Plan Bay Area

July 2013

Strategy for a Sustainable Region

Final Performance Assessment Report

Association of Bay Area Governments

Metropolitan Transportation Commission

Metropolitan Transportation Commission

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PLAN BAY AREA

Performance Assessment Report

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July 8, 2013

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TABLE OF CONTENTS

I. Executive Summary 4

II. Purpose of Performance Assessment 6

III. Identification of Performance Targets 7

a. Criteria for Performance Targets 7

b. Identification of Performance Targets 9

c. Identification of Baseline and Horizon Years for Target Assessment 11

IV. Vision and Alternative Scenarios Performance Assessment 11

a. Defining Vision Scenarios and Alternative Scenarios 11

b. Climate Protection Target 14

c. Adequate Housing Target 15

d. Healthy and Safe Communities Targets 16

e. Open Space and Agricultural Preservation Target 21

f. Equitable Access Target 23

g. Economic Vitality Target 24

h. Transportation System Effectiveness Targets 25

i. Overall Scenario Performance Trends 28

V. Project-Level Performance Assessment 32

a. Linking Scenario Performance to Project Performance 32

b. Targets Assessment Methodology 33

c. Benefit-Cost Assessment Methodology 34

d. Regional Programs – Off-Model Benefit-Cost Methodology 45

e. Supplementary Assessments 45

f. Key Findings of Project Performance Assessment 47

g. High-Performing and Low-Performing Projects 48

VI. Proposed Plan and EIR Alternatives Performance Assessment 56

a. Development of the Proposed Plan 56

b. Defining EIR Alternatives 56

c. Climate Protection Target 57

d. Adequate Housing Target 58

e. Healthy and Safe Communities Targets 59

f. Open Space and Agricultural Preservation Target 60

g. Equitable Access Target 61

h. Economic Vitality Target 62
i. Transportation System Effectiveness Targets 63
j. Overall EIR Alternative Performance Trends 64

VII. Appendices 68

APPENDIX A: Errata Sheet 69
APPENDIX B: Scenario Performance Target Methodologies 71
APPENDIX C: Economic Impact Analysis 78
APPENDIX D: Project Performance Assessment Regional Program Evaluation 94
APPENDIX E: Project Performance Assessment Detailed Targets Assessment Criteria ... 106
APPENDIX F: Project Performance Assessment Benefit-Cost Sensitivity Testing 117
APPENDIX G: Project Performance Assessment Equity Considerations Documentation .133
APPENDIX H: Project Performance Assessment Summary Tables
APPENDIX I: Project Performance Assessment Detailed Tables
APPENDIX J: Project Performance Assessment Benefit-Cost Confidence Assessment
APPENDIX K: Project Performance Assessment Targets Criteria Data Tables
APPENDIX L: Project Performance Assessment Equity Considerations Tables
APPENDIX M: Project Performance Assessment Equity Maps

LIST OF TABLES

Table 1: Criteria for Selecting Performance Targets 7
Table 2: Criteria for Identifying a Set of Targets 8
Table 3: Plan Bay Area Performance Targets 10
Table 4: Target Performance for Alternative Scenarios (Year 2035) 30
Table 5: Targets Assessment Criteria 38
Table 6: Project Lifecycle Assumptions 40
Table 7: Annual Road O&M Cost Assumptions 40
Table 8: Farebox Recovery Assumptions 41
Table 9: Benefit Valuations 42
Table 10: Target Performance for EIR Alternatives (Year 2040) 66

LIST OF FIGURES

Figure 1: Performance-Based Planning Framework 32
Figure 2: Project Performance Assessment – Results by Project Type 53
Figure 3: Project Performance Assessment – Road Project Results 54
Figure 4: Project Performance Assessment – Transit Project Results 55

I. EXECUTIVE SUMMARY

As part of the performance-based planning process for Plan Bay Area, MTC and ABAG developed a set of regional performance targets to evaluate both planning scenarios and individual transportation projects. A logical evolution from MTC's past performance-based planning efforts, Plan Bay Area expanded long-range planning goals to better reflect growing regional responsibilities on a diverse range of issues – including transportation, land use, air quality, and economic vitality.

Methodology

Ten performance targets, based on regional goals, were developed collaboratively with state, regional, and local public agencies, as well as stakeholder groups. The adopted targets addressed a broad spectrum of issues including climate change, housing, health and safety, open space, equity, economic vitality, and transportation efficiency.

Performance assessment was a critical component throughout the development of Plan Bay Area. After establishing the performance targets in early 2011, various scenarios with different combinations of land use patterns and transportation investments were quantitatively evaluated to determine how strongly they supported the adopted targets. In order to refine these scenarios and develop the Proposed Plan, MTC also evaluated individual transportation projects to prioritize high-performers and to reconsider the efficacy of low-performers. This project-level assessment examined projects' qualitative support for the Plan targets, in addition to quantitatively evaluating all major projects' cost-effectiveness via a benefit-cost analysis. Finally, the Proposed Plan and EIR alternatives were evaluated to highlight where the Plan has succeeded in meeting the targets and where it falls short, as well as what alternative approaches or strategies might strengthen the Proposed Plan or future long-range planning efforts.

Key Findings

Vision and Alternative Scenarios: Several key themes emerged from the first round of performance-based planning. These initial scenarios fell short of many of the adopted targets; most significantly, none of the scenarios analyzed achieved the statutory GHG reduction target. Only four targets – adequate housing, particulate matter mortality, gross regional product, and VMT per capita – were achieved by the best-performing scenarios. This analysis highlighted the need for further refinement of the land use and transportation strategies incorporated in the various scenarios to enhance the performance of Plan Bay Area.

Project Performance Assessment: Unlike the scenario-level assessment, the project performance assessment focused on the region's largest transportation investments on an individual basis. Efficiency projects, particularly for public transit, were found to be among the top performers in the region, while highway expansion projects were

identified as having adverse impacts on the performance targets. Focusing on outliers (high- and low-performers), MTC was able to direct regional funding to the most cost-effective and targets-supportive regional investments. These included bus rapid transit lines in San Francisco and Oakland, enhancements to the region's heavy rail BART system, Caltrain service expansion, congestion pricing in San Francisco, the extension of BART to San Jose, and the regional Freeway Performance Initiative. Sponsors of low-performing projects (either cost-ineffective or targets-unsupportive projects) were required to submit a compelling case for review by MTC's Planning Committee, address their performance deficiencies, or remove their project from inclusion in the Plan.

Proposed Plan and EIR Alternatives: Of the five alternatives analyzed, the Environment, Equity, and Jobs alternative performed the best, though only marginally better than the Proposed Plan. Its focus on enhanced transit services and additional growth in high-opportunity suburban areas supported performance gains for air quality, active transportation, low-income household affordability, and non-auto mode share targets. Six performance targets were achieved by the Proposed Plan and other top-performing EIR alternatives, indicating improvements to the Plan in light of earlier scenarios' performance shortcomings. These enhancements incorporated in the Proposed Plan included in the addition of the Climate Initiatives program to boost GHG emission reductions, greater funding for local street maintenance through the One Bay Area Grant program, and the removal of low-performing projects as a result of the project assessment's compelling case process.

Conclusions

While the Proposed Plan moves in the right direction on many of the region's important performance targets, the targets analysis for both scenarios and EIR alternatives revealed that the region's mature development pattern and extensive transportation system lead to challenges in changing the status quo and achieving adopted goals. Expected population and employment growth, combined with declining state and federal transportation revenue streams, further exacerbate this problem. In order to advance towards the region's ambitious goals related to economic vitality, environmental sustainability, and social equity, MTC and ABAG must continue to work on innovative strategies to achieve the region's performance targets over the coming years.

II. PURPOSE OF PERFORMANCE ASSESSMENT

Plan Bay Area relied upon a performance-based planning approach, utilizing quantifiable metrics to evaluate the outcomes of integrated transportation investments and land use policies. By leveraging analytical tools to identify measureable outcomes of policy decisions, we can make more informed decisions and better understand the impacts of Plan Bay Area.

Performance-based transportation planning is not a new approach for the Bay Area – over the past decade, MTC's long-range transportation plans have been developed using performance measures to evaluate their support for regional goals. Starting with the 2001 Regional Transportation Plan (RTP), transportation investment packages were compared using a set of performance measures. Since then, qualitative and quantitative evaluations have been added to assess the impacts of individual transportation projects proposed for inclusion in RTPs.

This report provides documentation of the three-year-long effort to evaluate and improve the performance of Plan Bay Area. These efforts have helped craft and guide the Plan from an initial vision to Proposed Plan, while examining how integrated transportation and land use planning efforts can help the region address long-term environmental, equity, and economic challenges. This report is organized into the following chapters, which reflect the various phases of performance assessment throughout the planning process:

- **Chapter III** provides a summary of the performance target selection process; this process culminated with the selection of ten performance targets that acted as the foundation for scenario-level and project-level assessments.
- **Chapter IV** highlights the scenario-level targets analysis conducted for both the vision and alternative scenarios; this evaluation later informed the development of the Proposed Plan.
- **Chapter V** discusses the project performance assessment and how the quantitative and qualitative performance results influenced the list of transportation projects incorporated in Proposed Plan.
- **Chapter VI**, similar to Chapter IV, highlights the performance of EIR alternatives against the Plan Bay Area performance targets; this analysis allowed policymakers to understand the trade-offs between the alternatives evaluated in the environmental process.
- **Chapter VII** includes extensive appendices that provide methodology documentation and detailed results tables.

III. IDENTIFICATION OF PERFORMANCE TARGETS

Performance targets form the foundation of a performance-based planning approach – that is, one must start by defining the region's objectives before assessing the performance of various alternatives. Building upon past planning efforts, a set of sustainability-focused goals was established drawing upon the 3 "E's": economy, equity, and environment. These goals – climate protection, adequate housing, healthy and safe communities, open space and agricultural protection, equitable access, economic vitality, and transportation system effectiveness – reflect the wide spectrum of sustainability objectives for this long-range planning effort. While not every regional objective is captured in the Plan Bay Area targets, the targets provide a framework that allows us to better understand how different projects and policies might affect the region's future.

Each target was designed to compare conditions over the life of the Plan – that is, measuring the change between the baseline year (2005) and the planning horizon year (2035 or 2040). Importantly, the targets were crafted to focus on desirable regional outcomes that did not prescribe a specific mode or investment type to reach the target. For example, a potential target might focus on air quality improvements, which can be addressed through a wide variety of investments such as new or improved transit services, changes in land use patterns, stricter truck emissions standards, or advanced technologies to improve traffic flow.

a. Criteria for Performance Targets

MTC staff developed a set of criteria (as shown in Table 1) with stakeholders and members of the public to make the targets as meaningful as possible in measuring the Plan's success. This stakeholder group, also known as the Regional Advisory Working Group Ad Hoc Committee on Performance Measures, played a critical role in identifying and evaluating the strengths and weaknesses of potential performance targets. The criteria utilized in this process primarily focused on ensuring the targets could be forecasted using available analytical tools and could be influenced by the Plan's investments and policies.

TABLE 1: CRITERIA FOR SELECTING PERFORMANCE TARGETS	
1	**Targets should be <u>able to be forecasted well</u>.** A target must be able to be forecasted reasonably well using MTC's and ABAG's models for transportation and land use, respectively. This means that the target must be something that can be predicted with reasonable accuracy into future conditions, as opposed to an indicator that can only be observed.

2	**Targets should be <u>able to be influenced by regional agencies in cooperation with local agencies</u>.** A target must be able to be affected or influenced by policies or practices of ABAG, MTC, BAAQMD and BCDC, in conjunction with local agencies. For example, MTC and ABAG policies can have a significant effect on accessibility of residents to jobs by virtue of their adopted policies on transportation investment and housing requirements.
3	**Targets should be <u>easy to understand</u>.** A target should be a concept to which the general public can readily relate and should be represented in terms that are easy for the general public to understand.
4	**Targets should <u>address multiple areas of interest</u>.** Ideally, a target should address more than one of the three "E's" – economy, environment, and equity. By influencing more than one of these factors, the target will better recognize the interactions between these goals. Additionally, by selecting targets that address multiple areas of interest, we can keep the total number of targets smaller.
5	**Targets should have <u>some existing basis for the long-term numeric goal</u>.** The numeric goal associated with the target should have some basis in research literature or technical analysis performed by MTC or another organization, rather than being an arbitrarily determined value.

Furthermore, staff established criteria for identifying the set of targets, seeking to ensure a reasonable number of distinct and quantifiable metrics. This focused the process on the most important issues for Plan Bay Area stakeholders. The criteria established for the overall set of targets is shown below in Table 2.

TABLE 2: CRITERIA FOR IDENTIFYING A SET OF TARGETS	
A	**The total number of targets selected should be <u>relatively small</u>.** Targets should be selected carefully to make technical analysis feasible within the project timeline and to ensure that scenario comparison can be performed without overwhelming decision-makers with redundant quantitative data.
B	**Each of the targets should <u>measure distinct criteria</u>.** Once a set of targets is created, it is necessary to verify that each of the targets in the set is measuring something unique, as having multiple targets with the same goal unnecessarily complicates scenario assessment and comparison.
C	**The set of targets should <u>provide some quantifiable metric for each of the identified goals</u>.** For each of the seven goals identified, the set of performance measures should provide some level of quantification for each to ensure that that particular goal is being met. Multiple goals may be measured with a single target, resulting in a smaller set of targets while still providing a metric for each of the goals.

Over a period of five months, the Ad Hoc Committee on Performance Measures discussed over 90 potential performance measures affecting a broad range of regional issues, debating which metrics reflected the most important objectives for this planning process. Leveraging the evaluation criteria established above, the committee identified a set of 10 performance measures (and associated numeric targets) in late 2010. These draft performance targets were later presented to the Regional Advisory Working Group, MTC Planning Committee, and ABAG Administrative Committee for further feedback and refinement.

b. Identification of Performance Targets

In January 2011, the Commission adopted Resolution No. 3987 that established the performance targets for Plan Bay Area. The targets were approved not only by the MTC Commission but also by the ABAG Executive Board. The Plan Bay Area performance targets, as shown in Table 3, successfully captured the key goals of a broad spectrum of stakeholders, going beyond the traditional mobility targets from past RTP efforts. The targets focused on broad outcomes – such as clean air and public health – that could be achieved by a variety of transportation and land use policies.

This outcome-oriented approach to performance targets expanded the focus of the planning effort, emphasizing the societal benefits derived from implementing transportation projects or changing land use patterns. For example, instead of emphasizing how transit investments will results in reduced emissions or less traffic congestion, the targets focused on how improved air quality will lead to better health outcomes and how less congestion will support economic vitality goals. By focusing on outcomes stakeholders would like to see in Bay Area communities, the targets highlighted the connections between regional transportation/land use planning and other key issues for Bay Area residents.

As a result of this approach, affordable housing, public health, and economic vitality performance measures were emphasized over many traditional transportation performance measures. Mobility-based metrics, such as congestion reduction, system reliability, and freight efficiency, played a much more significant role in past regional planning efforts.

Several targets were changed slightly over the course of the three-year planning process to reflect improved data sources or methodologies. These changes to the original adopted targets are further described in chapter IV.

TABLE 3: PLAN BAY AREA PERFORMANCE TARGETS

Goal/Outcome	#	Target
CLIMATE PROTECTION	1	Reduce per-capita CO_2 emissions from cars and light-duty trucks by 15% *Statutory - Source: California Air Resources Board, as required by SB 375*
ADEQUATE HOUSING	2	House 100% of the region's projected growth by income level (very-low, low, moderate, above-moderate) without displacing current low-income residents *Statutory - Source: ABAG, as required by SB 375*
HEALTHY & SAFE COMMUNITIES	3	Reduce premature deaths from exposure to particulate emissions: • Reduce premature deaths from exposure to fine particulates (PM2.5) by 10% • Reduce coarse particulate emissions (PM10) by 30% • Achieve greater reductions in highly impacted areas *Source: Adapted from federal and state air quality standards by BAAQMD*
	4	Reduce by 50% the number of injuries and fatalities from all collisions (including bike and pedestrian) *Source: Adapted from California State Highway Strategic Safety Plan*
	5	Increase the average daily time walking or biking per person for transportation by 70% (for an average of 15 minutes per person per day) *Source: Adapted from U.S. Surgeon General's guidelines*
OPEN SPACE AND AGRICULTURAL PRESERVATION	6	Direct all non-agricultural development within the urban footprint (existing urban development and urban growth boundaries) *Source: Adapted from SB 375*
EQUITABLE ACCESS	7	Decrease by 10% the share of low-income and lower-middle income residents' household income consumed by transportation and housing *Source: Adapted from Center for Housing Policy*
ECONOMIC VITALITY	8	Increase gross regional product (GRP) by an average annual growth rate of approximately 2% *Source: Bay Area Business Community*
TRANSPORTATION SYSTEM EFFECTIVENESS	9	• Increase non-auto mode share by 10% • Decrease automobile vehicle miles traveled per capita by 10% *Source: Adapted from Caltrans Smart Mobility 2010*
	10	Maintain the transportation system in a state of good repair: • Increase local road pavement condition index (PCI) to 75 or better • Decrease distressed lane-miles of state highways to less than 10% of total lane-miles • Reduce share of transit assets past their useful life to 0% *Source: Regional and state plans*

c. Identification of Baseline and Horizon Years for Target Assessment

Per Resolution No. 3987, the adopted performance targets generally relied on year 2005 as a baseline year for target performance. In other words, scenario performance was measured based off of increases or decreases between year 2005 and the horizon year. The few exceptions to this general rule were due either to board direction or model limitations. Targets 2 and 6 both specified a year 2010 baseline year when adopted by the MTC and ABAG boards. In addition, target 10c had to rely on a year 2012 baseline, as the transit asset model used to calculate target performance was only able to provide data for that baseline year.

The adopted performance target required identification of a planning horizon year; this was designed to be fully consistent with the horizon year for the phase of the planning process. During early rounds of planning, a 2035 horizon year was utilized to be consistent with SB 375 and the associated greenhouse gas reduction target, thus the performance results reflect that horizon year. For the EIR alternatives performance assessment, the horizon year was updated to year 2040 to better reflect the full lifespan of the Plan (and to be more consistent with the EIR).

IV. VISION AND ALTERNATIVE SCENARIOS PERFORMANCE ASSESSMENT

After developing the performance targets to guide the development of the Plan, MTC and ABAG staff initiated a scenario development process to compare different combinations of transportation investments and land use patterns. Each scenario developed for Plan Bay Area was assessed against the adopted performance targets in order to compare its relative performance. This process helped identify areas where regional actions could lead to the achievement of adopted targets, as well as areas where more aggressive action was needed. This scenario-level performance assessment, when combined with the project-level performance assessment discussed in Chapter V, later informed the development of the proposed Plan in 2012.

For each target defined for Plan Bay Area, background information and target results are shown in this chapter. For additional information on the specific methodology and/or modeling tools used to calculate each performance target, refer to Appendix B.

a. Defining Vision Scenarios and Alternative Scenarios

As part of the scenarios analysis process, two vision scenarios and five alternative scenarios were developed over the course of 2011. The vision scenarios process was

designed to examine differences between the current growth trajectory and an early conceptual focused growth pattern, while the alternative scenarios process was developed to compare combinations of transportation investment packages and land use patterns tied to both unconstrained and constrained levels of population growth.

Vision Scenarios [Spring 2011]

Current Regional Plans: The spatial distribution of housing and jobs in this scenario reflected an updated version of Projections 2009, which captured the existing land use plans adopted by local jurisdictions across the region. This scenario focused on forecasted growth assuming local jurisdictions continue on their current trajectory, rather than emphasizing additional growth in Priority Development Areas (PDAs). The transportation network reflected the investments from MTC's previous long-range transportation plan known as *Transportation 2035*, which included some expansion projects for both road and transit facilities.

Initial Vision (Round 1): The spatial distribution of housing and jobs in this scenario was concentrated in the PDAs based on local land use priorities, available transit service, and access to jobs. Compared to Current Regional Plans, this scenario has a higher level of regional growth as reflected in the higher population and employment control totals. The vast majority of housing growth was envisioned to be accommodated in PDAs, while more than half of job growth was expected to occur in the region's 10 largest cities. Like Current Regional Plans, the transportation network reflected the investments from MTC's previous long-range transportation plan.

Alternative Scenarios [Fall 2011]

Initial Vision (Round 2): Building on the land use pattern of the first Initial Vision scenario, housing and job growth was concentrated in the PDAs, based on local land use priorities, available transit service, and access to jobs. The scenario was based on input from local jurisdictions on the level of growth they could reasonably accommodate given resources, local plans, and community support. 70 percent of the housing was specified to be accommodated in PDAs. More than half of job growth was expected to occur in the region's 10 largest cities. This land use pattern was linked to the *Transportation 2035* transportation investments, which included some expansion projects for both road and transit facilities. (Note: this scenario was an updated version of the Initial Vision scenario from spring 2011.)

Core Concentration: Housing and job growth was more concentrated in locations that are served by frequent transit services and within a 45-minute transit commute of Oakland, San Francisco, and San Jose. This scenario also identified several "game changers," or places with capacity for a high level of growth if coupled with supportive policies and resources. These areas included the Tasman Corridor in Santa Clara County, lands east of Oakland Airport to the Coliseum, the Concord Naval Weapons

Station, and the San Francisco Eastern Waterfront, among others. Overall, 72 percent of the housing and 61 percent of the job growth were expected within the PDAs. The alternative was linked to the Core Capacity Transit transportation investments, which focused on significantly increased frequencies for the existing public transit system.

Focused Growth: Growth was distributed relatively evenly throughout the region's transit corridors and job centers, focusing most household and job growth within the PDAs. 70 percent of the housing production and around 55 percent of the employment growth were envisioned to be accommodated within PDAs. This scenario included more housing near transit stations and more local services in existing downtown areas and neighborhood centers. Similar to the Core Concentration scenario, this alternative was linked to the transit-oriented Core Capacity Transit transportation network.

Constrained Core Concentration: This scenario placed more household and job growth in PDAs situated along several transit corridors ringing the Bay in San Francisco, San Mateo and Santa Clara counties, and in portions of Alameda and Contra Costa counties. Some 79 percent of the housing production and 58 percent of the employment growth were envisioned to be accommodated within PDAs. By concentrating more growth in the major downtowns and along key transit corridors, this scenario went even further than the Focused Growth scenario in trying to maximize the use of the core transit network and provide access to jobs and services to most of the population. Like the Focused Growth scenario, this alternative was linked to the transit-oriented Core Capacity Transit transportation network.

Outward Growth: Closer to recent development trends, this scenario placed more growth in the cities and PDAs in the inland areas away from the Bay than those considered in the Focused Growth or the Constrained Core Concentration scenarios. Most housing and employment growth was still expected to be accommodated in areas closest to the Bay, but with clusters of jobs and housing in key transit-served locations in the inland areas. 67 percent of housing production and 53 percent of employment growth were envisioned to be in PDAs. While increased use of public transit was expected to be limited in inland areas, some shorter commutes were also expected as jobs are created closer to residential communities. Like the Initial Vision (Round 2) scenario, this scenario relied on the multimodal expansion projects included in the *Transportation 2035* network.

The following sections of this chapter delve into the details for each of the adopted performance targets. For each target, the target justification and target history are established and then target performance is examined for each of the vision scenarios and alternative scenarios.

b. Climate Protection Target

Adopted Target #1: Reduce per-capita CO_2 emissions from cars and light-duty trucks by 15%.

Background

Under California Senate Bill 375, major metropolitan areas in the state are required to develop a Sustainable Communities Strategy as part of their Regional Transportation Plan that achieves per-capita greenhouse gas reduction targets as established by the California Air Resources Board (CARB). In 2010, CARB established targets for the San Francisco Bay Area:

- 7 percent per-capita GHG reduction goal for year 2020
- 15 percent per-capita GHG reduction goal for year 2035

Past Experience with this Target

Transportation 2035 included non-statutory target to reduce carbon dioxide (CO_2) emissions to 40 percent below 1990 levels by the year 2035, reflecting the state's carbon reduction goals under the California Global Warming Solutions Act of 2006 (Assembly Bill 32). While that target showed emissions reductions over the *Transportation 2035* planning horizon, forecasted reductions in CO_2 emissions were primarily the result of statewide fuel economy standards, rather than regional transportation investment decisions.

Target Performance: Vision Scenarios

- **Goal: -15%**
- Current Regional Plans: -11%
- Initial Vision (Round 1): -12%

Both scenarios move the region closer to the statutory greenhouse gas emissions reduction target, but both fall short of the adopted 15% reduction target. The Initial Vision scenario performs slightly better than Current Regional Plans as a result of its focused growth land use pattern, but its higher control totals lead to slightly more congestion and slower vehicle speeds that limit its potential to achieve greater reductions.

Target Performance: Alternative Scenarios

- **Goal: -15%**
- Initial Vision (Round 2): -8%
- Core Concentration: -8%
- Focused Growth: -9%

- Constrained Core Concentration: -9%
- Outward Growth: -8%

All of the scenarios performed similarly for per-capita GHG reduction, yet none of them met the region's ambitious year 2035 target. This target performance pattern identified the need to further focus growth when developing the Proposed Plan, as well as to improve the transportation investment strategy by removing low-performing projects and adding additional funding for the Climate Initiatives program.

c. Adequate Housing Target

Adopted Target #2: House 100% of the region's projected growth by income level (very-low, low, moderate, above-moderate) without displacing current low-income residents.

Background

Similar to the greenhouse gas reduction target, California Senate Bill 375 requires Plan Bay Area to house all of the region's growth. This target would help to reduce the trend of greater regional in-commuting (in particular, from the San Joaquin Valley region). By addressing the high levels of housing demand in the Bay Area rather than forcing sprawl into other regions, these long interregional trips (with their comparably high emission impacts) could potentially be reduced.

Past Experience with this Target

Previous regional transportation plans had not considered this type of performance measure, as housing was outside the scope of those planning efforts.

Target Performance: Vision Scenarios

- **Goal: 100%**
- Current Regional Plans: 73%
- Initial Vision (Round 1): 100%

As explained in Appendix B, the analysis for this cycle of scenarios focused on a comparison of housing growth in Current Regional Plans and Initial Vision. As the Initial Vision scenario represented unconstrained growth where all housing needs were met, it automatically achieved the 100% target; Current Regional Plans' performance reflects the proportion of housing growth accommodated as a proportion of the Initial Vision scenario.

Target Performance: Alternative Scenarios

- **Goal: 100%**
- Initial Vision (Round 2): 100%
- Core Concentration: 100%
- Focused Growth: 98%
- Constrained Core Concentration: 98%
- Outward Growth: 98%

As explained in Appendix B, the analysis for this cycle of scenarios focused on a comparison of the higher controls in the unconstrained scenarios (Initial Vision and Core Concentration) compared to the three remaining constrained scenarios. The target results simply reflect the ratio of constrained versus unconstrained total regional population.

d. Healthy and Safe Communities Targets

Adopted Target #3: Reduce premature deaths from exposure to particulate emissions.

a) Reduce premature deaths from exposure to fine particulates (PM2.5) by 10%.
b) Reduce coarse particulate emissions (PM10) by 30%.
c) Achieve greater reductions in highly impacted areas.

Background

In consultation with the Bay Area Air Quality Management District (BAAQMD), particulate matter (PM) was identified as the target air pollutant of greatest concern, based on studies showing that PM is the air pollutant most harmful to public health. In particular, fine particulate matter (PM2.5) has been identified as the air pollutant most strongly linked to disease types (such as lower respiratory cancer, among others) that can result in premature mortality. Emissions of nitrogen oxides (NOx) from gasoline and diesel engines also contribute to formation of ammonium nitrate, the main component of secondary PM in the Bay Area.

