in fall 2020, with varying locational distributions of growth. Growth forecasts from 2015 through 2050 are provided in **Table 4-1**.

Table 4-1: Regional Growth Forecast of Population, Employment, Households, and Housing Units

	Year 2015	Year 2050
Population	7,660,000	10,330,000
Employment	4,010,000	5,410,000
Households	2,680,000	4,040,000
Housing Units	2,710,000	4,250,000

Source: Data compiled by MTC and ABAG in 2021

4.4.2 Households

Table 4-2 compares the household distribution in the years 2015 and 2050 for each alternative, along with each county's proportion of the region's population, as modeled by Bay Area UrbanSim 2.0 after taking each alternative's strategies into account. The household distribution by superdistrict is presented in **Table 4-3.** The nine-county Bay Area is divided into 34 subcounty areas, called "superdistricts." Superdistricts are combinations of cities, towns and unincorporated areas that allow the public to see the more localized growth pattern in Plan Bay Area 2050.

At the county scale, household growth patterns would remain similar to the 2015 conditions. That is, the greatest number of households would be in Santa Clara, Alameda, San Francisco, and Contra Costa Counties. Distribution of households would change slightly among the alternatives. Although each county is projected to gain households between 2015 and 2050 in every alternative, notable differences in the land use pattern, compared to the proposed Plan, are summarized as follows:

- Under the No Project Alternative, there would be a greater number of households in Contra Costa, Solano, and Sonoma Counties and a smaller number in Alameda, Marin, San Francisco, and Santa Clara Counties.
- Under Alternative 1, a greater number of households would be in San Francisco County and a smaller number in Contra Costa and Santa Clara Counties.
- Under Alternative 2, a greater number of households would be in Santa Clara County and a smaller number in Contra Costa, Marin, and San Francisco Counties.

The relative location of households and employment centers in the region informs characteristics of residents, such as auto ownership, based on numerous factors, including access to transit, income,

and parking availability. The results of the different growth patterns on auto ownership are included below in **Table 4-4**.

Table 4-2: Forecasted Households by Alternative and County in 2050

	Proposed Plan		No Project Alternative		Alternative 1		Alternative 2	
	Total	Share	Total	Share	Total	Share	Total	Share
Alameda	847,000	21%	802,000	20%	856,000	21%	839,000	21%
Contra Costa	551,000	14%	669,000	17%	505,000	12%	532,000	13%
Marin	146,000	4%	130,000	3%	152,000	4%	136,000	3%
Napa	56,000	1%	61,000	1%	56,000	1%	55,000	1%
San Francisco	578,000	14%	507,000	13%	627,000	16%	520,000	13%
San Mateo	394,000	10%	391,000	10%	420,000	10%	392,000	10%
Santa Clara	1,075,000	27%	1,064,000	26%	1,056,000	26%	1,168,000	29%
Solano	177,000	4%	184,000	5%	153,000	4%	179,000	4%
Sonoma	220,000	5%	235,000	6%	219,000	5%	224,000	6%
Regional Total	4,043,000	100%	4,043,000	100%	4,043,000	100%	4,043,000	100%

Note: The percentages and number of forecasted households is rounded. Figures may not sum because of independent rounding.
Source: Data compiled by MTC and ABAG in 2021

Table 4-3: Forecasted Households by Superdistrict by Alternative in 2050

County	SD	Name	Proposed Plan		No Project Alternative		Alternative 1		Alternative 2	
			Total	Share	Total	Share	Total	Share	Total	Share
Alameda	15	East	132,000	3%	124,000	3%	134,000	3%	139,000	3%
Alameda	16	South	152,000	4%	130,000	3%	145,000	4%	155,000	4%
Alameda	17	Central	160,000	4%	142,000	4%	162,000	4%	150,000	4%
Alameda	18	North	287,000	7%	297,000	7%	296,000	7%	284,000	7%
Alameda	19	Northwest	115,000	3%	109,000	3%	119,000	3%	111,000	3%
Contra Costa	20	West	123,000	3%	161,000	4%	123,000	3%	117,000	3%
Contra Costa	21	North	134,000	3%	164,000	4%	120,000	3%	127,000	3%
Contra Costa	22	Southwest	89,000	2%	92,000	2%	83,000	2%	89,000	2%
Contra Costa	23	South	70,000	2%	80,000	2%	58,000	1%	70,000	2%
Contra Costa	24	East	136,000	3%	173,000	4%	122,000	3%	130,000	3%
Marin	32	North	30,000	1%	34,000	1%	29,000	1%	29,000	1%
Marin	33	Central	66,000	2%	48,000	1%	75,000	2%	58,000	1%
Marin	34	South	50,000	1%	47,000	1%	47,000	1%	49,000	1%
Napa	27	South	40,000	1%	43,000	1%	39,000	1%	38,000	1%
Napa	28	North	16,000	0%	17,000	0%	16,000	0%	16,000	0%
San Francisco	1-4	Combined	578,000	14%	507,000	13%	627,000	16%	520,000	13%
San Mateo	5	North	166,000	4%	133,000	3%	180,000	4%	156,000	4%
San Mateo	6	Central	121,000	3%	126,000	3%	127,000	3%	118,000	3%
San Mateo	7	South	106,000	3%	132,000	3%	113,000	3%	118,000	3%
Santa Clara	8	Northwest	102,000	3%	102,000	3%	103,000	3%	143,000	4%
Santa Clara	9	North	320,000	8%	204,000	5%	303,000	7%	335,000	8%
Santa Clara	10	Southwest	172,000	4%	161,000	4%	177,000	4%	201,000	5%

County	SD	Name	Proposed Plan		No Project Alternative		Alternative 1		Alternative 2	
			Total	Share	Total	Share	Total	Share	Total	Share
Santa Clara	11	Central	168,000	4%	245,000	6%	161,000	4%	176,000	4%
Santa Clara	12	Northeast	180,000	4%	195,000	5%	179,000	4%	180,000	4%
Santa Clara	13	South	91,000	2%	102,000	3%	89,000	2%	91,000	2%
Santa Clara	14	Southeast	43,000	1%	56,000	1%	44,000	1%	42,000	1%
Solano	25	South	57,000	1%	61,000	1%	56,000	1%	54,000	1%
Solano	26	North	119,000	3%	124,000	3%	97,000	2%	124,000	3%
Sonoma	29	South	83,000	2%	85,000	2%	83,000	2%	81,000	2%
Sonoma	30	Central	98,000	2%	112,000	3%	98,000	2%	104,000	3%
Sonoma	31	North	39,000	1%	39,000	1%	38,000	1%	39,000	1%

Source: Data compiled by MTC and ABAG in 2021

Table 4-4: Forecasted Household Auto-Ownership by Alternative and County in 2050

	Proposed Plan	No Project Alternative	Alternative 1	Alternative 2
Households with Zero Autos	13%	11%	14%	13%
Households with One Auto	34%	34%	34%	33%
Households with Multiple Autos	53%	54%	52%	53%
Average Vehicles per Household	1.48	1.49	1.47	1.49

Note: The percentages are rounded.
Source: Data compiled by MTC and ABAG in 2021

4.4.3 Jobs

Similar to population and household growth, the alternatives all accommodate the same number of jobs in the year 2050. **Table 4-5** shows the projected job distribution by county for each alternative. The employment distribution by superdistrict is presented in **Table 4-6** In all alternatives, Santa Clara, Alameda, and San Francisco Counties account for the majority of the region's jobs in year 2050. With the notable exception of Marin County, all other counties gain jobs in every alternative. Notable differences in the land use pattern, compared to the proposed Plan, are summarized as follows:

- Under the No Project Alternative, a greater number of jobs would be located in San Francisco County and a smaller number in Alameda County.
- Under Alternative 1, a greater number of jobs would be located in Contra Costa County and a smaller number in Santa Clara County.
- Under Alternative 2, a greater proportion of jobs would be located in Alameda and San Francisco Counties and a smaller number in Santa Clara County.

Table 4-5: Forecasted Employment Counts by Alternative and County in 2050

	Proposed Plan		No Project Alternative		Alternative 1		Alternative 2	
	Total	Share	Total	Share	Total	Share	Total	Share
Alameda	1,182,000	22%	1,125,000	21%	1,172,000	22%	1,194,000	22%
Contra Costa	534,000	10%	496,000	9%	588,000	11%	530,000	10%
Marin	117,000	2%	118,000	2%	128,000	2%	121,000	2%
Napa	87,000	2%	92,000	2%	87,000	2%	88,000	2%
San Francisco	918,000	17%	969,000	18%	902,000	17%	1,007,000	19%
San Mateo	507,000	9%	495,000	9%	489,000	9%	482,000	9%
Santa Clara	1,610,000	30%	1,654,000	31%	1,594,000	29%	1,534,000	28%
Solano	201,000	4%	175,000	3%	199,000	4%	201,000	4%
Sonoma	251,000	5%	285,000	5%	249,000	5%	252,000	5%
Regional Total	5,408,000	100%	5,408,000	100%	5,408,000	100%	5,408,000	100%

Note: The percentages and number of forecasted jobs are rounded.
Source: Data compiled by MTC and ABAG in 2021

Table 4-6: Forecasted Employment by Superdistrict by Alternative in 2050

County	SD	Name	Proposed Plan		No Project Alternative		Alternative 1		Alternative 2	
			Total	Share	Total	Share	Total	Share	Total	Share
Alameda	15	East	156,000	3%	151,000	3%	156,000	3%	156,000	3%
Alameda	16	South	221,000	4%	204,000	4%	226,000	4%	217,000	4%
Alameda	17	Central	285,000	5%	272,000	5%	255,000	5%	280,000	5%
Alameda	18	North	358,000	7%	323,000	6%	364,000	7%	378,000	7%
Alameda	19	Northwest	162,000	3%	175,000	3%	171,000	3%	163,000	3%
Contra Costa	20	West	132,000	2%	103,000	2%	143,000	3%	120,000	2%
Contra Costa	21	North	184,000	3%	168,000	3%	189,000	4%	186,000	3%
Contra Costa	22	Southwest	74,000	1%	86,000	2%	86,000	2%	74,000	1%
Contra Costa	23	South	60,000	1%	67,000	1%	75,000	1%	61,000	1%
Contra Costa	24	East	84,000	2%	73,000	1%	96,000	2%	88,000	2%
Marin	32	North	29,000	1%	30,000	1%	29,000	1%	29,000	1%
Marin	33	Central	49,000	1%	52,000	1%	56,000	1%	52,000	1%
Marin	34	South	40,000	1%	36,000	1%	43,000	1%	41,000	1%
Napa	27	South	66,000	1%	68,000	1%	67,000	1%	68,000	1%
Napa	28	North	20,000	0%	24,000	0%	20,000	0%	20,000	0%
San Francisco	1-4	Combined	918,000	17%	969,000	18%	902,000	17%	1,007,000	19%
San Mateo	5	North	188,000	3%	186,000	3%	181,000	3%	177,000	3%
San Mateo	6	Central	123,000	2%	126,000	2%	120,000	2%	120,000	2%
San Mateo	7	South	196,000	4%	183,000	3%	188,000	3%	185,000	3%
Santa Clara	8	Northwest	207,000	4%	199,000	4%	205,000	4%	173,000	3%
Santa Clara	9	North	629,000	12%	695,000	13%	629,000	12%	619,000	11%
Santa Clara	10	Southwest	197,000	4%	195,000	4%	194,000	4%	173,000	3%

County	SD	Name	Proposed Plan		No Project Alternative		Alternative 1		Alternative 2	
			Total	Share	Total	Share	Total	Share	Total	Share
Santa Clara	11	Central	263,000	5%	253,000	5%	258,000	5%	264,000	5%
Santa Clara	12	Northeast	170,000	3%	160,000	3%	165,000	3%	162,000	3%
Santa Clara	13	South	77,000	1%	77,000	1%	77,000	1%	74,000	1%
Santa Clara	14	Southeast	68,000	1%	75,000	1%	67,000	1%	70,000	1%
Solano	25	South	62,000	1%	54,000	1%	62,000	1%	61,000	1%
Solano	26	North	139,000	3%	121,000	2%	137,000	3%	140,000	3%
Sonoma	29	South	80,000	1%	92,000	2%	80,000	1%	82,000	2%
Sonoma	30	Central	131,000	2%	147,000	3%	129,000	2%	130,000	2%
Sonoma	31	North	40,000	1%	46,000	1%	40,000	1%	40,000	1%

Source: Data compiled by MTC and ABAG in 2021

4.4.4 Jobs-Housing Ratios

The jobs to housing ratio indicates the balance between jobs and housing within a certain area. Higher ratios are generally related to a greater number of workers commuting into a county. The distribution of jobs to housing ratios by alternative for each county in 2050 is presented in **Table 4-7.**

Table 4-7: Jobs to Housing Ratios by Alternative and County in 2050

	Proposed Plan	No Project Alternative	Alternative 1	Alternative 2
Alameda	1.4	1.4	1.4	1.4
Contra Costa	1.0	0.7	1.2	1.0
Marin	0.8	0.9	0.8	0.9
Napa	1.6	1.5	1.6	1.6
San Francisco	1.6	1.9	1.4	1.9
San Mateo	1.3	1.3	1.2	1.2
Santa Clara	1.5	1.6	1.5	1.3
Solano	1.1	1.0	1.3	1.1
Sonoma	1.1	1.2	1.1	1.1
Regional Total	1.3	1.3	1.3	1.3

Source: Data compiled by MTC and ABAG in 2021

4.4.5 Household and Employment Growth in TPAs

Table 4-8 and **Table 4-9** show the expected distribution of household growth and employment growth in TPAs for each alternative.

Table 4-8: Total Households and Household Growth by Share in TPAs

	Proposed Plan	No Project Alternative	Alternative 1	Alternative 2
Total Households (2050)	4,043,000	4,043,000	4,043,000	4,043,000
Total Households in TPAs (2050)	2,049,000	1,809,000	2,164,000	1,991,000
Share of Households in TPAs (2050)	51%	45%	54%	49%
New Regional Household Growth (2015-2050)	1,367,000	1,367,000	1,367,000	1,367,000
New Household Growth in TPAs (2015-2050)	1,038,000	798,000	1,152,000	980,000
Share of New Household Growth in TPAs (2015-2050)	76%	58%	84%	72%

Note: TPAs are presented as a subset of the regional and county totals. The percentages and number of forecasted households are rounded.
Source: Data compiled by MTC and ABAG in 2021

Compared to the proposed Plan, the share of household growth in TPAs would vary across the alternatives. Household growth in TPAs would be greater under Alternative 1 than under the proposed Plan, whereas implementing the No Project Alternative or Alternative 2 would result in less household growth in TPAs than implementing the proposed Plan.

Table 4-9: Total Employment and Employment Growth by Share in TPAs

	Proposed Plan	No Project Alternative	Alternative 1	Alternative 2
Total Employment (2050)	5,408,000	5,408,000	5,408,000	5,408,000
Total Employment in TPAs (2050)	2,972,000	2,962,000	2,980,000	2,992,000
% of Employment in TPAs (2050)	55%	55%	55%	55%
New Regional Employment Growth (2015-2050)	1,403,000	1,403,000	1,403,000	1,403,000
New Employment Growth in TPAs (2015-2050)	838,000	828,000	846,000	858,000
Share of New Employment Growth in TPAs (2015-2050)	60%	59%	60%	61%

Note: TPAs are presented as a subset of the regional and county totals. The percentages and number of forecasted jobs are rounded.
Source: Data compiled by MTC and ABAG in 2021

Compared to the proposed Plan, the share of employment growth in TPAs would be similar between Alternative 1 and Alternative 2. Employment growth in TPAs would be greater under Alternative 1 and Alternative 2 than under the proposed Plan, and less employment growth in TPAs would occur under the No Project Alternative than under the proposed Plan.

4.4.6 Land Use Growth Footprint

The land use growth footprint would differ among the alternatives. As shown in **Table 4-10**, the total land use growth footprint area, land use growth footprint area within TPAs, and overall increase in developed land (i.e., projected development in areas not currently considered developed, according to the Farmland Mapping and Monitoring Program) also vary among the alternatives.

Table 4-10: Summary of Land Use Growth Footprint by Alternative and County

	Land Use Growth Footprint	Proposed Plan	No Project Alternative	Alternative 1	Alternative 2
Alameda	Total Area	7,100	8,700	6,000	6,800
	Within Growth Geography	5,700	4,600	3,100	4,000
	Within TPAs	3,300	2,800	3,000	3,100
	New Developed Land	1,500	1,900	1,300	1,400
Contra Costa	Total Area	9,700	22,000	6,800	8,800
	Within Growth Geography	4,700	5,600	3,100	4,000
	Within TPAs	1,400	1,300	1,000	1,200
	New Developed Land	5,300	11,400	4,100	4,700
Marin	Total Area	1,300	3,600	900	980
	Within Growth Geography	990	280	750	780
	Within TPAs	470	190	450	360
	New Developed Land	130	2,300	90	30
Napa	Total Area	790	1,500	720	770
	Within Growth Geography	420	400	390	380
	Within TPAs	70	50	70	40
	New Developed Land	490	700	480	510
San Francisco	Total Area	3,400	1,500	3,400	2,500
	Within Growth Geography	3,400	1,400	3,400	2,500
	Within TPAs	2,700	1,200	2,700	1,800
	New Developed Land	<1	<1	<1	<1
San Mateo	Total Area	2,700	4,800	2,600	2,900
	Within Growth Geography	1,900	1,500	2,100	2,200
	Within TPAs	1,300	970	1,500	1,200
	New Developed Land	360	1,000	220	270
Santa Clara	Total Area	8,500	14,200	8,000	10,900
	Within Growth Geography	6,200	6,600	6,000	8,700
	Within TPAs	5,300	6,200	5,100	6,300
	New Developed Land	920	2,400	880	1,100
Solano	Total Area	4,100	5,900	1,900	3,000
	Within Growth Geography	2,300	600	1,400	2,100
	Within TPAs	160	30	190	130
	New Developed Land	3,100	4,100	1,100	2,200
Sonoma	Total Area	1,900	2,800	1,700	2,000
	Within Growth Geography	820	820	720	960
	Within TPAs	260	200	240	220
	New Developed Land	510	810	590	520
Regional	Total Area	39,400	65,100	32,100	38,900
	Within Growth Geography	26,500	21,800	22,700	26,900
	Within TPAs	15,000	13,000	14,200	14,500
	New Developed Land	12,300	24,700	8,800	10,700

Notes: Numbers less than 1 are shown as "<1"; whole numbers have been rounded (between 11 and 999 to the nearest 10, between 1,000 and 1,000,000 to the nearest 100). Figures may not sum because of independent rounding.

TPAs are presented as a subset of the regional and county totals. Information provided by county includes both incorporated and unincorporated areas in the county.

Acreage that results in "new developed land" indicates the area of the land use growth footprint for the alternative that would be located within areas not currently designated Urban Built-Up according the FMMP.

Source: Data compiled by MTC and ABAG in 2021

4.4.7 Sea Level Rise Adaptation Footprint

The relative comparison of the sea level rise adaptation footprint acreage associated with each alternative is provided in **Table 4-11**.

Table 4-11 Acreage of Sea Level Rise Adaptation Projects Footprint by Alternative

	Proposed Plan	No Project Alternative	Alternative 1	Alternative 2
Acres	5,500	1,400	5,500	5,500

Notes: Whole numbers between 1,000 and 1,000,000 have been rounded to the nearest 100.
Source: Data compiled by MTC and ABAG in 2021

4.4.8 Transportation Strategies and Project Footprints

As discussed above, each alternative would focus on different types of transportation strategies designed to align with other land use–related strategies. **Table 4-12** presents the relative funding for each strategy across the various alternatives.

Table 4-12: Relative Funding of Transportation Strategies by Alternative

	Proposed Plan	No Project Alternative	Alternative 1	Alternative 2
T01. Restore, Operate, and Maintain the Existing System	$$	$	$$	$$
T02. Support Community-Led Transportation Enhancements in Equity Priority Communities	$$	$	$$	$$
T03. Enable a Seamless Mobility Experience	$$	N/A	$$	$$
T04. Reform Regional Transit Fare Policy	$$	N/A	$$	$$$
T05. Implement Per-Mile Tolling on Congested Freeways with Transit Alternatives	$$	N/A	$$	$$
T06. Improve Interchanges and Address Highway Bottlenecks	$$	$	$	$$
T07. Advance Other Regional Programs and Local Priorities	$$	$	$$	$$
T08. Build a Complete Streets Network	$$	$	$$	$$$
T09. Advance Regional Vision Zero Policy through Street Design and Reduced Speeds	$$	$	$$	$$$
T10. Enhance Local Transit Frequency, Capacity, and Reliability	$$	$	$$$	$$$
T11. Expand and Modernize the Regional Rail Network	$$	$	$$	$
T12. Build an Integrated Regional Express Lane and Express Bus Network	$$	$	$	$$$

Source: Data compiled by MTC and ABAG in 2021

The funding levels shown above indicate the relative investment in roadway-lane miles and total daily transit seat-miles. As shown in **Table 4-13**, there would be substantially less investment in roadway lane-miles under the No Project Alternative and Alternative 1 compared to the proposed Plan. In terms of total daily transit seat-miles, there would be a greater investment in capacity of daily transit seat-miles under Alternative 1 and Alternative 2 compared to the proposed Plan, and substantially lower added capacity of daily transit seat-miles under the No Project Alternative.

Table 4-13: Added Transportation System Capacity by Alternative (2015–2050)

	Proposed Plan	No Project Alternative	Alternative 1	Alternative 2
Freeway Lane-Miles	450	60	220	450
Expressway Lane-Miles	40	-20	40	40
Arterial Lane-Miles	-30	-40	-20	-20
Collector Lane-Miles		-10	-10	-
Total Roadway Lane-Miles	460	-20	230	470
Daily Local Bus Seat-Miles	4,089,000	833,000	5,459,000	6,308,000
Daily Express Bus Seat-Miles	2,772,000	524,000	2,715,000	7,350,000
Daily Light Rail Seat-Miles	1,239,000	50,000	1,239,000	1,655,000
Daily Heavy Rail Seat-Miles	9,230,000	3,667,000	9,230,000	9,230,000
Daily Commuter Rail Seat-Miles	14,598,000	968,000	14,598,000	3,397,000
Daily Ferry Seat-Miles	2,196,000	-37,000	2,196,000	2,196,000
Total Daily Transit Seat-Miles	34,125,000	6,016,000	35,438,000	30,136,000

Notes: Numbers less than 1 are shown as "<1"; whole numbers have been rounded (between 11 and 999 to the nearest 10, between 1,000 and 1,000,000 to the nearest 100). Figures may not sum because of independent rounding. Negative values in No Project alternative represent reductions due closures from sea level rise inundation.
Source: Data compiled by MTC and ABAG in 2021

The relative comparison of transportation projects acreage associated with each alternative is provided in **Table 4-14**.

Table 4-14: Acreage of Transportation Projects Footprint by Alternative

	Proposed Plan	No Project Alternative	Alternative 1	Alternative 2
Acres	14,300	2,200	10,400	12,200

Notes: Whole numbers between 1,000 and 1,000,000 have been rounded to the nearest 100.
Source: Data compiled by MTC and ABAG in 2021

This analysis considers the major transportation projects (i.e., projects that cost greater than $250 million) when comparing the alternatives. **Table 4-15** provides a breakdown of the major projects associated with Alternatives 1 and 2.

Table 4-15: Major Transportation Projects by Alternative

Strategy	System	Project Name	County	Alternative 1	Alternative 2
T06. Improve Interchanges & Address Highway Bottlenecks	Roadway	I-80/I-680/SR 12 | Interchange Improvements + Widening | Phases 3, 5-7	SOL	Removed	No Change
	Roadway	I-680/SR 4 | Interchange Improvements | Phases 1, 2, 4, & 5	CC	Removed	No Change
	Roadway	SR 4 | Operational Improvements | EB & WB	CC	Removed	No Change
	Roadway	SR 4/Vasco Road | Widening	CC	Removed	No Change
	Roadway	SR 37 | Interim Project (e.g., Widening + Tolling)	SOL, NAP	Removed	No Change
	Roadway	SR 262 Safety & Interchange Improvements	ALA	Removed	No Change
	Roadway	U.S. 101/I-580 | Direct Connector	MRN	Removed	No Change
	Roadway	Vasco Road/Byron Highway | New Connector Road	CC	Removed	No Change
T11. Expand & Modernize the Regional Rail Network	Public Transit	Caltrain/High Speed Rail | Electrification & Modernization (Tamien to Pacheco Pass)	SCL	No Change	Removed
	Public Transit	Dumbarton Rail Group Rapid Transit	ALA, SM	No Change	Removed
	Public Transit	Transbay Rail | New San Francisco-Oakland Crossing ("Link21")	ALA, SF	No Change	Removed

Strategy	System	Project Name	County	Alternative 1	Alternative 2
T12. Build an Integrated Regional Express Lane & Express Bus Network	Roadway	I-80 | Express Lanes	SOL	Rescoped	No Change
	Roadway	I-680 | Express Lanes	ALA, CC, SCL	Rescoped	No Change
	Roadway	I-880 | Express Lanes	ALA, SCL	Rescoped	No Change
EN01. Adapt to Sea Level Rise	Other	SR 37 | Long-Term Project (e.g., Sea Level Rise Adaptation)	SOL, NAP, SON, MRN	Removed	No Change

Notes: ALA = Alameda; CC = Contra Costa; MRN = Marin; NAP = Napa; SF = San Francisco; SM = San Mateo; SCL = Santa Clara; SOL = Solano; SON = Sonoma.
Source: Data compiled by MTC and ABAG in 2021

4.5 COMPARATIVE IMPACT ANALYSIS OF ALTERNATIVES

The following discussion provides an analysis of impacts of the alternatives compared to the proposed Plan. Quantified data is provided to the extent it is available. Each of these alternatives is intended to accommodate projected growth, sea level rise adaptation infrastructure, and transportation projects and programs, with one alternative (No Project, Alternative 1) reflecting forecasted future conditions without an adopted Plan in place and the other alternatives reflecting various modifications to the proposed Plan. The format of this analysis is structured to examine how impacts from each alternative would compare to impacts of the proposed Plan. The analysis compares impacts of the alternatives to the proposed Plan assuming no mitigation is in place. Mitigation measures presented in the impact discussions for the proposed Plan should be implemented for any alternative selected that would result in similar impacts, to reduce the adverse effect of significant impacts. However, MTC and ABAG cannot require local implementing agencies to adopt mitigation measures, and it is ultimately the responsibility of the implementing agencies to adopt mitigation.

Where quantified information or analysis is provided, the same source or method was followed as was used for presenting information and analysis on the proposed Plan (see Section 3.1, "Approach to the Analysis"). The analysis compares the potential effects of the land use growth footprint, sea level rise adaptation footprint, and the transportation projects footprint associated with each alternative.

4.5.1 Approach to Assessing Alternatives

Assessment of the Plan alternatives involved modeling to develop the land use growth footprint and traffic-related outputs. These efforts are described below.

MODELING

See Section 2.5.3, "Analysis Tools," for a detailed overview of the modeling methodology.

LAND USE FORECASTING MODEL – BAY AREA URBANSIM 2.0

MTC and ABAG developed the Regional Growth Forecast—forecasted numbers of population, jobs, households, and housing units—for 2050, as described in Section 2.5.2, "Planning Assumptions." Bay Area UrbanSim 2.0, the regional land use forecasting model, relied on these long-range forecasts as model inputs. Based on the assumed levels of household and job growth in the region, Bay Area UrbanSim analyzed the impact of economic, housing, and transportation strategies for each of the alternatives' forecasted growth pattern ("land use growth footprint").