There are various national and state ambient air quality standards for PM2.5 and for PM10. Based on current standards, the Bay Area exceeds the 24-hour national standard and the State annual standard for PM2.5. In addition, the Bay Area exceeds State 24-hour and annual standards for PM10. In 2005, the Bay Area's design value for the 24-hour PM2.5 standard was 39 micrograms per cubic meter. BAAQMD estimated that achieving the current Federal 24-hour standard (35 micrograms per cubic meter) would require a reduction of approximately 10% in emissions of PM2.5. Assuming a linear relationship between emissions reductions and ambient concentration reductions, this would provide an equivalent reduction of 10% in premature deaths related to exposure to PM2.5. The State 24-hour PM10 standard is 50 micrograms per cubic meter; the year

2005 design value for the Bay Area is 68 micrograms per cubic meter. To attain the State 24-hour PM10 standard, BAAQMD estimates that total PM emissions would need to be reduced by approximately 30%.

Based on input from equity stakeholders, the target also includes a provision to achieve greater reductions in highly impacted areas, later defined by MTC and BAAQMD planning staff as Community Air Risk Evaluation (CARE) communities. More information on the definition and location of CARE communities can be found on BAAQMD's website[1].

Past Experience with this Target

Transportation 2035 included a target to reduce PM2.5 emissions from motor vehicles by 10% and emissions of PM10 by 45% by 2035 – these targets are similar to what was adopted for Plan Bay Area. The numeric values associated with each target have been updated to reflect the latest baseline data.

The most substantive change is that the Plan Bay Area PM2.5 target is focused on reducing premature mortality related to PM2.5 exposure. The PM2.5 target is better expressed in terms of health outcomes, rather than merely attaining the ambient air quality standard.

Target Performance: Vision Scenarios

- **Goals: a) -10%; b) -30%; c) Yes**
- Current Regional Plans: a) -25%; b) -13%
- Initial Vision (Round 1): a) -24%; b) -10%

Both of the vision scenarios exceeded the PM2.5 reduction target but fell short on achieving the PM10 reduction target; reductions for both scenarios were partially due to truck emissions regulations scheduled for introduction over the lifespan of Plan Bay Area. However, Initial Vision performed worse than Current Regional Plans as a result of its significantly higher regional control total; the greater number of residents leads to more vehicle travel and more vehicle emissions, somewhat degrading target performance.

A methodology for evaluating CARE community impacts had not been developed at the time of the vision scenario analyses; as such, no target results are available.

Target Performance: Alternative Scenarios

- **Goals: a) -10%; b) -30%; c) Yes**
- Initial Vision (Round 2): a) -23%; b) -6%
- Core Concentration: a) -27%; b) -9%

[1] Refer to http://www.baaqmd.gov/Divisions/Planning-and-Research/CARE-Program.aspx.

- Focused Growth: a) -32%; b) -13%
- Constrained Core Concentration: a) -32%; b) -13%
- Outward Growth: a) -31%; b) -11%

All of the scenarios exceeded the PM2.5 reduction target but fell short on achieving the PM10 reduction target; reductions for all scenarios were partially due to truck emissions regulations scheduled for introduction over the lifespan of Plan Bay Area. Notably, the scenarios with lower regional control totals (Focused Growth, Constrained Core Concentration, and Outward Growth) all had greater reductions in particulate emissions. As these scenarios have lower levels of total VMT, they also have lower levels of total PM emissions.

A methodology for evaluating CARE community impacts had not been developed at the time of the alternative scenario analyses; as such, no target results are available.

Adopted Target #4: Reduce by 50% the number of injuries and fatalities from all collisions (including bike and pedestrian).

Background

The collision reduction target was based on a statewide goal reflected in the 2006 California Strategic Highway Safety Plan (SHSP) to reduce fatalities from motor vehicle collisions; while that plan incorporated total and per-VMT collision reduction goals, the Plan Bay Area focuses on the goal of reducing the total number of collisions despite the region's growing population and VMT. This is consistent with FHWA's "Towards Zero Deaths" national highway safety objective.

While the SHSP does not include a specific target for injury reduction due to data limitations of injury underreporting at the statewide level, the Plan Bay Area target included injuries because, even with an underreport in collisions, these injuries were an indicator of conflicts on the roadways. In particular, injury collision results can be used to show conflicts between vulnerable groups such as cyclists, walkers, children, the elderly, and the disabled.

The numeric target reflects the trend of decreasing fatalities and injuries on the region's roads. California Highway Patrol Statewide Integrated Traffic Records System (SWITRS) data indicates that there was a 26% decrease in injuries and fatalities from collisions in the Bay Area between 2000 and 2008 and a 12% decrease between 2005 and 2008. These trends were extrapolated into the future to achieve a visionary target for collision reduction, significantly beyond the SHSP target of 10.7% reduction between 2004 and 2010.

Past Experience with this Target

Transportation 2035 included a target to reduce collisions by 15% by 2035; however, all scenarios showed a significant increase in collisions (between +23% and +35%). To a certain extent, this is due to model limitations. MTC's model-based collision forecasting is based on vehicle miles traveled (VMT) and speed data and does not capture safety-enhancing infrastructure on the region's roads or safety improvements to the vehicle fleet.

Target Performance: Vision Scenarios

- **Goal: -50%**
- Current Regional Plans: +18%
- Initial Vision (Round 1): +21%

Both Current Regional Plans and Initial Vision are forecasted to increase collisions in the region, primarily as a result of total VMT growth between 2005 and 2035; for this target, both vision scenarios move the region in the wrong direction. As the Initial Vision scenario has slightly greater total VMT, it performs worse than Current Regional Plans.

Target Performance: Alternative Scenarios

- **Goal: -50%**
- Initial Vision (Round 2): +26%
- Core Concentration: +23%
- Focused Growth: +19%
- Constrained Core Concentration: +18%
- Outward Growth: +20%

Similar to the vision scenarios, all of the alternative scenarios are forecasted to increase collisions in the region as a result of total VMT growth. The Initial Vision and Core Concentration scenarios have somewhat higher levels of collisions as a result of greater numbers of households and jobs leading to greater demand for travel. While Focused Growth, Constrained Core Concentration, and Outward Growth all have the same population control totals, Outward Growth performs the worst due to its more dispersed land use pattern leading to greater total VMT in the region; longer distance travel patterns are expected to lead to more total collisions.

Adopted Target #5: Increase the average daily time walking or biking per person for transportation by 70% (for an average of 15 minutes per person per day).

Background

The health benefits of increased physical activity are well established and include better psychological health, lower rates of chronic disease, and longer life expectancy. Walking and bicycling have both been shown to be excellent sources of the type of moderate, health-inducing physical activity recommended by the U.S. Surgeon General. California Active Communities (a joint program of the University of California, San Francisco, Institute for Health and Aging, and the California Department of Public Health) and most public health agencies recommend 30 minutes of physical activity per person per day.

A 70% increase from 2005 levels is equivalent to an average of 15 minutes of walking, biking per person per day and 50% of the recommended level of physical activity. This includes time walking or biking to transit. According to the 2000 Bay Area Household Travel Survey (BATS), Bay Area residents that live within ½ mile of a rail or ferry station received on average 15 minutes of physical activity from walking or cycling to destinations or transit. Note that when originally adopted, the target was +60%; as a result of updated baseline data in mid-2011, the percentage increase had to be increased +70% to achieve the envisioned 15 minutes per day of physical activity.

The minutes per person target was selected over a mode share target for two reasons. First, it is a direct measure of the health impacts of walking and biking; second, it has a more direct relationship to the public health sector recommendations for daily physical activity levels. Mode share is an indicator of the impacts of transportation investments in pedestrian and bicycle infrastructure, but the quality of life in a community can be more accurately gauged by the amount of physical activity. The target is also easy for individuals to relate to and understand on a personal level. This approach was selected based on extensive discussions with staff from the California Department of Public Health and county public health departments.

Past Experience with this Target

Unlike some of the other performance targets, this is the first time that physical activity from walking and biking has been included as a distinct target for one of MTC's Regional Transportation Plans.

Target Performance: Vision Scenarios

- **Goal: +70%**
- Current Regional Plans: +12%
- Initial Vision (Round 1): +18%

Current Regional Plans included greater levels of suburban and exurban growth, while the Initial Vision scenario was the first examination of a more focused growth pattern in the urban core. This urban growth, occurring in locations where active transportation to

employment and retail sites is more attractive, led to a stronger performance on this target. However, neither scenario came close to achieving the performance target.

Target Performance: Alternative Scenarios

- **Goal: +70%**
- Initial Vision (Round 2): +15%
- Core Concentration: +20%
- Focused Growth: +14%
- Constrained Core Concentration: +15%
- Outward Growth: +10%

All of the scenarios moved this target in the right direction, but none achieved the ambitious target of boosting the average Bay Area resident's physical activity from transportation to 15 minutes per day. The strongest performer was the Core Concentration scenario due to its intense urban focus and higher control totals (meaning that a greater share of the population would be new residents, primarily in urban areas). The Outward Growth scenario performed the worst, as it allocated more jobs and households in fringe areas where walking and bicycling are unattractive (due to long distances between jobs, housing, goods, and services and lack of bicycle and pedestrian infrastructure).

e. Open Space and Agricultural Preservation Target

Adopted Target #6: Direct all non-agricultural development within the urban footprint (existing urban development and urban growth boundaries).

Background

The numeric target is based on the following logic: limit target to no new development outside of publicly-defined urban areas. For areas without locally-defined urban boundary lines, ABAG and MTC used a census definition of urbanized lands further refined by county spheres of influence and urban service areas to determine the existing urban footprint. SB 375 legislation asks regions to consider the best available data on resource lands.

Special resource lands and farm lands are specifically defined in SB 375 and include:

- publicly owned parks and open space;
- open space and habitat areas protected by natural resource protection plans;
- species habitat protected federal or state Endangered Species Acts;
- lands subject to conservation or agricultural easements by local governments, districts, or non-profits;

- areas designated for open space/agricultural uses adopted in elements of general plans;
- areas containing biological resources described in CEQA that may be significantly affected by a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS);
- areas subject to flooding as defined by the National Flood Insurance Program; and
- lands classified as prime/unique/state-significant farmland or lands classified by a local agency meeting or exceeding statewide standards that are outside of existing city spheres of influence/city limits.

Unlike the statutory housing target, where housing levels in the Proposed Plan are required to meet the 100% target value, it would be possible for scenarios to fall short in achieving this target. Each land use scenario consists of different policies with regards to zoning and development opportunities – the more high-density zoning and opportunities for development in the urban core, the more likely housing development would not occur outside of urban boundary lines and zones.

Past Experience with this Target

Unlike some of the other performance targets, this is the first time that open space protection and agricultural preservation have been specifically included as a performance target for an MTC Regional Transportation Plan.

Target Performance: Vision Scenarios

- **Goal: 100%**
- Current Regional Plans: 95%
- Initial Vision (Round 1): 97%

As discussed in Appendix B, a person-based metric was utilized to calculate target performance for this round of scenario analysis. As Current Regional Plans placed more households in suburban and exurban areas, it had a slightly lower share of population living within the existing urban footprint.

Target Performance: Alternative Scenarios

- **Goal: 100%**
- Initial Vision (Round 2): 97%
- Core Concentration: 92%
- Focused Growth: 92%
- Constrained Core Concentration: 92%
- Outward Growth: 90%

This analysis, also using a person-based approach as described in Appendix B, identified the Initial Vision scenario as having the greatest success in focusing growth within the existing urban footprint. Conversely, 10% of the region's population growth in the Outward Growth scenario is expected to occur in greenfield locations outside urban limit lines, leading to greater impacts for open space and agricultural lands.

f. Equitable Access Target

Adopted Target #7: Decrease by 10% the share of low-income and lower-middle income residents' household income consumed by transportation and housing.

Background

The Plan Bay Area equity target is adapted from a 2006 report by the Center for Housing Policy ("A Heavy Load: The Combined Housing and Transportation Burdens of Working Families"). According to that report, Bay Area families with annual incomes under $70,000 spend a combined average of 61% of earnings on housing (39%) and transportation (22%). This share of 61% of earnings is approximately 10% above the national average share spent by lower-income households. Therefore, this target is set to improve transportation and housing affordability to approximately match the national average by 2035.

Past Experience with this Target

This target was included in *Transportation 2035*. However, the housing cost methodology was not a true forecast (it instead relied on the share of income being forecasted through a trendline approximation from historical data). The numeric target of -10% was used in *Transportation 2035*, but none of the scenarios analyzed achieved this target. Despite the fact that *Transportation 2035* scenarios analyzed fell short from that ambitious goal, all scenarios moved in the right direction, showing reductions in combined H+T costs by 3 to 5% of household income.

Target Performance: Vision Scenarios

- **Goal: -10%**
- Current Regional Plans: +3%
- Initial Vision (Round 1): -4%

Neither of the vision scenarios achieved the targeted reduction in housing and transportation costs for working-class Bay Area residents, although Initial Vision was the only scenario in the Plan Bay Area process that moved in the right direction as a result of lower transportation costs and significantly lower housing costs. Current

Regional Plans, conversely, saw no reduction in transportation costs, while at the same time forecasting a rise in regional housing costs.

Target Performance: Alternative Scenarios

- **Goal: -10%**
- Initial Vision (Round 2)[2]: -4%
- Core Concentration: +8%
- Focused Growth: +9%
- Constrained Core Concentration: +9%
- Outward Growth: +9%

Most of the alternative scenarios performed similarly, showing significant increases in H+T costs for working-class Bay Area residents. The primary driver of this result was continued growth in housing costs under most scenarios, with slight transportation cost increases in some scenarios as well. This result, while not unexpected given the Bay Area's historically high housing costs, represents one of the greatest regional challenges to tackle over the coming years.

g. Economic Vitality Target

Adopted Target #8: Increase gross regional product (GRP) by an average annual growth rate of approximately 2% (+90% target for year 2035).

Background

While economic impacts had previously been measured in prior plans by metrics such as access to jobs, the Bay Area business community indicated its strong support of examining total economic output, also known as gross regional product (GRP). Since this was the first plan examining both land use and transportation, this target looks at the regional effects of population growth, locational accessibility, and agglomeration for the first time. In particular, the target focuses on continuing the region's robust economic performance over the next three decades.

Based on the envisioned 2.1% annual growth rate (slightly above the 40-year historic annual GRP growth rate of 2.0%), this target aligns with a +90% increase by year 2035 and a +110% increase by year 2040. Note that the year 2035 target was used for the alternative scenarios analysis, while the year 2040 target was used for the EIR alternatives analysis.

[2] Note that the Initial Vision scenario (Round 2) was not analyzed using the updated methodology for this round of scenarios, and therefore the forecasted reduction is due to methodology inconsistencies with the other four scenarios. The result is instead consistent with the Initial Vision scenario (Round 1).

Past Experience with this Target

This is the first time that gross economic output has been included as a target for one of MTC's Regional Transportation Plans.

Target Performance: Vision Scenarios

An appropriate economic impact analysis model had not yet been developed for the region during this phase of Plan Bay Area. Therefore, results are not available for the vision scenarios.

Target Performance: Alternative Scenarios

- **Goal: +90%**
- Initial Vision (Round 2): +131%
- Core Concentration: +134%
- Focused Growth: +113%
- Constrained Core Concentration: +113%
- Outward Growth: +113%

All of the scenarios analyzed forecast significant growth in GRP, but the biggest differences between scenarios were caused by different baseline assumptions for residents and jobs (also known as regional control totals). Both the Initial Vision and Core Concentration scenarios had higher baseline totals; greater numbers of residents and employees typically correspond with higher levels of total regional economic activity. The three remaining scenarios, all using the lower baseline totals, performed consistently for GRP regardless of the location of growth and portfolio mix of transportation projects.

Additional information on the economic impacts of the planning scenarios can be found in Appendix C.

h. Transportation System Effectiveness Targets

Adopted Target #9: Increase non-auto mode share by 10% and decrease automobile vehicle miles traveled per capita by 10%.

Background

These targets are designed to measure the overall transportation system efficiency for both auto and non-auto (public transit, walking, and biking) modes. The target has two components, which represent different objectives for modal efficiency. For non-autos, the target aims to increase the share of trips made in the region by transit, walking, and biking by making these transport modes more convenient and accessible. For autos, the

target aims to reduce vehicle miles traveled, which would reflect the benefits of a more compact land use development pattern (which brings destinations closer together and thus facilitates shorter trips). This target reflects the traditional RTP mobility goals within the SCS process.

It is important to note the originally adopted non-auto target was to reduce per-trip non-auto travel times. The justification for this target was that it would better capture land use changes which shorten the distance between origins and destinations, as well as transportation network improvements that increase transit operating speeds. However, it provided unexpected results for aggressive transit expansion scenarios, showing increasing non-auto travel times. This was due to the fact that aggressive transit expansion led to additional longer-distance transit trips with travel times significantly higher than the regional average. Even though these scenarios boosted transit ridership, the target showed adverse impacts of transit expansion. Therefore, an alternative target – non-auto mode share – was selected as a suitable replacement that captured the original intent of the adopted language.

Past Experience with this Target

This goal was a major focus of past Regional Transportation Plans. While VMT reduction has been carried over from *Transportation 2035*, the non-auto mode share target is a substantial shift from the prior target of freeway delay reduction. Scenarios in *Transportation 2035* failed to achieve significant reductions in VMT compared to past trends.

Target Performance: Vision Scenarios

- **Goals: 26%; -10%**
- Current Regional Plans: 19%; -8%
- Initial Vision (Round 1): 20%; -10%

Neither vision scenario achieved the 10-point targeted increase in non-auto mode share; Initial Vision performed marginally better as a result of its focused growth pattern. While Current Regional Plans achieved an 8% reduction in VMT per capita (falling short of the target), Initial Vision (Round 1) was the only scenario analyzed in the Plan Bay Area process that met the per-capita VMT reduction target.

Target Performance: Alternative Scenarios

- **Goals: 26%; -10%**
- Initial Vision (Round 2): 19%; -6%
- Core Concentration: 20%; -6%
- Focused Growth: 19%; -6%
- Constrained Core Concentration: 19%; -7%

- Outward Growth: 18%; -5%

Similar to the vision scenarios, all of the alternative scenarios moved in the right direction for both components of target #9 but fell short of the adopted goals. Thanks to greater transit infrastructure investments, the Core Concentration scenario performed the best for non-auto mode share, while the Constrained Core Concentration scenario performed the best for per-capita VMT. Conversely, the greater levels of sprawl development and additional road capacity included in the Outward Growth scenario led to its lower performance on both components of the target.

Adopted Target #10: Maintain the transportation system in a state of good repair:

a) Increase local road pavement condition index (PCI) to 75 or better.
b) Decrease distressed lane-miles of state highways to less than 10% of total lane-miles.
c) Reduce share of transit assets past their useful life to 0%.

Background

The target PCI of 75 was developed by the Bay Area Partnership Local Streets and Roads Working Group through their Strategic Plan effort. This numeric target was also used in *Transportation 2035* – it represents a "good" level of pavement condition.

The 10% target for distressed highway lane-miles was developed as part of California's 10-Year State Highway Operation and Protection Program Plan. This numeric target was also used in *Transportation 2035*.

The basis for the target measuring share of transit assets (buses, railcars, ferries, and transit stations) past their useful life is to replace assets at 100% of their useful lives. This will ensure that no transit assets are being used past their useful life, which reduces vehicle breakdowns and improves passenger comfort. Currently, Bay Area transit operators replace transit assets on average at approximately 120% of their useful lives. This represents a shift from the *Transportation 2035* target, which measured the average transit asset age as a percent of useful life. While that target was used as the originally approved language for transit state of good repair in Plan Bay Area, it was replaced by this improved target after staff identified flaws in the methodology for percentage of useful life. The prior formula experienced challenges in dealing with long-lifespan assets, such as elevated BART tracks and the Transbay Tube.

The numerical targets listed in the adopted language were later converted into percent changes from the baseline year to provide perspective on the level of improvement. For example, the PCI target of 75 became a +19% goal because the 2005 baseline pavement condition measured a PCI of 63; improvement to the stated numeric goal reflected a 19 percent increase in the index. The other state of good repair targets were similarly

adjusted to -63% and -100%; all target results from these measures are reported as these percent changes rather than the associated threshold values for clarity.

Past Experience with this Target

A similar version of this target was included in *Transportation 2035*. One key benefit of the target is that it is able to pivot off of assumed funding levels – therefore, it will be used to compare scenarios only if a funding level is assumed. Funding levels in *Transportation 2035* were able to slow the trends of degrading roads and sub-par transit assets.

Target Performance: Vision Scenarios

- **Goals: a) +19%; b) -63%; c) -100%**
- Current Regional Plans: a) +0%, b) +30%; c) not available
- Initial Vision (Round 1): a) +0%; b) +30%; c) not available

Both vision alternatives performed the same for all targets, as they both relied on the *Transportation 2035* investments levels of state of good repair. No progress was made towards the PCI target, while state highways were expected to worsen as a result of no additional funding being made available to address their state of good repair. Transit state of good repair data was not available at this time, and therefore the results are not shown for that target.

Target Performance: Alternative Scenarios

- **Goals: a) +19%; b) -63%; c) -100%**
- Initial Vision (Round 2): a) +5%; b) +30%; c) +138%
- Core Concentration: a) +5%; b) +30%; c) +138%
- Focused Growth: a) +5%; b) +30%; c) +138%
- Constrained Core Concentration: a) +5%; b) +30%; c) +138%
- Outward Growth: a) +5%; b) +30%; c) +138%

The alternative scenarios performed the same for all targets; this is a result of consistent funding levels for state of good repair in all of these scenarios. Even though the two transportation investment strategies shifted expansion funds between roads and transit, funds for maintenance were kept constant between the two investment strategies.

i. Overall Scenario Performance Trends

Several themes emerged from this scenario performance process, which helped to inform the development of the Proposed Plan, and are discussed below.

- **A relatively mature development pattern, combined with an existing robust transportation system, lead to challenges in changing the status quo and achieving many of the Plan's aggressive performance targets.** Unlike other fast-growing regions across the country (e.g. Atlanta and Phoenix), the bulk of region's future residential and commercial buildings in year 2040 has already been constructed. As such, new growth needs to be highly focused and transit-oriented in order to significantly change the status quo and make possible movement towards regional performance targets. Similarly, almost all of the region's roads and most of the region's year 2040 transit infrastructure have already been built; maintenance of these facilities only preserves the status quo (by preventing even worse conditions for users) but does not move the region towards achievement of targeted reductions.
- **Growth in housing and jobs assumed in each scenario plays a primary role in the scenario performance results.** More important than the specific investments or envisioned land use pattern is the regional growth total; scenarios with higher levels of population and employment tend to have higher levels of total emissions and collisions (for example), but often perform better on a per-capita basis.
- **Even with robust funding of maintenance for both roads and transit, the regional state of repair tends to decline over the planning period.** Only local streets and roads improve over the lifespan of the Plan, but they fail to reach the regional target for "good" road pavement quality. Freeway facilities continue to worsen under limited state funding and many more transit assets are expected to be used past their useful lives, even with robust funding to replace aging assets and infrastructure.

Table 4 summarizes all of the target results and indicates that many targets were not achieved by any of the scenarios studied. This table also highlights the somewhat stronger performance of the Initial Vision and Core Concentration scenarios and the relatively weaker performance of the Outward Growth scenario across many of the targets.

TABLE 4: TARGET PERFORMANCE FOR ALTERNATIVE SCENARIOS (YEAR 2035)

#	Target	Goal*	Current Regional Plans	Initial Vision (Round 1)	Initial Vision (Round 2)	Core Concentration	Focused Growth	Constrained Core Concentration	Outward Growth
1	Reduce per-capita CO_2 emissions from cars and light-duty trucks	-15%	-11%	-12%	-8%	-8%	-9%	-9%	-8%
2	House the region's projected growth	100%	73%	100%	100%	100%	98%	98%	98%
3a	Reduce premature deaths from exposure to fine particulates	-10%	-25%	-24%	-23%	-27%	-32%	-32%	-31%
3b	Reduce coarse particulate emissions	-30%	-13%	-10%	-6%	-9%	-13%	-13%	-11%
3c	Achieve greater reductions in highly impacted areas	Yes							
4	Reduce the number of injuries and fatalities from all collisions	-50%	+18%	+21%	+26%	+23%	+19%	+18%	+20%
5	Increase the average daily time walking or biking per person for transportation	+70%	+12%	+18%	+15%	+20%	+14%	+15%	+10%
6	Direct all non-agricultural development within the urban footprint	100%	95%	97%	97%	92%	92%	92%	90%
7	Decrease the share of low-income and lower-middle income residents' household income consumed by transportation and housing	-10%	+3%	-4%	-4%	+8%	+9%	+9%	+9%

TABLE 4: TARGET PERFORMANCE FOR ALTERNATIVE SCENARIOS (YEAR 2035)

#	Target	Goal*	Current Regional Plans	Initial Vision (Round 1)	Initial Vision (Round 2)	Core Concentration	Focused Growth	Constrained Core Concentration	Outward Growth
8	Increase gross regional product (GRP)	+90%			+131%	+134%	+113%	+113%	+113%
9a	Increase non-auto mode share	26%	19%	20%	19%	20%	19%	19%	18%
9b	Decrease automobile vehicle miles traveled per capita	-10%	-8%	-10%	-6%	-6%	-6%	-7%	-5%
10a	Increase local road pavement condition index (PCI)	+19%	+0%	+0%	+5%	+5%	+5%	+5%	+5%
10b	Decrease share of distressed lane-miles of state highways	-63%	+30%	+30%	+30%	+30%	+30%	+30%	+30%
10c	Reduce share of transit assets past their useful life	-100%			+138%	+138%	+138%	+138%	+138%

* = targets achieved via scenarios marked in green; targets where scenarios fell short marked in yellow; targets where scenarios move in the wrong direction marked in red

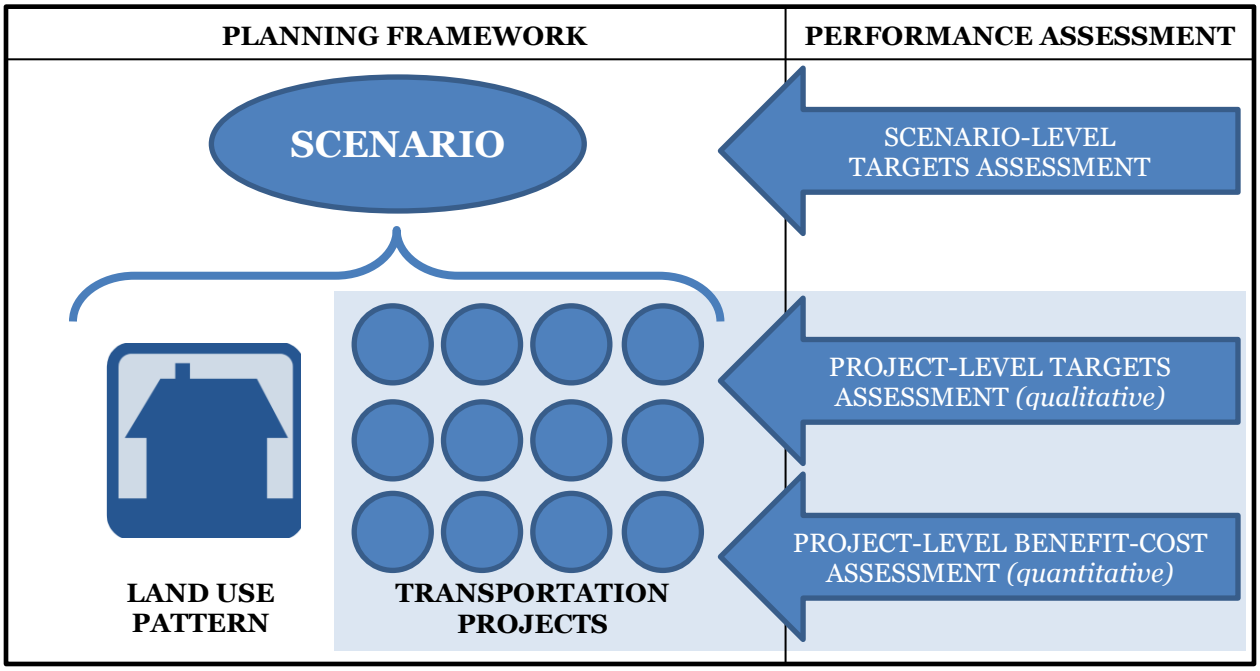
V. PROJECT-LEVEL PERFORMANCE ASSESSMENT

Individual transportation projects were also assessed to determine their support of the Plan's performance targets and to determine their cost-effectiveness. This effort identified the most effective transportation projects to inform the development of the suite of transportation projects approved as the Preferred Transportation Investment Strategy (later incorporated into the Proposed Plan). Note that project performance assessment result tables can be found in Appendices H and I.

a. Linking Scenario Performance to Project Performance

The project performance assessment conducted for Plan Bay Area goes beyond the scenario-level analysis typical for Regional Transportation Plans across the county. Instead of simply looking at various transportation investment packages tied to land use strategies, the project performance assessment looked at the much more detailed level of individual projects (as shown in Figure 1).