TRAVEL DEMAND FORECASTING MODEL – TRAVEL MODEL 1.5

The MTC demand model, Travel Model 1.5, is a regional activity-based travel model for the San Francisco Bay Area. Integrating the effects of transportation strategies and associated investments, the model produced all of the key outputs used in assessing the significance of transportation impacts for all alternatives (e.g., VMT).

INTEGRATION OF TRAVEL MODEL 1.5 AND BAY AREA URBANSIM 2.0

To appropriately consider the integrated relationship of transportation and land use, Bay Area UrbanSim 2.0 and Travel Model 1.5 are unified in an integrated model framework. This allows for analysis of how transportation projects affect the surrounding land use pattern, as well as how changes to household and employment locations affect transportation demand—the evaluation required of an SCS. See Chapter 2, "Project Description," for more detail on this process.

For calculations relying on outputs from Travel Model 1.5 and population totals (i.e., per capita VMT or per capita energy use), model-simulated population levels were used to ensure consistency. Simulated population may be slightly different from overall population forecasts for the proposed Plan and alternatives because of slight variability in modeling tools. Similarly, for calculations relying on household and/or housing unit totals, model-simulated totals from UrbanSim 2.0 were used to ensure consistency. Alike model-simulated population levels, households, and housing units may be slightly different than the regional growth forecast because of slight variability in modeling tools.

4.5.2 Aesthetics and Visual Resources

NO PROJECT ALTERNATIVE

Under the No Project Alternative, the forecasted development pattern, sea level rise adaptation infrastructure, and transportation projects would not substantially change the existing scenic vistas in the Bay Area at the regional scale because views of landforms and constructed features would generally remain similar to the existing conditions. However, development would sprawl into existing undeveloped areas including onto areas of relatively higher topography, which are visible to larger viewsheds than flatter areas. Impacts to scenic vistas would be substantial from discrete locations due to the presence of construction-related activities and introduction of new features in a localized viewshed. As shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses (24,700 acres versus 12,300 acres). With respect to planned infrastructure, the No Project Alternative would have a substantially reduced number of sea level rise adaptation and transportation projects, which would reduce the footprint related to these types of projects and require less construction. Under the No Project Alternative, modeling indicates that, without any adaptation projects and an assumed 2-foot sea level rise, the greatest degree of inundation would include inland areas along the bayside south of State Route (SR) 92, the San Francisco International Airport, the Oakland International Airport, and lands surrounding SR 37 (BCDC 2020). Implementation of sea level rise infrastructure would reduce inundation throughout the Plan Area but would do so by elevating some existing roadways and constructing vertical levees, which in some places would require considerable construction that could substantially affect scenic vistas. The No Project Alternative would result in greater levels of sea level rise impacts, but fewer sea level rise infrastructure projects than under the proposed Plan. Overall, implementation of the No Project Alternative would impact more Bay Area acreage than the proposed Plan; thus, this impact would be significant and unavoidable for the reasons described under Impact AES-1 and **greater** than the impact that would occur under the proposed Plan.

Construction of developments within view of scenic highways would generally cause similar types of short-term visual impacts resulting from construction equipment and scaffolding, temporary lighting, and exposed excavation and slope faces. However, the area of development would be greater under the No Project Alternative than the proposed Plan due to a larger forecasted growth footprint. As shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses (24,700 acres versus 12,300 acres). Modeling indicates that the State scenic highways SR 37 and SR 1 in Marin County would be inundated due to sea level rise by 2050 (BCDC 2020). While impacts to scenic resources within a State scenic highway generally pertain to nearby changes involving trees, rock outcroppings, and historical buildings within view of an identified roadway, under the No Project Alternative, scenic highways could potentially be inundated and unusable, which is not expected to occur under the proposed Plan. In contrast, the proposed Plan would include infrastructure projects that would allow for continued use of affected roadways while affecting surrounding views. This impact would be significant and unavoidable for the reasons described under Impact AES-2 and **greater** than the impact that would occur under the proposed Plan because a greater area would be developed.

Projected development has the potential to cause changes that could alter visual character. As shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses (24,700 acres versus 12,300 acres). In contrast, as it relates to transportation projects, the No Project Alternative includes a decreased number of transportation projects that could affect visual character. In addition, modeling indicates that without any adaptation infrastructure and a forecasted 98-percent confidence that sea level rise will be 2 feet or less, the greatest degree of inundation would include inland areas along the bayside south of SR 92, the San Francisco International Airport, the Oakland International Airport, and lands surrounding SR 37 (BCDC 2020). Inundation could lead to abandonment and destruction of existing business districts, homes, and other types of developed areas. Generally, the effect of sea level rise could affect the visual character of localized areas by rendering them undevelopable or otherwise unusable. In contrast, the proposed Plan includes sea level rise adaptation infrastructure that would generally allow for the continued use of developed lands; however, these projects may substantially alter undeveloped lands depending on the type of infrastructure improvement. Regardless, because the No Project Alternative would substantially increase the amount of land that would be converted from undeveloped to developed uses, this impact would be significant and unavoidable for the reasons described under Impact AES-3 and **greater** than the impact that would occur under the proposed Plan because a greater area of currently undeveloped land would be developed.

Projected development of new residential or commercial structures would involve new sources of light and glare, which would cover a greater area of land under the No Project Alternative as compared to the proposed Plan. However, the No Project Alternative includes fewer transportation projects than the proposed Plan and would thus make a smaller contribution to regional light and glare impacts. In terms of sea level rise adaptation impacts, both the No Project and proposed Plan would result in minimal sources of new light and glare due to the limited need for lighting of resiliency infrastructure. Overall, as shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses (24,700 acres versus 12,300 acres), which would be substantially greater than any reduced effects from the limited number of new transportation projects. This impact would be significant and unavoidable for the reasons described under Impact AES-4 and **greater** than the impact that would occur under the proposed Plan because a greater area of currently undeveloped land would be developed.

ALTERNATIVE 1 - TRA FOCUS ALTERNATIVE

Impacts to scenic vistas would be substantial from discrete locations due to the presence of construction-related activities and introduction of new feature in a localized viewshed. As shown in **Table 4-10**, the TRA Focus Alternative would result in a lesser area of land being converted from undeveloped to developed uses compared to the proposed Plan (8,800 acres versus 12,300 acres). In addition, the TRA Focus Alternative would reduce funding for the highway widening/resilience project on SR 37. This could result in less developed infrastructure along SR 37 and a greater risk of inundation of this roadway, which may put it in disrepair or disuse. Overall, the TRA Focus Alternative would reduce changes to undeveloped areas compared to the proposed Plan. This impact would be significant and unavoidable for the reasons described under Impact AES-1 and **less** than the impact that would occur under the proposed Plan.

Construction of developments within view of scenic highways would generally cause similar types of short-term visual impacts resulting from construction equipment and scaffolding, temporary lighting, and exposed excavation and slope faces. As shown in **Table 4-10**, the TRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (8,800 acres versus 12,300 acres). In addition, the TRA Focus Alternative would eliminate funding for the highway widening/resilience project on SR 37. This could result in less developed infrastructure along SR 37 and a greater risk of inundation of this roadway, which may put it in disrepair or disuse and thus eliminate use of a scenic highway. While impacts to scenic resources within a State scenic highway generally pertain to nearby changes involving trees, rock outcroppings, and historical buildings within view of an identified roadway, under the TRA Focus Alternative, scenic highways could potentially be destroyed or rendered unusable due to flooding. In contrast, the proposed Plan would include infrastructure projects that would allow for continued use of SR 37, while affecting surrounding views. This impact would be significant and unavoidable for the reasons described under Impact AES-2 and **less** than the impact that would occur under the proposed Plan because the area of projected growth would be relatively decreased.

Projected development has the potential to cause changes that could alter visual character. As shown in **Table 4-10**, the TRA Focus Alternative would result in a lesser area of land being converted from undeveloped to developed uses (8,800 acres versus 12,300 acres). As discussed above the TRA Focus Alternative would decrease funding for improvements to SR 37, which is projected to be inundated due to sea level rise by 2050. This may affect the visual character or quality of public views in future conditions; however, development of adaptation infrastructure included in the proposed Plan could require tree removal or earthwork. These activities could alter or degrade existing visual quality in the region depending on their location by introducing new built elements in existing natural landscapes or increasing the vertical profile of existing infrastructure. Regardless, though the TRA Focus Alternative would result in a lesser area of land converted from undeveloped to developed uses, compared to the proposed Plan, this impact would be significant and unavoidable for the reasons described under Impact AES-3 and **less** than the impact that would occur under the proposed Plan because a smaller area of currently undeveloped land would be developed.

Development and transportation projects could create new substantial sources of light and glare at the regional scale that cause a public hazard, disrupt scenic vistas, and brighten the night sky. As shown in **Table 4-10**, the TRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses when compared to the proposed Plan (8,800 acres versus 12,300 acres). This impact would be significant and unavoidable for the reasons described under Impact AES-4 and **less** than the impact that would occur under the proposed Plan because a smaller area of currently undeveloped land would be developed.

ALTERNATIVE 2 - HRA FOCUS ALTERNATIVE

Impacts to scenic vistas would be substantial from discrete locations due to the presence of construction-related activities and introduction of new features in a localized viewshed. As shown in **Table 4-10**, the HRA Focus Alternative would result in a lesser area of land being converted from undeveloped to developed uses compared to the proposed Plan (10,700 acres versus 12,300 acres). In terms of sea level rise adaptation projects, both the proposed Plan and HRA Focus Alternative contain the same list of projects and would result in the same level of environmental effects. Overall, the HRA Focus Alternative would reduce changes to undeveloped areas compared to the proposed Plan. This impact would be significant and unavoidable for the reasons described under Impact AES-1 and **less** than the impact that would occur under the proposed Plan.

Construction of developments within view of scenic highways would generally cause similar types of short-term visual impacts resulting from construction equipment and scaffolding, temporary lighting, and exposed excavation and slope faces. As shown in **Table 4-10**, the HRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (10,700 acres versus 12,300 acres). In terms of sea level rise adaptation projects, both the proposed Plan and HRA Focus Alternative contain the same list of projects and would result in the same level of environmental effects. This impact would be significant and unavoidable for the reasons described under Impact AES-2 and **less** than the impact that would occur under the proposed Plan because the area of projected growth would be relatively decreased.

Projected development has the potential to cause changes that could alter visual character. As shown in **Table 4-10**, the HRA Focus Alternative would result in a lesser area of land being converted from undeveloped to developed uses (10,700 acres versus 12,300 acres). In terms of sea level rise adaptation projects, both the proposed Plan and HRA Focus Alternative contain the same proposed infrastructure and would result in the same level of environmental effects. Impacts on visual character would be significant and unavoidable for the reasons described under Impact AES-3 and **less** than the impact that would occur under the proposed Plan because a smaller area of currently undeveloped land would be developed.

Development and transportation projects could create new substantial sources of light and glare at the regional scale that cause a public hazard, disrupt scenic vistas, and brighten the night sky. As shown in **Table 4-10**, the HRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses when compared to the proposed Plan (10,700 acres versus 12,300 acres). This impact would be significant and unavoidable for the reasons described under Impact AES-4 and **less** than the impact that would occur under the proposed Plan because a smaller area of currently undeveloped land would be developed.

4.5.3 Agriculture and Forestry Resources

The relative magnitude of differences in the impacts between alternatives is generally related to the land use growth, sea level rise adaptation, and transportation project footprints related to each alternative. **Table 4-16** provides data related to Farmland and agricultural zoning district acreages and **Table 4-17** provides data related to forest land. The comparison of non-quantified impacts are discussed qualitatively, below.

Table 4-16: Summary of Farmland and Agricultural Zoning District Acreage by Plan Alternative

	Land Use Growth Footprint	Sea Level Rise Adaptation Footprint	Transportation Projects Footprint	Total
Proposed Plan	1,600 (2,700)	0 (590)	270 (1,900)	1,900 (5,300)
No Project Alternative	2,900 (6,200)	0	30 (220)	2,900 (6,400)
Alternative 1	980 (930)	0 (590)	220 (1,200)	1,200 (2,700)
Alternative 2	1,100 (2,200)	0 (590)	110 (1,400)	1,200 (4,200)

Notes: Farmland is defined as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. Data is presented as acreage of Farmland (acreage of land located in agricultural zoning)
Source: Data compiled by MTC and ABAG in 2021

Table 4-17: Affected Forest Land Acreage by Plan Alternative

	Land Use Growth Footprint	Sea Level Rise Adaptation Footprint	Transportation Projects Footprint
Proposed Plan	280	2	100
No Project Alternative	3,600	<1	2
Alternative 1	240	2	100
Alternative 2	230	2	8

Notes: Numbers less than 1 are shown as "<1"; whole numbers have been rounded (between 0 and 10 to the nearest whole number, between 11 and 999 to the nearest 10, between 1,000 and 1,000,000 to the nearest 100).
Sources: Data compiled by MTC and ABAG in 2021 based on data from U.S. Department of Agriculture 2019

NO PROJECT ALTERNATIVE

Development of new residential and commercial land uses, sea level rise adaptation infrastructure, and transportation projects has the potential to convert Prime or Unique Farmland or Farmland of Statewide Importance to other uses. The conversion may conflict with zoning or a Williamson Act Contract. As shown in **Table 4-16**, compared to the proposed Plan, the No Project Alternative would convert more agricultural land to non-agricultural uses (2,900 acres versus 1,900 acres). This impact would be significant and unavoidable for the reasons described under Impact AG-1 and **greater** than the impact that would occur under the proposed Plan because more farmland would be affected.

Development of new residential and commercial land uses, sea level rise adaptation infrastructure, and transportation projects has the potential to convert has the potential to convert forest lands and timberlands to developed uses. Compared to the proposed Plan, the No Project Alternative would convert more forest lands to developed uses (3,600 acres versus 280 acres, **Table 4-17**). This impact would be significant and unavoidable for the reasons described under Impact AG-2 and **greater** than the impact that would occur under the proposed Plan because more forest land would be affected.

Anticipated growth under the proposed Plan would result in conversion of Important Farmland (Prime Farmland, Farmland of Statewide Importance, and Unique Farmland) to non-agricultural use and conversion of forest land to non-forest use. Lands that remain agricultural but located adjacent to developed uses may feel pressure to develop, as nearby land values increase or as nuisances from urban development spread to agricultural lands. Further, expanded transportation infrastructure capacity and the implementation of sea level rise infrastructure could remove obstacles to growth in existing agricultural areas. A range of local conservation plans, habitat conservation agencies and State/federal park designated areas provide protection for a substantial amount of forest land and farmland. However, a substantial amount of land on the urban and suburban fringe is vulnerable to development, if not within the boundaries of protected lands, and face additional development pressure as adjacent lands are converted from undeveloped to developed uses. Therefore,

development projects anticipated to occur under the No Project Alternative could have the potential to cause other changes in the existing environment that could result in conversion of important Farmland to non-agricultural use or conversion of forest land to non-forest use. Because the pressure to develop on the suburban fringe would be similar between the alternatives, this impact would be significant and unavoidable for the reasons described under Impact AG-3 and **similar** to the impact that would occur under the proposed Plan.

ALTERNATIVE 1 - TRA FOCUS ALTERNATIVE

Development of new residential and commercial land uses, sea level rise adaptation infrastructure, and transportation projects has the potential to convert Prime or Unique Farmland or Farmland of Statewide Importance to other uses. The conversion may conflict with zoning or a Williamson Act Contract. Compared to the proposed Plan, the TRA Focus Alternative would convert less agricultural land to non-agricultural uses (1,200 acres versus 1,900 acres, **Table 4-16**). This impact would be significant and unavoidable for the reasons described under Impact AG-1 and **less** than the impact that would occur under the proposed Plan because less farmland would be affected.

Development of new residential and commercial land uses, sea level rise adaptation infrastructure, and transportation projects has the potential to convert forest lands and timberlands to urban uses. Compared to the proposed Plan, the TRA Focus Alternative would convert a smaller area of forest lands to urban uses (240 acres versus 280 acres, **Table 4-17**). This impact would be significant and unavoidable for the reasons described under Impact AG-2 and **less** than the impact that would occur under the proposed Plan because less forest land would be affected.

Anticipated growth under the proposed Plan would result in conversion of Important Farmland (Prime Farmland, Farmland of Statewide Importance, and Unique Farmland) to non-agricultural use and conversion of forest land to non-forest use. Lands that remain agricultural but located adjacent to urban uses, may feel pressure to develop, as nearby land values increase or as nuisances from urban development spread to agricultural lands. Further, expanded transportation infrastructure capacity and the implementation of sea level rise infrastructure could remove obstacles to growth in existing agricultural areas. A range of local conservation plans, habitat conservation agencies and State/federal park designated areas provide protection for a substantial amount of forest land and farmland. However, a substantial amount of land on the urban and suburban fringe is vulnerable to development, if not within the boundaries of protected lands, and face additional development pressure as adjacent lands are converted from undeveloped to developed uses. Therefore, development projects anticipated to occur under the proposed Plan could have the potential to cause other changes in the existing environment that could result in conversion of important Farmland to non-agricultural use or conversion of forest land to non-forest use. Because the pressure to develop on the suburban fringe would be similar between the alternatives, this impact would be significant and unavoidable for the reasons described under Impact AG-3 and **similar** to the impact that would occur under the proposed Plan.

ALTERNATIVE 2 - HRA FOCUS ALTERNATIVE

Development of new residential and commercial land uses, sea level rise adaptation infrastructure, and transportation projects has the potential to convert Prime or Unique Farmland or Farmland of Statewide Importance to other uses. The conversion may conflict with zoning or a Williamson Act Contract. Compared to the proposed Plan, the HRA Focus Alternative would convert less agricultural land to non-agricultural uses (1,200 acres versus 1,900 acres, **Table 4-16**). This impact would be

significant and unavoidable for the reasons described under Impact AG-1 and **less** than the impact that would occur under the proposed Plan because less farmland would be affected.

Development of new residential and commercial land uses, sea level rise adaptation infrastructure, and transportation projects has the potential to convert forest lands and timberlands to urban uses. Compared to the proposed Plan, the HRA Focus Alternative would convert a smaller area of forest lands to urban uses (230 acres versus 280 acres, **Table 4-17**). This impact would be significant and unavoidable for the reasons described under Impact AG-2 and **less** than the impact that would occur under the proposed Plan because less forest land would be affected.

Anticipated growth under the proposed Plan would result in conversion of Important Farmland (Prime Farmland, Farmland of Statewide Importance, and Unique Farmland) to non-agricultural use and conversion of forest land to non-forest use. Lands that remain agricultural but located adjacent to urban uses, may feel pressure to develop, as nearby land values increase or as nuisances from urban development spread to agricultural lands. Further, expanded transportation infrastructure capacity and the implementation of sea level rise infrastructure could remove obstacles to growth in existing agricultural areas. A range of local conservation plans, habitat conservation agencies and State/federal park designated areas provide protection for a substantial amount of forest land and farmland. However, a substantial amount of land on the urban and suburban fringe is vulnerable to development, if not within the boundaries of protected lands, and face additional development pressure as adjacent lands are converted from undeveloped to developed uses. Therefore, development projects anticipated to occur under the HRA Focus Alternative could have the potential to cause other changes in the existing environment that could result in conversion of important Farmland to non-agricultural use or conversion of forest land to non-forest use. Because the pressure to develop on the suburban fringe would be similar between the alternatives, this impact would be significant and unavoidable for the reasons described under Impact AG-3 and **similar** to the impact that would occur under the proposed Plan.

4.5.4 Air Quality

These data are presented for changes to levels of exhaust emissions, fine particulate matter ($PM_{2.5}$), and VMT within Community Air Risk Evaluation (CARE) communities and the region in **Table 4-18** compared to the existing conditions, based on the land use growth footprints. The overlap of the land use growth footprint within TAC risk areas by community in provided in **Table 4-19.** The comparison of non-quantified impacts are discussed qualitatively, below.

Table 4-18: CARE Communities and Region Analysis by Alternative Compared to Existing Conditions

County	CARE Status	Exhaust Emissions				Total $PM_{2.5}$	VMT
		Exhaust Only $PM_{2.5}$	Diesel PM	Benzene	1, 3 Butadiene		
Proposed Plan	CARE Community	-88%	-93%	-76%	-73%	-8%	+18%
	Remainder of Region	-74%	-91%	-71%	-70%	+14%	+15%
	Total	-83%	-93%	-74%	-71%	+9%	+16%
No Project Alternative	CARE Community	-84%	-90%	-69%	-66%	+12%	+44%
	Remainder of Region	-69%	-88%	-65%	-64%	+28%	+33%
	Total	-78%	-90%	-67%	-65%	+24%	+36%
Alternative 1 – TRA Focus Alternative	CARE Community	-88%	-93%	-76%	-73%	-9%	+16%
	Remainder of Region	-66%	-91%	-72%	-71%	+12%	+14%
	Total	-83%	-93%	-74%	-71%	+7%	+14%

County	CARE Status	Exhaust Emissions				Total $PM_{2.5}$	VMT
		Exhaust Only $PM_{2.5}$	Diesel PM	Benzene	1, 3 Butadiene		
Alternative 2 – HRA Focus Alternative	CARE Community	-88%	-93%	-76%	-73%	-8%	+17%
	Remainder of Region	-66%	-91%	-72%	-71%	+13%	+14%
	Total	-83%	-93%	-74%	-71%	+8%	+15%

Notes: CARE = Community Air Risk Evaluation, $PM_{2.5}$ = fine particulate matter, PM = particulate matter, VMT = vehicle miles travelled; Percentages rounded to nearest whole number; Total $PM_{2.5}$ includes vehicle exhaust, re-entrained road dust, tire and brake wear; Marin, Napa, San Mateo and Sonoma Counties do not have CARE-designated areas; Emissions rates from EMFAC2021.

Sources: Data compiled by MTC and ABAG in 2021; BAAQMD 2014

Table 4-19: Acreage of Land Use Growth Footprint within Toxic Air Contaminant Risk Areas by Alternative

	County	Total Acres
Land Use Growth Footprint	Proposed Plan	8,800
	No Project Alternative	10,400
	Alternative 1 - TRA Focus Alternative	7,800
	Alternative 2 - HRA Focus Alternative	8,900

Note: Whole numbers have been rounded to the nearest 100.

Sources: Data compiled by MTC and ABAG in 2021

NO PROJECT ALTERNATIVE

This impact addresses conflicts with the 2017 Clean Air Plan. The 2017 Clean Air Plan contains a list of programs that protect public health and the climate, with the overall goal of reducing GHG emissions in the Bay Area by 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. This framework assumes that state policies, plans, and programs that address air quality and climate protection would be implemented, including SB 375 requirements. Under the No Project Alternative, there would be no adopted RTP/SCS and reduction goals would not be met (i.e., 19 percent reduction in VMT emissions from cars and light trucks). Without meeting SB 375 goals, implementation of the 2017 Clean Air Plan would be obstructed and, as a result, this impact would be significant and **greater** than the proposed Plan (AQ-1). *(This impact would be less-than-significant under the proposed Plan)*

Impacts of the proposed Plan related to construction-related emissions are generally localized in nature. Construction equipment and processes are generally similar between land use and transportation projects,. and could occur over a short period of time, resulting in substantial construction-related emissions on a daily basis. Because construction-related emissions are generally localized and would occur throughout the regional during the planning period, this impact would be significant and unavoidable for the reasons described under Impact AQ-2 and **similar** to the impact that would occur under the proposed Plan.

The area-source emissions of criteria pollutants and precursors would increase over the planning horizon of the Plan due to the net increase in land use development and transportation projects. As shown in **Table 4-18**, the increase of regional VMT would be greater under the No Project Alternative than under the proposed Plan (36-percent regional increase versus 16-percent regional increase). Because the No Project Alternative would emit a greater level of criteria air pollutants than the proposed Plan, due to greater VMT, this impact would be significant and unavoidable for the reasons described under Impact AQ-3 and **greater** than the impact that would occur under the proposed Plan.

TAC Risk Areas are locations where cancer risk levels and/or $PM_{2.5}$ concentrations are exceeded. In general, TAC Risk Areas tend to occur along high-volume freeways and roadways, high-use rail lines, locations near numerous stationary-sources, and locations where a single stationary-source has very high estimated cancer risk levels or $PM_{2.5}$ concentration. As indicated in **Table 4-19**, the No Project Alternative would result in a greater land use growth footprint within TAC risk areas than the proposed Plan (10,400 acres versus 8,800 acres). In addition, as shown in **Table 4-18**, there would be an increase of 12 percent in total $PM_{2.5}$ in CARE Communities under the No Project Alternative, which indicates a greater level of $PM_{2.5}$ emissions than the decrease of 8 percent in total $PM_{2.5}$ expected under the proposed Plan. This impact would be significant and unavoidable for the reasons described under Impact AQ-4 and **greater** than the impact that would occur under the proposed Plan because emissions would be greater.

Development of new residential and commercial uses, sea level rise adaptation infrastructure, and transportation projects could generate odorous diesel exhaust emissions from construction equipment and odors associated with asphalt paving. These types of construction-generated odorous emissions, however, would be temporary and not be generated at any one location for an extended period. Diesel exhaust fumes would also dissipate rapidly from the source with an increase in distance. Therefore, this impact would be less than significant for the reasons described under Impact AQ-5 and **similar** to the impact that would occur under the proposed Plan because construction-related emissions are generally localized and would occur throughout the regional during the planning period.

ALTERNATIVE 1 - TRA FOCUS ALTERNATIVE

This impact addresses conflicts with the 2017 Clean Air Plan. The 2017 Clean Air Plan contains a list of programs that protect public health and the climate, with the overall goal of reducing GHG emissions in the Bay Area by 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. This framework assumes that state policies, plans, and programs that address air quality and climate protection would be implemented, including SB 375 requirements. Because the TRA Focus Alternative would meet the GHG emission reduction goals of SB 375 (i.e., 19 percent reduction in VMT emissions from cars and light trucks), this impact would be less-than-significant for the reasons described in Impact AQ-1 and **similar** to the proposed Plan.

Construction-related air emissions are generally localized in nature. Construction equipment and processes are generally similar between land use and transportation projects, except that transportation projects and could potentially occur over a short period of time, resulting in substantial construction-related emissions on a daily basis. Because construction-related emissions are generally localized and would occur throughout the regional during the planning period, this impact would be significant and unavoidable for the reasons described under Impact AQ-2 and **similar** to the impact that would occur under the proposed Plan.

The area-source emissions of criteria pollutants and precursors would increase over the planning horizon of the Plan due to the net increase in land use development and transportation projects. As shown in **Table 4-18**, the increase of regional VMT would be less under the TRA Focus Alternative than the proposed Plan (14-percent regional increase versus 16-percent regional increase). Because the TRA Focus Alternative would emit a lower level of criteria air pollutant than the proposed Plan, due to a lower VMT, this impact would be significant and unavoidable for the reasons described under Impact AQ-3 and **less** than the impact that would occur under the proposed Plan because emissions would be less.

TAC Risk Areas are locations where cancer risk levels and/or $PM_{2.5}$ concentrations are exceeded. In general, TAC Risk Areas tend to occur along high-volume freeways and roadways, high-use rail lines, locations near numerous stationary-sources, and locations where a single stationary-source has very high estimated cancer risk levels or $PM_{2.5}$ concentration. As indicated in **Table 4-19**, the TRA Focus Alternative would result in a smaller land use growth footprint within TAC risk areas than the proposed Plan (7,800 acres versus 8,800 acres). In addition, as shown in **Table 4-18**, there would be a decrease of 9 percent in total $PM_{2.5}$ in CARE Communities under the TRA Focus Alternative, which indicates a greater reduction in $PM_{2.5}$ than the decrease of 8 percent in total $PM_{2.5}$ expected under the proposed Plan. This impact would be significant and unavoidable for the reasons described under Impact AQ-4 and **less** than the impact that would occur under the proposed Plan because emissions would be less in TAC Risk Areas under the TRA Focus Alternative.

Development of new residential and commercial uses, sea level rise adaptation infrastructure, and transportation projects could generate odorous diesel exhaust emissions from construction equipment and odors associated with asphalt paving. These types of construction-generated odorous emissions, however, would be temporary and not be generated at any one location for an extended period. Diesel exhaust fumes would also dissipate rapidly from the source with an increase in distance. Therefore, this impact would be less than significant for the reasons described under Impact AQ-5 and **similar** to the impact that would occur under the proposed Plan because construction-related emissions are generally localized and would occur throughout the regional during the planning period.

ALTERNATIVE 2 - HRA FOCUS ALTERNATIVE

This impact addresses conflicts with the 2017 Clean Air Plan. The 2017 Clean Air Plan contains a list of programs that protect public health and the climate, with the overall goal of reducing GHG emissions in the Bay Area by 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. This framework assumes that state policies, plans, and programs that address air quality and climate protection would be implemented, including SB 375 requirements. Because the HRA Focus Alternative would meet the GHG emission reduction goals of SB 375 (i.e., 19 percent reduction in VMT emissions from cars and light trucks)., this impact would be less-than-significant for the reasons described in Impact AQ-1 and **similar** to the proposed Plan.

Construction-related air emissions are generally localized in nature. Construction equipment and processes are generally similar between land use and transportation projects, except that transportation projects and could potentially occur over a short period of time, resulting in substantial construction-related emissions on a daily basis. Because construction-related emissions are generally localized and would occur throughout the regional during the planning period, this impact would be significant and unavoidable for the reasons described under Impact AQ-2 and **similar** to the impact that would occur under the proposed Plan.

The area-source emissions of criteria pollutants and precursors would increase over the planning horizon of the Plan due to the net increase in land use development and transportation projects. As shown in **Table 4-18**, the increase of regional VMT would be less under the HRA Focus Alternative than the proposed Plan (15-percent regional increase versus 16-percent regional increase). Because the HRA Focus Alternative would emit a lower level of criteria air pollutant than the proposed Plan, due to a lower VMT, this impact would be significant and unavoidable for the reasons described under Impact AQ-3 and **less** than the impact that would occur under the proposed Plan because emissions would be less.

TAC Risk Areas are locations where cancer risk levels and/or $PM_{2.5}$ concentrations are exceeded. In general, TAC Risk Areas tend to occur along high-volume freeways and roadways, high-use rail lines,

locations near numerous stationary-sources, and locations where a single stationary-source has very high estimated cancer risk levels or $PM_{2.5}$ concentration. As indicated in **Table 4-19**, the HRA Focus Alternative would result in a greater land use growth footprint within TAC risk areas than the proposed Plan (8,900 acres versus 8,800 acres). In addition, as shown in **Table 4-18**, there would be a decrease of 8 percent in total $PM_{2.5}$ in CARE Communities under the HRA Focus Alternative, which indicates a similar reduction in $PM_{2.5}$ as the decrease of 8 percent in total $PM_{2.5}$ expected under the proposed Plan. This impact would be significant and unavoidable for the reasons described under Impact AQ-4 and **similar** to the impact that would occur under the proposed Plan.

Development of new residential and commercial uses, sea level rise adaptation infrastructure, and transportation projects could generate odorous diesel exhaust emissions from construction equipment and odors associated with asphalt paving. These types of construction-generated odorous emissions, however, would be temporary and not be generated at any one location for an extended period. Diesel exhaust fumes would also dissipate rapidly from the source with an increase in distance. Therefore, this impact would be less than significant for the reasons described under Impact AQ-5 and **similar** to the impact that would occur under the proposed Plan because construction-related emissions are generally localized and would occur throughout the regional during the planning period.

4.5.5 Biological Resources

Table 4-20 provides a summary of the affect acreage of wetland feature by alternative**. Table 4-21** provides the area of affected essential connectivity by alternative.

Table 4-20: Affected Acreage of Wetland Features by Alternative

		Estuarine and Marine Deepwater	Estuarine and Marine Wetland	Freshwater Emergent Wetland	Freshwater Forested/ Shrub Wetland	Freshwater Pond	Lake	Riverine
Land Use Growth Footprint	Proposed Plan	170	50	180	40	160	10	150
	No Project Alternative	60	70	210	100	240	110	490
	Alternative 1	150	60	160	30	130	9	100
	Alternative 2	160	50	180	50	160	20	120
Sea Level Rise Adaptation Footprint	Proposed Plan	400	1,100	260	1	100	540	80
	No Project Alternative	100	280	50	-	20	250	20
	Alternative 1	400	1,100	260	1	100	540	80
	Alternative 2	400	1,100	260	1	100	540	80
Transportation Projects Footprint	Proposed Plan	310	150	50	20	30	20	110
	No Project Alternative	10	7	3	1	1	<1	20
	Alternative 1	280	100	40	20	20	1	80
	Alternative 2	110	70	50	20	20	20	90

Total Acreage of Wetland Features	
Proposed Plan	3,900
No Project Alternative	2,000
Alternative 1	3,600
Alternative 2	3,600

Notes: Numbers less than 1 are shown as "<1"; whole numbers have been rounded (between 0 and 10 to the nearest whole number, between 11 and 999 to the nearest 10, between 1,000 and 1,000,000 to the nearest 100). Figures may not sum due to independent rounding.
Source: data compiled by MTC and ABAG in 2021

Table 4-2110: Affected Acreage of Essential Connectivity Areas by Alternative

	Land Use Growth Footprint	Sea Level Rise Adaptation Footprint	Transportation Projects Footprint	Total
Proposed Plan	1,700	380	1,900	4,000
No Project Alternative	6,600	30	340	6,900
Alternative 1	1,400	380	1,100	2,900
Alternative 2	1,600	380	1,600	3,600

Notes: Whole numbers have been rounded (between 11 and 999 to the nearest 10, between 1,000 and 1,000,000 to the nearest 100). Figures may not sum due to independent rounding.
Source: data compiled by MTC and ABAG in 2021

NO PROJECT ALTERNATIVE

Impacts on special-status species could occur within areas of new residential and commercial development, sea level adaptation infrastructure, and transportation project footprints, including the temporary and permanent removal or conversion of vegetation and habitat necessary for species breeding, feeding, dispersal, or sheltering. Construction and/or ongoing operations could result in direct mortality of special-status plants and wildlife, entrapment in open trenches, and general disturbance due to noise or vibration during pile-driving, earthmoving, and other construction activities. Construction-generated fugitive dust accumulation on surrounding vegetation and construction-related erosion, runoff, and sedimentation could degrade the quality of adjacent vegetation communities, affecting their ability to support special-status plants and wildlife. As shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses (24,700 acres versus 12,300 acres). By contrast, the No Project Alternative would have far fewer sea level rise adaptation and transportation projects, which would reduce the footprint related to these types of projects and require less construction. Overall, the No Project Alternative would disturb a greater area of undeveloped land, resulting in the potential for increased impacts to special-status species. This impact would be significant and unavoidable for the reasons described under Impact BIO-1a and **greater** than the impact that would occur under the proposed Plan because a greater area of undeveloped land would become developed.

Impacts on critical habitat could include temporary or permanent habitat loss. Degradation of areas that have high conservation value for these species could also occur in association with development, where such development occurs within or adjacent to critical habitat, through the introduction of night lighting, increases in ambient noise levels, and the introduction of invasive species and predators. Potential impacts on salmonid critical habitat could include stream degradation in association with increased impervious surfaces and surface runoff, decreases in water quality due to increased point source pollution, and erosion and sedimentation during construction. As shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses (24,700 acres versus 12,300 acres). Overall, the No Project Alternative footprint would be greater than the proposed Plan footprint in areas potentially designated as critical habitat. This impact would be less than significant with mitigation for the reasons described under Impact BIO-1b but **greater** than the impact that would occur under the proposed Plan because a greater area of undeveloped land would become developed.

Potential impacts on wetlands include the temporary disturbance or permanent loss of jurisdictional waters, including wetlands; loss or degradation of stream or wetland function; incremental degradation of wetland habitats; and fragmentation of streams and wetlands. Jurisdictional waters in the region vary from relatively small, isolated roadside areas, wet meadows, and vernal pools to major streams and rivers, bays and estuaries, to tidal, brackish, and freshwater marshes. As shown in **Table**

4-20, due primarily to reduced sea level rise infrastructure relative to the proposed Plan, there would be a smaller area of wetland features affected by the No Project Alternative (2,000 acres) than the proposed Plan (3,900 acres). While the proposed Plan includes wetland restoration projects, acreages of affected wetland in this analysis considers only those that occur under the existing conditions. This impact would be less than significant with mitigation for the reasons described under Impact BIO-2 and **less** than the impact that would occur under the proposed Plan because less wetland features would overlap with the growth footprint.

The Bay Area encompasses large areas of wildlands that provide habitat for both common and rare plants and wildlife and some of these areas were mapped as Essential Connectivity Areas (ECAs). The ECAs are not regulatory delineations but are identified as lands likely important to wildlife movement between large, mostly natural areas at the Statewide level. As shown in **Table 4-21**, implementation of the No Project Alternative would result in a greater area of affected ECAs (6,900 acres) than the proposed Plan (4,000 acres). There would also be adverse effects on ECAs due to implementation of transportation projects. This impact would be significant and unavoidable for the reasons described under Impact BIO-3 and **greater** than the impact that would occur under the proposed Plan because larger area of ECAs would be affected.

The potential for land use development and implementation of transportation projects under the proposed Plan could each result in potentially significant conflicts with local ordinances or policies protective of biological resources Habitat Conservation Plan/Natural Community Conservation Plans (HCP/NCCPs), Conservation Strategies, and Local Coastal Programs (LCPs) on a localized basis as well as regionwide. As shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses (24,700 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact BIO-4 and **greater** than the impact that would occur under the proposed Plan because a greater area of undeveloped land would become developed.

As shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses (24,700 acres versus 12,300 acres). Overall, this impact would be significant and unavoidable for the reasons described under Impact BIO-5 and **greater** than the impact that would occur under the proposed Plan because a greater area of undeveloped land would become developed.

ALTERNATIVE 1 - TRA FOCUS ALTERNATIVE

Impacts on special-status species could occur within areas of new residential and commercial development, sea level adaptation infrastructure, and transportation project footprints, including the temporary and permanent removal or conversion of vegetation and habitat necessary for species breeding, feeding, dispersal, or sheltering. Construction and/or ongoing operations could result in direct mortality of special-status plants and wildlife, entrapment in open trenches, and general disturbance due to noise or vibration during pile- driving, earthmoving, and other construction activities. Construction-generated fugitive dust accumulation on surrounding vegetation and construction-related erosion, runoff, and sedimentation could degrade the quality of adjacent vegetation communities, affecting their ability to support special-status plants and wildlife. As shown in **Table 4-10**, the TRA Focus Alternative would result in a lesser area of land being converted from undeveloped to developed uses compared to the proposed Plan (8,800 acres versus 12,300 acres). Therefore, the TRA Focus Alternative would have the potential to result in fewer impacts to special-status species. This impact would be significant and unavoidable for the reasons described under

Impact BIO-1a and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would become developed.

Impacts on critical habitat could include temporary or permanent habitat loss. Degradation of areas that have high conservation value for these species could also occur in association with development, where such development occurs within or adjacent to critical habitat, through the introduction of night lighting, increases in ambient noise levels, and the introduction of invasive species and predators. Potential impacts on salmonid critical habitat could include stream degradation in association with increased impervious surfaces and surface runoff, decreases in water quality due to increased point source pollution, and erosion and sedimentation during construction. As shown in **Table 4-10**, the TRA Focus Alternative would result in less land conversion from undeveloped to developed uses compared to the proposed Plan (8,800 acres versus 12,300 acres). Overall, the TRA Focus Alternative footprint would be less than the proposed Plan footprint in areas potentially designated as critical habitat. This impact would be less than significant with mitigation for the reasons described under Impact BIO-1b and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would become developed.

Potential impacts on wetlands include the temporary disturbance, or permanent loss, of jurisdictional waters, including wetlands; loss or degradation of stream or wetland function; incremental degradation of wetland habitats; and fragmentation of streams and wetlands. Jurisdictional waters in the region vary from relatively small, isolated roadside areas, wet meadows, and vernal pools to major streams and rivers, bays and estuaries, to tidal, brackish, and freshwater marshes. As shown in **Table 4-20**, the TRA Focus Alternative would affect a smaller area of wetland features (3,600 acres) than the proposed Plan (3,900 acres). While the proposed Plan includes wetland restoration projects, acreages of affected wetland in this analysis considers only those that occur under the existing conditions. This impact would be less than significant with mitigation for the reasons described under Impact BIO-2 and **less** than the impact that would occur under the proposed Plan because less wetland features would overlap with the growth footprint.

The Bay Area encompasses large areas of wildlands that provide habitat for both common and rare plants and wildlife and some of these areas were mapped as ECAs. The ECAs are not regulatory delineations but are identified as lands likely important to wildlife movement between large, mostly natural areas at the Statewide level. As shown in **Table 4-21**, implementation of the TRA Focus Alternative would result in a smaller area of affected ECAs (2,900 acres) than the proposed Plan (4,000 acres). There would also be adverse effects on ECAs due to implementation of transportation projects. This impact would be significant and unavoidable for the reasons described under Impact BIO-3 and **less** than the impact that would occur under the proposed Plan because a smaller area of ECAs would be affected.

The potential for land use development and implementation of transportation projects under the proposed Plan could each result in potentially significant conflicts with local ordinances or policies protective of biological resources HCP/NCCPs, Conservation Strategies, and LCPs on a localized basis as well as regionwide. As shown in **Table 4-10**, the TRA Focus would result in a smaller area of land being converted from undeveloped to developed uses (8,800 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact BIO-4 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would become developed.

As shown in **Table 4-10**, the TRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (8,800 acres versus 12,300 acres). Overall, this impact

would be significant and unavoidable for the reasons described under Impact BIO-5 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would become developed.

ALTERNATIVE 2 - HRA FOCUS ALTERNATIVE

Impacts on special-status species could occur within areas of new residential and commercial development, sea level adaptation infrastructure, and transportation project footprints, including the temporary and permanent removal or conversion of vegetation and habitat necessary for species breeding, feeding, dispersal, or sheltering. Construction and/or ongoing operations could result in direct mortality of special-status plants and wildlife, entrapment in open trenches, and general disturbance due to noise or vibration during pile- driving, earthmoving, and other construction activities. Construction-generated fugitive dust accumulation on surrounding vegetation and construction-related erosion, runoff, and sedimentation could degrade the quality of adjacent vegetation communities, affecting their ability to support special-status plants and wildlife. As shown in **Table 4-10**, the HRA Focus Alternative would result in a lesser area of land being converted from undeveloped to developed uses compared to the proposed Plan (10,700 acres versus 12,300 acres). In terms of sea level rise adaptation projects, both the proposed Plan and HRA Focus Alternative contain the same list of projects and would result in the same level of environmental effects. Therefore, the HRA Focus Alternative would have the potential to result in fewer impacts to special-status species compared to the proposed Plan. This impact would be significant and unavoidable for the reasons described under Impact BIO-1a and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would become developed.

Impacts on critical habitat could include temporary or permanent habitat loss. Degradation of areas that have high conservation value for these species could also occur in association with development, where such development occurs within or adjacent to critical habitat, through the introduction of night lighting, increases in ambient noise levels, and the introduction of invasive species and predators. Potential impacts on salmonid critical habitat could include stream degradation in association with increased impervious surfaces and surface runoff, decreases in water quality due to increased point source pollution, and erosion and sedimentation during construction. As shown in **Table 4-10**, the HRA Focus Alternative would result in less land conversion from undeveloped to developed uses compared to the proposed Plan (10,700 acres versus 12,300 acres). Overall, the HRA Focus Alternative footprint would be less than the proposed Plan footprint in areas potentially designated as critical habitat. This impact would be less than significant with mitigation for the reasons described under Impact BIO-1b and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would become developed.

Potential impacts on wetlands include the temporary disturbance, or permanent loss, of jurisdictional waters, including wetlands; loss or degradation of stream or wetland function; incremental degradation of wetland habitats; and fragmentation of streams and wetlands. Jurisdictional waters in the region vary from relatively small, isolated roadside areas, wet meadows, and vernal pools to major streams and rivers, bays and estuaries, to tidal, brackish, and freshwater marshes. As shown in **Table 4-20**, the HRA Focus Alternative would affect a smaller area of wetland features (3,600 acres) than the proposed Plan (3,900 acres). While the proposed Plan includes wetland restoration projects, acreages of affected wetland in this analysis considers only those that occur under the existing conditions. This impact would be less than significant for the reasons described under Impact BIO-2 and **less** than the impact that would occur under the proposed Plan because a smaller area of wetland features would overlap with the growth footprint.

The Bay Area encompasses large areas of wildlands that provide habitat for both common and rare plants and wildlife and some of these areas were mapped as ECAs. The ECAs are not regulatory delineations but are identified as lands likely important to wildlife movement between large, mostly natural areas at the Statewide level. As shown in **Table 4-21**, implementation of the HRA Focus Alternative would result in a smaller area of affected ECAs (3,600 acres) than the proposed Plan (4,000 acres). There would also be adverse effects on ECAs due to implementation of transportation projects. This impact would be significant and unavoidable for the reasons described under Impact BIO-3 and **less** than the impact that would occur under the proposed Plan because a larger area of ECAs would be affected.

The potential for land use development and implementation of transportation projects under the proposed Plan could each result in potentially significant conflicts with local ordinances or policies protective of biological resources HCP/NCCPs, Conservation Strategies, and LCPs on a localized basis as well as region-wide. As shown in **Table 4-10**, the HRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (10,700 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact BIO-4 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would become developed.

As shown in **Table 4-10**, the HRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (10,700 acres versus 12,300 acres). Overall, this impact would be significant and unavoidable for the reasons described under Impact BIO-5 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would become developed.

4.5.6 Climate Change, Greenhouse Gases, and Energy

Table **4-22** presents metric tons of carbon dioxide equivalent ($MTCO_2e$) per capita emissions related to mobile sources for each alternative. The comparison of non-quantified impacts are discussed qualitatively, below. **Table 4-23** shows the Plan alternatives' ability to meet the SB 375 goal of reducing GHG emissions per capita by 19 percent.

Table 4-22: Mobile Source Emissions by Vehicle Source ($MTCO_2e$) for Each Alternative

	2015 Baseline	Proposed Plan	No Project Alternative	Alternative 1	Alternative 2
Passenger Vehicles	15,518,000	10,223,000	12,126,000	10,055,000	10,158,000
Trucks	4,102,000	3,672,000	4,280,000	3,610,000	3,651,000
Buses	345,000	265,000	311,000	262,000	262,000
Other Vehicles	129,000	109,000	129,000	107,000	108,000
Total	20,094,000	14,269,000	16,846,000	14,034,000	14,179,000

Note: Numbers are rounded. Figures may not sum due to independent rounding. Population statistics reflect the total Bay Area population able to travel on the region's transport network; it does not include immobile, involuntary populations such as prison inmates.
Source: data compiled by MTC and ABAG in 2021

Table 4-23: SB 375 GHG Emissions Reductions Relative to 2005 Baseline for Each Alternative

	Proposed Plan	No Project Alternative	Alternative 1	Alternative 2
Modeled Passenger Vehicles Emissions (2035)	69,000	79,900	68,600	68,300
Emissions Per Capita (2035)	13.5	17.4	13.4	13.4
Reductions in Emissions Per Capita Relative to 2005	-22%	+1%	-22%	-23%

Note: Numbers are rounded. Population statistics reflect the total Bay Area population able to travel on the region's transport network; it does not include immobile, involuntary populations such as prison inmates.
Source: data compiled by MTC and ABAG in 2021

NO PROJECT ALTERNATIVE

Construction-related and operational GHG emissions associated with the forecasted development pattern, sea level rise adaptation infrastructure, and transportation projects would contribute to GHG emissions. In terms of operational GHG emissions, the Plan alternatives primarily differ due to the number and type of transportation projects and types of mobile source-based GHG emission reduction programs. As shown in **Table 4-22**, relative to baseline (20,094,000 $MTCO_2e$) mobile source emissions under the No Project Alternative would be reduced (16,846,000), although to a lesser extent than under the proposed Plan (14,269,000). Similarly to the proposed Plan, construction emissions may not be reduced to net zero in all cases. This impact would be significant and unavoidable for the reasons described in Impact GHG-1 and **greater** than the impact that would occur under the proposed Plan because mobile source emissions would be greater under the No Project Alternative.

The No Project Alternative would increase CO_2 emissions per capita passenger vehicle and light trucks by 1 percent between 2005 and 2035, and thus would not meet SB 375 goals to reduce per capita passenger vehicle and light duty truck CO_2 emissions by over 19 percent by 2035 as compared to 2005 baseline (**Table 4-23**). This impact would be significant and **greater** than the impact that would occur under the proposed Plan because emissions would be greater. *(Impact GHG-2 would be less than significant under the proposed Plan.)*

The proposed Plan meets SB 375 goals and places the Bay Area on a downward trajectory in GHG emissions, but CARB has identified that meeting SB 375 goals alone will not meet Statewide goals under the Scoping Plan. Neither the proposed Plan nor the No Project Alternative have additional land use strategies to feasibly bridge the gap between the proposed Plan GHG emissions and 2030 (and beyond) targets. This gap would remain larger under the No Project Alternative than under the proposed Plan (**Table 23**). Because GHG emissions from mobile sources would be greater under the No Project Alternative, this impact would be significant and unavoidable for the reasons described in Impact GHG-3 and **greater** than the impact that would occur under the proposed Plan.

Local climate action plans or GHG reduction plans are adopted by local jurisdictions to comply with the goals set for local governments in CARB's Scoping Plan. CARB's Scoping Plan includes implementation of SB 375. Because the No Project Alternative would not comply with SB 375, as it would not implement an RTP/SCS, this impact would be significant and **greater** than the impact that would occur under the proposed Plan (GHG-4). *(This impact would be less-than-significant under the proposed Plan.)*

Construction and operation of the land uses, sea-level rise adaptation, and transportation system projects under the No Project Alternative would not result in the wasteful, unnecessary, or inefficient use of energy because the energy associated with these projects would be serving necessary regional needs and would comply with applicable regulations and standards (e.g., Renewable Portfolio

Standard, California Energy Code). Because individual projects would comply with applicable regulations and standards, this impact would be less than significant for the reasons described in Impact EN-1 and **similar** to the impact that would occur under the proposed Plan.

Consideration of per capita energy consumption associated with the proposed Plan and alternatives is related to electricity and natural gas use and per capita VMT, which is directly related to use of petroleum-based fuels. VMT per capita would be greater under the No Project Alternative and the proposed Plan. This impact would be less than significant for the reasons discussed under Impact EN-2 and **greater** than the impact that would occur under the proposed Plan because more fuel would be needed to support a higher VMT per capita.

ALTERNATIVE 1 - TRA FOCUS ALTERNATIVE

Construction-related and operational GHG emissions associated with the forecasted development pattern, sea level rise adaptation infrastructure, and transportation projects would contribute to GHG emissions. In terms of operational GHG emissions, the Plan alternatives primarily differ due to the number and type of transportation projects and types of mobile source-based GHG emission reduction programs. As shown in **Table 4-22**, relative to baseline (20,094,000 $MTCO_2e$) mobile source emissions under the TRA Focus Alternative would be reduced (14,034,000) to a greater extent than under the proposed Plan (14,269,000). Similar to the proposed Plan, construction emissions may not be reduced to net zero in all cases. This impact would be significant and unavoidable for the reasons described in Impact GHG-1 and **less** than the impact that would occur under the proposed Plan because mobile-source emissions would be lower under the TRA Focus Alternative.

The TRA Focus Alternative would decrease CO_2 emissions per capita passenger vehicle and light trucks by 22 percent between 2005 and 2035, thereby meeting SB 375 goals to reduce per capita passenger vehicle and light duty truck CO_2 emissions by over 19 percent by 2035 as compared to 2005 baseline (**Table 4-23**). This impact would be less than significant for the reasons described under Impact GHG-2 and **similar** to the impact that would occur under the proposed Plan because per capita emissions from passenger vehicles and light trucks would be the same.

The proposed Plan meets SB 375 goals and places the Bay Area on a downward trajectory in GHG emissions, but CARB has identified that meeting SB 375 goals alone will not meet Statewide goals under the Scoping Plan. Compared to the proposed Plan, the TRA Focus Alternative includes higher levels of household and job growth in the growth geographies, with substantially more housing growth in TRAs. As shown in **Table 4-23**, the TRA Focus Alternative would reduce GHG emissions per capita by 22 percent, relative to the 2005 baseline, which is the same as the proposed Plan. However, this would not provide enough of a reduction in GHG emissions to meet Statewide goals under the Scoping Plan. This impact would be significant and unavoidable for the reasons described in Impact GHG-3 and **similar** to the impact that would occur under the proposed Plan because emissions would be similar.

Local climate action plans or GHG reduction plans are adopted by local jurisdictions to comply with the goals set for local governments in CARB's Scoping Plan. The land use development pattern, sea level rise adaptation infrastructure, and transportation projects that may result from implementation of the TRA Focus Alternative would not conflict with local climate action or GHG reduction plans. This impact would be less than significant for the reasons described in Impact GHG-4 and **similar** to the impact that would occur under the proposed Plan because individual projects would not conflict with local climate action or GHG reduction plans.

Construction and operation of the land uses, sea-level rise adaptation, and transportation system projects under the TRA Focus Alternative would not result in the wasteful, unnecessary, or inefficient use of energy because the energy associated with these projects would be serving necessary regional needs and would comply with applicable regulations and standards (e.g., Renewable Portfolio Standard, California Energy Code). This impact would be less than significant for the reasons described in Impact EN-1 and **similar** to the impact that would occur under the proposed Plan because individual project would comply with applicable regulations and standards.

Consideration of per capita energy consumption associated with the proposed Plan and alternatives is related to electricity and natural gas use and per capita VMT, which is directly related to use of petroleum-based fuels. VMT per capita would be the same under the TRA Focus Alternative and the proposed Plan. This impact would be less than significant for the reasons discussed under EN-2 and **similar** to the impact that would occur under the proposed Plan because VMT per capita would be the same.