FIGURE 1: PERFORMANCE-BASED PLANNING FRAMEWORK



All uncommitted projects were subject to performance assessment under MTC Resolution No. 4006; committed projects were exempt from the project performance assessment. Projects could achieve committed status by:

- Having a certified Environmental Impact Report (EIR) or Record of Decision (ROD) for Environmental Impact Statement (EIS) by May 1, 2011 and having a full funding plan; or

- Identifying the project as 100% locally funded and therefore not requiring any regional funding.

Two distinct assessments were performed to determine uncommitted projects' utility and efficiency in achieving the Plan's objectives. First, each transportation project, approximately 230 in all, was qualitatively evaluated based on its level of support for the adopted targets. This process sought to answer a fundamental question: does each project being considered for inclusion in the Plan help us reach our goals? Depending on a project's level of support (or adverse impacts), it could receive an overall targets score ranging from +10 (strongly supporting all targets) to -10 (strongly adversely impacting all targets). This project-level targets assessment allowed staff to develop the Proposed Plan that prioritized projects that support the Plan's identified targets; furthermore, it acted as a crucial link between the scenario-level and targets-level analyses.

Second, all major capacity-increasing transportation projects (with total costs exceeding $50 million and/or with regional impacts) were evaluated using a quantitative, model-based methodology to determine each project's benefit-cost ratio. This process went beyond the adopted performance targets to consider as many quantifiable benefits as possible, seeking to determine which projects are most cost-effective in providing benefits to users and society. Given that benefit-cost ratios were developed for 90 major projects, the assessment focused on categorizing projects' benefit-cost performance by tier – low, medium-low, medium-high, and high – in order to focus primarily on outliers (the highest- and lowest-performers).

The results of this project performance assessment were used for two primary purposes:

- High-performing projects (which performed well on both the targets assessment and the benefit-cost assessment) were prioritized for regional funding in Plan Bay Area.
- Low-performing projects (which exhibited poor performance on either the targets assessment or the benefit-cost assessment) were subjected to additional scrutiny. Project sponsors were asked to present a compelling case to policymakers for inclusion in the Plan.

Note that the medium-performing projects, the category which represented the vast bulk of total projects assessed, were subject to the discretion of county congestion management agencies (CMAs) for prioritization for Plan Bay Area funding.

b. Targets Assessment Methodology

The targets assessment considered the extent to which projects and programs support the ten Plan Bay Area targets adopted by the Commission and ABAG. The assessment was based on a set of qualitative criteria developed with input from MTC's Partnership

Technical Advisory Committee (PTAC), the Regional Advisory Working Group, and the Ad Hoc Project Performance Assessment Technical Committee.

Approximately 230 projects were assessed individually as part of the targets assessment, including the 90 major capacity-increasing projects that were also evaluated as part of the benefit-cost assessment. For projects assessed on an individual basis, staff was able to consider project specifics such as geography, which are especially important for targets such as Adequate Housing, Open Space/Agricultural Preservation, and Economic Vitality.

MTC staff reviewed projects' support for each of the 10 targets and assigned scores based on a five-point scale (strong support = 1.0; moderate support = 0.5; minimal impact = 0; moderate adverse impact = -0.5; strong adverse impact = -1.0). The targets assessment relies on the targets net score, which combines the 10 target scores into a single score ranging from +10 to -10. As the Commission did not select to identify weights of the various targets, all were treated equally when calculating the combined score; note that a target with multiple sub-components (such as the air quality and transportation targets) were treated as a single target for the purposes of this assessment.

Table 5 summarizes the criteria used to assess projects in this qualitative assessment; more detailed information, along with example projects evaluated as part of the targets assessment, can be found in Appendix E.

The remaining 700 smaller projects (not subject to individual evaluation) were grouped into nine categories based on mode, project purpose, and functional class (e.g., expansion, operations, safety). The nine categories were then evaluated against the targets, with each project receiving a target score based on its categorization. These groupings capture many important distinctions relative to the targets but do not allow us to consider geographical differences between small projects. This more limited performance assessment was appropriate because these projects only make up a small fraction of total Plan costs, while the major projects subjected to individual assessment represent all of the high-cost, capacity-increasing projects with significant regional impacts.

c. Benefit-Cost Assessment Methodology

Fundamentally, the benefit-cost (B/C) assessment sought to identify transportation projects that are cost-effective based on the application of state-of-the-practice economic theory. The results of this assessment were intended to ensure that projects included in the Plan were not only sustainable, but also a wise allocation of scarce public dollars. Because of the time-consuming nature of this model-based assessment, the

assessment examined the 90 largest capacity-increasing and regionally-impactful transportation projects across the San Francisco Bay Area.

Forecasting Project Benefits

MTC's activity-based travel model, known as Travel Model One, was used to analyze these projects – which created a level playing field across all of the analyzed projects. This approach allowed for fair comparison of B/C ratios between individual projects, as each project's benefits were calculated using an identical methodology. To determine the impacts of a particular project, a no-build model run was conducted to determine the baseline conditions (e.g. total regional travel time, tons of airborne emissions, fatality collisions, etc.). After changing the baseline conditions to represent project-related improvements – e.g. travel lanes were added, or a rail line was extended – the model was then run again to analyze with-project conditions. Every model run was performed for the geographical scope of the entire Bay Area, meaning that no-build and with-project conditions captured the travel impacts of a given project for simulated travelers across the region. The impacts to each travel metric were calculated by comparing the no-build and with-project model runs. Given the large number of model runs, a 50% sample was utilized for each run – meaning that the travel behavior of half of all Bay Area households was analyzed to determine each project's impacts. This sample size is more than sufficient to forecast the benefits of a transportation project.

Since the activity-based model forecasts the travel behavior of millions of simulated Bay Area residents, its run time is significant. A new modeling approach had to be developed to analyze the number of projects subject to the B/C assessment. This approach, known as "mode choice" modeling, only re-runs the later stages of the model – mode choice and tour assignment – rather than going through the full process of generating new tours. It was assumed that, given the incremental nature of each transportation improvement, the tour generation on a per-project basis is relatively small. That said, the "mode choice" modeling approach did capture other responses to new travel choices, such as changes in departure time, routing, and mode choice caused by project implementation.

Numerous benefits were directly quantified based on model output metrics, including benefits for individuals (such as travel time and trip cost reductions) and for society as a whole (such as improved air quality and reduced CO_2 emissions). Additional benefits, such as health benefits from active individuals, parking costs, and auto ownership were calculated using sketch-level planning tools dependent upon model outputs (such as trip counts, trip distances, and travel times). However, since benefit methodologies were based on outputs of the transportation model, it was not possible to go beyond the model's scope and capture land use impacts and their associated monetized benefits (e.g. from new development or property value increases). Those types of land use benefits are highly challenging to quantify for benefit-cost analysis, given the necessity to differentiate between intraregional transfers and interregional net benefits. More

information about the benefit valuations, their components, and their sources can be found in Table 9.

In limited circumstances, it was necessary to post-process model benefit outputs to account for model shortcomings. Benefit post-processing actions included the following:

- Model output only captured direct particulate matter emissions; emissions were scaled up to account for particulate emissions from road dust and brake/tire wear *(projects impacted: all)*.
- Model output exhibited a bug for truck VMT and VHT outputs; these benefits were instead estimated by scaling model outputs for auto VMT and VHT by the ratio of truck to auto volumes on Bay Area roadways *(projects impacted: all)*.
- Differences in benefit valuation for utility-based forecasting (travel model logit models) and economic cost-effectiveness evaluation (benefit-cost analysis) led to somewhat inconsistent results for mode-switching travelers. This meant that, without post-processing, a subset of mode switchers experienced a negative benefit from switching to a slower travel time option, even if their utility (the basis for the travel modeling choices) was increased. As such, an out-of-vehicle transit travel time (OVTT) adjustment factor was applied to "zero out" negative OVTT disbenefits from mode switching *(projects impacted: primarily transit investments)*.
- The travel model does not allow for interregional transit trips, affecting projects that serve interregional transit travelers. These projects' benefits were scaled up to account for the expected proportion of non-Bay Area travelers not captured in the model *(projects impacted: BART to Livermore, I-580 Express Bus, ACE Service Expansion)*.
- For the project assessment, travel model runs did not incorporate high-speed rail service. Benefits for projects with significant high-speed rail components had their non-HSR model-based benefits supplemented with HSR benefit forecasts from off-model calculations *(project impacted: Transbay Transit Center)*.
- The travel model used a fixed set of express lane tolls, as it was not able to dynamically adjust tolls as would occur in real-world operations; this led to excess impacts on carpool formation and unrealistically high carpool mode shifts, affecting project benefits. Express lane project results were instead adjusted to account for this model shortcoming by scaling VMT and travel time benefits to more closely reflect expected carpool mode shifts *(projects impacted: MTC and VTA Express Lane Networks)*.

Calculating Benefit-Cost Ratios

While MTC developed estimates of benefits, project costs (both capital and operating) were provided by project sponsors. MTC worked with an independent consultant to review project cost estimates and ensure cost estimates provided by sponsors were

reasonable. When project costs were significantly below the standardized cost estimates, MTC followed up with project sponsors and requested either updated realistic cost estimates or justifications for projects' lower-than-expected cost inputs to the B/C analysis.

In order to calculate the benefit-cost ratio, benefits and costs were annualized to reflect the project impacts in the analysis horizon year of 2035. Benefits were based on year 2035 travel model output for a typical weekday, and therefore had to be multiplied by an annualization factor of 300 to determine the annual benefits. Capital costs were annualized based on the expected useful life of the corresponding transportation asset type as shown in Table 6, and then combined with their net annual operating and maintenance cost. For road projects, lane-mile maintenance costs were standardized using the lane-mile costs by facility type as shown in Table 7. For transit projects, gross operating and maintenance costs came from project sponsors and were converted to net annual operating costs using the agencies' current farebox recovery ratios as shown in Table 8 (thus rewarding agencies that recoup more of their operating costs through new farebox revenue).

TABLE 5: TARGETS ASSESSMENT CRITERIA

#	Target	Criteria for Project Support	Criteria for Adverse Impact
1	Reduce per-capita CO_2 emissions from cars and light-duty trucks	• Advances clean fuels and/or vehicles beyond CARB targets • Provides an alternative to driving alone • Provides a VMT reduction	• Results in a VMT increase
2	House the region's projected growth	• Located in a jurisdiction with at least 1,500 units of forecasted housing production • Located in a jurisdiction with above average past performance in meeting Regional Housing Needs Assessment targets for very low and low income units	• Located in a jurisdiction with below average past performance in meeting Regional Housing Needs Assessment targets for very low and low income units
3	Reduce premature deaths from exposure to particulate emissions	• Provides a VMT reduction • Increases walk/bike trips • Increases transit trips	• Results in a VMT increase
4	Reduce the number of injuries and fatalities from all collisions	• Implements safety improvements (for all modes) • Provides a VMT reduction • Enhances safety or security for transit passengers	• Results in a VMT increase
5	Increase the average daily time walking or biking per person for transportation	• Advances clean fuels and/or vehicles beyond CARB targets • Provides an alternative to driving alone • Provides a VMT reduction	• Results in a VMT increase
6	Direct all non-agricultural development within the urban footprint	• Does not consume areas of open space • Does not consume areas of agricultural land • Improves freeway, arterial, or rail access to agricultural lands	• Directly consumes areas of open space • Directly consumes areas of agricultural land

TABLE 5: TARGETS ASSESSMENT CRITERIA

#	Target	Criteria for Project Support	Criteria for Adverse Impact
7	Decrease the share of low-income and lower-middle income residents' household income consumed by transportation and housing	• Low-income riders constitute over 40% of the operator's current ridership • Operator servers over 0.5% of total regional low-income ridership	*No projects were determined to have adverse impacts on this target.*
8	Increase gross regional product (GRP)	• Improves access to/from employment centers and areas on currently congested roadways (all modes) • Improves operations to/from ports or in truck corridors	• Decreases access to port, truck or employment centers
9	Increase non-auto mode share and decrease automobile vehicle miles traveled per capita	• Improves transit service • Increases walk/bike and transit trips • Reduces transit travel times • Provides alternatives to the single occupant auto • Reduces household vehicle ownership	• Results in a VMT increase • Increase the need of use of single-occupant vehicles
10	Maintain the transportation system in a state of good repair	• Improves roadway surface condition • Replaces or extends the life of bus, rail, or ferry assets	*No projects were determined to have adverse impacts on this target.*

TABLE 6: PROJECT LIFECYCLE ASSUMPTIONS	
Project Type	**Expected Useful Life**
Local Buses	14 years
Express Buses	18 years
BRT Systems	20 years
Roads	20 years
Technology/Operations Components	20 years
Ferry Boats	20 to 30 years
Rail Infrastructure *(if supermajority of costs are not for new tunnels and/or stations)*	30 years
Rail Infrastructure *(if supermajority of costs are for new tunnels and/or stations)*	80 years

TABLE 7: ANNUAL ROAD O&M COST ASSUMPTIONS	
Roadway Type	**Cost per Lane-Mile (in year 2013 dollars)**
Freeway	$67,000
State Highway	$58,733
Local Road	$47,486

TABLE 8: FAREBOX RECOVERY ASSUMPTIONS	
Operator*	**Farebox Recovery Ratio**
AC Transit	18.8%
ACE	25.9%
BART	65.4%
Caltrain	48.5%
Capitol Corridor	47.0%
County Connection	16.4%
Dumbarton Rail *(assumed to be similar to ACE)*	25.9%
Golden Gate Bus	15.6%
Golden Gate Ferry	47.1%
LAVTA	19.0%
Marin Transit *(operated by Golden Gate)*	15.6%
Muni Bus *(average of motor bus and trolley bus)*	29.9%
Muni Light Rail	22.4%
SamTrans	17.9%
SMART *(assumed to be similar to ACE)*	25.9%
Sonoma County Bus *(weighted average of four operators in Sonoma)*	19.0%
Tri-Delta Transit	16.6%
VINE	11.1%
VTA Bus	12.3%
VTA Light Rail	17.1%
WETA	54.3%

* = based on FY 2009-2010 farebox recovery from 2010 Statistical Summary of Transit Operators (http://www.mtc.ca.gov/library/statsum/StatSumm_2010.pdf)

TABLE 9: BENEFIT VALUATIONS			
	Benefit	**Valuation ($2013)**	**What does this valuation include?**
Travel Time	**In-Vehicle Travel Time (Auto and Transit) per Person Hour of Travel**	**$16.03**	This valuation is set equal to one-half of the mean regional wage rate ($32.06). The valuation represents the discomfort to travelers of enduring transportation-related delay and the loss in regional productivity for on-the-clock travelers & commuters. *Sources: Caltrans Cal B-C Model; Bureau of Labor Statistics National Compensation Survey, 2011*
	Out-of-Vehicle Travel Time (Transit) per Person Hour of Travel	**$35.27**	This valuation is set equal to 2.2 times the valuation of in-vehicle transit time. The valuation represents the additional discomfort to travelers of experiencing uncertainty of transit arrival time, exposure to inclement weather conditions, and exposure to safety risks. *Source: FHWA Surface Transportation Economic Analysis Model (STEAM)*
	In-vehicle Travel Time (Freight/ Trucks) per Vehicle Hour of Travel	**$26.24**	The valuation is set equal to the average wage rate for a Bay Area employee in the Transportation – Truck Driver (average of heavy and light) occupation sector ($23.83/hour), plus the average hourly carrying value of cargo ($2.41/hour). *Sources: FHWA Highway Economic Requirements System; Bureau of Labor Statistics National Compensation Survey, 2011*
	Travel Time Reliability (Auto) per Person Hour of Non-recurring Delay	**$16.03**	The valuation represents the additional traveler frustration of experiencing non-expected incident related travel delays. The value is set equal to the value of in-vehicle travel time for autos. *Source: SHRP2 L05 Project – "Incorporating Reliability Performance Measures into the Transportation Planning and Programming Processes"*
	Travel Time Reliability (Freight/Truck) per Vehicle Hour of Non-recurring Delay	**$26.24**	The valuation represents the additional loss of regional productivity of experiencing non-expected incident related travel delays. The value is set equal to the value of in-vehicle travel time for trucks. *Source: SHRP2 L05 Project – "Incorporating Reliability Performance Measures into the Transportation Planning and Programming Processes"*
Collisions	**Fatality Collisions** ***(valuation per fatality)***	**$4.59 million**	The valuation includes the internal costs to a fatality collision victim (and their family) resulting from the loss of life, as well as the external societal costs. The valuation represents: • Loss of life for the victims • Medical costs incurred in attempts to revive victims • Loss of enjoyment of family member to other members of the family • Loss of productivity to the family unit (e.g. loss of earnings) • Loss of productivity to society • Loss of societal investment in the victim (e.g. educational costs) *Sources: Caltrans Cal-BC Model, 2010; National Safety Council, 2010*

TABLE 9: BENEFIT VALUATIONS			
	Benefit	**Valuation ($2013)**	**What does this valuation include?**
	Injury Collisions ***(valuation per injury)***	**$64,000**	The valuation includes the internal costs to an individual (and their family) resulting from the injury, as well as the external societal costs. The valuation represents: • Pain and inconvenience for the individuals • Pain and inconvenience for the other family members • Medical costs for injury treatment • Loss of productivity to the family unit (e.g. loss of earnings) • Loss of productivity to society *Sources: Caltrans Cal-BC Model, 2010; National Safety Council, 2010*
	Property Damage Only (PDO) Collisions ***(valuation per incident)***	**$2,455**	The valuation includes the internal costs to a property damage collision victim (and their family) resulting from the time required to deal with the collision, as well as the external societal costs from this loss of time. The valuation represents: • Inconvenience to the individual and to other members of the family • Loss of productivity to the family unit • Loss of productivity to society *Source: Caltrans Cal-BC Model, 2010*
Air Quality and Health	**CO_2 per Metric Ton**	**$55.35**	This valuation represents the full global social cost of an incremental unit (metric ton) of CO_2 emissions from the time of production to the damage it imposes over the whole of its time in the atmosphere. *Source: BAAQMD Clean Air Plan, 2010 (uprated to year 2035 using a 2% annual adjustment)*
	Diesel $PM_{2.5}$ (Fine Particulate Matter) per Ton	**$490,300**	These valuations represent the negative health effects of increased emissions including: • Loss of productive time (work & school) • Direct medical costs from avoiding or responding to adverse health effects (illness or death). • Pain, inconvenience, and anxiety that results from adverse effects (illness or death), or efforts to avoid or treat these effects • Loss of enjoyment and leisure time • Adverse effects on others resulting from their own adverse health effects *Source: BAAQMD Clean Air Plan, 2010*
	Direct $PM_{2.5}$ (Fine Particulate Matter) per Ton	**$487,200**	
	NO_x per Ton	**$7,800**	
	Acetaldehyde (ROG) per Ton	**$5,700**	
	Benzene (ROG) per Ton	**$12,800**	
	1,3-Butadiene (ROG) per Ton	**$32,200**	
	Formaldehyde (ROG) per Ton	**$6,400**	
	All Other ROG per Ton	**$5,100**	
	SO_2 per Ton	**$40,500**	

TABLE 9: BENEFIT VALUATIONS			
	Benefit	**Valuation ($2013)**	**What does this valuation include?**
	Costs of Physical Inactivity	**$1,220**	This valuation represents the savings achieved by influencing an insufficiently active adult to engage in moderate physical activity five or more days per week for at least 30 minutes. It reflects annual Bay Area health care cost savings of $326 (2006 dollars), as well as productivity savings of $717 (2006 dollars). *Source: California Center for Public Health Advocacy/ Chenoweth & Associates 2006, "The Economic Costs of Overweight, Obesity, and Physical Inactivity Among California Adults"*
Direct Costs	**Auto Operating Costs per Auto Mile Traveled**	**$0.2518**	This valuation represents the variable costs (per mile) of operating a vehicle. This valuation includes fuel, maintenance, depreciation (mileage), and tires. *Source: Caltrans Cal-BC Model, 2010*
	Truck Operating Costs per Truck Mile Traveled	**$0.3700**	
	Parking Costs per Auto Trip	**varies by county**	For this benefit valuation, costs vary based on the average parking costs for each of the Bay Area counties, taking into account average trip durations, parking subsidy rates, and hourly parking rates. The following per-trip parking cost savings were estimated for each auto trip reduced by county: • San Francisco: $7.16/work trip; $5.64/non-work trip • San Mateo: $0/work trip; $0.04/non-work trip • Santa Clara: $0.15/work trip; $0.33/non-work trip • Alameda: $0.54/work trip; $0.39/non-work trip • Contra Costa, Solano, Napa, Sonoma, Marin: $0/work trip; $0/non-work trip These valuations reflect the average per-trip parking costs (paid for a parking meter or space in a parking garage) based on trip destinations; they are consistent with the assumptions of Travel Model One on parking costs. *Source: Travel Model One, 2010*
	Auto Ownership Costs per Vehicle (change in the number of autos)	**$6,290**	This valuation represents the annual ownership costs of vehicles, beyond the per mile operating costs. This valuation includes purchase/lease cost, maintenance, and finance charges. *Source: MTC Bay Area auto ownership analysis, 2011*
Noise	**Noise per Auto Mile Traveled**	**$0.0012**	This valuation represents the value of property value decreases and societal cost of noise abatement. *Source: FHWA Federal Cost Allocation Report*
	Noise per Truck Mile Traveled	**$0.0150**	

d. Regional Programs – Off-Model Benefit-Cost Methodology

In addition to county projects that were evaluated using a benefit-cost ratio, MTC also evaluated the cost-effectiveness of its regional programs, which include programs such as Climate Initiatives, the Lifeline Program, and the Freeway Performance Initiative. Unlike capacity-increasing projects that were evaluated using Travel Model One, MTC regional programs were generally not modeled since many of them are programs without capacity improvements that can be accurately reflected in a regional travel demand model. An alternative method was developed that captures the benefits of the projects in one of two ways: 1) the estimated VMT reduced by the projects that was used to calculate all the performance metrics via a correspondence ratio or 2) the estimated nominal benefit(s) of the project that directly yielded a benefit-cost ratio.

Programs that used the VMT reduction approach relied on existing research to estimate the amount of VMT that could be reduced by the given program. These VMT estimates were used to generate metrics such as improved air quality and reduced CO_2 emissions in the same way that the travel model outputs were used to generate the program benefits for the projects that were analyzed in Travel Model One. The metrics were then monetized with the same values for the modeled projects and a ratio was calculated based on the program costs. For programs where no reliable VMT estimate could be obtained, such as the local streets and roads and transit maintenance programs, the direct benefits were estimated (such as avoided costs from on-time maintenance) and, along with the program costs, a benefit-cost ratio was calculated.

Detailed information on the benefit-cost assessment for MTC regional programs can be found in Appendix D.

e. Supplementary Assessments

In addition to the targets assessment and benefit-cost assessment for all major projects, three supplemental assessments were conducted to address other important issues raised by stakeholders.

First, a confidence assessment was performed for each project's benefit-cost assessment in order to identify potential limitations of the benefit-cost assessment. Given that all evaluation methods have limitations, it was important to document known shortcomings of the approach used in order to better inform policymakers of the strengths and weaknesses of the analysis results. The criteria evaluated as part of the confidence assessment sought to identify the primary shortcomings of the quantitative assessment approach and were categorized under the following concepts:

- **Travel Model Output**
  - Does the travel model have limitations in understanding a particular type of travel behavior (e.g. weaving)?
  - Does the travel model lack an understanding of specific travel conditions (e.g. ridership or traffic volumes)?
- **Framework Completeness**
  - Does the travel model output capture all of the primary benefits of the project?
  - Are we capturing all of the real-world limitations of relevant transportation systems (e.g. transit vehicle crowding)?
- **Timeframe Inclusiveness**
  - Is the project an "early winner" (i.e. can be implemented quickly and provides key benefits in the short term)?
  - Is the project a "late bloomer" (i.e. benefits will not be realized until the final years of the planning horizon)?

The confidence assessment results table can be found in Appendix J.

Second, sensitivity testing was undertaken in order to understand how the benefit valuations affect the cost-effectiveness estimates for various projects. Considering the sensitivity of valuations for travel time, travel delay, carbon dioxide emissions, collisions, and noise – as well as the potential for cost savings from more efficient transit operations – allowed for a better understanding of potential limitations of the benefit-cost ratios. While most of these tests indicated that valuation changes would have minimal impacts on the overall ratio (as shown in Appendix F), the valuation of travel time did play a significant role in the calculation of benefit-cost. While road projects were most dependent on travel time for their monetized benefits, all projects' benefit-cost ratios were reduced somewhat when travel time was valued at a significantly lower level. Most importantly, however, the ranked order of projects remained relatively consistent overall, meaning that the prioritization effort was relatively immune to valuation sensitivity issues.

Third, a project's equity considerations were highlighted and then utilized to conduct a geographic analysis. Each major transportation project was mapped in order to determine whether it is located within a Community of Concern (CoC) or Community Air Risk Evaluation (CARE). Next, each project located in a Community of Concern was evaluated to determine whether it truly served that community, which was defined as providing access to the residents of that neighborhood (e.g. bus stop, rail station, interchange ramp, arterial intersections, etc.). Finally, three of the target scores most focused on equity issues – adequate housing, particulate matter emissions in CARE communities, and low-income H+T affordability - were summed to calculate an equity targets score ranging from +3 to -3, analogous to the overall target score. Further information on this equity review can be found in Appendix G; the equity target scores

and corresponding equity maps can be found in Appendices L and M. [Note: approximately 30 projects analyzed during the supplemental project performance assessment process in early 2013 did not undergo this geographical assessment.]

f. Key Findings of Project Performance Assessment

Significant differences were apparent between projects of different modal types. Road efficiency projects, such as ramp metering in MTC's Freeway Performance Initiative program and new HOV/auxiliary lanes, were highly cost-effective and exhibited moderate support for the performance targets. Road expansion projects, such as the proposed SR-239 Expressway and the MTC Express Lanes Network, were somewhat cost-effective but demonstrated adverse impacts on key performance targets (e.g. CO_2 emissions reduction). Finally, transit projects in general were only marginally cost-effective but performed the strongest in terms of supporting the Plan's performance targets.

Several key trends emerged from the project performance assessment results, which then informed the development of the Proposed Plan. This process allowed high-performing projects to receive prioritized regional funding, while low-performing projects were subjected to additional scrutiny, as described in the following section.

Modal Performance Differences

Efficiency projects (which focus on improving existing transportation assets) typically performed better on both components of the project assessment than expansion projects (which emphasize widening highways or extending fixed transit guideways to new service areas). Implementation of ITS technologies – such as ramp metering and signal coordination – through programs like MTC's Freeway Performance Initiative performed better than freeway widening projects; this is due to the cost-effectiveness of efficiency projects in comparison to capital-intensive construction. Congestion pricing projects, including a proposal to implement cordon pricing in San Francisco's central business district, were shown to be even more highly cost-effective, given their ability to reduce congestion and fund additional transit service with net revenues. In addition to their cost-effectiveness, road efficiency and congestion pricing projects achieved many of the Plan Bay Area targets. In comparison, the Express Lane Network projects, which include some widening elements, showed adverse impacts for some of the Plan Bay Area targets by increasing capacity for automobiles through construction of new highway lane-mileage.