ALTERNATIVE 2 - HRA FOCUS ALTERNATIVE

Construction-related GHG emissions associated with the forecasted development pattern, sea level rise adaptation infrastructure, and transportation projects would contribute to GHG emissions. In terms of operational GHG emissions, the Plan alternatives primarily differ due to the number and type of transportation projects and types of mobile source-based GHG emission reduction programs. As shown in **Table 4-22**, relative to baseline (20,094,000 $MTCO_2e$) mobile source emissions under the HRA Focus Alternative would be reduced (14,179,000) to a greater extent than under the proposed Plan (14,269,000). Similar to the proposed Plan, construction emissions may not be reduced to net zero in all cases. This impact would be significant and unavoidable for the reasons described in Impact GHG-1 and **less** than the impact that would occur under the proposed Plan because emissions would be less.

The HRA Focus Alternative would decrease CO_2 emissions per capita passenger vehicle and light trucks by 23 percent between 2005 and 2035, thereby meeting SB 375 goals to reduce per capita passenger vehicle and light duty truck CO_2 emissions by over 19 percent by 2035 as compared to 2005 baseline (**Table 4-23**). This impact would be less than significant for the reasons described in Impact GHG-2 and **less** than the impact that would occur under the proposed Plan because per capita emissions from passenger vehicles and light trucks would be comparatively lower under the HRA Focus Alternative.

The proposed Plan meets SB 375 goals and places the Bay Area on a downward trajectory in GHG emissions, but CARB has identified that meeting SB 375 goals alone will not meet Statewide goals under the Scoping Plan. Compared to the proposed Plan, the HRA Focus Alternative includes higher levels of household and job growth in the growth geographies, with substantially more housing growth in HRAs. As shown in **Table 4-23**, the HRA Focus Alternative would reduce GHG emissions per capita by 23 percent, relative to the 2005 baseline, which represents a comparatively greater reduction than the proposed Plan. However, this would not provide enough of a reduction in GHG emissions to meet Statewide goals under the Scoping Plan. This impact would be significant and unavoidable for the reasons described in Impact GHG-3 and **less** than the impact that would occur under the proposed Plan because emissions would be less.

Local climate action plans or GHG reduction plans are adopted by local jurisdictions to comply with the goals set for local governments in CARB's Scoping Plan. The land use development pattern, sea level rise adaptation infrastructure, and transportation projects that may result from implementation

of the HRA Focus Alternative would not conflict with local climate action or GHG reduction plans. This impact would be less than significant for the reasons described in Impact GHG-4 and **similar** to the impact that would occur under the proposed Plan because individual projects would not conflict with local climate action or GHG reduction plans.

Construction and operation of the land uses, sea-level rise adaptation, and transportation system projects under the HRA Focus Alternative would not result in the wasteful, unnecessary, or inefficient use of energy because the energy associated with these projects would be serving necessary regional needs and would comply with applicable regulations and standards (e.g., Renewable Portfolio Standard, California Energy Code). This impact would be less than significant for the reasons described in Impact EN-1 and **similar** to the impact that would occur under the proposed Plan because individual project would comply with applicable regulations and standards.

Consideration of per capita energy consumption associated with the proposed Plan and alternatives is related to electricity and natural gas use and per capita VMT, which is directly related to use of petroleum-based fuels. VMT per capita would be the same under the HRA Focus Alternative and the proposed Plan. This impact would be less than significant for the reasons discussed under Impact EN-2 and **similar** to the impact that would occur under the proposed Plan because VMT per capita would be the same.

4.5.7 Cultural Resources and Tribal Cultural Resources

NO PROJECT ALTERNATIVE

Projects located in areas with known historical sites, or located in communities with established historic preservation programs, or involving activities that would introduce new visual elements or disturb the existing terrain have the potential to result in substantial historic resource impacts. As shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses (24,700 acres versus 12,300 acres). This impact would be significant and unavoidable for the reasons described under Impact CUL-1 and **greater** than the impact that would occur under the proposed Plan because a greater area of undeveloped land would be developed.

New development, sea level rise adaptation infrastructure, and transportation projects could result in archaeological impacts if construction activities include the disturbance of previously-identified or unidentified archaeological resources. Projects involving excavation, grading, or soil removal in previously undisturbed areas have the greatest likelihood to encounter significant archaeological resources which could represent important examples of periods of California's prehistory. Likewise, the establishment of staging areas, temporary roads, and other temporary facilities necessary for construction activities has the potential to impact these cultural resources. As shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses (24,700 acres versus 12,300 acres). This impact would be significant and unavoidable for the reasons described under Impact CUL-2 and **greater** than the impact that would occur under the proposed Plan because a greater area of undeveloped land would be developed.

In general, potential impacts on human remains would be similar to those discussed for archaeological resource impacts discussed above. New development, sea level rise adaptation infrastructure, and transportation projects involving construction activities that would disturb native terrain, including excavation, grading, or soil removal, would have the greatest likelihood to encounter human remains. Compliance with California Health and Safety Code Sections 7050.5 and 7052 and

PRC Section 5097 would provide an opportunity to avoid or minimize the disturbance of human remains, and to appropriately treat any remains that are discovered. As shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses (24,700 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact CUL-3 and **greater** than the impact that would occur under the proposed Plan because a greater area of undeveloped land would be developed.

MTC requested consultation meetings with three tribes that requested contact or consultation. To date the consultation has not resulted in identification of tribal cultural resources that would be affected by the Plan. However, it is possible that TCRs could still be identified, including during analysis of subsequent projects. As shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses (24,700 acres versus 12,300 acres). This impact would be significant and unavoidable for the reasons described under Impact CUL-5 and **greater** than the impact that would occur under the proposed Plan because a greater area of undeveloped land would be developed.

ALTERNATIVE 1 - TRA FOCUS ALTERNATIVE

Projects located in areas with known historical sites, or located in communities with established historic preservation programs, or involving activities that would introduce new visual elements or disturb the existing terrain have the potential to result in substantial historic resource impacts. As shown in **Table 4-10**, the TRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (8,800 acres versus 12,300 acres). This impact would be significant and unavoidable for the reasons described under Impact CUL-1 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

New development, sea level rise adaptation infrastructure, and transportation projects could result in archaeological impacts if construction activities include the disturbance of previously-identified or unidentified archaeological resources. Projects involving excavation, grading, or soil removal in previously undisturbed areas have the greatest likelihood to encounter significant archaeological resources which could represent important examples of periods of California's prehistory. Likewise, the establishment of staging areas, temporary roads, and other temporary facilities necessary for construction activities has the potential to impact these cultural resources. As shown in **Table 4-10**, the TRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (8,800 acres versus 12,300 acres). This impact would be significant and unavoidable for the reasons described under Impact CUL-2 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

In general, potential impacts on human remains would be similar to those discussed for archaeological resource impacts discussed above. New development, sea level rise adaptation infrastructure, and transportation projects involving construction activities that would disturb native terrain, including excavation, grading, or soil removal, would have the greatest likelihood to encounter human remains. Compliance with California Health and Safety Code Sections 7050.5 and 7052 and PRC Section 5097 would provide an opportunity to avoid or minimize the disturbance of human remains, and to appropriately treat any remains that are discovered. As shown in **Table 4-10**, the TRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (8,800 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact CUL-3 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

MTC requested consultation meetings with three tribes that requested contact or consultation. To date the consultation has not resulted in identification of tribal cultural resources that would be affected by the Plan. However, it is possible that TCRs could still be identified, including during analysis of subsequent projects. As shown in **Table 4-10**, the TRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (8,800 acres versus 12,300 acres). This impact would be significant and unavoidable for the reasons described under Impact CUL-5 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

ALTERNATIVE 2 - HRA FOCUS ALTERNATIVE

Projects located in areas with known historical sites, or located in communities with established historic preservation programs, or involving activities that would introduce new visual elements or disturb the existing terrain have the potential to result in substantial historic resource impacts. As shown in **Table 4-10**, the HRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (10,700 acres versus 12,300 acres). This impact would be significant and unavoidable for the reasons described under Impact CUL-1 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

New development, sea level rise adaptation infrastructure, and transportation projects could result in archaeological impacts if construction activities include the disturbance of previously-identified or unidentified archaeological resources. Projects involving excavation, grading, or soil removal in previously undisturbed areas have the greatest likelihood to encounter significant archaeological resources which could represent important examples of periods of California's prehistory. Likewise, the establishment of staging areas, temporary roads, and other temporary facilities necessary for construction activities has the potential to impact these cultural resources. As shown in **Table 4-10**, the HRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (10,700 acres versus 12,300 acres). This impact would be significant and unavoidable for the reasons described under Impact CUL-2 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

In general, potential impacts on human remains would be similar to those discussed for archaeological resource impacts discussed above. New development, sea level rise adaptation infrastructure, and transportation projects involving construction activities that would disturb native terrain, including excavation, grading, or soil removal, would have the greatest likelihood to encounter human remains. Compliance with California Health and Safety Code Sections 7050.5 and 7052 and PRC Section 5097 would provide an opportunity to avoid or minimize the disturbance of human remains, and to appropriately treat any remains that are discovered. As shown in **Table 4-10**, the HRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (10,700 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact CUL-3 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

MTC requested consultation meetings with three tribes that requested contact or consultation. To date the consultation has not resulted in identification of tribal cultural resources that would be affected by the Plan. However, it is possible that TCRs could still be identified, including during analysis of subsequent projects. As shown in **Table 4-10**, the HRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (10,700 acres versus 12,300 acres). This impact would be significant and unavoidable for the reasons described under Impact CUL-5 and

less than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

4.5.8 Geology, Seismicity, and Mineral Resources

Tables 4-24 through 4-27 provide quantifiable data related to geology and seismicity impacts.

Table 4-24: Alquist-Priolo Zone Acreage by Alternative

	Land Use Growth Footprint	Sea Level Rise Adaptation Footprint	Transportation Projects Footprint	Total Footprint
Proposed Plan	670	30	250	950
No Project Alternative	1,300	-	60	1360
Alternative 1	370	30	100	510
Alternative 2	540	30	250	820

Notes: Whole numbers have been rounded (between 11 and 999 to the nearest 10, between 1,000 and 1,000,000 to the nearest 100). Figures may not sum due to independent rounding.
Source: data compiled by MTC and ABAG in 2021

Table 4-25: Ground Shaking Potential Acreage by Alternative

		Strong – MMI 7	Very Strong – MMI 8	Violent – MMI 9
Land Use Growth Footprint	Proposed Plan	1,300	27,800	10,400
	No Project Alternative	1,800	47,200	16,100
	Alternative 1	670	22,100	9,300
	Alternative 2	950	27,600	10,300
Sea Level Rise Adaptation Footprint	Proposed Plan	0	2,800	1,700
	No Project Alternative	0	780	180
	Alternative 1	0	2,800	1,700
	Alternative 2	0	2,800	1,700
Transportation Projects Footprint	Proposed Plan	420	9,300	4,200
	No Project Alternative	0	1,000	1,100
	Alternative 1	260	6,300	3,500
	Alternative 2	230	8,100	3,800

Notes: Whole numbers have been rounded (between 11 and 999 to the nearest 10, between 1,000 and 1,000,000 to the nearest 100).
Source: data compiled by MTC and ABAG in 2021

Table 4-26: Liquefaction Potential Acreage by Alternative

		Very Low Potential	Low Potential	Medium Potential	High Potential	Very High Potential
Land Use Growth Footprint	Proposed Plan	8,500	4,700	19,000	2,400	4,700
	No Project Alternative	24,200	7,700	25,800	3,300	4,000
	Alternative 1	6,200	3,400	16,000	2,300	4,200
	Alternative 2	7,700	5,200	19,000	2,400	4,500
Sea Level Rise Adaptation Footprint	Proposed Plan	90	50	2,400	60	1,600
	No Project Alternative	40	10	570	0	280
	Alternative 1	90	50	2,400	60	1,600
	Alternative 2	90	50	2,400	60	1,600

		Very Low Potential	Low Potential	Medium Potential	High Potential	Very High Potential
Transportation Projects Footprint	Proposed Plan	2,600	2,000	7,200	520	1,600
	No Project Alternative	360	310	890	60	530
	Alternative 1	1,800	1,500	4,900	450	1,400
	Alternative 2	2,300	1,700	6,200	340	1,400

Notes: Whole numbers have been rounded (between 0 and 10 to the nearest whole number, between 11 and 999 to the nearest 10, between 1,000 and 1,000,000 to the nearest 100).
Source: data compiled by MTC and ABAG in 2021

Table 4-27: Landslide Zones Potential Acreage by Alternative

		Few	Many
Land Use Growth Footprint	Proposed Plan	5,500	900
	No Project Alternative	16,100	4,500
	Alternative 1	3,600	690
	Alternative 2	5,100	770
Sea Level Rise Adaptation Footprint	Proposed Plan	100	4
	No Project Alternative	30	< 1
	Alternative 1	100	4
	Alternative 2	100	4
Transportation Projects Footprint	Proposed Plan	1,900	310
	No Project Alternative	380	4
	Alternative 1	1,400	290
	Alternative 2	1,800	200

Notes: Numbers less than 1 are shown as "<1"; whole numbers have been rounded (between 0 and 10 to the nearest whole number, between 11 and 999 to the nearest 10, between 1,000 and 1,000,000 to the nearest 100).
Source: data compiled by MTC and ABAG in 2021

No Project Alternative

Surface fault rupture could occur along any of the active fault traces or within the associated Alquist-Priolo Zone for the active faults within the Plan area. Although fault rupture is not entirely confined to the boundaries of an Alquist-Priolo Zone, the likelihood of rupture occurring outside of these zones is very low based on historical evidence and geologic records. The land use growth footprint under the No Project Alternative overlaps with a larger portion of Alquist-Priolo Zones (1,300 acres) compared to the proposed Plan (670 acres) (see **Table 4-24**) and fewer acres of land (60 acres) compared to the proposed Plan (280 acres) associated with the transportation and sea level rise adaptation infrastructure footprints. Overall, the No Project Alternative would result in development in a greater area associated with Alquist-Priolo Zones compared to the proposed Plan. Regulatory agencies with oversight of development associated with the proposed Plan have developed regulations and engineering design specifications that address and substantially reduce hazards associated with site-level geological and seismic conditions. This impact would be less than significant for the reasons described under Impact GEO-1 and **greater** than the impact that would occur under the proposed Plan because the land use growth footprint would occur within a greater area of Alquist-Priolo Zones.

According to modeling conducted by the U.S. Geological Survey (USGS) in conjunction with the California Geologic Survey (CGS), the Bay Area is predicted to experience at least one major earthquake (greater than moment magnitude 6.7) within the next 20 years. The intensity of such an event would depend on the causative fault and the distance to the epicenter, the magnitude, the

duration of shaking, and the characteristics of the underlying geologic materials. The entire Bay Area is classified as potentially experiencing strong to violent ground shaking (MMI 7-9). **Table 4-25** quantifies the area within the land use growth footprint based on this data. As shown, the No Project Alternative would have a greater area of land use growth footprint located within areas subject to strong, very strong, or violent ground shaking compared to the proposed Plan. However, existing regulatory requirements specify mandatory actions that must occur during project development. This impact would be less than significant for the reasons described under Impact GEO-2 and **greater** than the impact that would occur under the proposed Plan because the land use growth footprint would occur within a greater area of potential ground shaking.

Liquefaction typically occurs in areas underlain with loose, saturated, cohesionless soils within the upper 50 feet of subsurface materials. These soils, when subjected to ground shaking, can lose their strength due to buildup of excess pore water pressure, causing them to function in a manner closer to a liquefied state. **Table 4-26** shows the area of land use growth footprint that would be subject to potential liquefaction. As shown, the No Project Alternative would have a smaller area of land use, sea level rise infrastructure, and transportation project footprints within areas classified as very high liquefaction zones and a slightly greater area within a high liquefaction potential zone. However, subsequent development would be required to conform to the current seismic design provisions of the California Building Code (CBC) to reduce potential losses from ground failure as a result of an earthquake. These future projects would also be required to adhere to the local general plans and local building code requirements that contain seismic safety policies to resist ground failure through modern construction techniques. This impact would be less than significant for the reasons described under Impact GEO-3 and **less** than the impact that would occur under the proposed Plan because a smaller area would be within a high liquefaction potential zone.

The Plan area includes a wide range of topographical conditions, and landslide hazards vary from very low in low lying areas to very high in some upland areas, especially areas with slopes that exceed 15 percent. **Table 4-27** shows acreage of land use growth footprint where there is potential for landslides. As shown, the No Project Alternative would have a greater risk for landslides than the proposed Plan for land use growth footprint and sea level rise adaptation infrastructure and a higher risk for landslides for transportation projects footprint, with a total acreage of 4,500 versus 1,200. This impact would be less than significant for the reasons described under Impact GEO-4 and **greater** than the impact that would occur under the proposed Plan because a greater area would be within higher risk landslide zones.

Buildout of the land use growth footprint and construction of sea level rise adaptation infrastructure and transportation projects would include earthwork activities that could expose soils to the effects of erosion or loss of topsoil. Once disturbed, either through removal of vegetation, asphalt, or demolition of a structure, stockpiled soils may be exposed to the effects of wind and water. However, construction activities are required to adhere to National Pollutant Discharge Elimination System permit requirements for construction, as well as any local grading ordinance requirements that may include erosion prevention measures. As shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses (24,700 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact GEO-5 and **greater** than the impact that would occur under the proposed Plan because a greater area of undeveloped land would be developed.

The proposed changes in land use and the proposed sea level rise adaptation infrastructure and transportation projects would be located on a range of different geologic materials and conditions. Hazards associated with unstable soils or geologic units are dependent on site- specific conditions, as

well as the specific nature of the individual project proposed. With adherence to grading permit and building code requirements, including seismic design criteria as required by the CBC, Caltrans, Special Publication 117A, and local building code requirements, the improvements and development associated with the proposed Plan would be designed to minimize potential risks related to unstable soils and geologic units. Existing regulatory requirements specify mandatory and relatively prescriptive actions that must occur during project development and would effectively reduce the inherent hazard. As shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses (24,700 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact GEO-6 and **greater** than the impact that would occur under the proposed Plan because a greater area of undeveloped land would be developed.

New development, sea level rise adaptation infrastructure, and transportation projects could result in discovery and disturbance of paleontological resources. Projects involving excavation, grading, or soil removal in previously undisturbed areas have the greatest likelihood to encounter these resources. As shown in **Table 4-10**, the TRA Focus Alternative would result in a greater area of land being converted from undeveloped to developed uses (24,700 acres versus 12,300 acres), which could result in land conversion in greater areas of paleontological sensitivity. This impact would be significant and unavoidable for the reasons described under Impact GEO-7 and **greater** than the impact that would occur under the proposed Plan because a greater area of undeveloped land would be developed.

Local jurisdictions have general plan policies to manage mineral resources and are required under the Surface Mining and Reclamation Act (SMARA) to consider significant mineral deposits identified by CGS. Local general plans, specific plans, and other land use plans include policies to protect existing and planned future mineral production and extraction activities from surrounding uses, and require that future projects near mining activities have compatible land uses. As shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses (24,700 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact MR-1 and **greater** than the impact that would occur under the proposed Plan because a greater area of undeveloped land would be developed.

Alternative 1 - TRA Focus Alternative

Surface fault rupture could occur along any of the active fault traces or within the associated Alquist-Priolo Zone for the active faults within the Plan area. Although fault rupture is not entirely confined to the boundaries of an Alquist-Priolo Zone, the likelihood of rupture occurring outside of these zones is very low based on historical evidence and geologic records. The land use growth footprint under the TRA Focus Alternative overlaps with a smaller portion of Alquist-Priolo Zones (370 acres) compared to the proposed Plan (670 acres) (see **Table 4-24**) and fewer acres of land (130 acres) compared to the proposed Plan (280 acres) associated with the transportation and sea level rise adaptation infrastructure footprints. Overall, the TRA Focus Alternative would have a smaller area associated with Alquist-Priolo Zones compared to the proposed Plan. Regulatory agencies with oversight of development associated with the proposed Plan have developed regulations and engineering design specifications that address and substantially reduce hazards associated with site-level geological and seismic conditions. This impact would be less than significant for the reasons described under Impact GEO-1 and **less** than the impact that would occur under the proposed Plan because the land use growth footprint would occur within a smaller area of Alquist-Priolo Zones.

According to modeling conducted by USGS in conjunction with CGS, the Bay Area is predicted to experience at least one major earthquake (greater than moment magnitude 6.7) within the next 20 years. The intensity of such an event would depend on the causative fault and the distance to the

epicenter, the magnitude, the duration of shaking, and the characteristics of the underlying geologic materials. The entire Bay Area is classified as potentially experiencing strong to violent ground shaking (MMI 7-9). **Table 4-25** quantifies the area within the land use growth footprint based on this data. As shown, the TRA Focus Alternative would have a smaller area of land use growth footprint located within areas subject to strong, very strong, or violent ground shaking compared to the proposed Plan. However, existing regulatory requirements specify mandatory actions that must occur during project development. This impact would be less than significant for the reasons described under Impact GEO-2 and **less** than the impact that would occur under the proposed Plan because the land use growth footprint would occur within a smaller area of potential ground shaking.

Liquefaction typically occurs in areas underlain with loose, saturated, cohesionless soils within the upper 50 feet of subsurface materials. These soils, when subjected to ground shaking, can lose their strength due to buildup of excess pore water pressure, causing them to function in a manner closer to a liquefied state. **Table 4-26** shows the area of land use growth footprint that would be subject to potential liquefaction. As shown, the TRA Focus Alternative would have a smaller area of land use growth footprint, sea level rise infrastructure, and transportation project footprint within areas classified as high or very high liquefaction hazard compared to the proposed Plan (10,010 and 10,880 acres, respectively). However, subsequent development would be required to conform to the current seismic design provisions of the CBC to reduce potential losses from ground failure as a result of an earthquake. These future projects would also be required to adhere to the local general plans and local building code requirements that contain seismic safety policies to resist ground failure through modern construction techniques. This impact would be less than significant for the reasons described under Impact GEO-3 and **less** than the impact that would occur under the proposed Plan because a smaller area would be within a high liquefaction potential zone.

The Plan area includes a wide range of topographical conditions, and landslide hazards vary from very low in low lying areas to very high in some upland areas, especially areas with slopes that exceed 15 percent. **Table 4-27** shows acreage of land use growth footprint, sea level rise infrastructure, and transportation projects footprint where there is potential for landslides. As shown, the TRA Focus Alternative would have a lower risk for landslides than the proposed Plan (1,000 versus 1,200 acres for land rated as many). This impact would be less than significant for the reasons described under Impact GEO-4 and **less** than the impact that would occur under the proposed Plan because a smaller area would be within higher risk landslide zones.

Buildout of the land use growth footprint and construction of sea level rise adaptation infrastructure and transportation projects would include earthwork activities that could expose soils to the effects of erosion or loss of topsoil. Once disturbed, either through removal of vegetation, asphalt, or demolition of a structure, stockpiled soils may be exposed to the effects of wind and water. However, construction activities are required to adhere to National Pollutant Discharge Elimination System permit requirements for construction, as well as any local grading ordinance requirements that may include erosion prevention measures. As shown in **Table 4-10**, the TRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (8,800 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact GEO-5 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

The proposed changes in land use and sea level rise adaptation infrastructure and transportation projects would be located on a range of different geologic materials and conditions. Hazards associated with unstable soils or geologic units are dependent on site- specific conditions, as well as the specific nature of the individual project proposed. With adherence to grading permit and building

code requirements, including seismic design criteria as required by the CBC, Caltrans, Special Publication 117A, and local building code requirements, the improvements and development associated with Alternative 1 would be designed to minimize potential risks related to unstable soils and geologic units. Existing regulatory requirements specify mandatory and relatively prescriptive actions that must occur during project development and would effectively reduce the inherent hazard. As shown in **Table 4-10**, the TRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (8,800 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact GEO-6 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

New development, sea level rise adaptation infrastructure, and transportation projects could result in discovery and disturbance of paleontological resources. Projects involving excavation, grading, or soil removal in previously undisturbed areas have the greatest likelihood to encounter these resources. As shown in **Table 4-10**, the TRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (8,800 acres versus 12,300 acres), which could result in land conversion in fewer areas of paleontological sensitivity. This impact would be significant and unavoidable for the reasons described under Impact GEO-7 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

Local jurisdictions have general plan policies to manage mineral resources and are required under SMARA to consider significant mineral deposits identified by CGS. Local general plans, specific plans, and other land use plans include policies to protect existing and planned future mineral production and extraction activities from surrounding uses, and require that future projects near mining activities have compatible land uses. As shown in **Table 4-10**, the TRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (8,800 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact MR-1 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

Alternative 2 - HRA Focus Alternative

Surface fault rupture could occur along any of the active fault traces or within the associated Alquist-Priolo Zone for the active faults within the Plan area. Although fault rupture is not entirely confined to the boundaries of an Alquist-Priolo Zone, the likelihood of rupture occurring outside of these zones is very low based on historical evidence and geologic records. The land use growth footprint under the HRA Focus Alternative overlaps with a smaller portion of Alquist-Priolo Zones (540 acres) than the proposed Plan (670 acres) (see **Table 4-24**); and the same acres of land compared to the proposed Plan (280 acres) associated with the transportation and sea level rise adaptation infrastructure footprints. Overall, the HRA Focus Alternative would have a smaller area associated with Alquist-Priolo Zones compared to the proposed Plan. Regulatory agencies with oversight of development associated with the proposed Plan have developed regulations and engineering design specifications that address and substantially reduce hazards associated with site-level geological and seismic conditions. This impact would be less than significant for the reasons described under Impact GEO-1 and **less** than the impact that would occur under the proposed Plan because the land use growth footprint would occur within a smaller area of Alquist-Priolo Zones.

According to modeling conducted by USGS in conjunction with CGS, the Bay Area is predicted to experience at least one major earthquake (greater than moment magnitude 6.7) within the next 20 years. The intensity of such an event would depend on the causative fault and the distance to the epicenter, the magnitude, the duration of shaking, and the characteristics of the underlying geologic

materials. The entire Bay Area is classified as potentially experiencing strong to violent ground shaking (MMI 7-9). **Table 4-25** quantifies the area within the land use growth footprint based on this data. As shown, the HRA Focus Alternative would have a smaller area of footprint located within areas subject to strong, very strong, or violent ground shaking compared to the proposed Plan. However, existing regulatory requirements specify mandatory actions that must occur during project development. This impact would be less than significant for the reasons described under Impact GEO-2 and **less** than the impact that would occur under the proposed Plan because the land use growth footprint would occur within a smaller area of potential ground shaking.

Liquefaction typically occurs in areas underlain with loose, saturated, cohesionless soils within the upper 50 feet of subsurface materials. These soils, when subjected to ground shaking, can lose their strength due to buildup of excess pore water pressure, causing them to function in a manner closer to a liquefied state. **Table 4-26** shows the area of land use growth footprint that would be subject to potential liquefaction. As shown, the HRA Focus Alternative would have a smaller area of land use growth footprint, sea level rise infrastructure, and transportation project footprint within areas classified as high or very high liquefaction hazard compared to the proposed Plan (10,300 and 10,880 acres, respectively). However, subsequent development would be required to conform to the current seismic design provisions of the CBC to reduce potential losses from ground failure as a result of an earthquake. These future projects would also be required to adhere to the local general plans and local building code requirements that contain seismic safety policies to resist ground failure through modern construction techniques. This impact would be less than significant for the reasons described under Impact GEO-3 and **less** than the impact that would occur under the proposed Plan because a smaller area would be within a high liquefaction potential zone.

The Plan area includes a wide range of topographical conditions, and landslide hazards vary from very low in low lying areas to very high in some upland areas, especially areas with slopes that exceed 15 percent. **Table 4-27** shows acreage of land use growth footprint where there is potential for landslides. As shown, the HRA Focus Alternative would have a lower risk for landslides than the proposed Plan (1,000 versus 1,200 for land rated as many). This impact would be less than significant for the reasons described under Impact GEO-4 and **less** than the impact that would occur under the proposed Plan because a smaller area would be within higher risk landslide zones.

Buildout of the land use growth footprint and construction of sea level rise adaptation infrastructure and transportation projects would include earthwork activities that could expose soils to the effects of erosion or loss of topsoil. Once disturbed, either through removal of vegetation, asphalt, or demolition of a structure, stockpiled soils may be exposed to the effects of wind and water. However, construction activities are required to adhere to National Pollutant Discharge Elimination System permit requirements for construction, as well as any local grading ordinance requirements that may include erosion prevention measures. As shown in **Table 4-10**, the HRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (10,700 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact GEO-5 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

The proposed changes in land use and sea level rise adaptation infrastructure and transportation projects would be located on a range of different geologic materials and conditions. Hazards associated with unstable soils or geologic units are dependent on site- specific conditions, as well as the specific nature of the individual project proposed. With adherence to grading permit and building code requirements, including seismic design criteria as required by the CBC, Caltrans, Special Publication 117A, and local building code requirements, improvements and development associated

with Alternative 2 would be designed to minimize potential risks related to unstable soils and geologic units. Existing regulatory requirements specify mandatory and relatively prescriptive actions that must occur during project development and would effectively reduce the inherent hazard. As shown in **Table 4-10**, the HRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (10,700 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact GEO-6 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

New development, sea level rise adaptation infrastructure, and transportation projects could result in discovery and disturbance of paleontological resources. Projects involving excavation, grading, or soil removal in previously undisturbed areas have the greatest likelihood to encounter these resources. As shown in **Table 4-10**, the HRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (10,700 acres versus 12,300 acres), which could result in land conversion in a smaller area of paleontological sensitivity compared to the proposed Plan. This impact would be significant and unavoidable for the reasons described under Impact GEO-7 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

Local jurisdictions have general plan policies to manage mineral resources and are required under SMARA to consider significant mineral deposits identified by CGS. Local general plans, specific plans, and other land use plans include policies to protect existing and planned future mineral production and extraction activities from surrounding uses, and require that future projects near mining activities have compatible land uses. As shown in **Table 4-10**, the HRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses (10,700 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact MR-1 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

4.5.9 Hazards and Wildfire

Table 4-28 shows acreage of ultramafic rock (which produces asbestos) within the land use growth footprint, sea level rise adaptation infrastructure footprint, and transportation projects footprint. **Table 4-29** shows the acreages within fire hazard severity zones for each alternative.

Table 4-28: Ultramafic Rock Acreage by Alternative

	Land Use Growth Footprint	Sea Level Rise Adaptation Footprint	Transportation Projects Footprint	Total
Proposed Plan	660	0	110	770
No Project Alternative	670	0	10	680
Alternative 1	650	-	80	730
Alternative 2	660	0	60	710

Notes: Whole numbers have been rounded (between 0 and 10 to the nearest whole number, between 11 and 999 to the nearest 10). Figures may not sum due to independent rounding.
Sources: data compiled by MTC and ABAG in 2021

Table 4-29: Fire Hazard Zones Acreage by Alternative

		Moderate	High	Very High
Land Use Growth Footprint	Proposed Plan	830	830	190
	No Project Alternative	3,300	4,300	2,700
	Alternative 1	800	360	90
	Alternative 2	820	680	180
Sea Level Rise Adaptation Footprint	Proposed Plan	30	30	30
	No Project Alternative	10	20	0
	Alternative 1	30	30	30
	Alternative 2	30	30	30
Transportation Projects Footprint	Proposed Plan	900	570	20
	No Project Alternative	100	30	<1
	Alternative 1	660	380	20
	Alternative 2	750	380	20

Notes: Numbers less than 1 are shown as "<1"; whole numbers have been rounded (between 0 and 10 to the nearest whole number, between 11 and 999 to the nearest 10, between 1,000 and 1,000,000 to the nearest 100).
Source: data compiled by MTC and ABAG in 2021

NO PROJECT ALTERNATIVE

The projected land use development pattern, sea level rise adaptation infrastructure, and transportation projects could increase the routine transport, use, storage, and disposal of hazardous wastes in the region. These impacts are subject to regulations described in Section 3.9, which would reduce the potential for adverse effects to occur. This impact would be less than significant for the reasons described under Impact HAZ-1 and **similar** to the impact that would occur under the proposed Plan because regulations pertaining to hazardous materials would be implemented.

Construction associated with implementation of the No Project Alternative could result in impacts related to use of hazardous materials and disturbance of potentially hazardous materials, including naturally occurring asbestos (NOA). The most likely incidents involving construction-related hazardous materials are generally associated with minor spills or drips. Small fuel or oil spills are possible but would have a negligible impact on public health. All hazardous materials would be stored, handled, and disposed of according to the manufacturers' recommendations, and spills would be cleaned up in accordance with applicable regulations. As shown in **Table 4-28**, there would be a smaller area of the land located in areas that may result in dispersal of NOA (i.e., ultramafic rock) under the No Project Alternative (680 acres) compared to the proposed Plan (770 acres). This impact would be less than significant for the reasons described under Impact HAZ-2 and **less** than the impact that would occur under the proposed Plan due to the decreased risk for NOA dispersal.

During construction, demolition, and excavation activities, the changes in planned land use and transportation projects could potentially produce hazardous air emissions or involve the handling of extremely hazardous wastes. During operation, land use projects could use and produce hazardous materials that may be transported on roadways included in this Plan. However, all projects would comply with federal and State regulations that are designed to reduce the potential for the release of large quantities of hazardous materials and wastes into the environment to an acceptable level, and in particular to protect schools. Existing protective measures and regulations would be sufficient to ensure that hazardous materials stored, used, transported, and disposed of under the Plan would not pose a substantial hazard to the public or the environment, including children at schools, under normal conditions. These impacts are subject to regulations described in Section 3.9, which would

reduce the potential for adverse effects to occur. This impact would be less than significant for the reasons described under Impact HAZ-3 and **similar** to the impact that would occur under the proposed Plan because regulations pertaining to hazardous materials would be implemented.

Throughout the Plan Area there are many sites where historical releases of hazardous materials or wastes have occurred; these are listed in environmental databases pursuant to Government Code Section 65962.5. These sites range from small releases that have had localized effects on private property and have already been remediated to large scale releases from long-term historical industrial practices that have had wider ranging effects on groundwater. These impacts are subject to regulations described in Section 3.9, which would reduce the potential for adverse effects to occur. This impact would be significant and unavoidable for the reasons described under Impact HAZ-4 and **similar** to the impact that would occur under the proposed Plan because regulations pertaining to hazardous materials would be implemented.

Projects within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport would not be approved by local agencies until project design plans have been reviewed and approved by the appropriate Airport Land Use Commission (ALUC). These impacts are subject to regulations described in Section 3.9, which would reduce the potential for adverse effects to occur. This impact would be less than significant for the reasons described under Impact HAZ-5 and **similar** to the impact that would occur under the proposed Plan because regulations pertaining to airports would be implemented.

The forecasted increase to population and employment anticipated in the Plan Area could increase congestion on evacuation routes and slow evacuation. This could impair implementation of emergency response or evacuation plans, particularly if local plans rely on evacuation via personal vehicle. While changes in land use would be reflected in updated emergency and evacuation plans, it is not known if the changes would be sufficient to ensure adequate evacuation. Under the No Project Alternative, development patterns would be more spread out and would thus reduce the potential degree of congestion on local roadways during evacuation procedures. Because evacuation during emergency conditions would be less impeded by vehicular congestion under the No Project Alternative, this impact would be significant and unavoidable for the reasons described under Impact HAZ-6 and **less** than the impact that would occur under the proposed Plan.

Land development under the proposed Plan could result in exposure of people to loss, injury, or death and damage to property adjacent to wildlands or where residences are intermixed with wildlands. The No Project Alternative would result in a substantially greater land use growth footprint within a fire hazard severity zone rated moderate, high, or very high (2,700 acres) than the proposed Plan (190 acres) (**Table 4-29**). Due to this greater area of land use growth footprint within higher risk fire zones, this impact would be significant and unavoidable for the reasons described under Impact HAZ-7 and **greater** than the impact that would occur under the proposed Plan.

ALTERNATIVE 1 - TRA FOCUS ALTERNATIVE

The projected land use development pattern, sea level rise adaptation infrastructure, and transportation projects could increase the routine transport, use, storage, and disposal of hazardous wastes in the region. These impacts are subject to regulations described in Section 3.9, which would reduce the potential for adverse effects to occur. This impact would be less than significant for the reasons described under Impact HAZ-1 and **similar** to the impact that would occur under the proposed Plan because regulations pertaining to hazardous materials would be implemented.

Construction associated with implementation of Alternative 1 could result in impacts related to use of hazardous materials and disturbance of potentially hazardous materials. The most likely incidents involving construction-related hazardous materials are generally associated with minor spills or drips. Small fuel or oil spills are possible but would have a negligible impact on public health. All hazardous materials would be stored, handled, and disposed of according to the manufacturers' recommendations, and spills would be cleaned up in accordance with applicable regulations. As shown in **Table 4-28**, there would be a smaller area of the land located in areas that may result in dispersal of NOA (i.e., ultramafic rock) under Alternative 1 (730 acres) compared to the proposed Plan (770 acres). Because the potential to disperse NOA would occur within a similar area of land, this impact would be less than significant for the reasons described under Impact HAZ-2 and **similar** to the impact that would occur under the proposed Plan.

During construction, demolition, and excavation activities, construction under Alternative 1 could potentially produce hazardous air emissions or involve the handling of extremely hazardous wastes. During operation, land use projects could use and produce hazardous materials that may be transported on roadways included in this Plan. However, all projects would comply with federal and State regulations that are designed to reduce the potential for the release of large quantities of hazardous materials and wastes into the environment to an acceptable level, and in particular to protect schools. Implementation of individual projects would require compliance with regulations described in Section 3.9, which would reduce the potential for adverse effects to occur. This impact would be less than significant for the reasons described under Impact HAZ-3 and **similar** to the impact that would occur under the proposed Plan because regulations pertaining to hazardous materials would be implemented.

Throughout the Plan Area there are many sites where historical releases of hazardous materials or wastes have occurred; these are listed in environmental databases pursuant to Government Code Section 65962.5. These sites range from small releases that have had localized effects on private property and have already been remediated to large scale releases from long-term historical industrial practices that have had wider ranging effects on groundwater. These impacts are subject to regulations described in Section 3.9, which would reduce the potential for adverse effects to occur. This impact would be significant and unavoidable for the reasons described under Impact HAZ-4 and **similar** to the impact that would occur under the proposed Plan because regulations pertaining to hazardous materials would be implemented.

Projects within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport would not be approved by local agencies until project design plans have been reviewed and approved by the appropriate ALUC. These impacts are subject to regulations described in Section 3.9, which would reduce the potential for adverse effects to occur. This impact would be less than significant for the reasons described under Impact HAZ-5 and **similar** to the impact that would occur under the proposed Plan because regulations pertaining to airports would be implemented.

The forecasted increase to population and employment anticipated in the Plan Area could increase congestion on evacuation routes and slow evacuation. This could impair implementation of emergency response or evacuation plans, particularly if local plans rely on evacuation via personal vehicle. While changes in land use would be reflected in updated emergency and evacuation plans, it is not known if the changes would be sufficient to ensure adequate evacuation. Under the TRA Focus Alternative, development patterns would be centered around existing developed areas, creating issues of potential congestion on local roadways during evacuation procedures that would be similar to the proposed Plan. Because evacuation during emergency conditions would be similarly impeded by vehicular congestion

under the TRA Focus Alternative, this impact would be significant and unavoidable for the reasons described under Impact HAZ-6 and **similar** to the impact that would occur under the proposed Plan.

Land development under Alternative 1 could result in exposure of people to loss, injury, or death and damage to property adjacent to wildlands or where residences are intermixed with wildlands. The TRA Focus Alternative would result in a substantially smaller land use growth footprint within a fire hazard severity zone rated moderate, high, or very high (90 acres) than the proposed Plan (190 acres) (**Table 4-29**). Due to the area of development within a high risk fire zone, this impact would be significant and unavoidable for the reasons described under Impact HAZ-7 and **less** than the impact that would occur under the proposed Plan.

ALTERNATIVE 2 - HRA FOCUS ALTERNATIVE

The projected land use development pattern, sea level rise adaptation infrastructure, and transportation projects could increase the routine transport, use, storage, and disposal of hazardous wastes in the region. These impacts are subject to regulations described in Section 3.9, which would reduce the potential for adverse effects to occur. This impact would be less than significant for the reasons described under Impact HAZ-1 and **similar** to the impact that would occur under the proposed Plan because regulations pertaining to hazardous materials would be implemented.

Construction associated with implementation of Alternative 2 could result in impacts related to use of hazardous materials and disturbance of potentially hazardous materials, including NOA. The most likely incidents involving construction-related hazardous materials are generally associated with minor spills or drips. Small fuel or oil spills are possible but would have a negligible impact on public health. All hazardous materials would be stored, handled, and disposed of according to the manufacturers' recommendations, and spills would be cleaned up in accordance with applicable regulations. As shown in **Table 4-28**, there would be a smaller area of the land located in areas that may result in dispersal of NOA (i.e., ultramafic rock) under the HRA Focus Alternative (710 acres) compared to the proposed Plan (770 acres). This impact would be less than significant for the reasons described under Impact HAZ-2 and **similar** to the impact that would occur under the proposed Plan due to a smaller area where earth-moving activities may cause dispersal of NOA.

During construction, demolition, and excavation activities, the changes in planned land use and transportation projects could potentially produce hazardous air emissions or involve the handling of extremely hazardous wastes. During operation, land use projects could use and produce hazardous materials that may be transported on roadways included in this Plan. However, all projects would comply with federal and State regulations that are designed to reduce the potential for the release of large quantities of hazardous materials and wastes into the environment to an acceptable level, and in particular to protect schools. Individual projects would be subject to regulations described in Section 3.9, which would reduce the potential for adverse effects to occur. This impact would be less than significant for the reasons described under Impact HAZ-3 and **similar** to the impact that would occur under the proposed Plan because regulations pertaining to hazardous materials would be implemented.

Throughout the Plan Area there are many sites where historical releases of hazardous materials or wastes have occurred; these are listed in environmental databases pursuant to Government Code Section 65962.5. These sites range from small releases that have had localized effects on private property and have already been remediated to large scale releases from long-term historical industrial practices that have had wider ranging effects on groundwater. These impacts are subject to regulations described in Section 3.9, which would reduce the potential for adverse effects to occur. This impact would be significant and unavoidable for the reasons described under Impact HAZ-4 and

similar to the impact that would occur under the proposed Plan because regulations pertaining to hazardous materials would be implemented.

Projects within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport would not be approved by local agencies until project design plans have been reviewed and approved by the appropriate ALUC. These impacts are subject to regulations described in Section 3.9, which would reduce the potential for adverse effects to occur. This impact would be less than significant for the reasons described under Impact HAZ-5 and **similar** to the impact that would occur under the proposed Plan because regulations pertaining to airports would be implemented.

The forecasted increase to population and employment anticipated in the Plan Area could increase congestion on evacuation routes and slow evacuation. This could impair implementation of emergency response or evacuation plans, particularly if local plans rely on evacuation via personal vehicle. While changes in land use would be reflected in updated emergency and evacuation plans, it is not known if the changes would be sufficient to ensure adequate evacuation. Under the HRA Focus Alternative, development patterns would be centered around existing developed areas, creating issues of potential congestion on local roadways during evacuation procedures that would be similar to the proposed Plan. Because evacuation during emergency conditions would be similarly impeded by vehicular congestion under the HRA Focus Alternative, this impact would be significant and unavoidable for the reasons described under Impact HAZ-6 and **similar** to the impact that would occur under the proposed Plan.

Land development under the proposed Plan could result in exposure of people to loss, injury, or death and damage to property adjacent to wildlands or where residences are intermixed with wildlands. The HRA Focus Alternative would result in a slightly smaller land use growth footprint within a fire hazard severity zone rated moderate, high, or very high (180 acres) than the proposed Plan (190 acres) (**Table 4-29**). This impact would be significant and unavoidable for the reasons described under Impact HAZ-7 and **less** than the impact that would occur under the proposed Plan because a smaller area of development would occur within higher risk fire areas.

4.5.10 Hydrology and Water Quality

Table 4-30 provides quantifiable data related to hydrology impacts.

Table 4-30: Flood Zone Acreage by Alternative

	Plan/Alternative	100-Year
Land Use Growth Footprint	Proposed Plan	4,200
	No Project Alternative	5,500
	Alternative 1	3,500
	Alternative 2	4,100
Sea Level Rise Adaptation Footprint	Proposed Plan	4,300
	No Project Alternative	1,100
	Alternative 1	4,300
	Alternative 2	4,300
Transportation Projects Footprint	Proposed Plan	1,900
	No Project Alternative	290
	Alternative 1	1,400
	Alternative 2	1,400

Notes: Whole numbers have been rounded (between 11 and 999 to the nearest 10, between 1,000 and 1,000,000 to the nearest 100).
Sources: Data compiled by MTC and ABAG in 2021

NO PROJECT ALTERNATIVE

Compliance with water quality standards or waste discharge requirements could be affected by land development and construction of sea level rise adaptation infrastructure and transportation projects by increasing the amount of impervious surface in the region, such as new paved areas, building rooftops, and parking lots. This increase in impervious surface has the potential to generate additional stormwater runoff. Compared to the proposed Plan, the No Project Alternative has a greater area of new developed land use growth and could thus result in a greater increase of impervious surfaces (24,700 acres versus 12,300 acres, **Table 4-10**). Development of residential and commercial uses, sea level rise infrastructure, and transportation projects would not substantially degrade water quality in violation of water quality standards. Individual projects would adhere to existing regulations and would operate under the oversight of applicable regulatory agencies. This impact would be less than significant for the reasons described under Impact HYDRO-1 and **greater** than the impact that would occur under the proposed Plan because a greater area of undeveloped land would be developed.

Groundwater levels can be affected by a decrease in recharge through increased impervious surfaces. Compared to the proposed Plan, the No Project Alternative would result in a greater area of new developed land and could thus result in a greater increase of impervious surfaces (24,700 acres versus 12,300 acres, **Table 4-10**). Development and use of sea level rise infrastructure and transportation projects would not substantially affect groundwater quality or quantity. Overall, this impact would be less than significant for the reasons described under Impact HYDRO-2 and **greater** than the impact that would occur under the proposed Plan because a greater area of undeveloped land would be developed.

Construction and earth-moving activities associated with development, sea level rise adaptation infrastructure, and transportation projects would have the potential to alter existing drainage patterns, which could result in sediment loading in local waterways and subsequent effects on water quality. Individual development and transportation projects would comply with requirements (e.g. adopt BMPs appropriate to local conditions), which would prevent the degradation of water quality. As shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses compared to the proposed Plan (24,700 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact HYDRO-3 and **greater** than the impact that would occur under the proposed Plan because a greater area of undeveloped land would be developed.

Construction and earth-moving activities associated with development, sea level rise adaptation infrastructure, and transportation projects would have the potential to alter existing drainage patterns, which could result in runoff that exceeds capacity of existing or planned stormwater drainage systems or results in flooding on- or off-site. Implementation of Plan alternatives could result in new development and redevelopment that would have the potential to result in project-specific changes to existing drainage patterns. Altered drainage patterns has the potential to cause exceedance in the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Before commencement of major construction activities, project applicants would submit a SWPPP to SWRCB that identifies the BMPs that would be used in construction of the planned project. The applicant must receive approval of the SWPPP and submit a notice of intent before initiating construction. Individual development and transportation projects are expected to adopt BMPs appropriate to local conditions. As shown in **Table 4-10**, the No Project Alternative would result in a greater area of land being converted from undeveloped to developed uses compared to the proposed Plan (24,700 acres versus 12,300 acres). Potential sea level rise could cause inundation in developed areas, which could alter drainage patterns. Sea level rise adaptation

infrastructure would reduce this risk. The No Project Alternative includes fewer sea level rise adaptation projects and would thus have a lesser degree of protection against altered drainage patterns. This impact would be less than significant for the reasons described under Impact HYDRO-4 and **greater** than the impact that would occur under the proposed Plan because a greater area of undeveloped land would be developed.

Residential, commercial, and transportation projects in identified flood hazard areas could involve support structures or other aboveground improvements in the floodway that could potentially obstruct floodwaters in some locations. All projects implemented under the No Project Alternative would be required to adhere to the appropriate local and State requirements that are designed to ensure that flooding conditions are not exacerbated and that water quality is not adversely affected. Based on existing regulations, implementation of the No Project Alternative is not anticipated to increase the rate or amount of surface runoff in a manner that would result in on- or offsite flooding, or substantial erosion or siltation. As shown in **Table 4-30**, there would be a greater area of the land use growth footprint within the 100-year flood hazard zone under the No Project Alternative (5,500 acres) compared to the proposed Plan (4,200 acres) and less area within the 100-year flood hazard zone associated with transportation projects (290 acres versus 1,900 acres). Sea level rise adaptation infrastructure is intended to protect existing businesses, residences, and infrastructure from flooding. The No Project Alternative includes less sea level rise adaptation infrastructure than the proposed Plan and would, therefore, reduce future flood risks to a lesser degree. This impact would be less than significant for the reasons described under Impact HYDRO-5 and **greater** than the impact that would occur under the proposed Plan because a greater area of the land use growth footprint would occur with the 100-year flood hazard zone.

Existing regulations guide growth away from hazardous areas, thus limiting the potential for risk related to the release of pollutants attributable to flooding, seiche, or tsunami. The No Project Alternative does not have as much sea level rise adaptation infrastructure as the proposed Plan, and would thus not decrease the potential for inundation in flood hazard, tsunami, and seiche zones to the same extent as the proposed Plan. This impact would be less than significant for the reasons described under Impact HYDRO-6 and **greater** than the impact that would occur under the proposed Plan because a less sea level rise adaptation infrastructure would be developed.

ALTERNATIVE 1 - TRA FOCUS ALTERNATIVE

Compliance with water quality standards or waste discharge requirements could be affected by land development and construction of transportation projects by increasing the amount of impervious surface in the region, such as new paved areas, building rooftops, and parking lots. This increase in impervious surface has the potential to generate additional stormwater runoff. Compared to the proposed Plan, the TRA Focus Alternative has a smaller area of new developed land use growth and could thus result in a smaller increase of impervious surfaces (8,800 acres versus 12,300 acres, **Table 4-10**). Development of residential and commercial uses, sea level rise infrastructure, and transportation projects would not substantially degrade water quality in violation of water quality standards. Individual projects would adhere to existing regulations and would operate under the oversight of applicable regulatory agencies. This impact would be less than significant for the reasons described under Impact HYDRO-1 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

Groundwater levels can be affected by a decrease in recharge through increased impervious surfaces. Compared to the proposed Plan, the TRA Focus Alternative would result in a smaller area of new developed land and could thus result in a smaller increase of impervious surfaces (8,800 acres versus

12,300 acres, **Table 4-10**). Development and use of sea level rise infrastructure and transportation projects would not substantially affect groundwater quality or quantity. Overall, this impact would be less than significant for the reasons described under Impact HYDRO-2 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

Construction and earth-moving activities associated with development, sea level rise adaptation infrastructure, and transportation projects would have the potential to alter existing drainage patterns, which could result in sediment loading in local waterways and subsequent effects on water quality. Individual development and transportation projects would comply with requirements (e.g. adopt BMPs appropriate to local conditions), which would prevent the degradation of water quality. As shown in **Table 4-10**, the TRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses compared to the proposed Plan (8,800 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact HYDRO-3 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

Construction and earth-moving activities associated with development, sea level rise adaptation infrastructure, and transportation projects would have the potential to alter existing drainage patterns, which could result in runoff that exceeds capacity of existing or planned stormwater drainage systems or results in flooding on- or off-site. Implementation of Plan alternatives could result in new development and redevelopment that would have the potential to result in project-specific changes to existing drainage patterns. Altered drainage patterns has the potential to cause exceedance in the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Before commencement of major construction activities, project applicants would submit a SWPPP to SWRCB that identifies the BMPs that would be used in construction of the planned project. The applicant must receive approval of the SWPPP and submit a notice of intent before initiating construction. Individual development and transportation projects are expected to adopt BMPs appropriate to local conditions. As shown in **Table 4-10**, the TRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses compared to the proposed Plan (8,800 acres versus 12,300 acres). Potential sea level rise could cause inundation in developed areas, which could alter drainage patterns. Sea level rise adaptation infrastructure would reduce this risk. The TRA Focus Alternative includes fewer sea level rise adaptation projects and would thus have a lesser degree of protection against altered drainage patterns. This impact would be less than significant for the reasons described under Impact HYDRO-4 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

Residential, commercial, and transportation projects in identified flood hazard areas could involve support structures or other aboveground improvements in the floodway that could potentially obstruct floodwaters in some locations. All projects implemented under Alternative 1 would be required to adhere to the appropriate local and State requirements that are designed to ensure that flooding conditions are not exacerbated and that water quality is not adversely affected. Based on existing regulations, TRA Focus Alternative implementation is not anticipated to increase the rate or amount of surface runoff in a manner that would result in on- or offsite flooding, or substantial erosion or siltation. As discussed above, there would be a smaller area of the land use growth footprint within the 100-year flood hazard zone under the TRA Focus Alternative than the proposed Plan (**Table 4-30**, 3,500 acres versus 4,200 acres) and less area within the 100-year flood hazard zone associated with transportation projects (1,400 acres versus 1,900 acres). Sea level rise adaptation project are intended to protect existing businesses, residences, and infrastructure from flooding. The TRA Focus Alternative

includes fewer sea level rise adaptation infrastructure than the proposed Plan and would therefore reduce future flood risks to a lesser degree. This impact would be less than significant for the reasons described under Impact HYDRO-5 and **less** than the impact that would occur under the proposed Plan because a smaller area of land use growth footprint would occur within the 100-year flood hazard zone.

Existing regulations guide growth away from hazardous areas, thus limiting the potential for risk related to the release of pollutants attributable to flooding, seiche, or tsunami. The TRA Focus Alternative does not have as much sea level rise adaptation infrastructure as the proposed Plan and would thus not decrease the potential for inundation in flood hazard, tsunami, and seiche zones, to the same extent as the proposed Plan. This impact would be less than significant for the reasons described under Impact HYDRO-6 and **greater** than the impact that would occur under the proposed Plan because a less sea level rise adaptation infrastructure would be developed.