Transit efficiency projects also performed very well, demonstrating a high level of cost-effectiveness and strong support for the targets. Projects such as bus rapid transit systems in San Francisco and Oakland emphasized high-demand corridors where

dedicated lanes and bus signal priority achieve substantial benefits at a relatively low cost. In fact, the highest-performing project in the entire assessment – the BART Metro Program – was entirely focused on efficiency. This project, emphasizing improvements to the urban core of the heavy-rail BART system, would construct new turnbacks and implement express train service to provide more frequent and faster service along existing routes. In this era of constrained resources, both transit and road efficiency projects strongly support regional goals and provide the best "bang per buck".

Geographical Differences

Another key trend emerged based on the geographic location of a given transportation project. In general, both road and transit projects in the urban core of the Bay Area had higher benefit-cost ratios, which is logical given greater levels of traffic congestion and transit ridership in urban areas. This is primarily due to the large populations in these core regions; more individuals are likely to benefit from a given project's implementation in a major population center. Projects at the edges of the region typically exhibited lower benefit-cost ratios, while at the same time receiving lower target scores due to these projects' propensity to spur sprawl and induce greenfield development patterns.

This was particularly evident with transit projects; less-dense locations often lead to reduced accessibility to/from transit stops and therefore lower levels of ridership. This was exemplified by projects in the North Bay counties of Marin and Sonoma, where both transit frequency improvements and commuter rail extensions showed benefit-cost ratios less than one. In comparison, some of the region's highest-performing transit projects were along the densest corridors in the region – San Francisco's Market Street and Van Ness Avenue as well as Oakland's MacArthur Boulevard and International Boulevard.

Visualizing the Results

The results of the project-level performance assessment are summarized in a series of bubble charts, as shown in Figures 2, 3, and 4. Each bubble chart shows the benefit-cost ratio (on the vertical axis) and the targets score (on the horizontal axis), while the bubble size corresponds to the magnitude of benefits. High-performers can be identified in the upper-right corners of each bubble chart, while low-performers can be found on the left side and bottom edge of each bubble chart.

g. High-Performing and Low-Performing Projects

The project performance assessment process was not intended to merely serve as an informational item for policymakers. As discussed earlier, it was designed to influence the development of the Proposed Plan by prioritizing high-performing projects and

requiring low-performing projects to submit a compelling case for approval by the MTC Planning Committee. This effort played a major role in aligning regional discretionary dollars to the most cost-effective projects, while removing cost-ineffective projects and projects with adverse impacts on the performance targets.

In February 2012, the MTC Planning Committee approved a set of criteria to identify high- and low-performing projects. High-performing projects were defined as projects with high benefit-cost ratios (at least 10) and moderate target scores (at least +2), and as projects with high target scores (at least +6) and moderate benefit-cost ratios (at least 5). Low-performing projects were defined as projects with benefit-cost ratios below 1 or target scores at or below -1.

Thirteen projects were identified as high-performers; most of these projects were focused on efficiency improvements to existing systems (such as BART Metro or FPI) or major high-capacity transit expansions to dense urban areas (such as BART to San Jose or new bus rapid transit lines in San Francisco). These projects were prioritized for regional funding; major high-performing transit projects marked in bold reflect the region's latest New Starts and Small Starts funding priorities:

- **BART Metro Program**
- Treasure Island Congestion Pricing
- Congestion Pricing Pilot
- **AC Transit Grand-MacArthur BRT**
- Freeway Performance Initiative
- ITS Improvements in San Mateo County
- ITS Improvements in Santa Clara County
- Irvington BART Station
- **SFMTA Transit Effectiveness Project**
- **Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (SF to Tamien)**
- **BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)**
- **Van Ness Avenue BRT**
- Better Market Street

Thirty-four low-performing projects were also flagged as part of this process. These low-performing projects were subject to additional scrutiny, as they failed to meet a basic cost-effectiveness threshold or had adverse impacts on the Plan's adopted performance targets. Project sponsors had three choices on how to proceed after their project had been identified as a low-performer:

- Project sponsors could drop their low-performing project and instead fund other projects identifying as high- or medium-performing.

- Project sponsors could rescope their project to exclude the construction phase or could agree to fund the project using 100% local dollars (exempting their project from the compelling case process).
- Project sponsors could submit a compelling case for consideration by the MTC Planning Committee under a set of eligible compelling case criteria. In addition, low-performing projects seeking approval for inclusion in the Plan needed to have a full funding plan (i.e. project needed to financially feasible).

The following twelve low-performing projects were submitted during the Call for Projects but were later dropped by project sponsors as a result of the compelling case process. These projects were therefore not included in the Proposed Plan.

- EV Solar Installation
- Golden Gate Bus Service Frequency Improvements
- Monterey Highway BRT
- BART to Livermore (Phase 2)
- Downtown East Valley (Phase 2: LRT)
- Sunnyvale-Cupertino BRT
- Capitol Expressway Light Rail Extension (Phase 3: to Nieman)
- SR-116 Widening & Rehabilitation (Elphick Road to Redwood Drive)
- SR-4 Widening (Marsh Creek Road to San Joaquin County line)
- SR-4 Bypass Completion (SR-160 to Walnut Avenue)
- SR-12 Widening (Walters Road to Sacramento County line)
- SR-4 Upgrade to Full Freeway (Phase 2: Cummings Skyway to I-80)

The following twelve low-performing projects were submitted during the Call for Projects but were substantially rescoped by project sponsors as a result of the compelling case process. The projects were therefore included as modified below in the Proposed Plan.

- **Project sponsor agreed to only pursue right-of-way acquisition**
    - ACE Service Expansion
- **Project sponsor agreed to only pursue environmental studies**
    - Dumbarton Rail
    - SMART (Phase 3: Extension from Windsor to Cloverdale)
    - Capitol Corridor Service Frequency Improvements (Oakland to San Jose)
    - Petaluma Cross-Town Connector/Interchange
    - SR-239 Expressway Construction (Brentwood to Tracy)
    - Whipple Road Widening (Mission Boulevard to I-880)
    - US-101 Widening (Gilroy to San Benito County line)
- **Project sponsor agreed to fund the project with 100% local sales tax dollars**

  - Pacheco Boulevard Widening
  - Vasona Light Rail Extension (Phase 2)
- **Project sponsor agreed to fund the project with 100% toll revenue dollars**
  - New SR-152 Alignment

Two additional low-performing projects were identified as a result of a supplemental project performance assessment in the spring of 2013. These projects were both rescoped as a result of the supplemental compelling case process in May 2013 and therefore remained in the Proposed Plan as modified.

- **Project sponsor agreed to fund the project with 100% local dollars**
  - James Donlon Boulevard/Expressway (Kirker Pass Road to Somersville Road) + Kirker Pass Operational Improvements
  - San Tomas Expressway Widening (SR-82 to Williams Road)

Eight low-performing projects decided to pursue the compelling case process; these projects needed to submit a case based on the established compelling case criteria, which focused on the limitations of the project performance assessment. In other words, project sponsors needed to highlight a known limitation of the assessment and show how addressing that analytical limitation might shift them outside of the low-performing range. If the project was flagged due to a low benefit-cost ratio, project sponsors needed to show how limitations in the travel model (Category 1) led to an underestimated B/C ratio and provide evidence that a model limitation, if resolved, could have led to a ratio above 1. Additionally, project sponsors could cite support for key federal air quality and social equity requirements (Category 2) that did not receive additional weight in either the B/C or targets assessments as justification for a compelling case.

The complete list of adopted compelling case criteria is provided below:

Category 1: Benefits Not Captured by the Travel Model

a) Serves an interregional or recreational corridor
b) Provides access to international airports
c) Project benefits accrue from reductions in weaving, transit vehicle crowding, or other travel behaviors not well represented in the travel model
d) Enhances system performance based on complementary new funded investments

Category 2: Federal Requirements

a) Cost-effective means of reducing CO_2, PM, or ozone precursor emission (on cost per ton basis)

b) Improves transportation mobility/reduces air toxics and PM emissions in communities of concern

All eight of these projects had their compelling cases approved by the MTC Planning Committee in April 2012, primarily relying on case 2b (serves a community of concern) to highlight the projects' support of important social equity goals. These projects were therefore included in the Proposed Plan.

- **Compelling case: project serves one or more communities of concern**
  - Lifeline Transportation Program
  - Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)
  - Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements
  - Sonoma Countywide Bus Service Frequency Improvements
  - Marin Countywide Bus Service Frequency Improvements
  - Farmers Lane Extension
- **Compelling case: project provides cost-effective emissions reduction**
  - SR-84/I-680 Interchange Improvements + SR-84 Widening
- **Compelling cases: project provides service for recreational trips and address transit vehicle crowding**
  - Historic Streetcar Expansion Program
- **Compelling case: changes to project scope and costs lead to benefit-cost ratio greater than 1**
  - SMART (Phase 2: Extensions to Larkspur & Windsor + Pathway)

All in all, the compelling case process successfully removed billions of dollars of low-performing projects from Plan Bay Area and boosted the cost-effectiveness of the overall Plan.

FIGURE 2: PROJECT PERFORMANCE ASSESSMENT – RESULTS BY PROJECT TYPE

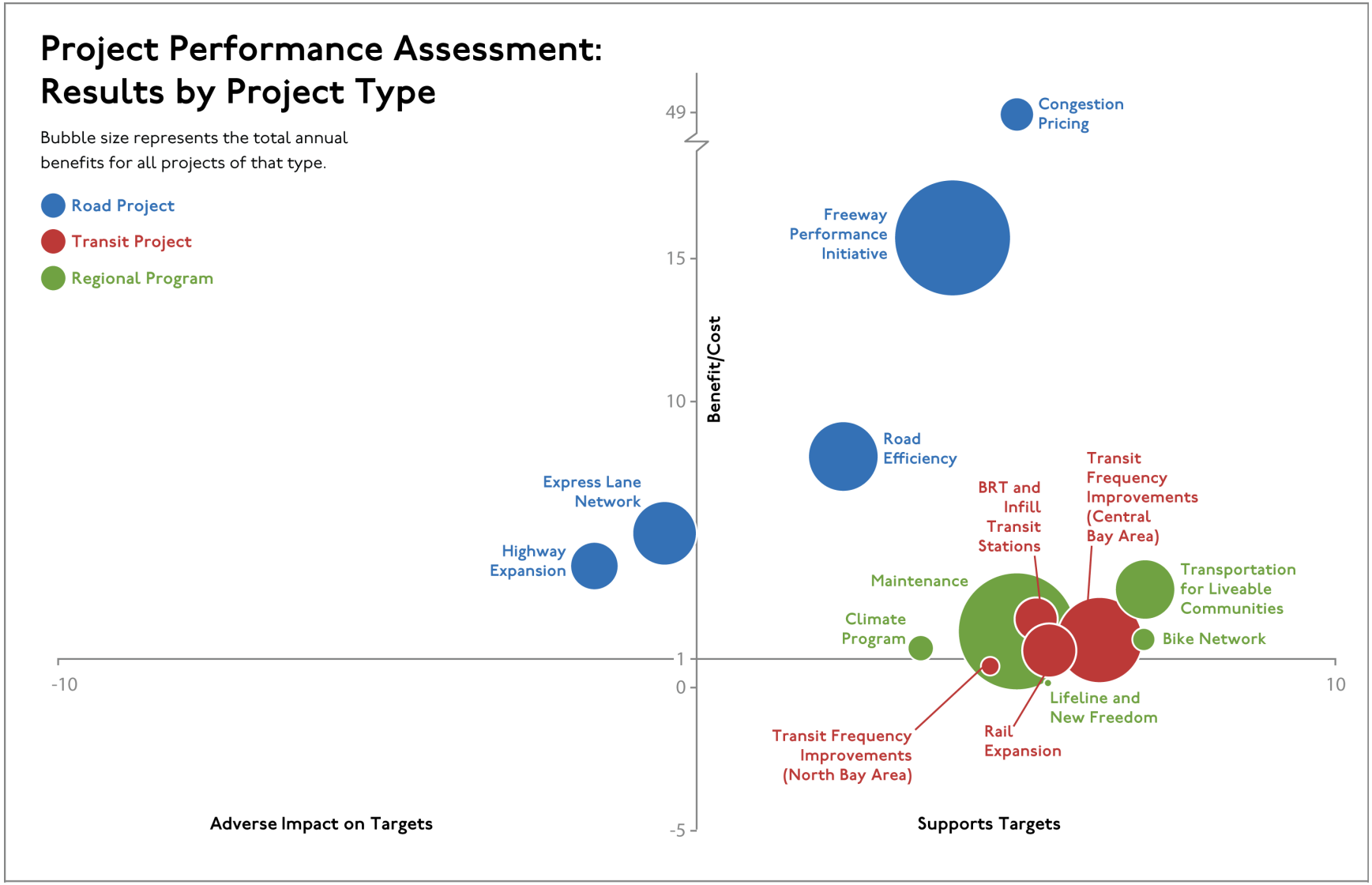


FIGURE 3: PROJECT PERFORMANCE ASSESSMENT – ROAD PROJECT RESULTS

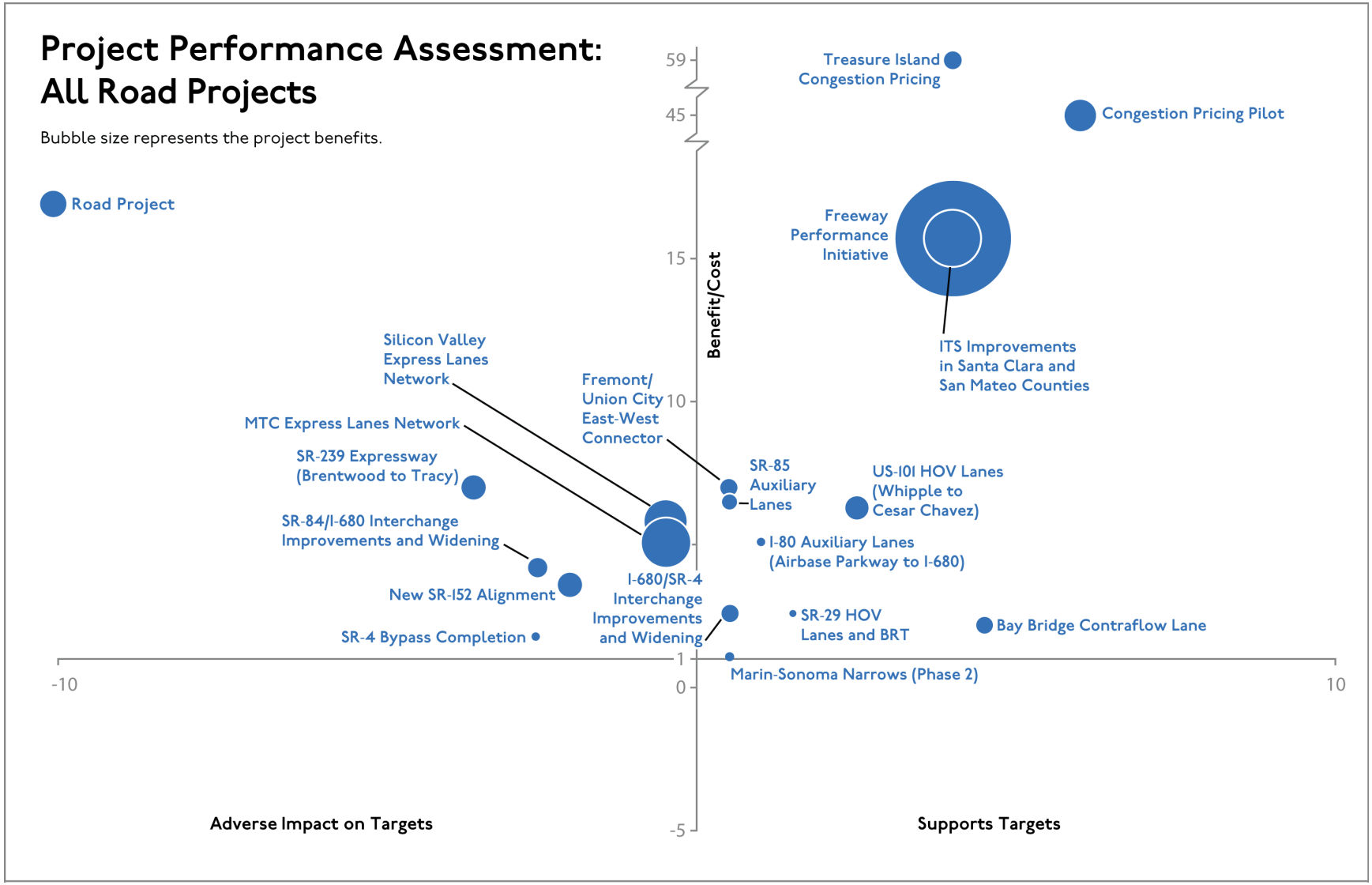
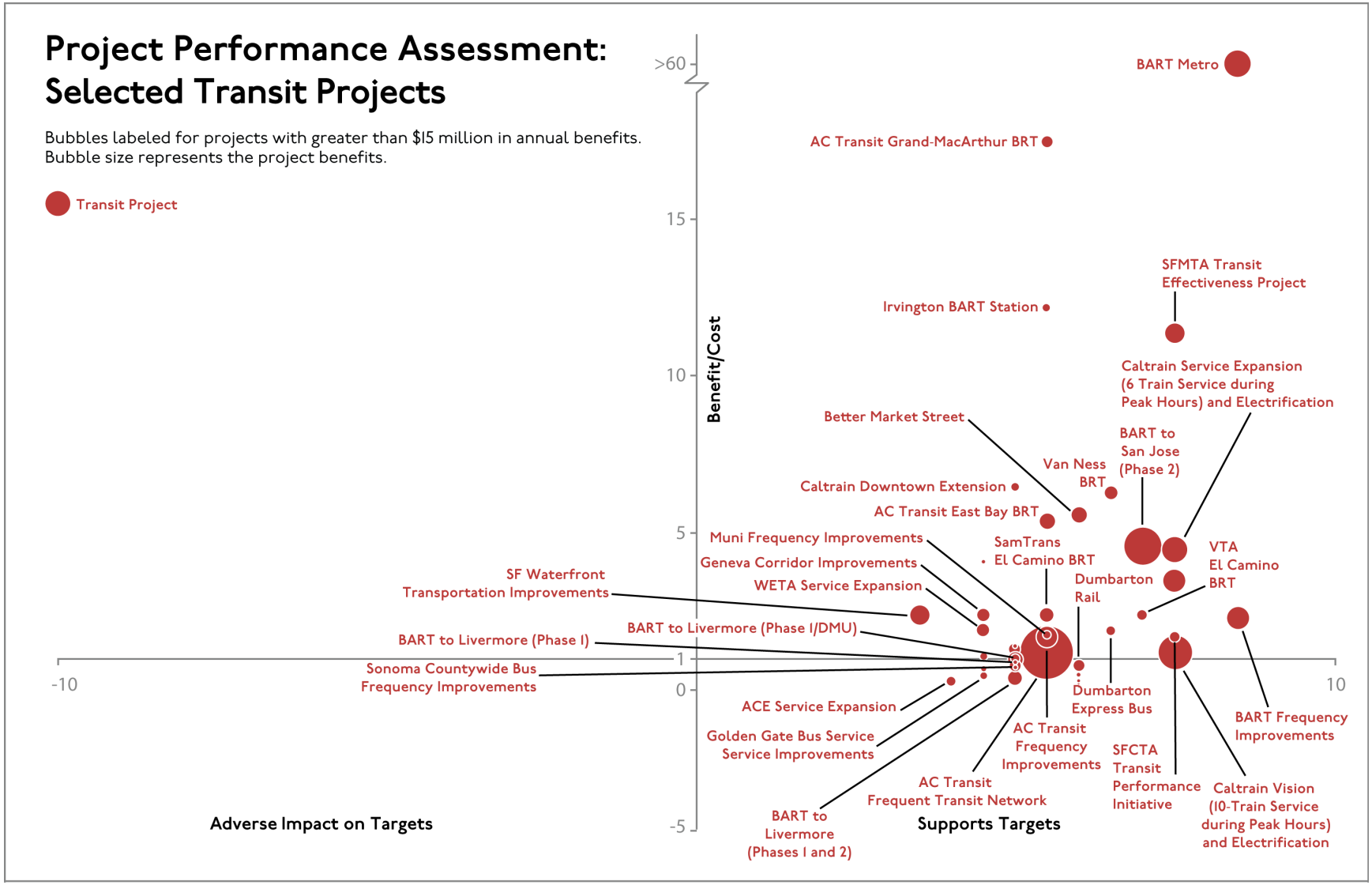


FIGURE 4: PROJECT PERFORMANCE ASSESSMENT – TRANSIT PROJECT RESULTS



VI. PROPOSED PLAN AND EIR ALTERNATIVES PERFORMANCE ASSESSMENT

Similar to the alternative scenarios evaluated in 2011 and described in Chapter IV of this report, staff analyzed the Proposed Plan and the various Environmental Impact Report (EIR) alternatives studied in 2012 and 2013. This process sought to highlight the results of the performance-based planning process and examine whether any concepts studied in the EIR should be considered as potential alternatives to the Proposed Plan due to their strong targets performances.

In general, the target methodologies for this round of performance targets assessment were consistent with those used in prior rounds of analysis, with a few exceptions. The most significant change was that targets were evaluated for horizon year 2040, instead of year 2035 from prior analyses. Detailed methodology information for each performance target can be found in Appendix B.

a. Development of the Proposed Plan

The Proposed Plan, also known as the Draft Plan or the preferred alternative for the Plan Bay Area EIR, was built upon the alternative scenarios process and the transportation project performance assessment, as well as input from local jurisdictions. The alternative scenarios process highlighted the need to develop a transportation investment package that provided greater funding for operating and maintaining the existing system. High-performing projects identified in the project performance assessment were prioritized for regional discretionary funding, while additional funding was provided to Climate Initiatives, the One Bay Area Grant program, the Transit Priority Initiative, and road efficiency programs such as the Freeway Performance Initiative.

On the land use side, the alternative scenarios process led to the creation of the Jobs-Housing Connection land use pattern which relied on lower control totals than unconstrained scenarios previously evaluated; it focused heavily on PDA growth, particularly in the "Big 3" cities (San Francisco, Oakland, and San Jose) with existing lower levels of per-capita GHG emissions. Additional revisions to the land use pattern were also made by ABAG staff to reflect local jurisdictions' feedback.

b. Defining EIR Alternatives

Alternative 1 – No Project: This alternative represented the potential scenario if Plan Bay Area is not implemented. Under this alternative, no new regional policies would be

implemented in order to influence local land use patterns and no uncommitted transportation investments would be made.

Alternative 2 – Proposed Plan: This alternative was selected by MTC and ABAG as the preferred plan option for Plan Bay Area; it represented a combination of the Jobs-Housing Connection land use strategy and the Preferred Transportation Investment Strategy, both developed as a result of the alternative scenarios analysis in early 2012. Refer to section (a) above for further details on the Proposed Plan.

Alternative 3 – Transit Priority Focus: This alternative sought to develop a focused growth pattern primarily in the region's urban core by relying on Transit Priority Project eligible areas (TPPs), which are areas with high-frequency transit service that are eligible for higher-density development streamlining, as per SB 375. This alternative was meant to leverage the significant investment the region has made and continues to make in frequent transit services.

Alternative 4 – Enhanced Network of Communities: This alternative sought to provide sufficient housing for all people employed in the San Francisco Bay Area and allowed for more dispersed growth patterns than the proposed Plan. This alternative reflected input from the region's business community, which requested an alternative that mirrors the land use pattern previously identified in Current Regional Plans.

Alternative 5 – Environment, Equity, and Jobs: This alternative reflected the development proposal presented by Public Advocates, Urban Habitat, and TransForm during the scoping period. This alternative sought to maximize affordable housing in high-opportunity urban and suburban areas through incentives and housing subsidies. The suburban growth was supported by increased transit service to historically disadvantaged communities funded by a potential VMT tax and higher bridge tolls.

Additional details on the EIR alternative definitions can be found in the Plan Bay Area Environmental Impact Report.

c. Climate Protection Target

Adopted Target #1: Reduce per-capita CO_2 emissions from cars and light-duty trucks by 15%.

Target Performance: EIR Alternatives

- **Goal: -15%**
- No Project: -8%
- **Proposed Plan: -18%**
- Transit Priority Focus: -17%

- Enhanced Network of Communities: -16%
- Environment, Equity, and Job: -17%

By 2040, all of the EIR alternatives achieve the greenhouse gas reduction target, with the notable exception of the No Project alternative. This is primarily due to the fact that the four successful alternatives all emphasize some version of focused growth and implement significant transit expansion projects. At the same time, the No Project alternative does not include certain elements of the Climate Initiatives program funded using uncommitted revenues, which is critical to the target achievement for all other alternatives.

For this target, it is also important to examine the statutory goal established by year 2035. In addition to the No Project alternative, Enhanced Network of Communities also falls short of the 15% per-capita reduction for that year. The three alternatives that do meet the year 2035 goal for GHG reduction (Proposed Plan, Transit Priority Focus, and Environment, Equity, and Jobs) all achieve a per-capita 16% reduction in GHG emissions between 2005 and 2035.

d. Adequate Housing Target

Adopted Target #2: House 100% of the region's projected growth by income level (very-low, low, moderate, above-moderate) without displacing current low-income residents.

Target Performance: EIR Alternatives

- **Goal: 100%**
- No Project: 100%
- **Proposed Plan: 100%**
- Transit Priority Focus: 100%
- Enhanced Network of Communities: 118%
- Environment, Equity, and Jobs: 100%

All of the EIR alternatives achieve this target as each provides sufficient housing for the envisioned growth in the region. As required by SB 375, the alternatives studied house the region's population growth. However, only the Enhanced Network of Communities alternative generates additional housing to eliminate the region's net in-commuting pattern (thus going above and beyond the adopted goal). The four remaining alternatives only produce sufficient housing to avoid increasing the share of residents who must commute from outside the region.

e. Healthy and Safe Communities Targets

Adopted Target #3: Reduce premature deaths from exposure to particulate emissions.

a) Reduce premature deaths from exposure to fine particulates (PM2.5) by 10%.
b) Reduce coarse particulate emissions (PM10) by 30%.
c) Achieve greater reductions in highly impacted areas.

Target Performance: EIR Alternatives

- **Goals: a) -10%; b) -30%; c) Yes**
- No Project: a) -71%; b) -16%; c) Yes
- **Proposed Plan: a) -71%; b) -17%; c) Yes**
- Transit Priority Focus: a) -72%; b) -17%; c) Yes
- Enhanced Network of Communities: a) -69%; b) -14%; c) No
- Environment, Equity, and Jobs: a) -72%; b) -18%; c) Yes

All of the alternatives considered far exceed the premature mortality target for fine particulate emissions, thanks primarily to statewide truck regulations scheduled to take effect over the planning period. With regards to coarse particulate matter, all alternatives fall somewhat short but certainly reflect a major improvement for the region. Notably, the Enhanced Network of Communities alternative has the smallest reductions due to its greater regional population growth.

For CARE community PM impacts, most of the alternatives show greater reductions in those highly impacted locations. The key exception is Enhanced Network of Communities; the greater levels of VMT in that alternative, resulting from higher regional control totals, causes slightly lower levels of PM10 reduction in CARE communities than in non-CARE communities.

It is important to note that the results for this target assessment may vary from the Plan Bay Area EIR as they feature slightly different definitions for air pollutants. Additional information on the target methodology can be found in Appendix B.

Adopted Target #4: Reduce by 50% the number of injuries and fatalities from all collisions (including bike and pedestrian).