ALTERNATIVE 2 - HRA FOCUS ALTERNATIVE

Compliance with water quality standards or waste discharge requirements could be affected by land development and construction of transportation projects by increasing the amount of impervious surface in the region, such as new paved areas, building rooftops, and parking lots. This increase in impervious surface has the potential to generate additional stormwater runoff. Compared to the proposed Plan, the HRA Focus Alternative has a smaller area of new developed land use growth and could thus result in a smaller increase of impervious surfaces (10,700 acres versus 12,300 acres, **Table 4-10**). Development of residential and commercial uses, sea level rise infrastructure, and transportation projects would not substantially degrade water quality in violation of water quality standards. Individual projects would adhere to existing regulations and would operate under the oversight of applicable regulatory agencies. This impact would be less than significant for the reasons described under Impact HYDRO-1 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

Groundwater levels can be affected by a decrease in recharge through increased impervious surfaces. Compared to the proposed Plan, the HRA Focus Alternative would result in a smaller area of new developed land and could thus result in a smaller increase of impervious surfaces (10,700 acres versus 12,300 acres, **Table 4-10**). Development and use of sea level rise infrastructure and transportation projects would not substantially affect groundwater quality or quantity. Overall, this impact would be less than significant for the reasons described under Impact HYDRO-2 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

Construction and earth-moving activities associated with development, sea level rise adaptation infrastructure, and transportation projects would have the potential to alter existing drainage patterns, which could result in sediment loading in local waterways and subsequent effects on water quality. Individual development and transportation projects would comply with requirements (e.g. adopt BMPs appropriate to local conditions), which would prevent the degradation of water quality. As shown in **Table 4-10**, the HRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses compared to the proposed Plan (10,700 acres versus 12,300 acres). This impact would be less than significant for the reasons described under Impact HYDRO-3 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

Construction and earth-moving activities associated with development, sea level rise adaptation infrastructure, and transportation projects would have the potential to alter existing drainage patterns, which could result in runoff that exceeds capacity of existing or planned stormwater drainage systems or results in flooding on- or off-site. Implementation of Plan alternatives could result in new development and redevelopment that would have the potential to result in project-specific changes to existing drainage patterns. Altered drainage patterns have the potential to cause exceedance in the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Before commencement of major construction activities, project applicants would submit a SWPPP to SWRCB that identifies the BMPs that would be used in construction of the planned project. The applicant must receive approval of the SWPPP and submit a notice of intent before initiating construction. Individual development and transportation projects are expected to adopt BMPs appropriate to local conditions. As shown in **Table 4-10**, the HRA Focus Alternative would result in a smaller area of land being converted from undeveloped to developed uses compared to the proposed Plan (10,700 acres versus 12,300 acres). Potential sea level rise could cause inundation in developed areas, which could alter drainage patterns. Sea level rise adaptation infrastructure would reduce this risk. The HRA Focus Alternative includes the same sea level rise adaptation projects and would thus have a similar effect on drainage patterns. This impact would be less than significant for the reasons described under Impact HYDRO-4 and **less** than the impact that would occur under the proposed Plan because a smaller area of undeveloped land would be developed.

Residential, commercial, and transportation projects in identified flood hazard areas could involve support structures or other aboveground improvements in the floodway that could potentially obstruct floodwaters in some locations. Projects implemented under Alternative 2 would be required to adhere to the appropriate local and State requirements that are designed to ensure that flooding conditions are not exacerbated and that water quality is not adversely affected. Based on existing regulations, implementation of Alternative 2 is not anticipated to increase the rate or amount of surface runoff in a manner that would result in on- or offsite flooding, or substantial erosion or siltation. As discussed above, there would be a smaller area of the land use growth footprint within the 100-year flood hazard zone under the HRA Focus (**Table 4-30**, 4,100 acres versus 4,200 acres) and less area within the 100-year flood hazard zone associated with transportation projects (1,400 acres versus 1,900 acres). Sea level rise adaptation project are intended to protect existing businesses, residences, and infrastructure from flooding. The HRA Focus Alternative includes fewer sea level rise adaptation infrastructure than the proposed Plan and would therefore reduce future flood risks to a lesser degree. This impact would be less than significant for the reasons described under Impact HYDRO-5 and **less** than the impact that would occur under the proposed Plan because a smaller area of land use growth footprint would occur within the 100-year flood hazard zone.

Existing regulations guide growth away from hazardous areas, thus limiting the potential for risk related to the release of pollutants attributable to flooding, seiche, or tsunami. The HRA Focus Alternative has the same sea level rise adaptation infrastructure as the proposed Plan, and would thus decrease the potential for inundation in flood hazard, tsunami, and seiche zones to the same extent as the proposed Plan. This impact would be less than significant for the reasons described under Impact HYDRO-6 and **similar** to the impact that would occur under the proposed Plan because a less sea level rise adaptation infrastructure would be developed.

4.5.11Land Use, Population, and Housing

The Plan alternatives assume the same projected housing and population levels in 2050; each alternative differs by where new housing and employment centers are located. Please see Section 4.7, "Ability to Meet Project Objective" for additional discussions related to displacement.

NO PROJECT ALTERNATIVE

Physical division of established communities is generally attributed to development of roadways or other impediments that prohibit or limit travel within a developed area. Compared to the proposed Plan, there would be fewer transportation projects that could require the acquisition of land in existing communities, but some projects could still divide established communities. This impact would be significant and unavoidable for the reasons described under Impact LU-1 for the impacts of transportation projects and **less** than the impact that would occur under the proposed Plan because there would be fewer transportation projects.

Implementation of the No Project Alternative assumes that the land use growth footprint, transportation projects, and sea level rise infrastructure would be consistent with general plan policies and zoning districts. This impact would be less than significant because development under the No Project Alternative would be consistent with land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect, and **less** than the impact that would occur under the proposed Plan (LU-2). *(This impact is significant and unavoidable under the proposed Plan)*

Under the No Project Alternative, growth would occur consistent with current general plans and zoning, without an adopted regional plan, and assuming no new infrastructure projects beyond those currently under construction or those that have both full funding and environmental clearance. In comparison to the proposed Plan, there are no regional strategies in the No Project Alternative to focus growth into specific geographic areas within the region. Instead, growth would occur consistent with current general plans and zoning and would therefore not result in substantial unplanned growth. This impact would be less than significant for the reasons described under Impact LU-3 and **similar** to the impact that would occur under the proposed Plan.

Displacement risk is a function of the location and availability of affordable housing near major job centers in a growing regional economy. As the growth in jobs (particularly those that pay higher wages) outpaces the supply of housing (particularly those that are affordable to lower-income households), the cost of housing inevitably rises faster than wages for all workers. This causes a greater risk of displacement within Equity Priority Communities through 2050, despite an overall improvement in the risk of displacement regionwide compared to the proposed Plan. This alternative lacks any coordinated regional policies, such as Strategies H1, H2, H4 and H5, to build and integrate preserve and produce more adequate affordable housing and therefore help reduce displacement. Due to a relative reduction in redevelopment, implementation of the No Project Alternative would less construction of replacement housing, which could result in environmental impacts. The impact related to displacement of housing would be significant and unavoidable for the reasons described under Impact LU-4 and **less** than the impact that would occur under the proposed Plan because there would less construction of new housing compared to the proposed Plan.

ALTERNATIVE 1 - TRA FOCUS ALTERNATIVE

Physical division of established communities is generally attributed to development of roadways or other impediments that prohibit or limit travel within a developed area. Compared to the proposed

Plan, there would be fewer transportation projects that could require the acquisition of land in existing communities, but some projects could still divide established communities. This impact would be significant and unavoidable for the reasons described under Impact LU-1 for the impacts of transportation projects and **less** than the impact that would occur under the proposed Plan because there would be fewer transportation projects.

Implementation of the TRA Focus Alternative could result in planning of land use development pattern, sea level rise adaption infrastructure, and transportation projects in areas that are not consistent with existing long-range plans, including local general plans, the Bay Plan, and LCPs. As for the proposed Plan, MTC does not have the authority to adopt, approve, implement, or otherwise regulate local or regional land use plans. In addition, cities and counties are not required to change their land use plans and policies, including general plans, to be consistent with the TRA Focus Alternative. Therefore, the potential for inconsistencies with general plans and regional conservation plans would be the same under the TRA Focus Alternative as the proposed Plan, and this impact would be significant and unavoidable for the reasons described under Impact LU-2 and **similar** to the proposed Plan.

The TRA Focus Alternative would concentrate growth into areas that contain high-quality transit services. This alternative would respond to projected growth and would therefore not result in substantial unplanned growth. This impact would be less than significant for the reasons described under Impact LU-3 and **similar** to the impact that would occur under the proposed Plan because individual project would be consistent with general plan policies and zoning districts.

Displacement risk is a function of the location and availability of affordable housing near major job centers in a growing regional economy. As the growth in jobs (particularly those that pay higher wages) outpaces the supply of housing (particularly those that are affordable to lower-income households), the cost of housing inevitably rises faster than wages for all workers. Risk of displacement, overall and in Equity Priority Communities, is lower under the TRA Focus Alternative compared to the proposed Plan because the housing growth pattern enables more low-income residents to continue living in current communities due to an increase in deed-restricted affordable housing. An increase in deed-restricted affordable housing would reduce the need to develop replacement housing elsewhere because more low-income residents could continue living in current communities. Because more low-income residents would not be required to relocate, there would be less necessity for new construction that could result in environmental impacts, and the impact related to displacement of housing would be significant and unavoidable for the reasons described under Impact LU-4 and **less** than the impact that would occur under the proposed Plan.

ALTERNATIVE 2 - HRA FOCUS ALTERNATIVE

Physical division of established communities is generally attributed to development of roadways or other impediments that prohibit or limit travel within a developed area. Compared to the proposed Plan, there would be fewer transportation projects that could require the acquisition of land in existing communities, but some projects could still divide established communities. This impact would be significant and unavoidable for the reasons described under Impact LU-1 for the impacts of transportation projects and **less** than the impact that would occur under the proposed Plan because there would be fewer transportation projects.

Implementation of the HRA Focus Alternative could result in planning of land use development pattern, sea level rise adaption infrastructure, and transportation projects in areas that are not consistent with existing long-range plans, including local general plans, the Bay Plan, and LCPs. As for

the proposed Plan, MTC does not have the authority to adopt, approve, implement, or otherwise regulate local or regional land use plans. In addition, cities and counties are not required to change their land use plans and policies, including general plans, to be consistent with the HRA Focus Alternative. Therefore, there is a potential for inconsistencies with general plans and regional conservation plans would be the same under the HRA Focus Alternative as the proposed Plan, and this impact would be significant and unavoidable for the reasons described under Impact LU-2 and **similar** to the proposed Plan.

The HRA Focus Alternative would concentrate a substantially higher share of growth in HRAs, especially in the South Bay. This alternative would respond to projected growth and would therefore not result in substantial unplanned growth. This impact would be less than significant for the reasons described under Impact LU-3 and **similar** to the impact that would occur under the proposed Plan because individual project would be consistent with general plan policies and zoning districts.

Displacement risk is a function of the location and availability of affordable housing near major job centers in a growing regional economy. Under the HRA Focus Alternative, strategies shift more development, including deed-restricted affordable housing, toward High-Resource Areas, making these traditionally-exclusive communities somewhat more inclusive than the proposed Plan. This causes a greater risk of displacement within the existing Equity Priority Communities through 2050, despite an overall improvement in the risk of displacement regionwide compared to the proposed Plan. This shift in housing development toward High-Resource Areas indicates that less housing, including affordable housing, would be constructed in Equity Priority Communities, meaning that fewer residents in the existing low-income communities and communities of color are able to remain in place through 2050. This would require a greater degree of replacement housing construction elsewhere, and thus a greater potential for related environmental impacts. The impact related to displacement of housing would be significant and unavoidable for the reasons described under Impact LU-4 and **greater** than the impact that would occur under the proposed Plan because there would be a greater risk of displacement within the existing Equity Priority Communities through 2050 under the HRA Focus Alternative compared to the proposed Plan.

4.5.12 Noise

NO PROJECT ALTERNATIVE

The land use development pattern, sea level rise adaptation infrastructure, and transportation projects that may result from implementation of the Plan alternatives could result in substantial construction noise levels such that nearby receptors could be adversely affected and applicable noise standards exceeded. For the reasons described under Impact NOISE-1, construction from implementation of the No Project Alternative would be significant and unavoidable and **similar** to the impact that would occur under the proposed project.

The land use development pattern, sea level rise adaptation infrastructure, and transportation projects that may result from implementation of the Plan alternatives could result in regional average noise increases and localized traffic-related noise levels that exceed applicable thresholds, resulting in a substantial permanent increase in noise in some areas. Depending on the location of development, noise levels would increase or decrease along some roadways in some counties. In addition, the land use growth pattern under the No Project Alternative is spread out more than under the proposed Plan, which would distribute transportation noise throughout the region more, but may reduce it in areas that would become more dense under the proposed Plan. Because the Plan

alternatives would result in varying degrees of noise levels distributed throughout the Plan area, including traffic noise increases and threshold exceedances in some areas, substantial increases in stationary noise sources, and variations to the level of new or expanded transit services, it is not possible to determine the relative level of adverse effect for this area of impact. Furthermore, noise is assessed based on the presence of sensitive receptors to a noise generator, which cannot be reasonably determined within a large area and over a long period of time. In addition, noise levels decrease with distance and would not combine across the Plan area. This impact would be significant and unavoidable for the reasons discussed under Impact NOISE-2 and **similar** to the impact that would occur under the proposed Plan.

Construction activities could generate substantial vibration levels, and the potential exists for pile driving to occur within 50 feet of an older building, exceeding Caltrans-recommended levels for structural damage, and within 550 feet of an existing sensitive land use, exceeding levels for vibration annoyance recommended by the Federal Transit Administration (FTA) recommended. In addition, locating residential land uses in proximity to transit could also result in exposure of the future residents to vibration levels in excess of established standards. Information is not available to assess the relative difference to transit-related vibration levels under the No Project Alternative; nor the extent to which construction vibration would affect existing sensitive land uses. However, vibration impacts would occur under both the proposed Plan and No Project Alternative. Because these types of impacts are site specific, they are difficult to compare across a large site such as the Plan area. This impact would be significant and unavoidable for the reasons described under Impact NOISE-3 and **similar** to the impact that would occur under the proposed Plan.

There are 38 airports, including public, private, and military airports throughout the Bay Area. Projected development could potentially be located in close proximity to existing airports such that applicable exterior and interior noise standards would be exceeded. Local land use compatibility standards contained in City and County General Plans, would typically discourage or require specific site review for construction of sensitive land uses in areas potentially impacted by aircraft noise. However, it is possible that planned development could be exposed to exterior and interior noise levels from existing airports or airstrips that exceed applicable standards. This impact would be significant and unavoidable for the reasons described under Impact NOISE-4 and **similar** to the impact that would occur under the proposed Plan.

ALTERNATIVE 1 - TRA FOCUS ALTERNATIVE

The land use development pattern, sea level rise adaptation infrastructure, and transportation projects that may result from implementation of the Plan alternatives could result in substantial construction noise levels such that nearby receptors could be adversely affected and applicable noise standards exceeded. For the reasons described under Impact NOISE-1, construction from projected development, sea level rise adaptation infrastructure, and transportation projects would be significant and unavoidable and **similar** to the impact that would occur under the proposed project.

The land use development pattern, sea level rise adaptation infrastructure, and transportation projects that may result from implementation of the Plan alternatives could result in stationary noise increases in certain areas and localized traffic-related noise levels that exceed applicable thresholds, resulting in a substantial permanent increase in noise in some areas. Depending on the location of development, noise levels would increase on some roadways or decrease along some roadways in some counties. Generally, with consideration of traffic noise, the TRA Focus Alternative would result in similar levels of vehicle commuters and commuters using alternative modes of transportation (walk, transit, bike, telecommute)**.** In addition, this alternative would include the same major rail

expansion and modernization projects as the proposed Plan and thus result in similar levels of transit-related noise. However, because the land use growth pattern under the TRA Focus Alternative would focus growth within TRAs, the distribution of noise levels would be different than the proposed Plan. Noise is assessed based on the presence of sensitive receptors to a noise generator, which cannot be reasonably determined within a large area and over a long period of time. In addition, noise levels decrease with distance and would not combine across the Plan area. This impact would be significant and unavoidable for the reasons discussed under Impact NOISE-2 and **similar** to the impact that would occur under the proposed Plan.

Construction activities could generate substantial vibration levels, and the potential exists for pile driving to occur within 50 feet of an older building, exceeding Caltrans-recommended levels for structural damage, and within 550 feet of an existing sensitive land use, exceeding FTA-recommended levels for vibration annoyance. In addition, locating residential land uses in proximity to transit could also result in exposure of the future residents to vibration levels in excess of standards established by FTA or Caltrans. New households included in the land use growth footprint forecast could exceed the recommended threshold for human disturbance of 72 velocity level in decibels (VdB) for sensitive receptors that are exposed to a frequent amount of vibration events. Information is not available to assess the relative difference to transit-related vibration levels under the TRA Focus Alternative; nor the extent to which construction vibration would affect existing sensitive land uses. However, vibration impacts would occur under both the proposed Plan and TRA Focus Alternative. Because these types of impacts are site specific, they are difficult to compare across a large site such as the Plan area. This impact would be significant and unavoidable for the reasons described under Impact NOISE-3 and **similar** to the impact that would occur under the proposed Plan.

There are 38 airports, including public, private, and military airports throughout the Bay Area. Projected development could potentially be located in close proximity to existing airports such that applicable exterior and interior noise standards would be exceeded. Local land use compatibility standards contained in City and County General Plans, would typically discourage or require specific site review for construction of sensitive land uses in areas potentially impacted by aircraft noise. However, it is possible that planned development could be exposed to exterior and interior noise levels from existing airports or airstrips that exceed applicable standards. This impact would be significant and unavoidable for the reasons described under Impact NOISE-4 and **similar** to the impact that would occur under the proposed Plan.

HRA FOCUS ALTERNATIVE

The land use development pattern, sea level rise adaptation infrastructure, and transportation projects that may result from implementation of the Plan alternatives could result in substantial construction noise levels such that nearby receptors could be adversely affected and applicable noise standards exceeded. For the reasons described under Impact NOISE-1, construction from projected development, sea level rise adaptation infrastructure, and transportation projects would be significant and unavoidable and **similar** to the impact that would occur under the proposed project.

The land use development pattern, sea level rise adaptation infrastructure, and transportation projects that may result from implementation of the Plan alternatives could result in stationary noise increases in certain areas and localized traffic-related noise levels that exceed applicable thresholds, resulting in a substantial permanent increase in noise in some areas. Depending on the location of development, noise levels would increase along some roadways and decrease along other roadways in some counties. Generally, with consideration of traffic noise, the TRA Focus Alternative would result in similar levels of vehicle commuters and commuters using alternative modes of transportation

(walk, transit, bike, telecommute)**.** In addition, this alternative would include the same major rail expansion and modernization projects as the proposed Plan and thus result in similar levels of transit-related noise. However, because the land use growth pattern under the HRA Focus Alternative would focus growth within HRAs, the distribution of noise levels would be different than the proposed Plan. Noise is assessed based on the presence of sensitive receptors to a noise generator, which cannot be reasonably determined within a large area and over a long period of time. In addition, noise levels decrease with distance and would not combine across the Plan area. This impact would be significant and unavoidable for the reasons discussed under Impact NOISE-2 and **similar** to the impact that would occur under the proposed Plan.

Construction activities could generate substantial vibration levels, and the potential exists for pile driving to occur within 50 feet of an older building, exceeding Caltrans-recommended levels for structural damage, and within 550 feet of an existing sensitive land use, exceeding FTA-recommended levels for vibration annoyance. In addition, locating residential land uses in proximity to transit could also result in exposure of the future residents to vibration levels in excess of standards established by FTA or Caltrans. New households included in the land use growth footprint forecast could exceed the recommended threshold for human disturbance of 72 VdB for sensitive receptors that are exposed to a frequent amount of vibration events. Information is not available to assess the relative difference to transit-related vibration levels under the HRA Focus Alternative; nor the extent to which construction vibration would affect existing sensitive land uses. However, vibration impacts would occur under both the proposed Plan and HRA Focus Alternative. Because these types of impacts are site specific, they are difficult to compare across a large site such as the Plan area. This impact would be significant and unavoidable for the reasons described under Impact NOISE-3 and **similar** to the impact that would occur under the proposed Plan.

There are 38 airports, including public, private, and military airports throughout the Bay Area. Projected development could potentially be located in close proximity to existing airports such that applicable exterior and interior noise standards would be exceeded. Local land use compatibility standards contained in City and County General Plans, would typically discourage or require specific site review for construction of sensitive land uses in areas potentially impacted by aircraft noise. However, it is possible that planned development could be exposed to exterior and interior noise levels from existing airports or airstrips that exceed applicable standards. This impact would be significant and unavoidable for the reasons described under Impact NOISE-4 and **similar** to the impact that would occur under the proposed Plan.

4.5.13 Public Services and Recreation

NO PROJECT ALTERNATIVE

The regional growth forecast could result in increases in demand for public services that exceed existing service capabilities, and may require construction of new facilities or modifications to existing facilities to maintain adequate capital capacity, equipment, and personnel. Because MTC and ABAG do not have land use authority to adopt local land use plans or approve local land use development projects, land use development projects are ultimately controlled by local jurisdictions throughout the Plan area. Future land use development projects would be required to undergo an evaluation of their contribution to demand on public services prior to approval. In cases where a project results in increased demand, many jurisdictions require developers to pay impact fees to fund increased demand for public services; however, the amount and extent to which a project must mitigate additional demand would differ on a project-by-project basis depending on size and location and

would be the responsibility of the implementing agency/project applicant. The magnitude of this impact is dependent on changes to population levels, which would be the same under all Plan alternatives but would occur in different patterns. Forecasted population levels would result in the need for new public services facilities, the construction of which could cause significant environmental impacts, in different patterns between the No Project Alternative and proposed Plan, but with no discernable difference in the level of adverse effect for this area of impact. This impact would be significant and unavoidable for the reasons described under Impact PSR-1 and **similar** to the impact that would occur under the proposed Plan.

Land use development could increase demand on recreational services. Existing State requirements regarding development of a complete general plan, including Open Space and Conservation Elements, require local jurisdictions to address impacts on recreational facilities. The magnitude of this impact is dependent on changes to population levels, which would be the same under all Plan alternatives. Sea level rise adaptation infrastructure and transportation projects would not substantially affect recreation resources. Forecasted population levels would result in the need for new public services facilities in different patterns between the No Project Alternative and proposed Plan. The construction of new or expanded recreational facilities may result in environmental impacts. This impact would be significant and unavoidable for the reasons described under Impact PSR-2 and **similar** to the impact that would occur under the proposed Plan.

ALTERNATIVE 1 - TRA FOCUS ALTERNATIVE

The regional growth forecast could result in increases in demand for public services that exceed existing service capabilities, and may require construction of new facilities or modifications to existing facilities to maintain adequate capital capacity, equipment, and personnel. The magnitude of this impact is dependent on changes to population levels, which would be the same under all Plan alternatives but would occur in different patterns. Forecasted population levels would result in the need for new public services facilities in different patterns between the TRA Focus Alternative and proposed Plan, but with no discernable difference in the level of adverse effect for this area of impact. This impact would be significant and unavoidable for the reasons described under Impact PSR-1 and **similar** to the impact that would occur under the proposed Plan.

Land use development could increase demand on recreational services. Existing State requirements regarding development of a complete general plan, including Open Space and Conservation Elements, require local jurisdictions to address impacts on recreational facilities. The magnitude of this impact is dependent on changes to population levels, which would be the same under all Plan alternatives. Sea level rise adaptation infrastructure and transportation projects would not substantially affect recreation resources. Forecasted population levels would result in the need for new public services facilities in different patterns between the TRA Focus Alternative and proposed Plan. The construction of new or expanded recreational facilities may result in significant environmental impacts. This impact would be significant and unavoidable for the reasons described under Impact PSR-2 and **similar** to the impact that would occur under the proposed Plan.

ALTERNATIVE 2 - HRA FOCUS ALTERNATIVE

The regional growth forecast could result in increases in demand for public services that exceed existing service capabilities, and may require construction of new facilities or modifications to existing facilities to maintain adequate capital capacity, equipment, and personnel. Because MTC and ABAG do not have land use authority to adopt local land use plans or approve local land use development projects, land use development projects are ultimately controlled by local jurisdictions throughout

the Plan area. Future land use development projects would be required to undergo an evaluation of their contribution to demand on public services prior to approval. In cases where a project results in increased demand, many jurisdictions require developers to pay impact fees to fund increased demand for public services; however, the amount and extent to which a project must mitigate additional demand would differ on a project-by-project basis depending on size and location and would be the responsibility of the implementing agency/project applicant. The magnitude of this impact is dependent on changes to population levels, which would be the same under all Plan alternatives but would occur in different patterns. Forecasted population levels would result in the need for new public services facilities in different patterns between the HRA Focus Alternative and proposed Plan, but with no discernable difference in the level of adverse effect for this area of impact. This impact would be significant and unavoidable for the reasons described under Impact PSR-1 and **similar** to the impact that would occur under the proposed Plan.

Land use development could increase demand on recreational services. Existing State requirements regarding development of a complete general plan, including Open Space and Conservation Elements, require local jurisdictions to address impacts on recreational facilities. The magnitude of this impact is dependent on changes to population levels, which would be the same under all Plan alternatives. Sea level rise adaptation infrastructure and transportation projects would not substantially affect recreation resources. Forecasted population levels would result in the need for new public services facilities in different patterns between the HRA Focus Alternative and proposed Plan. The construction of new or expanded recreational facilities may result in significant environmental impacts. This impact would be significant and unavoidable for the reasons described under Impact PSR-2 and **similar** to the impact that would occur under the proposed Plan.

4.5.14 Public Utilities and Facilities

NO PROJECT ALTERNATIVE

Impacts related to wastewater, stormwater, and solid waste are more localized in nature, and therefore the analysis is qualitative and focuses on the existing regulations, standards, and policy measures to address these localized impacts. The evaluation of public utilities and facilities impacts assumes that construction and development under the No Project Alternative would adhere to applicable federal, State, and local regulations and would conform to appropriate standards in the industry, as relevant for individual projects. Potential impacts on water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities would occur primarily from buildout under the land use development pattern that may result from implementation of the No Project Alternative. Development outside of urbanized areas could require the construction of new or expanded utilities infrastructure. Expansion of new infrastructure would be greater under the No Project Alternative than under the proposed Plan because there would be a larger area of undeveloped land converted to developed uses (24,700 acres versus 12,300 acres, **Table 4-10**). This impact would be significant and unavoidable for the reasons described under Impact PUF-1 and **greater** than the impact that would occur under the proposed Plan because there would be a larger area of undeveloped land that would be developed.

Increases to water demand are primarily associated with increased population levels. Landscaping features associated with transportation projects may also require water supplies, depending on the requirements of the plant species used. The No Project Alternative would result in the same increase to population levels as the proposed Plan. However, the land use growth footprint is greater under the No Project Alternative than under the proposed Plan (24,700 acres versus 12,300 acres, **Table 4-10**), which

would result in a less efficient water supply system (e.g., greater areas of irrigated landscaping). This impact would be significant and unavoidable for the reasons described under Impact PUF-2 and **greater** than the impact that would occur under the proposed Plan because there would be a larger area of undeveloped land that would be developed.

Wastewater treatment demand would increase due to increases in population levels of individual service districts. The proposed Plan and No Project Alternative include the same population projections, and thus a similar level of wastewater would be generated. The land use growth footprint would be different between the proposed Plan and No Project Alternative; however, it is not possible to determine the extent to which different service providers would be affected because the timeline for buildout of specific areas and future expansion plans of individual service districts is unknown. This impact would be significant and unavoidable for the reasons described under Impact PUF-3 and **similar** to the impact that would occur under the proposed Plan because population projections are the same between the proposed Plan and No Project Alternative.

Solid waste generated by land use development, sea level rise adaptation infrastructure, and transportation projects could reduce the capacity of existing landfills, leading to earlier closure dates than currently anticipated and a need for increased landfill capacity. The proposed Plan and No Project Alternatives include the same population projections, and a similar level of solid waste would be generated among the alternatives. This impact would be significant and unavoidable for the reasons described under Impact PUF-4 and **similar** to the impact that would occur under the proposed Plan.

ALTERNATIVE 1 - TRA FOCUS ALTERNATIVE

Potential impacts on water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities would occur primarily from the land use development pattern that may result from implementation of Alternative 1. Development outside of urbanized areas could require the construction of new or expanded utilities infrastructure. Expansion of new infrastructure would be smaller under the TRA Focus Alternative than the proposed Plan because there would be a smaller area of undeveloped land converted to developed uses (8,800 acres versus 12,300 acres, **Table 4-10**). This impact would be significant and unavoidable for the reasons described under Impact PUF-1 and **less** than the impact that would occur under the proposed Plan because there would be a smaller area of undeveloped land that would be developed.

Increases to water demand are primarily associated with increased population levels. Landscaping features associated with transportation projects may also require water supplies, depending on the requirements of the plant species used. The TRA Focus Alternative would result in the same increase to population levels as the proposed Plan. However, the land use growth footprint is smaller under the TRA Focus Alternative than under the proposed Plan (8,800 acres versus 12,300 acres, **Table 4-10**), which would result in a more efficient water supply system (e.g., less area of irrigated landscaping). This impact would be significant and unavoidable for the reasons described under Impact PUF-2 and **less** than the impact that would occur under the proposed Plan because there would be a smaller area of undeveloped land that would be developed.

Wastewater treatment demand would increase due to increases in population levels of individual service districts. The proposed Plan and TRA Focus Alternative include the same population projections, and thus a similar level of wastewater would be generated. The land use growth footprint would be different between the proposed Plan and TRA Focus Alternative; however, it is not possible to determine the extent to which different service providers would be affected because the timeline for buildout of specific areas and future expansion plans of individual service districts is unknown. This

impact would be significant and unavoidable for the reasons described under Impact PUF-3 and **similar** to the impact that would occur under the proposed Plan because population projections are the same between the proposed Plan and TRA Focus Alternative.

The solid waste generated by both land use development, sea level rise adaptation infrastructure, and transportation projects could reduce the capacity of existing landfills, leading to earlier closure dates than currently anticipated and a need for increased landfill capacity. The proposed Plan and TRA Focus Alternative include the same population projections, and thus a similar level of solid waste would be generated among the alternatives. This impact would be significant and unavoidable for the reasons described under Impact PUF-4 and **similar** to the impact that would occur under the proposed Plan.

HRA FOCUS ALTERNATIVE

Potential impacts on water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities would occur primarily from the land use development pattern that may result from implementation of the proposed Plan. Development outside of urbanized areas could require the construction of new or expanded utilities infrastructure. Expansion of new infrastructure would be smaller under the HRA Focus Alternative than the proposed Plan because there would be a smaller area of undeveloped land converted to developed uses (10,700 acres versus 12,300 acres, **Table 4-10**). This impact would be significant and unavoidable for the reasons described under Impact PUF-1 and **less** than the impact that would occur under the proposed Plan because there would be a smaller area of undeveloped land that would be developed.

Increases to water demand are primarily associated with increased population levels. Landscaping features associated with transportation projects may also require water supplies, depending on the requirements of the plant species used. The HRA Focus Alternative would result in the same increase to population levels as the proposed Plan. However, the land use growth footprint is less under the HRA Focus Alternative than under the proposed Plan (10,700 acres versus 12,300 acres, **Table 4-10**), which would result in a more efficient water supply system (e.g., smaller area of irrigated landscaping). This impact would be significant and unavoidable for the reasons described under Impact PUF-2 and **less** than the impact that would occur under the proposed Plan because there would be a smaller area of undeveloped land that would be developed.

Wastewater treatment demand would increase due to increases in population levels of individual service districts. The proposed Plan and HRA Focus Alternative include the same population projections, and thus a similar level of wastewater would be generated. The land use growth footprint would be different between the proposed Plan and HRA Focus Alternative; however, it is not possible to determine the extent to which different service providers would be affected because the timeline for buildout of specific areas and future expansion plans of individual service districts is unknown. This impact would be significant and unavoidable for the reasons described under Impact PUF-3 and **similar** to the impact that would occur under the proposed Plan because population projections are the same between the proposed Plan and HRA Focus Alternative.

The solid waste generated by both land use, sea level rise adaptation infrastructure, and transportation projects could reduce the capacity of existing landfills, leading to earlier closure dates than currently anticipated and a need for increased landfill capacity. The proposed Plan and HRA Focus Alternatives include the same population projections, and thus a similar level of solid waste would be generated among the alternatives. This impact would be significant and unavoidable for the reasons described under Impact PUF-4 and **similar** to the impact that would occur under the proposed Plan.

4.5.15 Transportation

Bay Area travel behavior in 2050 under the proposed Plan and each alternative, is summarized in **Table 4-31. Table 4-32** shows average trip length by Alternative. **Table 4-33** shows the journey to work method for each of the alternatives.

Table 4-31: Comparison of Bay Area Travel Behavior by Alternative in 2050

	Proposed Plan	No Project Alternative	Alternative 1	Alternative 2
Daily Commute Trips	9,324,000	10,709,000	9,317,000	9,302,000
Daily Non-Commute Trips	24,197,000	24,211,000	24,166,000	24,229,000
Total Daily Trips	33,521,000	34,920,000	33,482,000	33,531,000
Daily Vehicle Trips	23,487,000	26,466,000	23,258,000	23,488,000
Daily Vehicle Miles Traveled (VMT)	181,917,000	212,110,000	179,094,000	180,701,000
Daily Vehicle Miles Traveled per Capita	17.5	20.5	17.3	17.4
Daily Vehicle Hours of Recurring Delay	644,200	1,277,000	613,100	622,500
Daily Transit Boardings	3,964,000	3,146,000	4,155,000	4,177,000
Daily Transit Passenger Miles	30,245,000	24,051,000	30,667,000	33,133,000

Note: Whole numbers have been rounded, with the exception of VMT. Population statistics reflect the total Bay Area population able to travel on the region's transport network; it does not include immobile, involuntary populations such as prison inmates.
Source: Data compiled by MTC and ABAG in 2021

Table 4-32: Comparison of Average Trip Length (Miles) by Purpose by Alternative in 2050

	Proposed Plan	No Project Alternative	Alternative 1	Alternative 2
Commute	9.6	10.1	9.3	9.7
Non-Commute	4.3	4.4	4.3	4.4
Total	5.8	6.1	5.7	5.9

Note: Figures may not sum due to independent rounding. Population statistics reflect the total Bay Area population able to travel on the region's transport network; it does not include immobile, involuntary populations such as prison inmates.
Source: Data compiled by MTC and ABAG in 2021

Table 4-33: Comparison of Journey to Work by Mode by Alternative in 2050

	Proposed Plan	No Project Alternative	Alternative 1	Alternative 2
Auto ("Vehicle") – Drive Alone	36%	45%	35%	35%
Auto – Other	17%	18%	17%	17%
Transit	20%	17%	20%	21%
Active Modes (Bike/Walk)	10%	6%	10%	9%
Telecommute	17%	13%	17%	17%

Note: Figures may not sum due to independent rounding. Population statistics reflect the total Bay Area population able to travel on the region's transport network; it does not include immobile, involuntary populations such as prison inmates.
Source: Data compiled by MTC and ABAG in 2021

NO PROJECT ALTERNATIVE

Under the No Project Alternative, housing growth would be more dispersed, while job growth would be slightly more concentrated in the region's two largest job centers of San Francisco and Silicon Valley. The No Project Alternative would include substantially lower funding for transportation

strategies and no regional strategies to focus growth into specific geographic areas within the region. In contrast to the proposed Plan, the No Project Alternative would not implement strategies that would reduce emissions, improve mobility and access, reduce congestion, and increase safety on the transportation system, consistent with federal, State, and local efforts. Because these strategies would not be implemented under the No Project Alternative, federal, State, and local efforts aimed at directing regional growth to infill areas and providing sustainable transportation options to reduce emissions, improve mobility and access, reduce congestion, and increase safety on the transportation system may not be promoted to the same extent as under the proposed Plan. However, although the No Project Alternative would not promote these efforts, it would not necessarily conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. This impact would be less than significant for the reasons described under Impact TRA-1 and **similar** to the impact that would occur under the proposed Plan.

The No Project Alternative would result in substantially lower levels of household growth in the proposed Plan's growth geographies than the proposed Plan and slightly higher levels of job growth in growth geographies. This means that housing growth would be more dispersed, while job growth would be slightly more concentrated in the region's two largest job centers of San Francisco and Silicon Valley. As shown above in **Table 4-31,** modeling indicates that the No Project Alternative would result in more daily trips (approximately 34.9 million versus 33.5 million) and less transit passenger use than the proposed Plan (approximately 24.1 daily passenger miles versus 30.2 daily passenger miles). In addition, under the No Project Alternative there would be longer trips (6.1 miles versus 5.8 miles [**Table 4-32**]) and a larger share of drive along, auto-based commuting (45 percent versus 36 percent [**Table 4-33**]). Overall, because VMT per capita would be greater under the No Project Alternative than the proposed Plan (20.5 versus 17.5, **Table 4-31**), this impact would be significant and unavoidable for the reasons described under Impact TRA-2 and **greater** than the impact that would occur under the proposed Plan.

Specific transportation projects under the No Project Alternative would be expected to follow the design guidelines and allowable uses established by the State or the local jurisdiction with authority over the project. The potential to increase transportation hazards due to geometric design feature or incompatible uses would be less than significant for the reasons described under Impact TRA-3 and **similar** to the impact that would occur under the proposed Plan.

Construction projects must conform to local regulations requiring maintenance of emergency access during construction and operation and would be required to produce and follow a construction transportation management plan. Therefore, the impact related to the potential to result in inadequate emergency access would be less than significant for the reasons described under Impact TRA-4 and **similar** to the impact that would occur under the proposed Plan.

ALTERNATIVE 1 - TRA FOCUS ALTERNATIVE

The TRA Focus Alternative features higher levels of household and job growth in the growth geographies than the proposed Plan, with substantially more housing growth in TRAs. Compared to the proposed Plan, three strategies would be modified to accommodate demand for local transit services in the urban core, while reducing funding for highway expansion projects to reduce environmental impacts. The TRA Focus Alternative's approach and strategies align with other regional programs, plans, and policies, including MTC programs administering State and federal programs. These policies would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. This impact would be less than

significant for the reasons described under Impact TRA-1 and **similar** to the impact that would occur under the proposed Plan.

The TRA Focus Alternative features the most compact growth pattern, with the greatest share of housing and job growth in TRAs—especially within walking distance of regional rail stations. To support this more urban-oriented growth pattern, additional core capacity transit investments are funded in lieu of highway projects that add lane-mileage to the system. As shown above in **Table 4-31,** modeling indicates that the TRA Focus Alternative would result in slightly fewer daily trips (approximately 33.48 million versus 33.52 million) and slightly more transit passenger use than the proposed Plan (approximately 30.67 daily passenger miles versus 30.25 daily passenger miles). In addition, under the TRA Focus Alternative there would be slightly shorter average trips (5.7 miles versus 5.8 miles [**Table 4-32**]) and a slightly smaller share of drive along auto-based commuting (35 percent versus 36 percent, **Table 4-33**). Because VMT would be less under the TRA Focus Alternative than the proposed Plan (17.3 versus 17.5, **Table 4-31),** this impact would be significant and unavoidable for the reasons described under Impact TRA-2 and **similar** to the impact that would occur under the proposed Plan.

Specific transportation projects under Alternative 1 would be expected to follow the design guidelines and allowable uses established by the State or the local jurisdiction with authority over the project. The potential to increase transportation hazards due to geometric design feature or incompatible uses would be less than significant for the reasons described under Impact TRA-3 and **similar** to the impact that would occur under the proposed Plan.

Construction projects must conform to local regulations requiring maintenance of emergency access during construction and operation. Therefore, the potential to result in inadequate emergency access would be less than significant for the reasons described under Impact TRA-4 and **similar** to the impact that would occur under the proposed Plan**.**

ALTERNATIVE 2 - HRA FOCUS ALTERNATIVE

The HRA Focus Alternative features substantially higher share of growth in HRAs, especially in the South Bay. To support this growth pattern and advance regional equity goals, infrastructure funding is shifted away from major regional and interregional rail expansion projects. In lieu of such investments, greater funding for local bus frequency increases, new express bus lines, expanded transit fare discount programs, and enhanced non-motorized infrastructure work to both make these communities lower-VMT places to live and work, while reducing concerns about displacement impacts from transportation megaprojects. The HRA Focus Alternative's approach and strategies align with other regional programs, plans, and policies, including MTC programs administering State and federal programs. Thus, it would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. Thus, the impact under TRA-1 would be less than significant and **similar** to the impact that would occur under the proposed Plan.

The HRA Focus Alternative would result in substantially lower levels of household growth in the proposed Plan's growth geographies than the proposed Plan and slightly higher levels of job growth in growth geographies. This means that housing growth would be more dispersed, while job growth would be slightly more concentrated in the region's two largest job centers of San Francisco and Silicon Valley. As shown above in **Table 4-31,** modeling indicates that the HRA Focus Alternative would result in slightly more daily trips (approximately 33.53 million versus 33.52 million) and more transit passenger use than the proposed Plan (approximately 33.13 daily passenger miles versus 30.25 daily

passenger miles). In addition, under the HRA Focus Alternative there would be slightly longer average trips (5.9 miles versus 5.8 miles [**Table 4-32**]) and a slightly smaller share of auto-based commuting (35 percent versus 36 percent, **Table 4-33**). Because VMT would be less under the HRA Focus Alternative than the proposed Plan (17.4 versus 17.5, **Table 4-31),** this impact would be significant and unavoidable for the reasons described under Impact TRA-2 and **similar** to the impact that would occur under the proposed Plan.

Specific transportation projects under Alternative 2 would be expected to follow the design guidelines and allowable uses established by the State or the local jurisdiction with authority over the project. The potential to increase transportation hazards due to geometric design feature or incompatible uses would be less than significant for the reasons described under Impact TRA-3 and **similar** to the impact that would occur under the proposed Plan.

Construction projects must conform to local regulations requiring maintenance of emergency access during construction and operation. Therefore, the potential to result in inadequate emergency access would be less than significant for the reasons described under Impact TRA-4 and **similar** to the impact that would occur under the proposed Plan**.**

4.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA Guidelines Section 15126.6(e)(2) states that if the environmentally superior alternative is the no project alternative, the EIR shall also identify an environmentally superior alternative from among the other alternatives analyzed. **Table 4-34** (included at the end of this chapter) provides a comparison of the environmental effects of the alternatives in relation to the proposed Plan to assist in understanding the relative differences in outcomes expected to result from implementation of the alternatives. This comparative information is useful in assessing environmental superiority among the alternatives.

The primary objectives of the Plan are to identify strategies that will enable the Bay Area to accommodate future growth and make the region more equitable and resilient in the face of unexpected challenges, such as the uncertainties posed by rising sea levels, economic cycles, and new technologies (see Section 4.7, "Ability to Meet Project Objective"). A substantial level of development is required to accommodate the growth forecasts. Consequently, most of the impacts of the proposed Plan and alternatives are similar in type and magnitude. Differences in impacts relate to the location and size of land use growth, sea level rise adaptation infrastructure, and transportation footprints and to the ability of feasible policies to influence how development forecasted in the Plan and its alternatives would proceed.

As discussed above in Section 4.5, "Comparative Impact Analysis of Alternative," the No Project Alternative would result in two more significant and unavoidable impacts than the proposed Plan (Impact AQ-1 and GHG-4) and would result in one less significant and unavoidable impact than the proposed Plan (LU-2). Because the No Project Alternative would result in more significant and unavoidable impacts than the proposed Plan, it would not be the environmentally superior alternative. When this is the case, there is no further obligation under CEQA to assess the relative environmental superiority of other alternatives. However, as this information is useful in understanding the relative benefits and adverse effects of the other alternatives, MTC and ABAG have nevertheless chosen to provide this information as summarized below.

As shown in Table 4-23, the HRA Focus Alternative has the greatest reductions in per-capita GHG emissions in 2035 among the alternatives, followed by the TRA Focus Alternative, proposed Plan, and No Project Alternative. Furthermore, the TRA Focus Alternative would have the lowest daily VMT in 2050 and the greatest reductions in daily per-capita VMT, followed by the HRA Focus Alternative, proposed Plan, and No Project Alternative, as reflected in Table 4-31. While VMT and GHG are not synonymous, daily VMT is the primary input into EMFAC, the mobile source emissions model to estimate GHG emissions.

The TRA Focus and HRA Focus Alternatives would result in the same number of less-than-significant and significant and unavoidable impacts as the proposed Plan. As shown in **Table 4-34**, the TRA Focus Alternative would result in comparatively less significant and unavoidable impact than either the proposed Plan or the HRA Focus Alternative (AQ-4 and LU-4).

Overall the TRA Alternative would have lower acreage of new developed land, lower acreage of development in agriculturally zoned land, lower development in TAC Risk Areas, lower acreage in Essential Connectivity Areas, lower mobile source MTCO2e emissions, lower total VMT, and lower VMT per capita. Because the level or degree of resulting significant and unavoidable impact would be lower under the TRA Focus Alternative, this alternative is environmentally superior to the other alternatives.

The following discussions provide additional information regarding the important relative differences between the proposed Plan and alternatives:

- **Aesthetics**: The TRA Focus and HRA Focus Alternatives would result in smaller land use growth, sea level rise adaptation, and transportation project footprints, compared to the proposed Plan and other alternatives. Overall, the TRA Focus and HRA Focus Alternatives would have the same impacts related to aesthetic resources as the proposed Plan but to a lesser degree. The No Project Alternative would also have similar types of impacts, but to a greater degree, because a greater area of undeveloped lands would be converted to developed uses.

- **Agricultural and Forestry Resources**: The TRA and HRA Focus Alternatives would result in fewer acres of Farmland converted to nonagricultural uses and fewer acres of forestland converted to other uses. The potential to result in changes to the existing environment that, because of their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forestland to non-forest use would be similar among the alternatives. A substantially greater amount of agricultural land and forestlands would be affected under the No Project Alternative compared to the proposed Plan.

- **Air Quality**: The TRA Focus and HRA Focus Alternatives would have lower mobile source emissions than the proposed Plan. The No Project Alternative would result in greater air emissions and would not include policies and the capital investments, defined by transportation strategies in the proposed Plan, that would make it consistent with the relevant control measures in the 2017 Clean Air Plan. Thus, the No Project Alternative would result in the greatest level of air quality impacts.

- **Biological Resources**: The TRA Focus and HRA Focus Alternatives would result in a lesser degree of impact on special-status species, critical habitat, and acreage of wetlands and ECAs compared to the proposed Plan. Overall, the No Project Alternative would have the greatest level of impact on biological resources compared to the proposed Plan.

- **Climate Change and Greenhouse Gases**: The TRA Focus and HRA Focus Alternatives would result in lower mobile source GHG emissions compared to the proposed Plan. In terms of GHG emissions per capita, the TRA Focus Alternative would result in similar reductions as the proposed Plan, and the HRA

Focus Alternative would result in a greater reduction than the proposed Plan. The No Project Alternative would not meet the SB 375 GHG emission reduction target of 19 percent below 2005 emissions by 2035 and would result in greater GHG emissions per capita than the proposed Plan.

- **Cultural Resources and Tribal Cultural Resources**: The TRA Focus and HRA Focus Alternatives would result in smaller land use growth, sea level rise adaptation, and transportation project footprints, compared to the proposed Plan. Overall, the TRA Focus and HRA Focus Alternatives would have the same cultural resources and tribal cultural resources impacts as the proposed Plan but to a lesser degree. The No Project Alternative would also have similar types of impacts, but they would be greater comparatively because a greater area of undeveloped uses would be converted to developed uses.

- **Geology, Seismicity, and Mineral Resources**: The alternatives would have geology, seismicity, and mineral resources impacts similar to those of the proposed Plan, but the TRA Focus and HRA Focus Alternatives would have impacts that would be comparatively less because they would result in fewer acres of land use growth footprint, sea level rise adaptation infrastructure, and transportation project footprint that overlap with Alquist-Priolo Zones, are located in areas in very high and high liquefaction potential zones, and are located in areas of landslides. The No Project Alternative would have greater geology, seismicity, and mineral resources impacts than the proposed Plan because its land use growth footprint is larger and greater areas of geologic hazard risk are located within its overall footprint.

- **Hazards and Wildfire**: Regarding hazards and wildfire impacts, the proposed Plan and all of the alternatives are comparable and would mostly have the same types of less-than-significant and significant and unavoidable impacts, and to a similar degree. Exceptions include potential exposure to NOA, which would be greatest under the proposed Plan, and exposure of people to loss, injury, or death and damage to property adjacent to wildlands or where residences are intermixed with wildlands (less than the project under Alternatives 1 and 2 and greater than the project under the No Project Alternative). The No Project Alternative would have greater hazards and wildfire impacts than the proposed Plan because its land use growth footprint is larger and greater areas of wildfire risk are located within its overall footprint, but it would result in less impeded evacuations during emergency conditions.

- **Hydrology and Water Quality**: The alternatives would have similar hydrology and water quality impacts, but the impacts would be greater under the No Project Alternative and generally less under the TRA Focus and HRA Focus Alternatives because the area of land use growth footprint and portion of land use growth footprint within the 100-Year flood zone are greater under the No Project Alternative and smaller under the TRA Focus and HRA Focus Alternatives. The No Project Alternative and TRA Focus Alternative would generally result in a greater potential flood risks because they would not have as many acres of sea level rise adaptation infrastructure as the proposed Plan.

- **Land Use**: The potential for division of an established community is generally attributed to the development of roadways or other impediments, which would be less under the No Project Alternative, TRA Focus Alternative, and HRA Focus Alternative than the proposed Plan. Displacement of residents, requiring construction of replacement housing elsewhere results in the potential for significant environmental impacts related to new development. Risk of displacement, and thus development of replacement housing, is lower under the TRA Focus Alternative compared to the proposed Plan because the housing growth pattern enables more low-income residents to continue living in current communities due to an increase in deed-

restricted affordable housing. Under the HRA Focus Alternative, strategies shift more development, including deed-restricted affordable housing, toward High-Resource Areas, indicating that less housing, including affordable housing, would be constructed in Equity Priority Communities This means that fewer residents in the existing low-income communities and communities of color are able to remain in place through 2050. Under the No Project Alternative there would be less replacement housing constructed because there would be less displacement compared to the proposed Plan and thereby less replacement housing developed.

- **Noise**: The Plan alternatives would result in types of impacts similar to those of the proposed Plan; however, increased noise levels would occur in different areas based on where development is located. Overall, the level of noise impacts under the Plan alternatives would be similar to that of the proposed Plan.

- **Public Services and Recreation:** The Plan alternatives and proposed Plan would have similar levels of impacts because jurisdictions would need to respond to changing population levels regardless of the land use growth footprint.

- **Public Utilities and Facilities**: The TRA Focus and HRA Focus Alternatives would involve compact development centered around the TRA and HRA growth geographies, respectively. This would reduce the area of growth compared to the proposed Plan and thus result in similar types of impacts but to a lesser degree. The land use growth footprint of the No Project Alternative, more spread out than that of the proposed Plan, would result in greater impacts related to water supply and utility infrastructure.

- **Transportation**: The TRA Focus and HRA Focus Alternatives would result in similar VMT per capita than the proposed Plan. The No Project Alternative would result in greater VMT per capita than the proposed Plan. Transportation impacts that address consistency with programs, plans, ordinances, policies, roadway design, and emergency access would be similar among the Plan alternatives.