Target Performance: EIR Alternatives

- **Goal: -50%**
- No Project: +18%
- **Proposed Plan: +18%**
- Transit Priority Focus: +17%

- Enhanced Network of Communities: +23%
- Environment, Equity, and Jobs: +16%

None of the EIR alternatives reduce collisions; in fact, collisions are expected to grow between 16 percent and 23 percent over the planning period under the alternatives considered. As discussed earlier, this is primarily due to regional growth leading to greater total VMT; as Environment, Equity, and Jobs has the lowest level of total VMT, it also has the least growth in total collisions. Enhanced Network of Communities has the greatest growth in total collisions due to the fact that it has the higher regional control totals than any other alternative, leading to the greatest total VMT within the region.

Adopted Target #5: Increase the average daily time walking or biking per person for transportation by 70% (for an average of 15 minutes per person per day).

Target Performance: EIR Alternatives

- **Goal: +70%**
- No Project: +12%
- **Proposed Plan: +17%**
- Transit Priority Focus: +18%
- Enhanced Network of Communities: +13%
- Environment, Equity, and Jobs: +20%

None of the EIR alternatives achieve the physical activity target for active transportation, but all of them are moving in the right direction. The No Project and Enhanced Network of Communities alternatives perform the worst, given their growth pattern's suburban emphasis; Environment, Equity, and Jobs performs the best given its significant investment in public transit services. As many transit riders walk or bicycle to transit, the boost in ridership tends to increase physical activity as more individuals rely on forms of active transportation instead of the automobile.

f. Open Space and Agricultural Preservation Target

Adopted Target #6: Direct all non-agricultural development within the urban footprint (existing urban development and urban growth boundaries).

Target Performance: EIR Alternatives

- **Goal: 100%**
- No Project: 53%

- **Proposed Plan: 100%**
- Transit Priority Focus: 100%
- Enhanced Network of Communities: 100%
- Environment, Equity, and Jobs: 100%

As four of the EIR alternatives assume strict adherence to current adopted urban boundary lines, all of those alternatives fully achieve this target by locating all new households and businesses in existing urban areas rather than greenfield lands outside of growth boundaries. The notable exception is the No Project alternative. In this alternative, 53 percent of new developed acreage occurs within the urban footprint, with the rest occurring in greenfield lands adversely affecting farmlands and natural areas. This target analysis highlights the critical need for local jurisdictions to prevent expansion of urban growth boundaries in order to achieve the goals of Plan Bay Area.

It is important to note that the results for this target assessment may vary from the Plan Bay Area EIR as they feature a slightly different definition for open space consumption. Additional information on the target methodology can be found in Appendix B.

g. Equitable Access Target

Adopted Target #7: Decrease by 10% the share of low-income and lower-middle income residents' household income consumed by transportation and housing.

Target Performance: EIR Alternatives

- **Goal: -10%**
- No Project: +8%
- **Proposed Plan: +3%**
- Transit Priority Focus: +5%
- Enhanced Network of Communities: +3%
- Environment, Equity, and Jobs: +2%

This target, which represented a goal of aggressively improving the region's affordability for low-income and lower-middle income residents, remains vexingly out of reach for all of the EIR alternatives studied. Housing costs continue to be the most significant burden for working-class residents of the region, representing 42 percent of typical household costs under Proposed Plan, Transit Priority Focus, and Enhanced Network of Communities. No Project is expected to have somewhat higher housing costs as a result of its lack of affordable housing subsidies, while Environment, Equity, and Jobs is expected to have the lowest share of income spent on housing as a result of its significant affordable housing subsidy levels.

With regards to transportation costs, Enhanced Network of Communities and the Proposed Plan are expected to have the lowest costs for working-class households, with higher costs forecasted under No Project, Transit Priority Focus, and Environment, Equity, and Jobs. The net result of combined housing and transportation costs leads to Environment, Equity, and Jobs having the strongest performance on this target, with the sprawl-oriented No Project alternative leading to the greatest growth in combined housing and transportation costs.

h. Economic Vitality Target

Adopted Target #8: Increase gross regional product (GRP) by an average annual growth rate of approximately 2% (+110% target for year 2040).

Target Performance: EIR Alternatives

- **Goal: +110%**
- No Project: +118%
- **Proposed Plan: +119%**
- Transit Priority Focus: +118%
- Enhanced Network of Communities: +123%
- Environment, Equity, and Jobs: +118%

All of the EIR alternatives exceed the gross regional product target, reflecting the impact of significant population and job growth forecasted under ABAG's regional control totals. All of the alternatives analyzed had relatively similar performance, with the notable exception of Enhanced Network of Communities. That alternative's significantly stronger performance is a result of higher levels of population and employment resulting from the no net in-commuting assumption. As additional residents choose to locate within the region and bring along additional service-sector jobs, the Bay Area's gross regional product would be expected to increase in a commensurate manner.

While not resulting in as significant an increase in GRP as Enhanced Network of Communities, the performance of the Proposed Plan slightly exceeds that of the No Project alternative; this is a result of several factors. First, the Proposed Plan includes significant investments in transportation infrastructure that slightly reduces traffic congestion. Second, greater access to labor under the proposed land use pattern generates higher levels of industrial productivity (value added per employee). While the difference is not very significant, it is important to recognize that the Proposed Plan has a slight positive benefit (above and beyond the status quo) for the region's economic vitality.

Additional information on the economic impacts of the EIR alternatives can be found in Appendix C.

i. Transportation System Effectiveness Targets

Adopted Target #9: Increase non-auto mode share by 10% and decrease automobile vehicle miles traveled per capita by 10%.

Target Performance: EIR Alternatives

- **Goals: 26%; -10%**
- No Project: 19%; -5%
- **Proposed Plan: 20%; -9%**
- Transit Priority Focus: 20%; -8%
- Enhanced Network of Communities: 19%; -9%
- Environment, Equity, and Jobs: 21%; -9%

All of the alternatives fall short of the mode shift and VMT per capita reduction targets, but all move in the right direction. In particular, the Environment, Equity, and Jobs alternative performs the best for this target, achieving a 21% non-auto mode share thanks to its substantial investments in the region's transit system. All of the alternatives, except for No Project, nearly achieve the VMT per capita reduction target. The forecasted reductions in VMT per capita are primarily due to the focused growth strategy of those alternatives, as individuals will be closer to key destinations such as work, school, or retail.

Adopted Target #10: Maintain the transportation system in a state of good repair:

a) Increase local road pavement condition index (PCI) to 75 or better.
b) Decrease distressed lane-miles of state highways to less than 10% of total lane-miles.
c) Reduce share of transit assets past their useful life to 0%.

Target Performance: EIR Alternatives

- **Goals: a) +19%; b) -63%; c) -100%**
- No Project: a) -21%; b) +63%; c) +179%
- **Proposed Plan: a) +8%; b) +63%; c) +88%**
- Transit Priority Focus: a) +8%; b) +63%; c) +88%
- Enhanced Network of Communities: a) +8%; b) +11%; c) +88%
- Environment, Equity, and Jobs: a) +13%; b) +52%; c) +88%

Of the three state of good repair targets, only local road pavement conditions are expected to improve under the EIR alternatives analyzed (with the exception of the No Project alternative); freeway distressed lane-miles and the share of transit assets past their useful life are expected to degrade, even with significant state of good repair investments envisioned in the Plan.

Local street quality varies between the EIR alternatives as a result of different funding levels. No Project does not include significant uncommitted regional funding to improve pavement quality, while Environment, Equity, and Jobs boosts funding for local street quality and therefore has a slightly higher PCI target performance. With regards to the state highway distressed lane-miles target, No Project, Proposed Plan, and Transit Priority Focus all result in a significant worsening of state highway pavement conditions, as no regional funding is used to supplement state SHOPP maintenance funds. In Enhanced Network of Communities (and Environment, Equity, and Jobs to a lesser extent), new funding sources such as increased bridge tolls are used to slow the degradation of state highway facilities. Transit state of good repair, while also degrading in all alternatives, performs better than the No Project alternative as a result of regional funding allowing operators to replace vehicles and infrastructure earlier than otherwise possible.

j. Overall EIR Alternative Performance Trends

The performance analysis of EIR alternatives highlights the similarities between the alternatives evaluated, especially since a number of the alternatives simply represent different paths towards the same goal – focused growth near public transit. The most significant contrast to this result can be found in the poor performance of the No Project alternative, particularly with regards to GHG reduction and open space protection; these results demonstrate the shortcomings associated with a more dispersed land use pattern. Note that many of the smaller differences between the remaining alternatives need to be interpreted carefully given their relative similarities; key conclusions based on careful interpretation of the results are listed below. Table 10 provides a full list of performance target results for the various EIR alternatives studied.

- **The Environment, Equity, and Jobs alternative, with its investments in public transit rather than highway expansion, performs the best on performance targets related to lower auto use.** Reduced levels of driving, combined with focused growth in urban and suburban locations, lead to the strongest performance on targets such as air quality, active transportation, low-income household affordability, and non-auto mode share.
- **The No Project alternative highlights the limitations of a dispersed growth pattern, as well as the importance of continued investments in transportation.** This alternative leads to lower levels of transit utilization,

walking, and bicycling than other alternatives. At the same time, it has much greater impacts due to its reliance on suburban and exurban greenfield development. Without transportation funding for uncommitted projects or for the Climate Initiatives program to achieve the GHG target, the No Project alternative falls short of the regional goals.

- **Similar to the alternative scenarios, the higher regional control totals for the Enhanced Network of Communities alternative degrade its performance for certain targets.** Higher levels of population and jobs in that particular alternative result in more emissions and more collisions, even though the alternative has the greatest performance on VMT per capita reduction. Furthermore, the alternative's reduced funding for Climate Initiatives weakens its performance on the GHG reduction target, causing it to fall behind the Proposed Plan.
- **Except for the No Project alternative, higher investment levels for maintenance and operations in the EIR alternatives lead to better outcomes for local streets and public transit.** As a result of the targets assessment for the alternative scenarios, additional funding was allocated for local roads and public transit assets; in the case of transit state of good repair, this had a significant effect on the target performance when compared to the earlier round of scenarios. While neither achieves the adopted targets, both targets underline the importance of performance assessment throughout the planning process, as funding shifts can be implemented to respond to poor target performance in early analysis rounds. Additional funding in the Enhanced Network of Communities alternative for state highway maintenance also highlights how state of good repair investments can have a significant impact on target performance. Maintaining the region's transportation assets remains a critically important regional challenge in ensuring the continued vitality of the Bay Area.

TABLE 10: TARGET PERFORMANCE FOR EIR ALTERNATIVES (YEAR 2040)

#	Target	Goal	No Project	Proposed Plan	Transit Priority Focus	Enhanced Network of Communities	Environment, Equity, and Jobs
1	Reduce per-capita CO_2 emissions from cars and light-duty trucks	**-15%**	-8%	**-18%**	-17%	-16%	-17%
2	House the region's projected growth	**100%**	100%	**100%**	100%	118%	100%
3a	Reduce premature deaths from exposure to fine particulates	**-10%**	-71%	**-71%**	-72%	-69%	-72%
3b	Reduce coarse particulate emissions	**-30%**	-16%	**-17%**	-17%	-14%	-18%
3c	Achieve greater reductions in highly impacted areas	**Yes**	Yes	**Yes**	Yes	No	Yes
4	Reduce the number of injuries and fatalities from all collisions	**-50%**	+18%	**+18%**	+17%	+23%	+16%
5	Increase the average daily time walking or biking per person for transportation	**+70%**	+12%	**+17%**	+18%	+13%	+20%
6	Direct all non-agricultural development within the urban footprint	**100%**	53%	**100%**	100%	100%	100%

TABLE 10: TARGET PERFORMANCE FOR EIR ALTERNATIVES (YEAR 2040)

#	Target	Goal	No Project	Proposed Plan	Transit Priority Focus	Enhanced Network of Communities	Environment, Equity, and Jobs
7	Decrease the share of low-income and lower-middle income residents' household income consumed by transportation and housing	**-10%**	+8%	**+3%**	+5%	+3%	+2%
8	Increase gross regional product (GRP)	**+110%**	+118%	**+119%**	+118%	+123%	+118%
9a	Increase non-auto mode share	**26%**	19%	**20%**	20%	19%	21%
9b	Decrease automobile vehicle miles traveled per capita	**-10%**	-5%	**-9%**	-8%	-9%	-9%
10a	Increase local road pavement condition index (PCI)	**+19%**	-21%	**+8%**	+8%	+8%	+13%
10b	Decrease share of distressed lane-miles of state highways	**-63%**	+63%	**+63%**	+63%	+11%	+52%
10c	Reduce share of transit assets past their useful life	**-100%**	+179%	**+88%**	+88%	+88%	+88%

* = targets achieved via scenarios marked in green; targets where scenarios fell short marked in yellow; targets where scenarios move in the wrong direction marked in red

VII. APPENDICES

a. Errata Sheet

b. Scenario Performance Assessment Target Methodologies

c. Economic Impact Analysis

d. Project Performance Assessment Regional Program Evaluation

e. Project Performance Assessment Detailed Targets Assessment Criteria

f. Project Performance Assessment Benefit-Cost Sensitivity Testing

g. Project Performance Assessment Equity Considerations Documentation

h. Project Performance Assessment Summary Tables

i. Project Performance Assessment Detailed Tables

j. Project Performance Assessment Benefit-Cost Confidence Assessment

k. Project Performance Assessment Targets Criteria Data Tables

l. Project Performance Assessment Equity Considerations Tables

m. Project Performance Assessment Equity Maps

APPENDIX A: Errata Sheet

This appendix highlights the key differences between the Draft Performance Assessment Report (released in April 2013) and the Final Performance Assessment Report (released in July 2013). Changes shown in Table A1 were made to correct minor errors, as well as to provide additional clarity on methodology and results.

TABLE A1: REVISIONS TO PERFORMANCE ASSESSMENT REPORT

Final Report Chapter	Revisions from Draft Report
I	• An executive summary was added to provide an overview of performance assessment methodology, results, and conclusions.
II	• This chapter was substantially revised to reflect the addition of a separate executive summary. • A brief outline of the overall document was added to guide readers through the document framework.
III	• Additional information was added describing the baseline and horizon years for the Plan Bay Area performance targets.
IV	• Further clarification was added regarding the collision target selection.
V	• The total number of projects evaluated individually was updated to reflect additional projects analyzed as part of the supplemental project performance assessment in spring 2013. • Section (c) on the benefit-cost assessment methodology was significantly enhanced with additional information on post-processing and off-model benefits. • Additional language was added on the low-performing projects' compelling case process, including the ultimate outcome for each of the 34 low-performing projects. • 2 low-performing supplemental projects were added to the compelling case section
VI	• Updated GHG results for the various alternatives studied in the EIR were incorporated in the performance results table; these changes increased the per-capita GHG reduction for Alternative 3 from -16% to -17%. • The preferred alternative (as known as the Draft Plan) was relabeled as Proposed Plan in order to make it consistent with the EIR.
Other	• An appendix was added to the performance report providing further detail on the economic impact analysis conducted for the alternative scenarios and EIR alternatives. • Project performance results from the supplemental project performance assessment in spring 2013 were added to the targets assessment results tables in Appendix I. • Updates were made to chapter, table, figure, and appendix numbers to reflect new sections and additional material.

- The definition of urban growth boundaries was clarified to match the Plan Document and EIR, using the term "urban boundary lines and zones" when applicable.
- Minor updates were made throughout the document to improve readability or fix grammatical issues from the Draft Report.

APPENDIX B: Scenario Performance Assessment Target Methodologies

Adopted Target #1: Reduce per-capita CO_2 emissions from cars and light-duty trucks by 15%.

Travel Model One was utilized to forecast reductions in greenhouse gas emissions as a result of various Plan Bay Area scenarios. Daily travel patterns were analyzed as a result of scenarios' transportation investments and land use patterns, making possible the calculation of vehicle miles traveled and speed of travel. ARB's EMFAC air quality model was then used to calculate the pounds of carbon dioxide emissions associated with that amount of regional travel. For more information about the travel modeling process, refer to the Travel Model One Data Summary supplemental report.

Additional off-model greenhouse gas reductions were also added following the inclusion of the Climate Initiatives Program in the Proposed Plan and EIR alternatives. These reductions, resulting from the Plan's funding of electric vehicle incentives and smart driving initiatives (among other programs), were calculated by estimating the direct greenhouse gas emissions reduction of specific funded programs, rather than forecasting travel impacts in the model. This is appropriate as many of the programs are not designed to necessarily reduce VMT, but instead reduce emissions through cleaner vehicles and improved driving habits. Further documentation of these off-model calculations can be found in Travel Model One Data Summary supplemental report.

Adopted Target #2: House 100% of the region's projected growth by income level (very-low, low, moderate, above-moderate) without displacing current low-income residents.

Vision Scenarios: For the vision scenarios, the regional household growth forecasts for the two alternatives were compared to unconstrained level of growth forecasted in the Initial Vision Scenario. These growth forecasts were developed by ABAG in early 2011 and envisioned CRP growth based on historical trends and IVS growth of 267,000 more housing units than CRP as a result of PDA-focused growth.

Formula: % of growth housed = (household growth in scenario X) / (household growth in unconstrained Initial Vision Scenario)

Alternative Scenarios: Unlike the other two rounds for this performance target, the target was measured based on total households, rather than the increment of household growth (in other words, it counted housing the existing population as part of the target achievement). Target achievement was based on the unconstrained Initial Vision Scenario (Fall 2011) which had higher control totals than three of the alternative scenarios, but lower control totals than the Initial Vision Scenario (Spring 2011).

Formula: % of region housed = (total households in scenario X) / (total households in unconstrained scenarios)

EIR Alternatives: For the EIR alternatives, the regional household growth forecasts for the five alternatives were compared to the growth forecast assuming no increase in the regional share of in-commuting. That forecast is the basis of the Proposed Plan and its control totals were used for Alternatives 1, 2, 3, and 5; Alternative 4 is the only alternative with greater control totals as a result of its goal to achieve no net in-commuting in the region. Thus, that alternative performs above and beyond this target as it builds more than is required to accommodate growth at current in-commuting rates.

Formula: % of growth housed = (household growth in alternative X) / (household growth with no increase in the regional share of in-commuting)

Adopted Target #3: Reduce premature deaths from exposure to particulate emissions.

a) Reduce premature deaths from exposure to fine particulates (PM2.5) by 10%.
b) Reduce coarse particulate emissions (PM10) by 30%.
c) Achieve greater reductions in highly impacted areas.

First, overall emissions estimates were generated by Travel Model One and EMFAC, the state's emissions forecasting tool. These emissions estimates take into account the future VMT and speeds from the travel model, as well as assumed improvements in vehicle technologies. The model not only estimates the particulate matter impacts, but also changes in NOx emissions that lead to secondary PM2.5.

Second, BAAQMD leveraged their existing Multi-Pollutant Evaluation Methodology (MPEM) tool to estimate how reductions in emissions of various air pollutants impact key health outcomes such as premature mortality, cardiovascular disease, and asthma. MPEM can be used to estimate how changes in emissions of direct tailpipe emissions of PM2.5, as well as NOx emissions that contribute to formation of ammonium nitrate, will impact premature mortality. Because the MPEM model is designed to work based on current population data, the premature mortality figures were scaled proportionately to represent baseline year and horizon year population forecasts developed by ABAG.

Third, the particulate emissions were calculated based on their location in CARE and non-CARE communities; tailpipe emissions and brake/tire wear contributing to PM10 were calculated for all major travel corridors and the vicinities of these travel corridors were examined to determine whether or not they passed through a CARE community. This made possible the calculation of total emissions per day in CARE and non-CARE communities; percent reductions for these two areas were compared to determine the target result.

The modeling tools available changed over the course of the process as indicated below:

Vision Scenarios: The EMFAC 2009 model was used to forecast emissions for year 2035; however, this round of scenarios did not incorporate emission reductions from heavy-duty truck regulations not yet fully enacted. The CARE target calculation tool also had not been developed and therefore no results were calculated for target 3c.

Alternative Scenarios: The EMFAC 2009 model was used to forecast emissions for year 2035; this round of scenarios did incorporate emission reductions from heavy-duty truck regulations, which are expected to significantly reduce particulate matter from diesel vehicles. The inclusion of these regulations was the primary reason for target result differences between the Vision and Alternative Scenarios. Similar to the Vision Scenarios analysis, the CARE target calculation tool also had not been developed and therefore no results were calculated for target 3c.

EIR Alternatives: As the Plan has a 2040 horizon year, MTC/ABAG wanted to examine Plan performance for that year; however, past analyses had been constrained by EMFAC 2009 and other modeling tools that did not go past the year 2035. With the release of EMFAC 2011 by CARB, MTC was able to analyze air quality impacts for year 2040; thus, this updated model was used for the Proposed Plan and EIR alternatives. The CARE communities analysis tool was also available and was used to compare EIR alternatives' equity impacts for PM reduction.

Adopted Target #4: Reduce by 50% the number of injuries and fatalities from all collisions (including bike and pedestrian).

MTC forecasts injuries and fatalities caused by motor vehicle collisions using a combination of MTC Travel Model One output and collision rate data for different roadway types. MTC's travel model forecasts VMT for specific road types for each analysis year. Collision rates are then applied based off of historical data from SWITRS; these rates reflect all collisions, including bicycle and pedestrian collisions. The rates applied reflect the specific road types – including freeways, arterials, local streets, etc. – incorporating the number of lanes included in the traffic model. For more information about the travel modeling process, refer to the Travel Model One Data Summary supplemental report.

Adopted Target #5: Increase the average daily time walking or biking per person for transportation by 70% (for an average of 15 minutes per person per day).

To determine the average minutes per person of active transportation, the average walk, bike and transit associated walk trip times for all trip purposes were taken from Travel

Model One and combined to determine the active transportation minutes per person. To get typical walk and bike trip travel times, the small number of outliers (very long and very short travel times) were excluded. For more information about the travel modeling process, refer to the Travel Model One Data Summary supplemental report.

Adopted Target #6: Direct all non-agricultural development within the urban footprint (existing urban development and urban growth boundaries).

Based on the adopted language of the resolution, all scenarios and EIR alternatives evaluated were compared to the year 2010 urban footprint, rather than a year 2005 baseline like most other targets.

Vision Scenarios: ABAG analytical staff assessed the target using a person-based approach, rather than acreage impact approach. Greenfield consumption was forecasted based on household change within traffic analysis zones (TAZs). Each of the 1454 TAZs were classified based on their overall state of development (urbanized, undeveloped, or a mixture of both). Based on growth levels in each TAZ, greenfield impacts varied based on this classification – urbanized TAZ growth had no impact on greenfields, undeveloped TAZ growth had 100% impact on greenfields, and mixed TAZ growth was assumed to have 50% impact on greenfields (the rest occurring within existing urban areas). The target result represents the share of growth occurring in existing urban areas as a proportion of total regional growth. Acreage impacts were also considered using the ABAG CLARA model, but these did not factor into the target result.

Alternative Scenarios: ABAG planning staff assessed the target using a person-based approach, rather than acreage impact approach. Growth was examined on a TAZ-level using a GIS-based analysis; growth on rural TAZs was flagged as greenfield development.

EIR Alternatives: Using the output of the UrbanSim model for all alternatives, ABAG staff examined the acres of new development, as well as significant redevelopment, across the region. Staff identified whether those acres were within the 2010 urban footprint or whether those acres were on greenfield lands outside the urban footprint; the result reflects the percentage of total acres developed that occurred within the urban footprint. This methodology better matches with the adopted target's aim to preserve agricultural and natural areas, rather than the population-based approach used in prior rounds. This was only possible due to the parcel-based nature of UrbanSim, which allows for the examination of individual development and redevelopment projects forecasted under each alternative.

Adopted Target #7: Decrease by 10% the share of low-income and lower-middle income residents' household income consumed by transportation and housing.

In order to determine the share of residents' household income consumed by transportation and housing, we combine the outputs of both the transportation and land use models to more accurately determine the value. Both models are adjusted to identify costs for low-income households (defined as households with income between $0 and $30,000 [in year 2000 dollars]) and for lower-middle-income households (defined as households with income between $30,000 and $60,000 [in year 2000 dollars]).

From the transportation model, all user costs are included in the cost calculation. This factors in the costs of maintaining and owning an automobile, purchasing transit fares and passes, and paying bridge and roadway tolls (among other user costs). These costs can be forecasted using MTC's travel model based on typical travel behavior for low-income and lower-middle-income residents and the model's assumptions about gas prices, toll fees, transit fares, etc. Additional documentation of the travel model can be found in the Travel Model One Data Summary supplemental report.

The housing cost methodology varied significantly throughout the planning process; detailed housing cost methodology information can be found in the Plan Bay Area Equity Analysis. That report also delves more deeply into affordability issues for low-income families in the region.

Adopted Target #8: Increase gross regional product (GRP) by an average annual growth rate of approximately 2% [+90% target for year 2035; +110% target for year 2040].

Vision Scenarios: An appropriate economic impact analysis model had not yet been developed for the region during this phase of Plan Bay Area. Therefore, results are not available for the vision scenarios.

Alternative Scenarios/EIR Alternatives: The gross regional product target calculation relied on the economic software package TREDIS, developed by Economic Development Research Group (EDRG), to estimate the gross regional economic output for the region. TREDIS reported employment for 54 industries based on the North American Industry Classification System (NAICS). The economic analysis measured the effects to the region from changes made to the transportation network and residential and nonresidential development patterns.

Existing regional models were used as model inputs to forecast gross regional product. First, ABAG's projections and land use data (generated by UrbanSim only as part of the EIR alternatives process) provided the geographic distribution of new residents and employment in the region; the changing land use pattern affects business operating

costs, agglomeration benefits, and the labor pool available for employers, among other factors. Second, Travel Model One data, which forecasts travel behavior and costs, enables the forecast to capture improved regional mobility that supports economic growth.

Adopted Target #9: Increase non-auto mode share by 10% and decrease automobile vehicle miles traveled per capita by 10%.

Both non-auto mode share and VMT per capita targets are direct outputs of Travel Model One. First, all non-auto (transit, bicycle, and pedestrian) trips are summed and divided by the total number of regional trips to calculate non-auto mode share. Second, for each auto trip, the trip distance is calculated between the origin and destination; these distances are summed for all trips in the model and then divided by the regional population to calculate VMT per capita.

Adopted Target #10: Maintain the transportation system in a state of good repair:

a) Increase local road pavement condition index (PCI) to 75 or better.
b) Decrease distressed lane-miles of state highways to less than 10% of total lane-miles.
c) Reduce share of transit assets past their useful life to 0%.

These state of good repair (SGR) targets are measured using post-processing methodologies (developed by MTC's Programming and Allocations section) to estimate the road and transit conditions in the future.

- Pavement condition index is calculated using a combination of MTC's pavement asset management software, StreetSaver (which projects roadway conditions), and the financial constraints of the alternative under analysis (which reflects funding available for maintenance). Existing pavement conditions are presumed to degrade over time as a result of traffic loads and weather-related stress unless funding is used to preventively maintain the roadways, or funding is used to rehabilitate or reconstruct already severely deteriorated roadways.
- Caltrans defines distressed lane-miles as lane-miles with "poor structural condition or poor ride quality". Caltrans also defines the methodology for determining the distressed lane-miles on the state highway system – lane-miles are added to the metric when the wear-and-tear is estimated to cause that highway segment to be defined as "distressed", while lane-miles are subtracted from the metric when repairs or infrastructure replacement fixes structural or surface issues that causes them to no longer be defined as "distressed". Similar to the PCI methodology, MTC's travel mode assumptions regarding roadway improvements, combined with traffic levels to indicate wear-and-tear, are

merged with financial constraints (which reflect funding for roadway repair and replacement) to estimate total distressed lane-miles.

- For the transit asset target, asset age can be estimated based on the amount of funding forecast to be available for transit capital replacement (MTC's Regional Transit Capital Inventory). Assets are weighted based on their costs, so replacement of higher priced transit assets yields greater impact towards the achievement of this target when compared to lower priced assets. Financial constraints dictate when particular operators are able to replace or retrofit vehicles. Additional related indicators, such as transit revenue service disruption caused by asset age, can be calculated using the TERM model developed by consultant Booz Allen Hamilton. That model is able to estimate the condition rating across the fleet using decay curves, based on data from the National Transit Database (NTD).

APPENDIX C: Economic Impact Analysis

This appendix provides detail related to the economic impacts of Plan Bay Area as measured by gross regional product (GRP), detailing the process used to forecast GRP and the results for the various scenarios analyzed. As indicated in Chapter IV, GRP was selected as a performance target in order to gauge how integrated transportation and land use scenarios and EIR alternatives (developed as part of the Plan Bay Area process) could affect the region's economic vitality. Consultant Cambridge Systematics was hired to conduct the economic analysis, both for the planning scenarios and for the alternatives analyzed in the Plan Bay Area Environmental Impact Report (EIR).

Selection of GRP as a Measure of Economic Vitality

While previous regional transportation plans (RTPs) have emphasized the three E's of sustainability – Economy, Environment, and Equity – business stakeholders emphasized that Plan Bay Area should more robustly consider economic performance by adding gross regional product as one of 10 performance measures used to evaluate scenario outcomes. GRP is the market value of all final goods and services produced in a given year within the nine Bay Area counties; it measures the size of the regional economy, including wages, benefits, proprietors' income (which captures the output of the self-employed), and other property-type income (which include profits)[3].

In addition to GRP, several other economic impact measures were considered based on input from a range of stakeholders. These metrics are illustrated in Table C1, along with the key strengths and limitations associated with each one. Given the strong support from the business community for using GRP as the regional measure of economic vitality, along with its direct emphasis on the economy as a whole, GRP was ultimately selected as the Plan Bay Area economic vitality performance metric.

TABLE C1: STRENGTHS AND LIMITATIONS OF POTENTIAL MEASURES

Economic Vitality Measure Considered	Strengths	Limitations
Access to Labor *Average share of workers within 30 minutes (by car) or 45 minutes (by transit) of worksites*	• One of the primary economic drivers of regional productivity • Directly affected by both transportation and land use	• Reflects only one driver of overall economic growth
Affordability *Share of low and/or lower-middle income household incomes spent on transportation and housing*	• Focuses on primary personal economic issue that Plan Bay Area can affect through transportation and land use policies	• Important for individuals but not a general economic indicator

[3] Profits may be repatriated to a Bay Area firm's headquarters outside the nine counties. Profits for the finance, insurance, and real estate (FIRE) industries, for example, constitute a significant share of their output.

TABLE C1: STRENGTHS AND LIMITATIONS OF POTENTIAL MEASURES		
Economic Vitality Measure Considered	**Strengths**	**Limitations**
Gross Regional Product	• Summarizes overall economic growth in most aggregate terms • Strong support from business community	• Transportation and land use policies can only marginally impact GRP • Does not reflect income inequality impacts
Transportation Costs or Cost-Effectiveness *Total costs (or cost-effectiveness) for operating, maintaining, and improving the region's transportation system*	• Key goal of regional transportation plan	• Focuses on allocation of funding rather than economic impacts • Accounts only for transportation
Transportation Performance Index	• Reflects aspects of transportation supply, quality of service, and utilization that affect business	• Plan Bay Area would not affect many index components (air, rail, marine) • Driven by transportation decisions (rather than land use)
Property Tax Revenue	• Can be influenced by housing supply, which is primary Plan Bay Area element • Provides indication of local jurisdiction revenues	• Does not provide overall indication of economic health • Incomplete picture of local government revenues • Driven primarily by land use decisions (rather than transportation)

Discussion of GRP Analysis

As discussed in chapters IV and VI, MTC and ABAG developed five alternative scenarios and five EIR alternatives during the planning process; each of these was analyzed to determine its performance against the Plan Bay Area performance targets, including GRP.

Cambridge Systematics used the economic software package TREDIS developed by Economic Development Research Group for this analysis. TREDIS combines IMPLAN input-output tables, macroeconomic forecasts from Moody's, and econometric equations to model how economic activity will change for a county or group of counties due to changes in the transportation system or land use patterns[4]. Data from two sources was used to assess each scenario or EIR alternative:

1. MTC's travel demand model (Travel Model One) developed forecasts for travel behavior and costs based on proposed land uses and transportation investments.

[4] Refer to http://tredis.com/index.php/products/inside-tredis for a detailed description of the software's functionality.

2. ABAG's projected land use data provided the geographic distribution of new residents and employment based on land use policy assumptions.

Effects on GRP from Transportation Investments

Regional and local transportation investments affect the economic output of a region because of three key direct benefits. These benefits include:

1. Reduced business and household costs through lower congestion, accidents, and vehicle operating costs;
2. Expanded businesses access to customer or supplier markets; and
3. Increased size and diversity of the labor pool from which businesses can recruit workers.

The majority of direct benefits from transportation investments come from the reduction of business costs and increased productivity. When a region's businesses spend less on transportation per unit of output, they can better compete against similar firms located outside the region and capture greater market share. As these local firms increase their production, they hire more workers (i.e., direct employment and primary-income generation) and they buy more inputs, which causes their suppliers to hire more workers (indirect employment and secondary-income generation). In turn, these additional workers (induced employment, which is generated from direct plus indirect employment and primary and secondary-income) consume products and services that require more workers (e.g., retail clerk, school teachers, etc.), which boost the region's output, income, and employment further (i.e., tertiary impacts).

Effects on GRP from Land Use Patterns and Policies

Land use patterns and policies can generate economic benefits when businesses are concentrated closer together (i.e., business-to-business agglomeration) and have closer access to a larger and more diverse pool of labor (access to labor). Agglomeration impacts of land use policies are in addition to the direct travel savings obtained from transportation investments and shorter trip distances. Labor pool expansion and concentration give rise to productivity benefits that are not included in the travel time reduction benefit. Economic theory posits that benefits arise from five separate consequences of higher residential and industrial densities: matching, sharing, knowledge spillovers (or learning), competition, and access to labor[5]. Collectively, these five consequences may be called agglomeration effects.

The first four of the five agglomeration effects involve firm interactions that result from higher concentration of employment. These benefits result from an increase in the number and size of firms interacting within a given region. Empirical research indicates that employment density increases worker and firm interactions, which results in

[5] Krugman, P. (1991). "Increasing Returns and Economic Geography," Journal of Political Economy, 99, 483-499.

increased business productivity. In particular, these business-to-business and worker-to-worker agglomeration effects reflect the benefits of proximity between firms based on the following concepts:

- **Sharing benefits** are closely tied to economies of scale. Large pools of customers allow for economic activities that would otherwise be unprofitable. A simple example would be an office supply store, which is poorly supported by a small number of businesses in a low-density office development, but becomes profitable in a high-density commercial development. These are called "sharing benefits" precisely because demand can be shared across a large number of companies or people.
- **Knowledge spillovers** occur as people interact. They share ideas and knowledge and collaborate to create new knowledge. Proximity is a key to knowledge diffusion, although it has emerged that proximity can be measured in ways other than spatial distance. With economic density, the potential for interactions increases and can improve the pace and breadth of learning and knowledge accumulation. This knowledge, over time, gets embodied in worker skills and production techniques to improve firms' productivity.
- **Competition** is a driving force in innovation. Industrial clustering can speed knowledge growth by forcing firms to innovate or fail. Clustering expands customers' access to the number of firms that directly compete with each other for their business. As the number of market participants increases, 1) poor performers are more likely to be driven out of business, and 2) remaining firms feel more pressured to innovate – to actively acquire knowledge. Both effects can lead to higher rates of innovation and productivity.
- **Matching benefits** are closely tied to economic specialization. They capture the fact that good economic fits facilitate productivity. The benefits of specialization arise from matching specialized products and services to specialized needs. Urban areas bring firms and industries near one another. As this pool of firms grows, odds increase that a firm needs a specialized input. For example, a manufacturer needing a specific metal alloy may be more likely to find it in a cluster of metal fabricators. The correct metal alloy may allow a manufacturer to eliminate a downstream production cost.
- **Labor access** benefits result from an increase in the number of residents within a given area that is well-served by efficient transportation networks, especially public transit. Empirical economic research has confirmed that a larger labor pool in closer proximity to employment opportunities increases the quality of employment-worker matches. This improved matching between workers and employment opportunities also increases wages. As the pool of accessible labor grows, odds increase that a firm will find a good fit for their specialized skill needs. Ultimately, good matches lead to higher productivity because they are

more efficient. In the labor market, one perfect employee might substitute for two adequate employees.

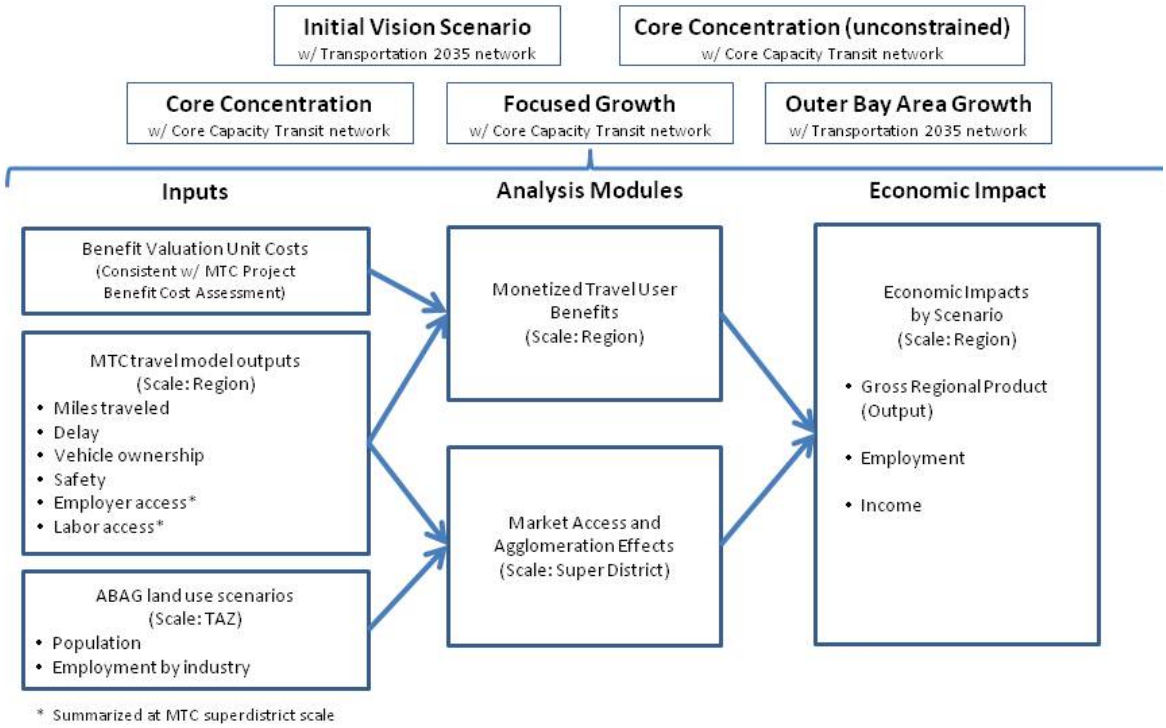
Framework for GRP Evaluation of Transportation Investments and Land Use Scenarios

Figure C1 illustrates the framework that was used to evaluate the GRP output for each of the scenarios analyzed during the performance assessment process. Three sets of inputs were entered into the TREDIS analysis modules, allowing TREDIS to perform two relatively separate modeling operations.

TREDIS's first operation monetizes the results from MTC's travel demand model and allocates them to each of 50-plus industries active in the nine-county Bay Area region. The IMPLAN input/output model embedded in TREDIS estimates how significantly these direct monetary benefits from each alternative's transportation investments improve industry employment and output (i.e., the indirect and induced impacts). This yields economic impacts associated with transportation investments for each scenario.

TREDIS's second operation applies econometric equations for each type of industry located within the 34 Bay Area superdistricts to estimate how each scenario's land use pattern affects the density and proximity of jobs and households, as well as how these changes impact productivity, employment, and output.

FIGURE C1: EVALUATION FRAMEWORK FOR SCENARIO GRP ANALYSIS



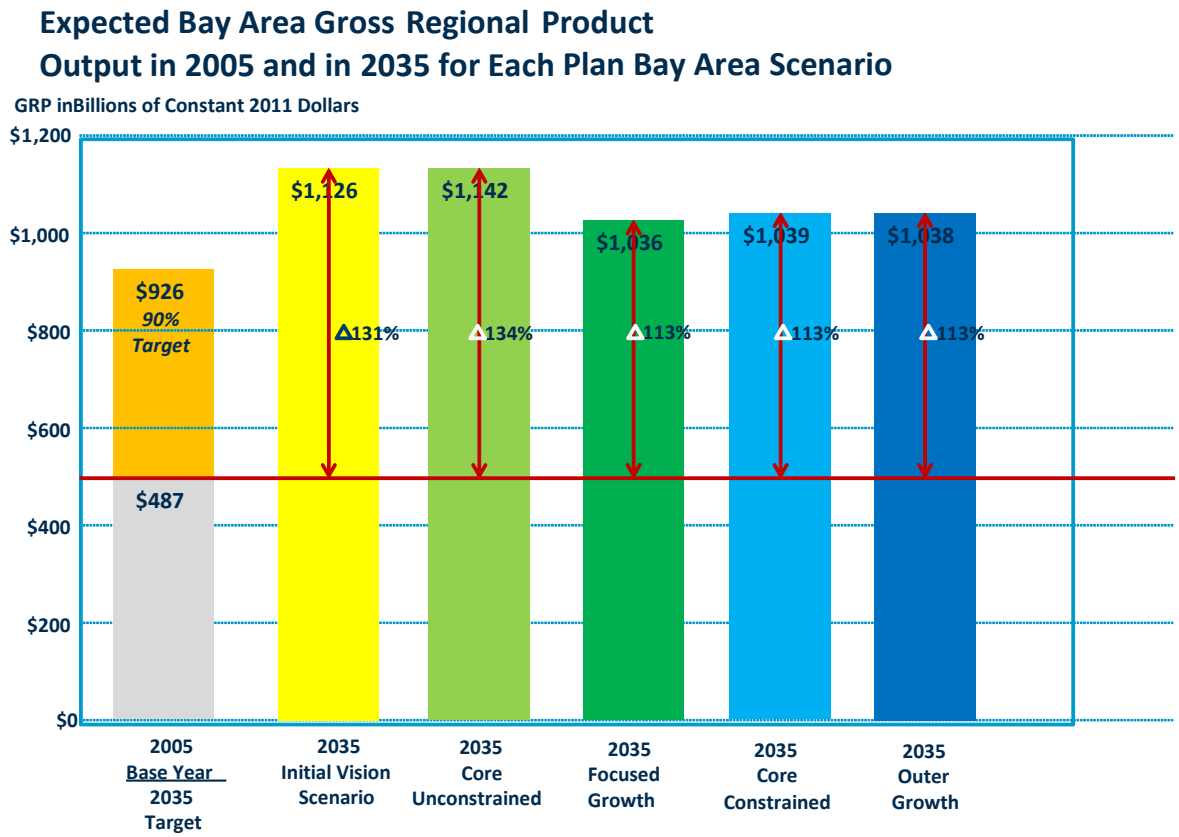
Source: Cambridge Systematics, 2013.

GRP Performance for Plan Bay Area Scenarios

As described in Chapter IV of this report, the economic vitality target for the alternative scenarios was to increase Bay Area GRP by an average annual growth rate of approximately 2%, leading to 90% growth in GRP by year 2035. As shown in Figure C2, all of the scenarios analyzed forecast significant growth in GRP, exceeding this target. Again, as described in Chapter IV of this report, the Initial Vision and Core Concentration scenarios performed significantly better primarily due to their higher regional control totals, as opposed to the transportation investments and land use pattern incorporated into those scenarios.

Clearly, the most important input variable in each of the scenarios is the amount of future industry and the aggregate amount of employment assumed within the scenarios. ABAG developed these aggregate assumptions independent of this economic impact analysis. Agglomeration, and its effect on labor productivity, is the second most important driver of economic impacts. Some manufacturing sectors are more productive than other sectors, such as retail clerks versus software engineers. The Plan Bay Area land use scenarios lead to changes in the industrial mix, proximity of businesses to each other, and business access to labor, which translates into varying levels of productivity.

FIGURE C2: GRP OUTPUT FOR PLAN BAY AREA SCENARIOS



Source: Cambridge Systematics, 2013 – based on TREDIS model output.

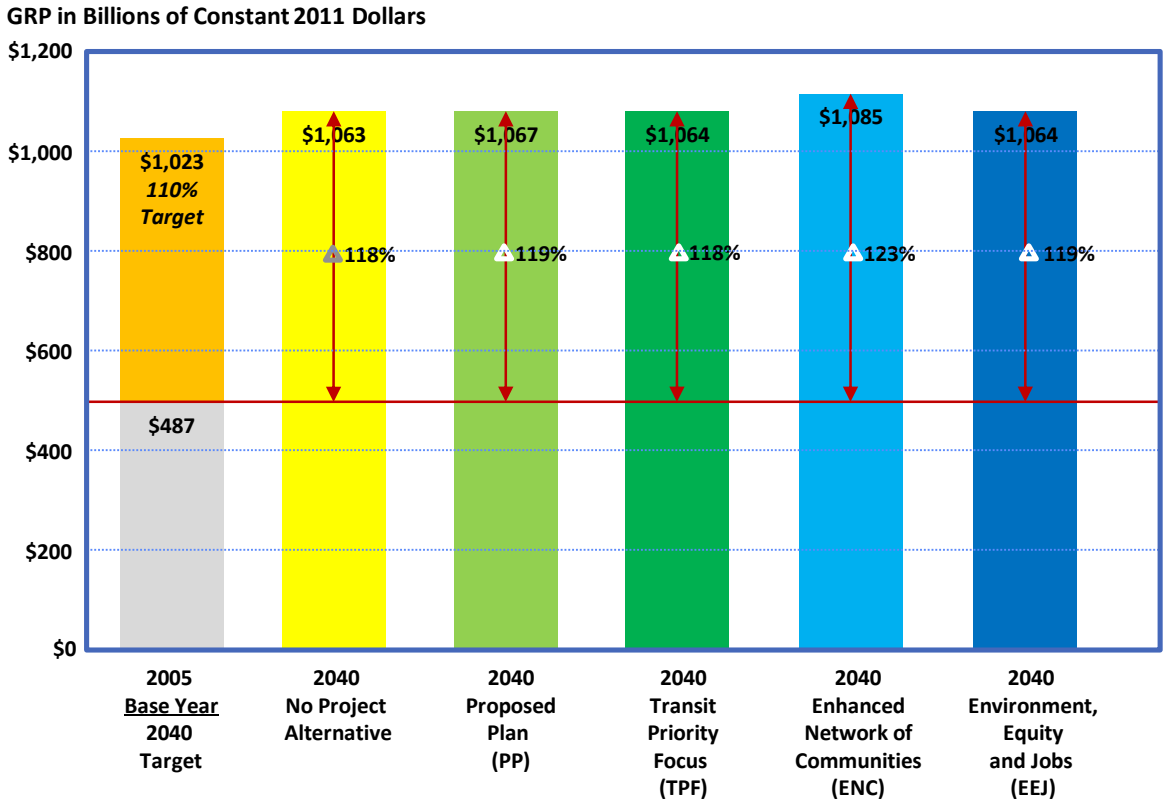
GRP Performance for Plan Bay Area EIR Alternatives

As discussed in Chapter VI, MTC and ABAG developed a Draft EIR for Plan Bay Area as required by the California Environmental Quality Act (CEQA). Five alternatives were analyzed: (1) No Project; (2) Proposed Plan; (3) Transit Priority Focus; (4) Enhanced Network of Communities; and (5) Environment, Equity, and Jobs.

MTC and ABAG applied the same performance metrics used in the scenario performance assessment to each of the EIR alternatives, comparing the results of each to the No Project Alternative as a baseline. The economic analysis isolates the differences in GRP between each alternative and the No Project; the difference is the primary metric used to understand differences in year 2040 economic performance for each alternative. These differences present a reasonable estimate of each alternative's relative performance if all other influences of economic growth are held constant. The absolute amounts of GRP in 2040 are speculative and will be impacted by global economic and natural forces.

The results of this analysis are shown in Figure C3 below. The GRP for all four alternatives exceed the No Project alternative in 2040 and surpass the performance target of 110% growth in GRP by year 2040. The results illustrate how large the Bay Area economy will be relative to the impacts of the proposed Plan. The Bay Area's economy is projected to double from roughly $487 billion in 2005 (2011 dollars) to almost $1.1 trillion in 2040. By contrast, Plan Bay Area will invest $289 billion over about 28 years or roughly over $10 billion per year, which is about 1 percent of the region's annual output (GRP). While Plan Bay Area incorporates progressive land use policies in addition to the transportation investments, it is not expected that their combined impacts will dramatically change the aggregate output of 4.5 million employees and 3.8 million households. The results show that the Plan Bay Area EIR alternatives make a positive but modest economic contribution above the aggregate growth forecasted for the No-Project alternative.

FIGURE C3: GRP OUTPUT FOR PLAN BAY AREA EIR ALTERNATIVES



Source: Cambridge Systematics, 2013 – based on TREDIS model output.

Overview of Economic Effects

The methodology used to measure the economic impacts of Plan Bay Area is designed to measure the difference between a no project or base-case alternative and a set of alternatives that vary in their level of transportation investments and land use policies. Unlike the alternative scenarios process, the Plan Bay Area EIR included a No Project alternative, as per the CEQA requirements, which allows GRP results to be compared for each alternative as a change from the No Project alternative. While the absolute forecasts are shown to illustrate the performance of the alternatives in achieving the economic target, several analyses shown below will focus on performance compared to the No Project.

Note that economic forecasts, especially over a 25-year period, are unpredictable because regional, national, and global economies can be changed by random market and natural forces (e.g., European sovereign debt crisis, drought, earthquakes, new technologies, etc.). The value of this type of economic evaluation, therefore, is in comparing the four alternatives with the No Project alternative.

Furthermore, Plan Bay Area's $286 billion dollars of regional transportation investments over 25 years amount to less than one-third of one percent of the Bay Area's annual GRP. This level of investment will have modest impacts at best, which are hard to measure in absolute terms, but can be isolated when measured relative to a base case alternative. The impacts of the SCS land use policies, assuming they are fully implemented, also are modest since they are applied only to new development and redevelopment, which is a small fraction of the existing land use in the region. The isolation of different outcomes between different alternatives (i.e., deltas) may be measured in absolute or percentage terms, providing a more controlled evaluation of each alternative performance while holding all other influences constant. Analyzing the performance of different alternatives relative to a base case provides a reasonable basis for comparison.

As Figure C3 shows, while Plan Bay Area's level of transportation investments and land use policies will have modest impacts on GRP, all alternatives exceed the 110 percent GRP target in 2040.

Enhanced Network of Communities (Alternative 4) has the highest forecasted GRP of the five alternatives. That alternative assumes a greater regional population than the other alternatives (i.e., 9,535,000 versus 9,196,000, or 3.7 percent higher), as well as higher employment (i.e., 4,550,000 versus 4,505,000, or 1.0 percent higher than for all other alternatives). Therefore, the higher GRP in Alternative 4 is primarily due to higher population and employment, while land use policies or transportation investments contribute a modest amount to the difference.

Higher GRP in Alternative 4 becomes more modest when presented on a per-capita basis, as shown in Table C2. The Proposed Plan shows the highest per-capita GRP of $116,100 when compared to all other alternatives. This per-capita difference is $500 more than the No Project alternative per capita GRP. Although the transportation and land use effects are modest when viewed through the lens of regional economic growth, there are significant differences between the alternatives at the margin.

TABLE C2: GRP PER CAPITA FOR PLAN BAY AREA EIR ALTERNATIVES

EIR Alternative	GRP per capita (2011 $)
Base Year (2005)	$69,000
No Project	$115,600
Proposed Plan	$116,100
Transit Priority Focus	$115,700

TABLE C2: GRP PER CAPITA FOR PLAN BAY AREA EIR ALTERNATIVES	
EIR Alternative	**GRP per capita (2011 $)**
Enhanced Network of Communities	$113,800
Environment, Equity, and Jobs	$115,700

The following sections describe the three major effects contributing to the differences in GRP for the Plan Bay Area EIR alternatives.

Effect 1: Travel Costs Savings

As noted above, the analysis of economic impacts includes the reductions in congestion, accidents, and vehicle operating costs achieved through the Plan Bay Area transportation investments. The majority of direct benefits from transportation improvements are from the reduction of business costs. When the region's businesses spend less on transportation per unit of output, they can compete against similar firms located outside the region and capture greater market share.

All alternatives perform the same as or better than the No Project alternative with respect to travel cost savings as shown in Table C3 because the No Project alternative includes only projects and programs that are identified as "committed" in MTC Resolution 4006 (Committed Projects and Programs Policy). Parking prices and tolls would remain the same as today as measured in constant year dollars, and localized parking minimums would remain the same for new development. All other alternatives invest more than the "committed" projects by including Plan Bay Area's Transportation Investment Strategy. Some alternatives focus investments in activity centers and the urban core, while others distribute investments more throughout the region. In addition, one possible reason for the higher level GRP in the Enhanced Network of Communities alternative is that travel cost savings may be reduced due to the elimination of interregional commuting assumed in that alternative.

TABLE C3: TRAVEL COST SAVINGS WITH RESPECT TO NO PROJECT		
EIR Alternative	**Travel Cost Savings to Industry ($ millions)**	**Output from Travel Cost Savings ($ millions)**
Proposed Plan	$407	$220
Transit Priority Focus	$391	$308
Enhanced Network of Communities	$7,487	$6,990
Environment, Equity, and Jobs	$369	$383

Source: Cambridge Systematics, 2013 – based on TREDIS model output.

Effect 2: Sector-Level Industry Output

All of the employment gains and growth in GRP in the Plan Bay Area represent generative benefits for the nine-county region as a whole. Generative benefits measure the aggregate growth in the region's output, as opposed to redistribution among the counties.