Table 4-34: Summary Comparison of Impacts

Impacts	Proposed Plan	No Project Alternative	TRA Focus Alternative	HRA Focus Alternative
3.2 AESTHETICS AND VISUAL RESOURCES				
Impact AES-1: Have a substantial adverse effect on a scenic vista	SU	>	<	<
Impact AES-2: Substantially damage scenic resources, including but not limited to trees, rock outcropping, and historical buildings within a state scenic highway	SU	>	<	<
Impact AES-3: In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings and in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality	SU	>	<	<
Impact AES-4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area	SU	>	<	<
3.3 AGRICULTURE AND FORESTRY RESOURCES				
Impact AGF-1: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use, or conflict with existing zoning for agricultural use, or a Williamson Act contract	SU	>	<	<

Impacts	Proposed Plan	No Project Alternative	TRA Focus Alternative	HRA Focus Alternative
Impact AGF-2: Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))	SU	>	<	<
Impact AGF-3: Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use	SU	=	=	=
3.4 AIR QUALITY				
Impact AQ-1: Conflict with or obstruct implementation of the applicable air quality plan	LTS	>	=	=
Impact AQ-2: Result in a substantial net increase in construction-related emissions	SU	=	=	=
Impact AQ-3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard	SU	>	<	<
Impact AQ-4: Expose sensitive receptors to substantial pollutant concentrations	SU	>	<	=
Impact AQ-5: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people	LTS	=	=	=
3.5 BIOLOGICAL RESOURCES				
Impact BIO-1a: Have a substantial adverse effect, either directly or through habitat modifications, on species identified as candidate, sensitive, or special status in local or regional plans, policies, or regulations, or by CDFW, USFWS, or NOAA Fisheries	SU	>	<	<
Impact BIO-1b: Have substantial adverse impacts on designated critical habitat for federally listed plant and wildlife species	LTS/M	>	<	<
Impact BIO-2: Have a substantial adverse effect on riparian habitat, State- or federally protected wetlands (including but not limited to marsh, vernal pool, coastal), or other sensitive natural communities identified in local or regional plans, policies, or regulations, or by CDFW or USFWS, through direct removal, filling, hydrological interruption, or other means.	LTS/M	<	<	<
Impact BIO-3: Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridor, or impede the use of native wildlife nursery sites	SU	>	<	<
Impact BIO-4: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or with provisions of an adopted Habitat Conservation Plan (HCP); Natural Community Conservation Plan (NCCP); or other approved local, regional, or State HCP	LTS	>	<	<
Impact BIO-5: Have the potential to substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or substantially reduce the number or restrict the range of an endangered, rare, or threatened species	SU	>	<	<
3.6 Climate Change, Greenhouse Gases, and Energy				
Impact GHG-1: Result in a net increase in greenhouse gas emissions, either directly or indirectly, compared to existing 2015 conditions that may have a significant impact on the environment	SU	>	<	<

Impacts	Proposed Plan	No Project Alternative	TRA Focus Alternative	HRA Focus Alternative
Impact GHG-2: Conflict with the Bay Area region's achievement of the GHG emissions reduction target of 19 percent below 2005 emissions by 2035 established by CARB pursuant to SB 375	LTS	>	=	<
Impact GHG-3: Conflict with an applicable state plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases	SU	>	=	<
Impact GHG-4: Conflict with an applicable local plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases	LTS	>	=	=
Impact EN-1: Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation	LTS	=	=	=
Impact EN-2: Conflict with or obstruct a state or local plan for renewable energy or energy efficiency	LTS	>	=	=
3.7 Cultural Resources and Tribal Cultural Resources				
Impact CUL/TCR-1: Cause a substantial adverse change in the significance of a historical resource as defined in Guidelines Section 15064.5	SU	>	<	<
Impact CUL/TCR-2: Cause a substantial adverse change in the significance of a unique archaeological resource as defined in Guidelines Section 15064.5	SU	>	<	<
Impact CUL/TCR-3: Disturb any human remains, including those interred outside of formal cemeteries	LTS	>	<	<
Impact CUL/TCR-4: Cause a substantial adverse change in the significance of a TCR, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe	SU	>	<	<
3.8 Geology, Seismicity, and Mineral Resources				
Impact GEO-1: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault	LTS	>	<	<
Impact GEO-2: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking	LTS	>	<	<
Impact GEO-3: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction, lateral spreading, and subsidence	LTS	<	<	<
Impact GEO-4: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides	LTS	>	<	<
Impact GEO-5: Result in substantial soil erosion or the loss of topsoil	LTS	>	<	<
Impact GEO-6: Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property	LTS	>	<	<
Impact GEO-7: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature	SU	>	<	<
Impact MR-1: Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or a locally-important mineral resources recovery site delineated on a local land use plan	LTS	>	<	<

Impacts	Proposed Plan	No Project Alternative	TRA Focus Alternative	HRA Focus Alternative
3.9 Hazards and Wildfire				
Impact HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials	LTS	=	=	=
Impact HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment	LTS	<	=	=
Impact HAZ-3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school	LTS	=	=	=
Impact HAZ-4: Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment	SU	=	=	=
Impact HAZ-5: Result in a safety hazard for people residing or working in the planning area for projects located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport	LTS	=	=	=
Impact HAZ-6: Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan	SU	<	=	=
Impact HAZ-7: Exacerbate the risk of wildland fires, associated pollutant release, and potential for flooding and landslides due to projected land use patterns and infrastructure in or near State Responsibility Areas or land classified as very high hazard severity zones	SU	>	<	<
3.10 Hydrology and Water Quality				
Impact HYDRO-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality	LTS	>	<	<
Impact HYDRO-2: Substantially decrease groundwater supplies or interfere with groundwater recharge such that the project may impede sustainable groundwater management of the basin	LTS	>	<	<
Impact HYDRO-3: Substantially alter existing drainage patterns, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion, siltation, or additional sources of polluted runoff	LTS	>	<	<
Impact HYDRO-4: Substantially alter existing drainage patterns, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in runoff that exceeds capacity of existing or planned stormwater drainage systems or results in flooding on- or off-site	LTS	>	<	<
Impact HYDRO-5: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows	LTS	>	<	<
Impact HYDRO-6: In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation	LTS	>	>	=
3.11 Land Use, Population, and Housing				
Impact LU-1: Physically divide an established community	SU	<	<	<

Impacts	Proposed Plan	No Project Alternative	TRA Focus Alternative	HRA Focus Alternative
Impact LU-2: Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect	SU	<	=	=
Impact LU-3: Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)	LTS	=	=	=
Impact LU-4: Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere	SU	<	<	>
3.12 Noise				
Impact NOISE-1: Generate a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies	SU	=	=	=
Impact NOISE-2: Generate a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies	SU	=	=	=
Impact NOISE-3: Generate excessive groundborne vibration or groundborne noise levels	SU	=	=	=
Impact NOISE-4: For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels	SU	=	=	=
3.13 Public Services and Recreation				
Impact PSR-1: in substantial adverse physical impacts associated with the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection, police protection, schools, parks, and other public facilities.	SU	=	=	=
Impact PSR-2: Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment	SU	=	=	=
3.14 Public Utilities and Facilities				
Impact PUF-1: Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities the construction or relocation of which could cause significant environmental effects	SU	>	<	<
Impact PUF-2: Have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years	SU	>	<	<
Impact PUF-3: Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments	SU	=	=	=

Impacts	Proposed Plan	No Project Alternative	TRA Focus Alternative	HRA Focus Alternative
Impact PUF-4: Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals, and comply with federal, state, and local management and reduction statutes and regulations related to solid waste	SU	=	=	=
3.15 Transportation				
Impact TRA-1: Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities	LTS	=	=	=
Impact TRA-2: Conflict or be inconsistent with CEQA Guidelines Section 15064.3(b)	SU	>	=	=
Impact TRA-3: Substantially increase hazards due to geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)	LTS	=	=	=
Impact TRA-4: Result in inadequate emergency access	LTS	=	=	=

Notes: LTS=less than significant
LTS/M=less than significant with mitigation incorporated
SU=significant and unavoidable
<=the alternative would result in less impact than the proposed Plan
>= the alternative would result in greater impact than the proposed Plan
= the alternative would result in a similar impact to the proposed Plan

4.7 ABILITY TO MEET PROJECT OBJECTIVES

The State CEQA Guidelines require an EIR to describe a range of reasonable alternatives to the project, or to the location of the project, that would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen some of the significant effects of the project and that it shall evaluate the comparative merits of the alternatives (CEQA Guidelines Section 15126.6). The following discussion describes the objectives of the proposed Plan and provides a preliminary assessment of the extent to which each alternative will attain those objectives. The ultimate determination as to whether an alternative meets the project objectives will be made by the MTC/ABAG Board of Directors as part of its decision about the feasibility of the alternatives and based on the entirety of the record before it at the time of its decision. (See PRC Sections 21081.5, 21081[a] [3]; CEQA Guidelines Section 15126.6(f)(1).

The information presented in this section is based upon the Draft Plan Bay Area 2050 Performance Report, which evaluated the direction, magnitude and diversion of change of the proposed Plan and Plan alternatives. This report is available at www.planbayarea.org.

4.7.1 Objective 1: Address climate change by reducing carbon dioxide (CO_2) emissions pursuant to targets established by the California Air Resources Board (CARB); specifically, meet or exceed a 19-percent reduction in per-capita emissions from cars and light-duty trucks by 2035 relative to 2005 levels.

The Proposed Plan, TRA Focus Alternative, and HRA Focus Alternatives would exceed a 19 percent reduction in per-capita emissions from cars and light-duty trucks by 2035 relative to 2005 levels. The No Project Alternative would not exceed a 19 percent reduction in per-capita emissions from cars and light-duty trucks by 2035 relative to 2005 levels. Overall, the No Project Alternative does not meaningfully address objective 1.

NO PROJECT ALTERNATIVE

The No Project Alternative would fail to reduce CO_2 emissions pursuant to targets established by CARB: a 19-percent reduction in per-capita emissions from cars and light-duty trucks by 2035 relative to 2005 levels.

PROPOSED PLAN

The proposed Plan would reduce per capita emissions from cars and light-duty truck by 2035 by 22 percent relative to 2005 levels, which would meet the 19 percent reduction target.

TRA FOCUS ALTERNATIVE

The TRA Focus Alternative would reduce per capita emissions from cars and light-duty truck by 2035 by 22 percent relative to 2005 levels, which would meet the 19 percent reduction target.

HRA FOCUS ALTERNATIVE

The HRA Focus Alternative would reduce per capita emissions from cars and light-duty truck by 2035 by 23 percent relative to 2005 goals, which would meet the 19 percent reduction target.

4.7.2 Objective 2: House 100 percent of the region's projected growth by income level, and with no increase in in-commuters over the proposed Plan baseline year.

The No Project Alternative, Proposed Plan, TRA Focus Alternative, HRA Focus Alternatives would house 100 percent of the region's projected growth by income level.

NO PROJECT ALTERNATIVE

The No Project Alternative would accommodate 100 percent of the region's projected housing unit growth.

PROPOSED PLAN

The proposed Plan would accommodate 100 percent of the region's projected housing unit growth.

TRA FOCUS ALTERNATIVE

The TRA Focus Alternative would accommodate 100 percent of the region's projected housing unit growth.

HRA FOCUS ALTERNATIVE

The HRA Focus Alternative would accommodate 100 percent of the region's projected housing unit growth.

4.7.3 Objective 3: Ensure that all current and future Bay Area residents and workers have sufficient housing options they can afford by reducing how much residents spend on housing and transportation and by producing and preserving more affordable housing.

The combination of housing and transportations costs for Bay Area residents in 2015 was high: the average household spent 58 percent of their income on housing. Households with low incomes spent 113 percent of their income on housing and transportation costs. Without increased subsidies for affordable housing, housing cost burden remains high at 25 percent as a share of income for all households, and 44 percent for households with low incomes. Households in the Bay Area spent 25 percent of their income on transportation costs, while low income households spent 45 percent. In total households spent 33 percent of their income on housing, while low income households spent 68 percent of their incomes on housing. Further, 4 percent of the Bay Area's housing units were deed-restricted affordable. In historically exclusionary HRAs, 2 percent of housing units were deed-restricted affordable.

The proposed Plan, TRA Focus Alternative, and HRA Focus Alternative would ensure sufficient housing options for current and future Bay Area residents and workers through implementation of policies that plan for sufficient housing at all income levels, lower transportation costs for those that are most burdened, and universal basic income provisions. Overall, the No Project Alternative does not meaningfully address objective 3.

NO PROJECT ALTERNATIVE

Under the No Project Alternative, modeling results indicate that Bay Area households would spend 49 percent of their income on housing and transportation combined in 2050, while households with low incomes would spend 88 percent.

Without increased subsidies for affordable housing, housing cost burden remains high at 25 percent as a share of income for all households, and 44 percent for households with low incomes. Existing and anticipated funding sources for affordable housing production and preservation help increase the share of housing that would be deed-restricted affordable from 4 percent in 2015 to 13 percent in 2050. However, this level would be insufficient to meet the housing needs of Bay Area residents, especially households with low incomes.

Transportation affordability for all households would be 44 percent of total income. Households with low incomes would spend 44 percent of their income on transportation.

PROPOSED PLAN

The proposed Plan would reduce the burden of housing and transportation costs for all households from 58 percent in 2015 to 45 percent in 2050. Low income households would spent 57 percent of their incomes on housing and transportation, which would meaningfully decreases disparities that burden households with low incomes today.

Under the proposed Plan, the regional share of income spent on housing would decrease to 21 percent in 2050 from 33 percent in 2015. Low-income households would decrease spending on housing from 33 percent to 29 percent. Policies would allow for the share of deed-restricted affordable housing among all housing units to increase to 27 percent by 2050—sufficient to address the needs of all households with low incomes—the proposed Plan decreases the share of income spent on housing and transportation costs for households with low incomes to 57 percent in 2050. In historically exclusionary HRAs, the percent of deed-restricted affordable housing would increase from 2 percent to 24 percent.

Transit fare policy reform along with means-based discounts help lower transportation expenditures, especially for households with low incomes. All households are forecasted to experience higher expenses for auto trips due to the introduction of means-based per-mile tolls on select freeways and increased parking costs in growth geographies. Despite this, the share of income spent on transportation would be lowered for all households from 25 percent in 2015 to 24 percent in 2050. For households with low incomes, the percentage of income for transportation cost would decrease from 45 percent in 2015 to 28 percent in 2050.

TRA FOCUS ALTERNATIVE

Under the TRA Focus Alternative, the share of housing and transportation costs would be substantially similar to the proposed Plan, both for the Region (44 percent) and for low income households (57 percent). Affordable housing production as a share of new housing production would be higher than the proposed Plan with more development in TRAs, but this does not have a significant effect on housing costs for both low income and regional households (29 and 21 percent respectively). Deed-restricted affordable housing would increase to 28 percent for the region and 24 percent in HRAs.

Transportation costs remain fairly consistent as well, with a slight decrease in the region-wide average as the increased housing in TRAs drives vehicle ownership lower (23 percent) versus the proposed Plan (24 percent).

HRA FOCUS ALTERNATIVE

Housing and transportation costs as a share of all households and low-income households would be the same under the proposed Plan as the HRA Focus Alternative. As in the TRA Focus Alternative, regional average housing costs as a share of income are similar to the proposed Plan. Notably, the share of housing in HRAs that are permanently affordable (i.e. deed-restricted) in 2050 would be 26 percent, slightly higher than the 24 percent share in the proposed Plan. The expansion of means-based fare discounts for households with moderate incomes in this alternative helps lower the average fare per transit trip; however, this does not substantially affect the overall expenditure on transportation.

4.7.4 Objective 4: Support an expanded, well-functioning, safe, and multimodal transportation system that connects the Bay Area by improving access to destinations and by ensuring residents and workers have a transportation system they can rely on.

In 2015, 31 percent of Bay Area households were located within half-mile of frequent transit (i.e. rail, ferry and bus stops with two or more intersecting routes with frequencies less than or equal to 15 minutes). The share was higher for households with low incomes at 41 percent. On average, residents could access 18 percent of the region's jobs within a 30-minute drive and 3 percent within a 45-minute transit journey, including walking and waiting time. These metrics were more favorable for residents in Equity Priority Communities, at 19 percent and 5 percent respectively.

The No Project Alternative, while slightly improving access to transit and jobs by transit for all households, would substantially deteriorate the transportation system itself with increased congestion and transit crowding. The proposed Plan improves proximity to transit and accessibility to jobs by all modes for all households. Overall job accessibility outcomes are fairly similar between the proposed Plan and the Plan alternatives, but outcomes for freeway travel times and transit crowding improve slightly in the TRA Focus Alternative.

The proposed Plan, TRA Focus Alternative, and HRA Focus Alternative would support an expanded, well-functioning, safe, and multimodal transportation system that connects the Bay Area through implementation of policies that improve access to destinations and improve transportation system reliability. Overall, the No Project Alternative does not meaningfully address objective 4.

NO PROJECT ALTERNATIVE

In the No Project Alternative, the share of households within half-mile of frequent transit increases to 43 percent, and 50 percent for low-income households; however, without significant investment in expanding transit capacity, crowding increases substantially on some operators. In the absence of new transportation demand management strategies, freeway travel times nearly double in some corridors by 2050. Residents are able to reach 14 percent of the jobs in the region within a 30-minute drive – lower than the share in 2015, but an absolute increase since the number of jobs in the region increases. Accessible transit would be available to 4 percent of the Bay Area's jobs. These metrics were more favorable for residents in Equity Priority Communities, at 15 percent for access by automobile and 5 percent for transit.

PROPOSED PLAN

Under the proposed Plan, 49 percent of all households and 74 percent of households with low incomes live within a half-mile of frequent transit. This enables an increase in share of the region's jobs accessible by transit to 5 percent for all residents and 8 percent for residents of Equity Priority Communities. Transit crowding, although lower than the No Project Alternative, continues to remain a challenge despite investments in transit capacity expansion. Strategies to manage freeway demand, including freeway tolling, parking fees and improvements to transit help manage freeway travel times and in some cases lower them below 2015 levels. This helps improve access to the region's jobs within a 30-minute drive to 19 percent of all jobs, corresponding to a substantial increase in the number of jobs accessible.

TRA FOCUS ALTERNATIVE

Access to jobs by transit increases marginally in TRA Focus Alternative as more households are in closer proximity to high frequency transit than the proposed Plan. Any potential increase in commute times from removing express lanes in this alternative would be met by the increased access and use of transit, which also enabled a small decrease in travel times in many key freeway corridors. Investments to alleviate transit crowding in local transit lower the share of person hours spent in crowded transit for some operators, but crowding persists.

HRA FOCUS ALTERNATIVE

Generally, the ability of the HRA Focus Alternative to meet objective 4 would be similar to the proposed Plan. However, as compared to the proposed Plan, the increase in number of jobs in San Francisco County as well as investments to boost transit frequency in HRAs, which would have more housing growth, drives a slight increase in access to jobs by transit, while simultaneously also increasing auto travel times to San Francisco.

4.7.5 Objective 5: Support an inclusive region where people from all backgrounds, abilities, and ages can remain in place with full access to the region's assets and resources by creating more inclusive communities and reducing the risk that Bay Area residents are displaced

Region-wide, while 26 percent of households had low incomes in 2015, the share was lower in neighborhoods with the best access to well-resourced schools, jobs, and amenities – 24 percent in transit-rich HRAs, and 20 percent in all HRAs.

While the No Project does not make any meaningful progress in improving the distribution of low income households throughout the Bay Area, the proposed Plan creates more choices in housing locations for households with low incomes and enables more inclusive communities. Displacement is difficult to forecast and measure, given that simulation models cannot track the movement of individual households. Despite these modeling limitations, this "displacement risk" metric estimates the share of neighborhoods (census tracts) that are forecasted to experience a net loss of households with low incomes between 2015 and 2050. The net loss of such households indicates a risk of displacement, which could indeed be displacement or could instead reflect relocation by choice to other neighborhoods with more attractive housing or other opportunities. Differences in outcomes between the proposed Plan and the Plan alternatives under the Diverse Guiding Principle are driven by the change in housing growth patterns.

The proposed Plan, TRA Focus Alternative, and HRA Focus Alternative would support an inclusive region where people from all backgrounds, abilities, and ages can remain in place through implementation of policies that create inclusive communities and reduce displacement risk. Overall, the No Project Alternative does not meaningfully address objective 5.

NO PROJECT ALTERNATIVE

Because the No Project Alternative would not increase development of affordable housing development in the growth geographies, the shares of households with low incomes within transit-rich or HRAs in 2050 would remain similar to the shares in 2015. The share of neighborhoods with risk of

displacement between 2015 and 2050 would be 33 percent across the Plan Area, and would be substantially higher in Equity Priority Communities (45 percent), TRAs (51 percent), HRAs (48 percent).

PROPOSED PLAN

Under the proposed Plan, inclusionary zoning and subsidies for affordable housing in areas with better access to assets and opportunities would allow for the share of households with low incomes to increase to 36 percent in transit-rich HRAs, and 24 percent in all HRAs in 2050 (from 24 percent and 20 percent, respectively in 2015). This increase would be correlated with the decrease in the share in Equity Priority Communities from 43 percent in 2015 to 41 percent in 2050, as more households with low incomes choose to relocate to HRAs. At the Bay Area level, the share of neighborhoods with a displacement risk between 2015 and 2050 would be 48 percent, indicating that more neighborhoods may be at risk of displacement than the No Project Alternative; however, displacement risk in Equity Priority Communities would be lower, at 40%. However, the substantial drop in the metric in HRAs (17 percent) and TRAs (9 percent), when comparing the No Project Alternative (48 percent and 9 percent, respectively) to the proposed Plan, indicates that the increase would be mainly driven by households with low incomes relocating to these growth geographies – neighborhoods near frequent transit and/or in HRAs – where much of the new affordable housing would be developed under the proposed Plan strategies. Growth geographies also experience some displacement risk. However, analysis indicates that much of this displacement would be households with low incomes relocating between these neighborhoods, rather than being displaced to neighborhoods that lack quality transit or access to opportunity. Lastly, and importantly, the displacement risk metric does not fully capture the positive impact of protective policies at the local level, which could further reduce displacement risk and prevent homelessness. In addition, the proposed Plan also includes assistance for home ownership for roughly 10 percent of households with low incomes to promote wealth-building opportunities.

TRA FOCUS ALTERNATIVE

In this alternative, the share of households with low incomes in HRAs would be marginally higher (25 percent) relative to the share under the proposed Plan (24 percent). While the share of households with low incomes in TRAs would be slightly lower than the proposed Plan (37 percent versus 39 percent in proposed Plan), this would be primarily due to higher overall household growth in these areas, given the strategies' focus on growth near transit. Risk of displacement would be lower, both overall and in Equity Priority Communities, as this housing growth pattern enables more low-income residents to continue living in current communities, but with a greater share residing in deed-restricted affordable housing.

HRA FOCUS ALTERNATIVE

Under the HRA Focus Alternative, strategies would shift more development, including deed-restricted affordable housing, toward HRAs, making these traditionally-exclusive communities somewhat more inclusive than the proposed Plan. The share of households with low incomes in these neighborhoods increases to 27 percent by 2050, relative to 24 percent under the proposed Plan. However, the shift in housing development locations also indicates that less housing, including affordable housing, would be constructed in Equity Priority Communities, meaning that fewer residents in the existing low-income communities and communities of color are able to remain in place through 2050. Under this alternative, 44 percent of Equity Priority Communities have a risk of displacement, relative to 40 percent under the proposed Plan, despite a decrease in the risk of displacement throughout the Bay Area (42 percent under HRA Focus Alternative versus 48 percent under proposed Plan).

4.7.6 Objective 6: Conserve the region's natural resources, open space, clean water, and clean air with the intent of improving health of Bay Area residents and workers and improving the health of the environment locally and globally.

In 2015, 71 percent of the working population commuted using a car and 51 percent drove alone to work. High levels of auto-dependency make achieving state-mandated emissions targets difficult and hinder safety goals. Annual fatalities and injuries due to vehicle collisions occur at a rate of 6 and 26 per 100,000 residents in 2015. Approximately 118 acre of open space per resident are accessible in the Bay Area as of 2015.

The proposed Plan, TRA Focus Alternative, and HRA Focus Alternative would conserve the region's natural resources, open space, clean water, and clean air through implementation of policies that improve public health and improve local and global environmental outcomes. Overall, the No Project Alternative does not meaningfully address objective 6.

NO PROJECT

While the share of cars as a commute mode decreases from 71 percent in 2015 to 63 percent in 2050, greenhouse gas emissions would be increased by 1 percent and remain far from the state-mandated reduction target of 19 percent per capita by 2035 relative to 2005 levels. Under the No Project Alternative, automobile-related fatalities and injuries would increase marginally from 6.0 to 6.2 and 26.0 to 26.9 per 100,000 residents in 2050. The acreage of open space and urban park land per resident would also increase marginally between 2015 and 2050.

PROPOSED PLAN

Overall, the land use growth pattern under the proposed Plan would concentrate growth and limit effects on natural resources, open space, clean water, and clean air. Bay Area residents are forecasted to be healthier with better access to parks and improved air quality. Annual fatalities per one hundred thousand residents due to vehicle collisions (with other vehicles, pedestrians or bicycles) decrease from 6.0 in 2015 to 4.8 in 2050. Street design enhancements and additional education programs proposed in the proposed Plan strategies would be required to make further headway toward this important goal. Investments in resilience to natural hazards would protect nearly all households from two feet of inundation due to sea level rise and from major damage due to earthquake or wildfire events. The proposed Plan also plans for the Bay Area environment to be healthy and safe, with strategies that lower dependence on driving to 53 percent of commute trips in 2050 (36 percent for single-occupancy auto), reduce greenhouse gas emissions per capita by 22 percent by 2035, reduce carbon footprint of the building stock and primarily focus development within the existing urban footprint. Open space and urban park acreages would increase under the proposed Plan from 118 to 149, and 1.4 to 2.3 per thousand residents between 2015 and 2050.

TRA FOCUS ALTERNATIVE

Greenhouse gas emission reductions per capita in 2035 relative to 2005 are similar to the proposed Plan at 22 percent, meeting the state-mandated target of 19 percent for the region. Commute mode share of single occupancy auto drops marginally to 35 percent, relative to 36 percent in the proposed Plan. Metrics related to automobile-related fatalities and injuries, protection from sea level rise,

earthquake, and wildfire risk, and access to urban park and open space areas would be the same under the TRA Focus Alternative as the proposed Plan (see discussion above).

HRA FOCUS ALTERNATIVE

As in TRA Focus Alternative, outcomes are similar to the proposed Plan. Greenhouse gas emission reductions per capita in 2035 relative to 2005 are marginally higher than the proposed Plan at 23 percent, also meeting the state-mandated target of 19 percent for the region. As in TRA Focus Alternative, commute mode share of single occupancy auto drops marginally to 35 percent. Metrics related to automobile-related fatalities and injuries, protection from sea level rise, earthquake, and wildfire risk, and access to urban park and open space areas would be the same under the HRA Focus Alternative as the proposed Plan (see discussion above).

4.7.7 Objective 7: Support the creation of quality job opportunities for all and ample fiscal resources for communities by more evenly distributing jobs and housing in the Bay Area and by enabling the regional economy to thrive.

The existing jobs-housing imbalance in the Bay Area is evident in the 2015 metrics, with West and South Bay counties having a higher jobs-housing ratio than the region-wide ratio (1.5), and North Bay counties and Contra Costa County having a lower ratio. While the proposed Plan and TRA Focus Alternative are able to make progress on bringing jobs-housing ratios closer to the region-wide ratio, HRA Focus Alternative maintains a high jobs-housing ratio in San Francisco County.

Overall, robust economic output and job growth metrics indicate that the Bay Area economy would thrive under the proposed Plan and Plan alternatives, regardless of new revenue sources that are invested back into the transportation, housing, economy and environment. The regional jobs-housing ratio would be reduced to 1.3 under all alternatives, with significant variation between counties in each alternative.

The proposed Plan and TRA Focus Alternative would support the creation of quality job opportunities for all and ample fiscal resources for communities through implementation of policies that improve jobs-housing balance and support economic growth. Overall, the No Project Alternative and HRA Focus Alternative do not meaningfully address objective 7, in particular the issue of jobs-housing balance.

No Project Alternative: The No Project Alternative would bring the county-level jobs-housing ratio farther away from the regional ratio for four of the nine counties: Contra Costa (1.1 in 2015 and 0.7 in 2050), Marin (1.3 in 2015 and 0.9 in 2050), Napa (1.4 in 2015 and 1.5 in 2050), and San Francisco (1.8 in 2015 and 1.9 in 2050).

Proposed Plan: Under the proposed Plan, jobs and housing in the Bay Area are more evenly distributed than in 2015. The proposed Plan strategies that enable more housing in job-rich areas, such as allowances for increased densities in growth geographies and accelerated reuse of public land, were particularly successful in the West and South Bay, bringing the ratio closer to the regionwide average in San Francisco (1.9 in 2015 to 1.6 in 2050), San Mateo (1.5 in 2015 to 1.3 in 2050), and Santa Clara (1.8 in 2015 to 1.5 in 2050) counties in 2050. Meanwhile, encouraging job growth in housing-rich areas continues to be a challenge. Incentives to encourage employers to shift jobs to housing rich areas bring the ratio closer to the regionwide average in Napa (1.4 in 2015 to 1.6 in 2050),

and Solano (0.9 in 2015 to 1.1 in 2050) counties, while Contra Costa (1.1 in 2015 to 1.0 in 2050), and the other North Bay counties continue to have more housing than jobs.

TRA Focus Alternative: Under this alternative, the increased focus on housing in TRAs results in a slightly more dispersed job growth pattern than the proposed Plan and a slightly more even distribution of jobs and housing. The jobs-housing ratio decreases in San Francisco (1.9 to 1.4), San Mateo (1.5 to 1.2) and Alameda (1.6 to 1.4) counties, which have more TRAs. On the other hand, the jobs-housing ratio increases in Contra Costa (1.1 to 1.2) and Solano (0.9 to 1.3) counties, approaching the regionwide average of 1.3.

HRA Focus Alternative: While the proposed Plan and TRA Focus Alternative succeed in incentivizing job growth in some housing-rich counties and more evenly distributing jobs and housing across the region, the HRA Focus Alternative further concentrates jobs in San Francisco County. The new economic strategy to disallow office development in job-rich exclusionary cities, and their neighbors, has adverse effects for Silicon Valley while yielding additional job growth in (already jobs-rich) San Francisco. The jobs-housing ratio in San Francisco County continues to be high in 2050 at 1.9, well above the regionwide average (1.3). Meanwhile, jobs-housing ratios remain low in currently housing-rich counties such as Contra Costa (1.0) and Solano (1.1).

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