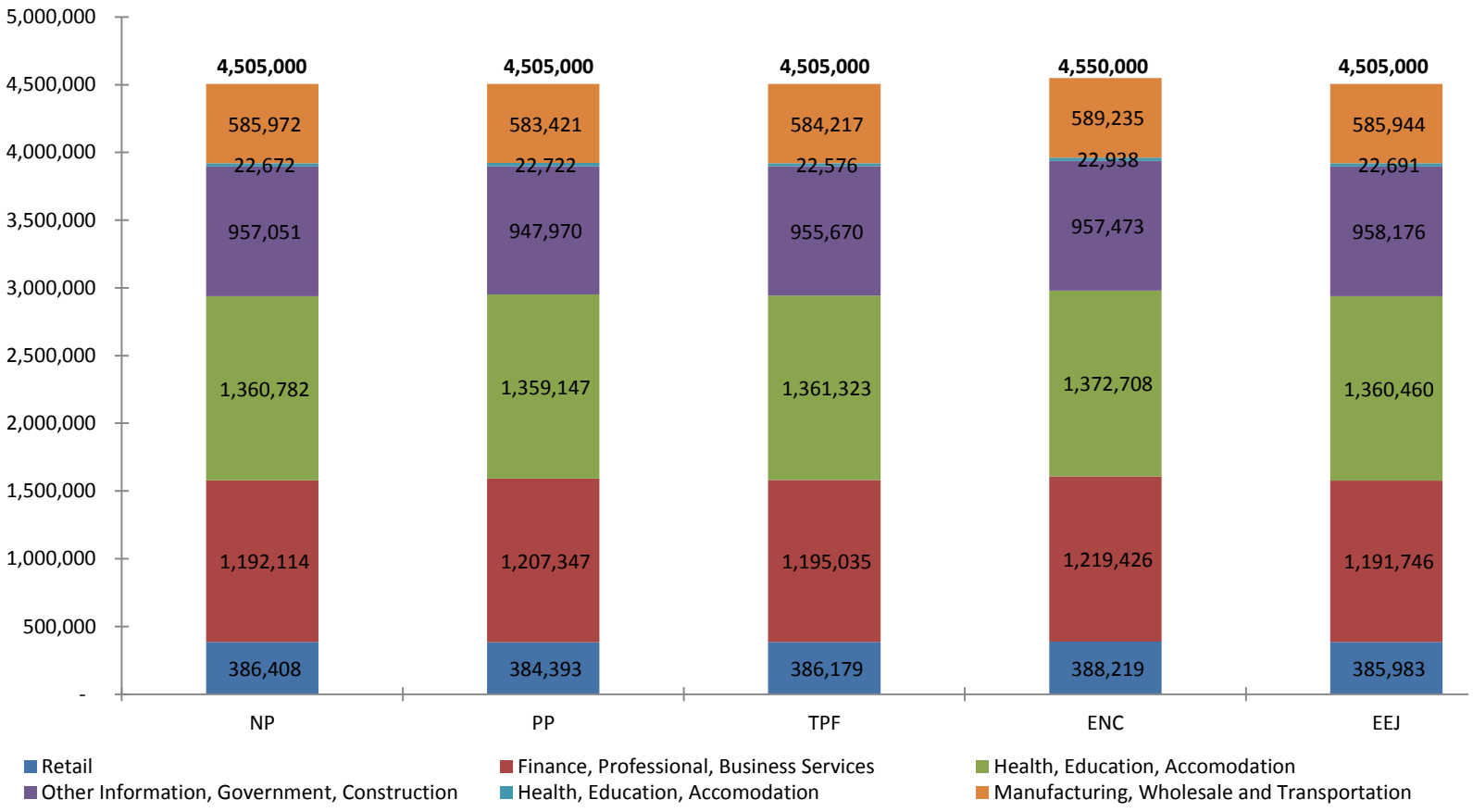
Four of the EIR land use alternatives have the same regional employment level; the Enhanced Network of Communities alternative has higher regional population and employment. Of the four with the same employment level, the distribution of employment by industrial sector was different in each alternative (e.g. retail versus financial services). Figure C4 shows employment by the six industry sectors for each of the Plan Bay Area alternatives[6].

Some industrial sectors contribute significantly more per-employee output than others. Differences in number of employees in the industrial sectors results in differences in the GRP. For the Bay Area, many of the most productive industries are within the Finance, Professional and Business Service sector. This leads to alternatives with a larger percentage of employees in this sector contributing to higher overall GRP, at the margin. A higher total number of jobs in more productive sectors correlate to higher GRP, as shown in Figure C5. For instance, the Proposed Plan has over 15,000 more jobs in the Finance, Professional and Business Service sector than the No Project alternative – an industry category that generates higher output per employee for the region.

It is important to note that differences in sector-level employment levels are primarily due to land use modeling variability between the alternatives. While these differences in sector-level employment slightly affect the GRP results, this effect should not be interpreted as resulting from the land use pattern or transportation investments associated with each alternative.

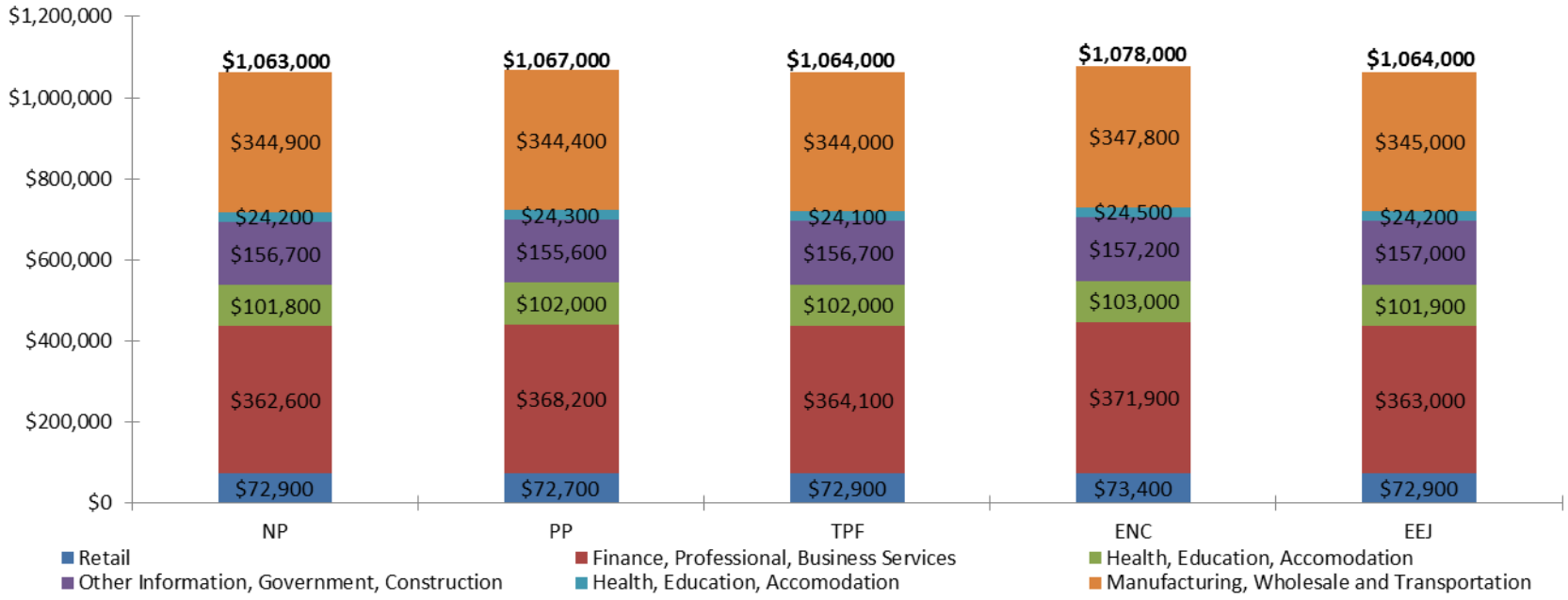
[6] ABAG and MTC aggregate employment data into six industry sectors for use with the travel model. For economic modeling, employment was disaggregated into 54 NAICS industry sectors. Values were then aggregated back to the six MTC/ABAG sectors for the analysis.

FIGURE C4: EMPLOYMENT BY ABAG 6-INDUSTRY/NAICS SECTOR



Source: Cambridge Systematics, 2013 – based on TREDIS model output.

FIGURE C5: GRP BY ABAG 6-INDUSTRY/NAICS SECTOR



Source: Cambridge Systematics, 2013 – based on TREDIS model output.

Effect 3: Improved Access to Labor

Changes in land use can generate economic benefits when businesses are located closer together (i.e., agglomeration), and have better access to a larger and more diverse pool of labor (i.e., labor market matching). Agglomeration impacts of land use policies are in addition to the direct travel savings derived from transportation investments.

Improved access to labor involves the quantity and proximity or workers to jobs, measured in distance or commute time. This effect is generated from land use policies that locate higher density residential development nearer to job centers. A larger labor pool in closer proximity to employment opportunities increases the quality of employment-worker matches. As the pool of accessible labor grows, odds increase that firms will find a good fit for the specialized skills they need. Good matches lead to higher productivity because they are more efficient.

For the Plan Bay Area EIR alternatives, ABAG and MTC used the land use model UrbanSim to model the household distribution of population and employment after taking into account each alternative's land use, transportation policies, and transportation projects. For each EIR alternative, the distribution of both population and jobs in each of the 34 modeled superdistricts (SD) in the TREDIS economic model differs significantly. Land use and socioeconomic policy differences among the alternatives produce different industry mixes within a SD. This changes employers' access to labor and produces different levels of productivity for each alternative.

Table C4 shows how the value added, or contribution to GRP, changes for each SD and each alternative. The cells highlighted in red have the largest increases in value added compared to the No Project alternative; the cells highlighted in yellow have the smallest increases from the No Project alternative. Certain SDs, such as SD 9, has higher output for all alternatives. This means that not only do those SDs likely have higher numbers of residents and/or employees in more productive sectors (see Effect 2: Sector-Level Industry Output), but they also provide better access between employees and employers. The UrbanSim model predicts the redistribution of jobs and housing throughout the Bay Area in part by maximizing improvements to productivity. The resulting distribution produces a mix of productivity effects by alternative and by SD.

Another example is SD 20 and SD 21 in Contra Costa County. In this case both the Proposed Plan and Enhanced Network of Communities alternative have higher levels of output when compared to the Transit Priority Focus and EEJ alternatives. This may be due to the fact that both the Transit Priority Focus and EEJ alternatives provide greater employment and housing by assuming Transit Priority Project areas (TPPs) are available for increased development, in addition to the Priority Development Areas (PDAs). The Transit Priority Focus alternative focuses growth in TPPs at the urban core, and the EEJ alternative focuses on development in areas that include jobs-rich, high-opportunity TPPs not currently identified as PDAs. It is likely that a PDA

investment under the Proposed Plan and Enhanced Network of Communities alternative may create opportunities that result in higher population and better access to labor for these two SDs.

TABLE C4: GRP BY ABAG 6-INDUSTRY NAICS SECTORS FROM AGGLOMERATION EFFECTS

SD	Affiliated County	Sub-County Region	2040 Value Added (millions of $)			
			Proposed Plan	Transit Priority Focus	Enhanced Network of Comm.	Environ., Equity, and Jobs
1	San Francisco	NE	6	201	6	190
2	San Francisco	NW	0	23	0	21
3	San Francisco	SE	2	44	3	45
4	San Francisco	SW	3	4	3	4
5	San Mateo	North	14	21	35	21
6	San Mateo	Central	47	44	35	31
7	San Mateo	South	70	70	68	80
8	Santa Clara	West	45	45	60	39
9	Santa Clara	North	108	121	136	114
10	Santa Clara	S. Central	41	39	56	37
11	Santa Clara	Central	44	42	62	36
12	Santa Clara	East	41	40	55	37
13	Santa Clara	SE	16	16	21	13
14	Santa Clara	South	12	9	15	7
15	Alameda	East	24	91	34	34
16	Alameda	SW	58	62	72	45
17	Alameda	W. Central	49	35	39	13
18	Alameda	N. Central	71	51	74	31
19	Alameda	NW	37	31	34	24
20	Contra Costa	West	100	4	94	11
21	Contra Costa	N. Central	114	49	90	55
22	Contra Costa	Central	26	6	28	4
23	Contra Costa	S. Central	9	24	1	19
24	Contra Costa	East	19	9	24	7
25	Solano	South	23	3	20	4
26	Solano	North	18	9	17	6
27	Napa	South	18	12	20	11
28	Napa	North	4	4	8	1
29	Sonoma	South	20	15	16	11
30	Sonoma	Central	7	7	8	6
31	Sonoma	North	3	2	3	1
32	Marin	North	13	3	1	5
33	Marin	Central	48	1	14	3
34	Marin	South	7	1	1	4
All	**All**	**All**	**1,116**	**1,138**	**1,154**	**971**

Source: Cambridge Systematics, 2013 – based on TREDIS model output.

References

Inputs and Outputs for Analysis of the Gross Regional Product, Memorandum from Cambridge Systematics to MTC, dated November 14, 2011.

Gross Regional Product (GRP) Results from the Plan Bay Area Final EIR/S, Memorandum from Cambridge Systematics to MTC, dated March 26, 2013.

APPENDIX D: Project Performance Assessment Regional Program Evaluation

In addition to individual transportation projects, regional programs were evaluated as part of the Plan Bay Area project performance assessment. These regional programs consist largely of MTC-led initiatives, in addition to three programs submitted for consideration by BAAQMD.

MTC Programs

- Lifeline Transportation Program
- Transportation for Livable Communities Program
- Regional Bicycle Program
- Climate Programs
    1. Electric Vehicle Strategy
    2. Public Outreach Campaign
    3. Incentive Programs
    4. Safe Routes to School
    5. Innovative Grants Program
    6. School and Youth Outreach
- New Freedom
- Transit Maintenance
- Local Streets and Roads Maintenance
- Freeway Performance Initiative

Air District Programs

- Solar Installations for Electric Vehicle Charging
- Truck and Motorcycle Retirement Program
- Heavy Duty Truck Replacement

VMT-Based Methodology

Unlike other transportation projects, regional programs were not run through the travel model to calculate their cost-effectiveness (with the exception of the Freeway Performance Initiative, discussed below). As a result, the regional programs were evaluated "off model" using available research to estimate project benefits.

In consultation with the MTC program managers, staff estimated the VMT reduction associated with the regional program. The VMT reduction estimate was then used to calculate other benefits such as travel time, emissions, collisions, and noise; this process is described in greater detail below. While the methodology used to estimate the VMT reduction from each program varied, the methodology was used to quantify the nominal values for all associated benefits was consistent. Similar to the benefit-cost assessment for individual projects, calculated benefits were then compared to a future baseline scenario in which the program was not implemented.

In order to translate VMT reductions into other benefits, conversion factors were used to calculate the nominal values for each benefit. First, conversion factors were needed to use the estimated VMT of the project to estimate the nominal values for each benefit. Each nominal value (measured in metrics such as minutes, tons of pollutants, or

number of collisions) was divided by the annual auto VMT in the baseline to develop a ratio between total VMT and each benefit type. The annual VMT number was multiplied by this basecase ratio to derive the values for each benefit, as shown in the formula below:

$$Benefit(p) = [Benefit(b)/VMT(b)]*VMT(p)$$

p = values for program evaluated; b= values from Travel Model One baseline

Similar to the benefit-cost analysis for individual projects, these nominal benefit values were then multiplied by the previously-discussed monetization factors to obtain the monetized benefits from each program.

VMT-Based Regional Program Analyses

Lifeline Transportation Program

MTC's Lifeline Transportation Program supports projects that address mobility and accessibility needs in low-income communities throughout the region. It is funded by a combination of federal and state operating and capital funding sources, including the Federal Transit Administration's Jobs Access and Reverse Commute Program, and state Proposition 1B Transit Capital and State Transit Assistance programs. The Lifeline Program was evaluated by first estimating the auto ownership reduction resulting from the program and then estimating the associated VMT reduction. That VMT reduction was used as the basis for calculating the program benefits.

Auto Ownership Formula: auto ownership reduced = (1.6 autos/household in transit-accessible urban areas – 1.57 autos/household in limited-transit urban areas) x (242,203 low-income households in communities of concern with urban densities in 2035) x (10% of those households who are able to postpone purchase of additional autos) x ($3,747 annual cost per vehicle for low-income households in 2035)

References and Assumptions:

- Autos per household – from 2000 Bay Area Travel Survey (BATS) and Station Area Residents Survey (STARS) report. Figures represent households who live in urban densities comparing those who live ½ mile to 1 mile from rail transit vs. those who live greater than 1 mile from rail transit.
- Number of households served – based on staff analysis of March 2011 Current Regional Plans data using year 2000 Census-based Community of Concern (CoCs) definition:
    - 2010 Community of Concern households = 776,502
    - 2035 Community of Concern households = 1,042,562

  - 2010 Low Income households in CoCs = 320,100
  - 2035 Low Income households in CoCs = 356,743
  - 2010 Low Income Households in CoCs with urban densities = 136,337
  - 2035 Low Income Households in CoCs with urban densities = 242,203
- Key assumption (given lack of existing research in this area): 10% of low-income households with urban densities (10,000+ persons/square mile) are able to postpone purchase an additional auto through better mobility options (postponing need to move from zero to one auto, or from one to two autos, per household)
- Average annual automobile ownership cost per vehicle for low-income households = $2,392 total cost / 1.4 vehicles per household for low-income households = $1,709 per vehicle (in year 2000 dollars) based on 2009 Bureau of Labor Statistics Consumer Expenditure Survey data
- 2000 dollars converted to 2009 dollars based on CPI-U for Bay Area (224.4 / 180.2) and then adjusted to 2035 dollars based on 2.2% annual inflation rate.

VMT Reduction Formula: VMT reduced = (727 autos forgone by low-income households living in urban communities of concern) x (8,066 avg. annual VMT per auto for low-income HHs) = 5,863,982 VMT/year

Transportation for Livable Communities (TLC) Program

The Transportation for Livable Communities Program (TLC) program supports community-based transportation projects that bring new vibrancy to downtown areas, commercial cores, neighborhoods, and transit corridors, enhancing their amenities and ambiance and making them places where people want to live, work, and visit. The TLC Program supports invests in Priority Development Areas, designated areas in which there is local commitment to developing housing, along with amenities and services, to meet the day-to-day needs of residents in a pedestrian-friendly environment served by transit.

Formula: VMT reduced = (1,377,700 HH units in PDAs and GOAs in 2035) x (20 VMT/day) x (365 days/year) x (.039 VMT reduction attributable to design) x (25 years)

Key assumptions include 20 VMT per day (average for all households within half-mile of a rail station or ferry terminal), 0.039 (VMT elasticity attributable for 4D design, as specified by the Smart Growth Index EPA report), and all PDA/GOA growth associated to take advantage of TLC program benefits.

Regional Bicycle Program

There are a variety of estimates of increased bicycle usage from new infrastructure. Most of the available research that quantifies the change in bicycle trips resulting from a capital project is conducted for a specific improvement, such as a new Class I bike path. Quantifying the benefits of a regional program, which includes a variety of different types of capital projects, is more difficult. The Regional Bikeway Network identifies specific areas where connections are to be implemented, but it does not specify the types of facilities. Additionally, any observation of increase in trips is difficult to see since an observed increase in trips could be due to rerouting.

The evaluation was based on increase in the bicycle trips from a programmatic set of investments. Studies have a wide range of estimates for the increase of bicycle trips due to capital improvements; two studies were selected for the program evaluation. The Safe Routes to School evaluation in California showed increases up to 20% due to the program[7]. Another study in New Zealand showed the increase of cyclists up to 10%[8]. As such, the Regional Bicycle Program assumed an increase of bicycle trips by 20% due to the investments in the program.

Formula: VMT reduced = (0.2) x (398,292 Year 2035 bicycle trips) x (0.63 auto trips reduced per each new bike trip) x (2.3 miles per one way auto trip reduced) x (300 days per year)

Direct Benefits Methodology

For the programs where VMT estimates were not available, or where VMT reduction does not reflect the benefits of the particular program, the direct benefits of the program were quantified instead. This is particularly necessary for programs that do not significantly affect VMT but still accrue benefits to the region – for example, air quality improvements from new technologies or state of good repair investments.

Climate Program

The Climate Initiatives Program is a collection of initiatives that will help to reduce transportation related CO_2 emissions. Similar to the other MTC programs, the estimated benefits were based on the best available research of programs similar to the MTC Climate Initiatives Program. At the time of the performance assessment, many of the programs were not in place and the entire scope of the program was not yet known.

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[7] Orenstein, Marla R., Gutierrez, Nicolas, Rice, Thomas M., Cooper, Safe Routes to School- Safety and Mobility Analysis. Institute of Transportation Studies, Berkeley, 2007.

[8] McDonald, A.A., Macbeth, A.G., Ribeiro, K.M., & Mallett, D.S., Estimating Demand for New Cycling Facilities in New Zealand. Land Transport NZ Research Report 340. 124 pp. 2007.

To calculate the benefit-cost of the program, CO_2 reduction estimates for the many proposed program elements were evaluated for a 5-year period (based on the lifespan of the initial program grant). Six programs were included in the Climate Initiatives Program as evaluated during the project performance assessment; because several programs were not assumed to have VMT or GHG benefits (while at the same time costs were included for these programs), the analysis likely results in a conservative benefit-cost ratio:

1. Electric Vehicle Strategy - (no VMT/GHG reduction but costs included)
2. Public Outreach Campaign
3. Incentive Programs
4. Safe Routes to School
5. Innovative Grants Program - (no VMT/GHG reduction but costs included)
6. School and Youth Outreach - (no VMT/GHG reduction but costs included)

Key assumptions for each program are listed below for transparency:

- **Electric Vehicle Strategy:** includes incentives and/or vehicle retirement program, fleet purchasing, public charger installations, residential infrastructure incentives for multi-unit and family dwellings, HOV lane access, parking incentives, and/or "try it before you buy it" campaign
    - Estimated cost: $40 million over 10 years
    - Assume that regional programs result in an additional 195,100 vehicles (50/50 combination of BEVs and PHEVs) by 2020 (over baseline sales that are expected for the region)
    - Assume the PHEV's and BEV's are replacing average vehicles in California Air Resources Board (CARB) fleet mix
- **Public Outreach Campaign:** includes smart driving, active transportation, and/or trip reduction programs
    - Estimated cost: $10 million over 6 years
    - Smart Driving includes smooth acceleration and deceleration, driving at the speed limit, trip linking, regular vehicle maintenance, and/or using trip planning tools to avoid traffic, eliminate idling, remove vehicle weight, purchase low rolling resistance tires, and implement in car mpg meters
    - Active Transportation includes replacing short driving trips with walking or biking trips
    - Trip Reduction includes carpooling and trip linking
    - Adoption rate is based on advertising dollars spent and the assumption that 10% of the population that stated that each behavior would be very easy or easy to adopt in a MTC survey will adopt the behavior
    - **Estimated daily CO_2 reduction: 2,800 to 6,500 metric tons**
- **Incentive Programs:** includes rebates for low rolling resistance tires, tire pressure monitor kits, buy back for older SUVs, in car MPG meters, and other incentive programs

  - Estimated cost: $5 million for incentives over 6 years
  - Key assumptions include: $50 rebates = 100,000 sets of Low Rolling Resistance Replacement tires; $2 tire pressure caps = 2,500,000 tire pressure caps installed; $1,000 to buy back early model SUV's = 5,000 older SUV's (14 mpg) replaced with EV's; $50 in vehicle MPG meters = 100,000 MPG meters installed
  - **Estimated daily CO_2 reductions (assuming all funds spent on just one program): 32 metric tons (LRR tires), 277 metric tons (tire pressure monitors), 127 metric tons (SUV EV replacement), 440 to 757 (in-vehicle MPG meters)**
- **Safe Routes to School:** includes infrastructure and education programs for K-12 schools
  - Estimated cost: $25 million for 6 years
  - Regionwide program assumed to provide trip elimination benefits at one-half the rate of San Francisco and Marin SR2S programs
  - **Estimated daily CO_2 reductions: 81 to 100 metric tons**
- **Innovative Grants Program:** includes demonstration projects to-be-determined
  - Estimated cost: $31 million over 6 years
  - Assume equivalent reductions to current innovative grant recipients
- **School and Youth Outreach Programs:** includes regional SR2S program and testing of innovative SR2S ideas
  - Estimated costs: $12 million over 6 years
  - Assume expansion of SR2S creative grants regionwide

New Freedom

The simplistic cost-effectiveness calculation for this project is based on cost savings associated with replacing a traditional paratransit trip with an alternative mode funded by this program (e.g. fixed route transit, volunteer driver programs, taxis, community shuttles).

Formula: benefit-cost ratio = (average cost of an ADA paratransit trip) / (average cost of a trip on an alternative mode) = 1.67

The benefit-cost ratio of 1.67 is consistent with research on the costs and benefits of travel training programs that teach senior and disabled riders to used fixed route rather than ADA complementary paratransit services. That research found an average benefit-cost ratio of 2.50 for travel training programs. The 2.50 figure is the benefit-cost ratio from the perspective of the public transportation provider (funder), given the assumption that the funder will garner the lowest benefit-cost ratio compared to the trainee and the community (Wolf-Branigin & Wolf-Branigin, 2010).

References and Assumptions:

- Average cost of an ADA complementary paratransit trip = $28.27

  This figure is from MTC's Transit Sustainability Project Paratransit Primer, and represents the average cost per passenger trip for the large Bay Area transit operators in 2010. For smaller Bay Area transit operators, the average cost per passenger trip is higher ($33.02 in 2010). The more conservative cost figure was used in this calculation.

- Average cost per trip on alternative modes = $16.92

  This figure is calculated using Federal Fiscal Year (FFY) 2010 New Freedom reporting data. For each trip-based or operations project, the cost per trip was calculated using the following formula: (amount of New Freedom funds spent in FFY 2010) / (number of trips provided in FFY 2010). This figure represents the average of all the cost per trip calculations.

Transit Maintenance

The benefits for this program were calculated with the same methodology used in *Transportation 2035*. As in the prior performance assessment, no research was available to practitioners that could capture the benefits of the program through a VMT reduction. The benefits of the program were calculated from the public benefit of avoided increases in rehabilitation and maintenance costs. This reflects only a small portion of the benefits of maintaining an operable transit system, such as increased system reliability leading to increased ridership, reduced congestion, reduced emissions, and increased mobility.

Formula: benefit-cost ratio = (projected replacement, rehabilitation, and maintenance costs if transit capital assets are operated to 150% of their standard useful lives and run to failure before repair) / (projected replacement, rehabilitation, and maintenance costs if assets are replaced at 100% of their standard useful lives and receive scheduled maintenance and rehabilitation) = 1.4

Surprisingly little research has been published that quantifies the benefits of replacing and rehabilitating transit capital assets. The public benefit of avoided increases in rehabilitation and maintenance costs was derived from an Army Corps of Engineers study which compared rehabilitation and maintenance costs for facilities over the life of the facility under two scenarios: Best Practices (performing all scheduled rehabilitation and maintenance), and Run to Failure (rehabilitation or repair only after component failure). At 150% of useful life (i.e. if the facility was operated 50% longer than the normal useful life before replacement), the cumulative rehabilitation and maintenance

costs under the Run to Failure were 313% of cumulative costs at 100% of useful life under Best Practices.

This differential captures the effects both of operating the facility beyond the standard useful life and of failing to perform scheduled maintenance and rehabilitation, which is appropriate since the transit capital program includes both replacement and rehabilitation costs. Higher rehabilitation and maintenance costs are offset by lower replacement costs (from operating assets for 50% longer period before replacement). Total capital costs (replacement + rehabilitation + maintenance) under the 150% of useful life/Run to Failure scenario are estimated to be 140% of total capital costs under the 100% of useful life/Best Practices scenario, i.e. $400 in avoided additional costs for every $1,000 invested in transit capital replacement and rehabilitation.

Local Streets and Roads Maintenance

Similar to transit maintenance, the evaluation of the local road maintenance relied upon a methodology of avoided costs. The benefit derived from reducing the costs associated with deferring maintenance through increased levels of regional investment was measured by calculating the change in "maintenance backlog" between the first year of the analysis (2013) and the last year, for several regional investment scenarios (2038).

The City of Santa Rosa was selected as a proxy for the combined region. The city's mix of roadways and pavement condition resembles that of the combined region only on a smaller scale. Results from modeling done on Santa Rosa's pavement management database were scaled to represent the region by translating cost information into per-mile figures and then multiplying by the total regional mileage.

The level of existing revenue available for street and road maintenance in the region was calculated based on information provided by local jurisdictions in response to the Local Street and Road Need and Revenue survey. Additional revenue projections for gas taxes were made by MTC and included in the total revenue amounts; these additional revenues reflected the cost element of the benefit-cost ratio (in other words, the costs associated with improving roads from the local status quo approach).

To calculate benefits, two investment scenarios were compared – one which relies only on existing local investments to improve local street quality and one that provides an additional $7 billion in regional contributions to improve pavement condition. The higher regional funding level is consistent with *Transportation 2035*.

Two primary benefits of roadway maintenance were captured as part of the local streets and roads maintenance B/C ratio:

- **Deferred Maintenance Benefit:** The benefits derived from reducing the costs associated with deferring maintenance through varied levels of regional investment were measured by calculating the change in maintenance "backlog" between the first year of the analysis and the last year. Backlog is the term used to describe the amount of maintenance that needs to be performed in order to bring the conditions of the street and road network up to an optimal condition—the point at which on-going maintenance of the LS&R network is the most cost-effective. Deferred maintenance benefits were forecasted using the StreetSaver pavement management system; approximately $375 million in annual cost savings were forecast as a result of the regional investment, representing $344,000 in savings per lane-mile. Over the lifespan of the Plan, this would represent approximately $14.6 billion in deferred maintenance cost savings.
- **Vehicle Operating Cost Savings Benefit:** Research shows that drivers incur additional vehicle operating and maintenance expense as a result of driving on poorly maintained roadways. The EVOC benefit can be measured as the amount of private costs saved over time by reducing the rate of deterioration in pavement condition with a greater level of regional investment. Key assumptions for the vehicle cost savings benefit are shown below; forecasted savings total to $19.6 billion over the lifespan of the Plan as a result of regional funding.

Benefit-Cost Calculation: (deferred maintenance cost savings + vehicle operating cost savings)/ regional investment = ($14.6 billion + $19.6 billion)/($7 billion) = **5**

References and Assumptions:

- 50% of VMT occurs on local roadways (FHWA VMT data by roadway functional classification)
- 0.5% growth rate in number of Bay Area drivers (based on growth rate of drivers' licenses between 2000 and 2009)
- 1 point of PCI improvement associated with 5% cost savings for vehicle operating costs (based on The Road Information Program 2010 study aligned with metro area)

<u>Solar Installations for Electric Vehicle Charging</u>

<u>Truck and Motorcycle Retirement Program</u>

<u>Heavy Duty Truck Replacement</u>

Three of the BAAQMD projects were evaluated by assessing the direct benefits of targeted programs with a specific focus to reduce pollutants of ROG, NOX, PM2.5 and CO_2. BAAMQD provided the estimated pollutant reductions due to the implementation

of each program, as these were the primary benefits of these vehicle emissions improvement projects. While the programs may have slight benefits for other benefit categories, these were not captured in the programs' benefit-cost ratios.

Air quality benefits were monetized using the same monetary values as used for individual projects in the project benefit-cost analysis process.

Hybrid Benefits Methodology

Freeway Performance Initiative (FPI)

FPI required a hybrid methodology to consider the many different programs included within; some elements of FPI could be analyzed using the regional travel demand model (consistent with capacity-increasing projects) while others required off-model benefit estimations. The seven components, and their assessment methodologies, are listed below:

1. Ramp Metering – model-based analysis
2. Signal Coordination – model-based analysis
3. 511 Rideshare – VMT-based analysis
4. Freeway & Arterial ITS Infrastructure – direct benefits analysis
5. Incident Management – direct benefits analysis
6. Emergency Preparedness – qualitative only (no monetized benefits)
7. 511 (other components of program) – qualitative only (no monetized benefits)

Model-Based Methodology: Ramp metering and signal coordination were represented in the travel model and were coded as follows:

- For freeway ramp metering selected freeway segments were used as the basis for identifying which freeway segments would benefit from improvements.
- For arterial signal coordination, the simple assumption was made that every major arterial in the Bay Area received a FPI treatment.

The modeling methodology was consistent with all other projects undergoing model-based B/C assessment; key metrics for the project (e.g. travel time, travel cost, emissions) were compared to a no-build scenario to determine the regional impact of FPI. The travel model estimates benefits for ramp metering and signal coordination by assuming that freeways with ramp metering and arterials with signal coordination have an increased effective capacity (ranging between 2.5% and 10% by facility type).

VMT-Based Methodology: 511's Rideshare component was analyzed using a VMT-based off-model approach similar to that of other Plan Bay Area regional programs. A forecasted year 2035 VMT reduction due to 511's Rideshare tool (which enables individuals to form carpools, instead of driving alone) was used to calculate the metrics.

As funding for employer outreach will be eliminated by 2035, the amount of VMT reduced in the future is expected to be smaller than today – this decline is reflected in the VMT forecast. VMT reduction due to carpooling was used as a proxy to forecast corresponding reductions in other key metrics, such as travel time and emissions, compared to the baseline conditions. The ratio of VMT due to the project was compared to the baseline, and values were calculated for metrics used in the B/C assessment. The total benefits for the project was the sum of the expected reduction and monetized values for performance metrics.

Direct Benefits Methodology: The source of the off-model/sketch planning benefit assumptions is the FHWA ITS Deployment Analysis System (IDAS). IDAS is a sketch-planning analysis tool developed by FHWA to analyze the benefits, costs, and impacts of ITS strategies. The impact values used within IDAS are based upon real-world evaluations and analyses of these investments. IDAS is designed as a post-processor to travel demand models and its method and analysis techniques are consistent with the travel demand modeling process. Within IDAS, there is a set of default impact values associated with Incident Management Systems, of which the ITS deployment characteristics are listed as being "Incident Detection/Verification" devices. These are the very same devices listed in the FPI elements going through the off-model/sketch planning exercise - namely, Freeway and Arterial ITS Infrastructure elements (initial deployment and ongoing operations, maintenance, and repair costs) and Incident Management strategies.

Within IDAS, the default value for reduction in all emissions rates is listed as 15% and the default value for reduction in fatality collisions is listed as 10%. While there is no direct % travel time reduction default value listed, there is a default value for reduction in incident duration of 9% listed, a default value associated with ramp metering in terms of an assumed capacity increase at affected freeway links of 9.5% and a default value associated with signal coordination in terms of an assumed capacity increase in the range of 8-13%. These default values, though not synonymous with a 10% travel time reduction, do provide an indication of what is going on in terms of reduction in travel time, non-recurring delay and overall levels of congestion. Moreover, 10% is still significantly lower than our own documented, empirical before & after travel time results, as well as many other ITS Infrastructure and Traffic Incident Management project evaluation results as listed in the ITS Benefits Database on the USDOT's Research and Innovative Technology Administration (RITA) website.

These IDAS travel time, emissions, and fatality collision reductions were only applied to the fraction of the roadway network assumed to benefit from FPI improvements. As ITS infrastructure improvements will occur on the same corridors that benefit from ramp metering and signal coordination, we relied on the Travel Model One coding for ramp metering and signal coordination to provide a rough estimate of this fraction. Based on the fraction of VHT corresponding to FPI-improved corridors, the IDAS benefits should

be applied to 58.1% of regional travel time, emissions, and fatality collisions. To be conservative, it was only recognized travel time benefits to autos and trucks, even though transit vehicles traveling on these corridors would experience travel time savings due to ITS infrastructure and incident management.

APPENDIX E: Project Performance Assessment Detailed Targets Assessment Criteria

This appendix documents the explicit methodology used to assign project performance assessment target scores. Example projects were selected for each project category to illustrate typical projects that received a range of target ratings, as well as common reasons for rating projects in a given way.

Adopted Target #1: Reduce per-capita CO_2 emissions from cars and light-duty trucks by 15%.

Projects supported the target if they resulted in a VMT reduction; provide an alternative to driving alone; or advance clean fuel vehicles. Projects were likely to result in increased VMT are assumed to have an adverse impact on the target.

Guidelines for Applying Criteria

Transit, bicycle and pedestrian projects were expected to reduce VMT and were rated as supportive of the target. Larger projects, those likely to serve a large number of trips or serve longer trips, were rated as strongly supportive. Smaller projects, those likely to serve fewer trips or shorter trips, were rated as moderately supportive.

Projects that increased roadway capacity or were expected to increase VMT were generally rated as having a strong adverse impact on the target. Operational roadway projects, such as highway interchange projects, were not expected to increase VMT significantly since they did not add capacity and were generally rated as having minimal impact. Roadway projects that include transit, bicycle and pedestrian elements were scored to minimal or moderate support to recognize the impacts of these multi-modal elements.

Examples

Transbay Transit Center - Phase 2B (Caltrain Downtown Extension) received **strong support** due to the potential to reduce long car trips by attracting riders from the San Mateo peninsula to San Francisco.

Irvington BART Station received **moderate support** since it provided additional access to BART by the development of a new BART station with multi-modal access to the station. The vehicle trips that BART is expected to replace are shorter than the Caltrain trips.

US-101 Broadway Interchange Improvements was awarded **minimal impact** since the project is a road efficiency project that is not expected to increase VMT significantly.

US-101 Widening (Monterey Street to SR-129) received **strong adverse impact** for the target since it is a roadway expansion project that would make driving more attractive and increase VMT.

Adopted Target #2: House 100% of the region's projected growth by income level (very-low, low, moderate, above-moderate) without displacing current low-income residents.

The assessment of a project's impact on housing was dependent upon two criteria: potential for housing growth in the jurisdictions affected and those jurisdictions' past track record on affordable housing. The strongest support were for projects that were located in jurisdictions that had above average production for low and very low income housing and a high amount of housing planed in the future (10,000 units or greater).

Guidelines for Applying Criteria

To determine a project's potential support for adequate housing, the level of planned housing growth in the Focused Growth scenario was examined. Projects affecting cities with less than 1,500 units of housing production were given no points, while projects affecting cities with more than 1,500 units of housing production received 0.5 points.

After this initial step, planned affordable housing production was examined – looking at jurisdictions' track records in achieving production of very-low and low income housing units compared to prior Regional Housing Needs Allocation (RHNA) cycles. Using data compiled from ABAG's housing report in 2007 "A Place to Call Home – Housing in the San Francisco Bay Area," the number of permitted units as a share of each jurisdiction's RHNA target was calculated by income level for years 1999 through 2006. Overall, 23 cities were identified that performed better than the regional averages for both very low (above 44%) and low (above 75%) income housing and 53 that were below the regional averages. Refer to Tables 1 & 2 in Appendix K for the city-specific data for this target.

Projects that were multi-county projects were given a score for both housing production and RHNA based on the individual cities and unincorporated areas. The overall county RHNA score was determined by the majority of projects in one category (above average, neither above or below, and below average). If 2/3 of the cities in a county had below average production, then the county would receive a -0.5. If there was not a clear majority of cities in one category, then the county would be scored minimal or 0 points. Some projects that were multi-county such as BART, Capital Corridor, or ACE were scored based upon the cities served by the projects in the same manner as described above.

The affordable housing RHNA scores shown below were added to the initial total housing production forecast cited earlier:

- above the regional average for very low and low income housing (0.5 points)
- neither above nor below the regional average (0 points)
- below the regional average for very low and low income housing (-0.5 points)

Examples

Hercules Intermodal Station scored ½ point for expected growth (4,653) and got an additional ½ point for above average RHNA production, resulting in a target score of **strong support**.

BART Service Frequency Improvements received ½ point for housing production, since the counties that BART services have expected growth above 1,500 units. It did not receive any points for RHNA production, since the Bay Area as a whole scores 0 (there is not a clear majority of cities above or below the average). Therefore, it resulted in a score of **moderate support**.

BART to Livermore got strong support for housing units over 1,500 (½ point). The RHNA housing production for Pleasanton, Livermore, Dublin, and the unincorporated county is below average deducting a ½ point, resulting in an overall **minimal impact** score.

SR-1 Safety and Operational Improvements (Pacifica to Half Moon Bay) impacted communities with housing growth under 1,500 units and received 0 points from this. The RHNA past production is below average (-½ point), resulting in an overall **moderate adverse impact** score.

Adopted Target #3: Reduce premature deaths from exposure to particulate emissions.

a) Reduce premature deaths from exposure to fine particulates (PM2.5) by 10%.
b) Reduce coarse particulate emissions (PM10) by 30%.
c) Achieve greater reductions in highly impacted areas.

Projects support the target if they have the potential to reduce particulate (PM) emissions from vehicles by reducing VMT or providing an alternative to driving alone. Projects likely to increase VMT are assumed to have an adverse impact on the target.

Guidelines for Applying Criteria

Because the criteria for target 3 are nearly identical to those for the CO_2 reduction target and because the particulate targets were focused largely on tailpipe emissions which correlate with CO_2 emissions, projects generally received the same rating for these targets as they did for CO_2 reduction.

Examples

MTC Regional Bikeway Network was expected to reduce PM emissions due to the increase of bicyclists in the region utilizing new bike facilities. The development of a regional network would close gaps between county lines and provide connections to transit and downtown areas. Therefore, the project received a score of **strong support** for the target.

BAAQMD Electric Vehicle Solar Installation Program got a score of strong support to reduce CO_2 emissions by providing an incentive to increase the use of emission free vehicles, but it has **minimal impact** for PM reduction, since electric vehicles still generate PM through tire wear and brake dust.

Adopted Target #4: Reduce by 50% the number of injuries and fatalities from all collisions (including bike and pedestrian).

There is a positive correlation between increased VMT and collisions for all modes of transportation. Despite advances in safety countermeasures on roadways and safety technology in vehicles, vehicle collisions remain one of the leading causes of death for children. An estimate of 30,000 people a year dies in vehicle collisions. In recent years, this number has declined slightly; decreases in VMT have correlated with decreases in collisions. Projects that reduced VMT or explicitly provided a safety benefit by building infrastructure that reduced vehicle-to-vehicle collisions or bicycle/pedestrian collisions are rated as supportive of the target.

Guidelines for Applying Criteria

Similar to the criteria used for CO_2 reductions, projects that increased vehicle use through increased capacity were deemed to be detrimental to safety. Projects that provided alternatives to the auto received support for collision reduction. A project would be supportive of the target if it included an explicit countermeasure for reducing crashes. Operational improvements such as braided ramps, auxiliary lanes that reduced vehicle conflicts received positive support for the target. Transit projects that were specific to reducing train crashes such as Caltrain's Positive Train Control System (PTS) and at-grade improvements such as improved vehicle crossings received strong support. For the analysis, any infrastructure that removed vehicles from the roadway were expected to decrease collisions. No attention was given to certain types of localized infrastructure (such as off-street bicycle paths or median islands) for which such detailed information was not available.

Examples

BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara) represented a major expansion of the heavy rail BART system and was therefore expected to reduce

driving. With the reductions in VMT and more vehicles removed from the roadway, the project received a **strong support** rating for collision reduction.

Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center) was expected to attract more riders to transit and reduce the number of vehicles on the roadway. As it is smaller in scale than the major BART expansion to Santa Clara County, it only received a **moderate support** rating.

SR-12 Jameson Canyon Project (Phase 3: New SR-12/SR-29 Interchange) included a significant roadway expansion components; therefore, it received a moderate adverse impact score for CO_2 reduction but scores a **moderate support** rating for collision reduction. As part of the project interchange improvements, it included operational improvements that are expected to result in reduced vehicle-to-vehicle crashes.

SR-4 Upgrade to Full Freeway (Phase 2: Cummings Skyway to I-80) provided capacity increases that are expected to increase total driving. As a result, it scores a **strong adverse impact** rating for encouraging driving, as well as for increasing vehicle speeds.

Adopted Target #5: Increase the average daily time walking or biking per person for transportation by 70% (for an average of 15 minutes per person per day).

Projects that provide infrastructure for bicycles and pedestrians, such as on- and off-street bicycle facilities, bike parking, and sidewalks are supportive of this target. Projects that are expected to increase auto trips have an adverse impact.

Guidelines for Applying Criteria

Projects that would increase auto trips would not be supportive of the target and would adversely affect conditions for cycling or walking trips by making driving easier – similar to the evaluation of projects for the CO_2 target. The additional car trips would put more vehicles on the road and would increase conflicts between vulnerable users. Investments in capacity-increasing projects, such as highway widening, would not promote land uses that would be conducive to compact development that would foster walking, cycling and transit use.

Roadway projects that included significant bicycle and pedestrian elements, such as highway on/off ramps that reduced vehicle-to-bicycle conflicts and overcrossings that included bicycle lanes, were supportive of the target. Transit projects were among the projects that were the most supportive of increasing active transportation since many people access transit services by walking and biking. Additionally, transit users are more likely to walk or bike once they reach their destination, as they do not have an automobile with them.

Examples

Marin Countywide Bus Service Frequency Improvements would make bus service throughout the county more frequent and increase ridership by making the bus a more attractive option. More people would walk to the bus and leave their vehicles at home, resulting in **strong support** for this target.

US-101 Broadway Interchange Improvements would expend most of its funds on US-101 where bicycles and pedestrians are prohibited; it did not include an overcrossing that improves access for active modes. With new bike lanes and sidewalks over the highway, the project provided **moderate support** towards the target.

SR-1 Safety & Operational Improvements (Pacifica to Half Moon Bay) only improved conditions for vehicles on highway 1 and did not include specific bike and pedestrian improvements. As a result, it received a **minimal impact** score for the target, in contrast to the project above.

US-101 Widening (Monterey Street to SR-129) added additional vehicle capacity to US-101 from Gilroy to the Santa Cruz County line. As a result of the exclusive focus on cars and resulting VMT increases, this project scored a **strong adverse impact** score.

Adopted Target #6: Direct all non-agricultural development within the urban footprint (existing urban development and urban growth boundaries).

Projects that do not consume open space or agricultural lands support the target. Projects that improve access to agricultural lands support the target because they maintain economic viability of those lands; this is consistent with requirements in SB 375. Plan Bay Area must show how farmland is preserved from urban development and issues like access for farm to market are considered. Projects that directly consume open space or agricultural land have an adverse impact.

Guidelines for Applying Criteria

Projects that helped to promote infill development are given a supportive rating for this target, as developing or redeveloping existing urban areas reduced the demand for sprawling developments at the fringe of the region; reduced fringe development decreases the pressure on agricultural lands to convert to residential use. Supportive projects could include investments in transit that provide connections to city centers and foster development in these areas. Transit projects that served large populations tended to show the best support of the target.

Support for the target was also given for improved access to agricultural lands. Highway projects that connected agricultural lands to urban areas were supportive of the target since these projects could foster improved goods movement by trucks to their

destination. A project would be considered adverse to the target if it would require new right-of-way in previously undeveloped open space or agricultural land. Projects that resulted in a road widening but would use existing developed right-of-way did not have an effect on the target. This target did not consider the adverse impacts of development pressure from conversion of agricultural land to housing, as this was in indirect effect. Only the direct effects of the projects were considered for adverse impacts, such as the amount of open space or agricultural land being consumed by the project.

Examples

BART Metro improved the services within the BART's system urban core, attracting more riders and decreasing regional VMT. As more people use the system, development in and around the stations will continue to reduce the need to develop in open space and agricultural land; as a result, this project was in **strong support** of the target.

MTC Freeway Performance Initiative made the highway network more efficient by reducing delay and improving travel times through Intelligent Transportation System (ITS) improvements. Goods movement by trucks delivering agricultural goods from farm to market would be improved, provided **moderate support** of the target.

SR-113 Relocation out of Dixon expanded an existing state route by diverting it through an area surrounded by agricultural land. However, the project would use existing right-of-way from a local road, rather than consuming undeveloped land. Therefore, the project received a **minimal impact** rating.

New SR-152 Alignment constructed a new highway alignment through open space and agricultural lands; as such, the project is rated as having a **strong adverse impact** for the target.

Adopted Target #7: Decrease by 10% the share of low-income and lower-middle income residents' household income consumed by transportation and housing.

Projects supported the target if they included transit enhancements that provided a lower-cost transportation alternative to driving. The degree of support varied based on the operator's current low-income ridership.

Guidelines for Applying Criteria

Transit projects were determined to provide a lower-cost alternative to auto ownership and were supportive of this target. Transit projects were assessed based on the percentage of the region's total low-income riders and the proportion of low income riders served by the operator. The percentages of low-income riders were based on the Transit Demographics Survey and the 2011 Statistical Summary of Bay Area Transit Operators; refer to Table 3 in Appendix K.

Transit operators' projects received a strong support rating if low-income riders constitute over 40% of system ridership or if the operator serves more than 10% of the region's low-income transit riders. Transit operators' projects received a moderate support rating if serves more than 0.5% of the region's low-income transit riders; transit projects for operators with less than this threshold received a minimal impact rating.

By awarding strong support to operators that have a high share (over 40%) of low-income riders, this acknowledges that many small operators provided service to low-income groups but carried a smaller share of the region's total low-income ridership. It also rewarded the larger operators that carried a high number of the region's low-income population. No adverse rating was given for highway projects that did not provide low-cost options, since these projects did not take away choices for low- and middle-income residents.

By their nature, bicycle and pedestrian projects provided a lower cost alternative to auto ownership since the operations and maintenance of a bicycle is substantially less than a car. Projects that encouraged these modes of travel were supportive of this target.

Examples

BART Station Access Improvements would improve the bicycle, pedestrian, transit, and car access to various BART stations making it easier to get to the station and use the system. While low-income riders only constitute 14.5% of BART's total ridership, as an operator BART carries 10.7% of the region's total low income transit users. Therefore, BART projects received a **strong support** rating for this target.

Golden Gate Bus Service Frequency Improvements would boost bus service in Sonoma, Marin, and San Francisco counties. Golden Gate Transit's low income riders make up 23.8% of the total ridership, that lead to a **moderate support** rating for the target; the project is ineligible for the strong support rating because, as a smaller operator, it only carries 1.6% of the region's total low income transit riders.

Petaluma Cross-Town Connector/Interchange added an additional arterial segment improving connectivity for autos from the town to the freeway. This project did not include a bicycle, pedestrian, or transit component; as a result, it received a **minimal impact** score as it does not degrade or improve service on any of those modes.

Adopted Target #8: Increase gross regional product (GRP) by an average annual growth rate of approximately 2% (in current dollars) [+90% target for year 2035; +110% target for year 2040].

Currently congested corridors are detrimental to economic vitality; economic studies show projects that provide congestion relief and improve access to employment centers

have the strongest long-term impact on productivity, and thus are rated as supportive of the target. Improved access to ports or truck corridors is also supportive of the target.

Guidelines for Applying Criteria

Highway projects expected to provide relief by either providing expansion or operational improvements received strong or moderate support depending upon the level of current congestion. Transit projects that would be expected to remove vehicles from the congested corridor were also supportive of the target. No project was in opposition of the target, since a project would be unlikely would be make traffic conditions worse.

Examples

SR-4 Bypass Completion (SR-160 to Walnut Avenue) would construct a new bypass would help to relieve traffic congestion in one of the most congested corridors in the Bay Area. As such, the project had **strong support** for economic vitality.

I-580/I-680 Interchange Improvements (Phase 1) would improve the interchange between two major Bay Area freeways, primarily through operational improvements. Interstate 580 is one of the most chronically congested corridors in Alameda County. This project received only **moderate support** for the target since the interchange improvements were not expected to relive large amounts of congestion without capacity increases.

SR-1 Widening (Fassler Avenue to Westport Drive) added capacity to State Route 1, but it did not relieve a congested segment. Therefore, the project had **minimal impact** on this target.

Adopted Target #9: Increase non-auto mode share by 10% and decrease automobile vehicle miles traveled per capita by 10%.

Criteria for this target are similar to those for the CO_2 and PM targets. Projects that provide alternatives to the single occupant vehicle such as public transit or bicycling/walking were determined to be supportive. Projects that increase the use of single occupancy vehicles were determined to have an adverse impact.

Guidelines for Applying Criteria

See discussion under CO_2 target for guidelines used to assess whether a project was likely to increase VMT. Transit projects received support for this target if they provided frequency or operational improvements that would make transit service more convenient and appealing. Projects that provided bicycle and pedestrian infrastructure and encourage a decrease in the auto were also supportive.

Examples

Geary Boulevard BRT would run bus rapid transit service along a major east-west corridor in San Francisco, improving the travel time of the bus service and attracting riders from auto modes. As such, it provided **strong support** for the target.

Vasona Light Rail Extension (Phase 2) is an extension of the existing light rail service to the town of Los Gatos. Given its shorter length and service of a town with a much smaller number of residents, it would not serve as many people as Geary BRT project; therefore it only received a **moderate support** rating for the target.

I-80/I-680/SR-12 Widening & Interchange Improvements (Phase 1) focused on operational improvements for drivers, but some minor improvements would benefit a limited number of bicyclists and pedestrians. Therefore, it received a rating of **minimal impact**.

SR-84/I-680 Interchange Improvements + SR-84 Widening (Jack London to I-680) included vehicle operational improvements to the interchange, in combination with many miles of capacity increases along SR-84 and therefore it has a **moderate adverse impact** for this target.

Pacheco Boulevard Widening (Blum Road to Arthur Road) is a road expansion that would only benefit autos. It had a negative effect on bicyclists, pedestrian, and transit since the expansion of the auto network results in increased auto use; as such, the project had a **strong adverse impact** on the target.

Adopted Target #10: Maintain the transportation system in a state of good repair:

a) Increase local road pavement condition index (PCI) to 75 or better.
b) Decrease distressed lane-miles of state highways to less than 10% of total lane-miles.
c) Reduce share of transit assets past their useful life to 0%.

Projects that specifically improve the roadway condition or replace transit assets were shown as supportive of this target.

Guidelines for Applying Criteria

Most projects received a minimal rating for this target. Only projects that were specific maintenance projects such as road rehabilitation or transit maintenance facilities were supportive of the target. The increased burden of additional maintenance from expanded transit service or additional lane miles of roadways resulting from highway expansion was not considered.

Examples

Local Streets and Roads Capital Maintenance Needs would provide maintenance and rehabilitation of roads throughout the Bay Area. As it would significantly increase the local roadway pavement condition index, it had **strong support** for the target.

Rio Vista Bridge Reconstruction & Realignment rehabilitated an existing local bridge; as such, it scored a **moderate** ranking for the target.

I-80 Yerba Buena Island Interchange Improvements improved an interchange near the new San Francisco-Oakland Bay Bridge east span. Despite the number of roadway improvements included in this project, the project did not specifically rehabilitate current infrastructure and received a rating of **minimal impact**.

APPENDIX F: Project Performance Assessment Benefit-Cost Sensitivity Testing

Sensitivity testing is an important element of any analytical analysis; it allows for a better understanding of potential limitations for the quantitative results. Key assumptions – in this case, primarily the monetary valuations for specific benefits such as time saved or human lives saved – can have a substantial impact on the results. By examining how changes to these assumptions might alter the results, we can examine the strength of the results before drawing conclusions.

The following sensitivity assessments were performed in order to measure how the analysis results could be affected by changes in methodological and technical assumptions:

1. Valuing nonrecurring delay at three (3) times the travel time value
2. Adjusting transit operations and maintenance (O&M) costs to reflect potential cost savings
3. Valuing CO_2 at a substantially higher value of $178.33 per ton
4. Slightly adjusting collision valuations to match USDOT standards for the value of life
5. Increasing the noise valuation
6. Decreasing travel time valuations substantially

For each sensitivity test, detailed tables present the total annualized benefits, total annualized costs, benefit-cost (B/C) ratio, and ranking from highest B/C to lowest, for both the original B/C assessment and then adjusted to reflect the impact of the particular sensitivity test. The B/C ratios are color coded according to high, medium-high, medium-low, and low ratings using the same categories from the original assessment. In addition, summary tables are provided for each sensitivity test, highlighting projects with significant changes to their B/C ratios, B/C ranking, and/or B/C rating.

Of the sensitivity tests performed, only changes to the travel time valuation had any substantial impacts. Its primary role in the total benefits for many projects led to significantly lower B/C ratios for most projects analyzed, with the greatest reductions for road projects highly dependent on travel time savings for their resulting cost-effectiveness. However, the overall ranking is relatively unaffected even by lower valuations of travel time; as the ordinal ranking is more important than the nominal values for identifying outliers (high- and low-performers), this does not appear to be a major analytical sensitivity issue for the benefit-cost results. Instead, the sensitivity tests highlight the relative strength of the quantitative analysis in ranking potential Bay Area transportation investments.

Valuing Nonrecurring Delay at Three Times the Value of Travel Time

Test Rationale

The *Transportation 2035* benefit-cost analysis used a value equal to three times the recurring in-vehicle travel time. More recent research under the Strategic Highway Research Program (SHRP) suggests a lower valuation – in the range of 0.9 to 1.2 times the value of recurring in-vehicle travel time – is more appropriate for application to non-recurring travel time. Therefore, the benefit valuation for non-recurring travel time delay for the Plan Bay Area performance assessment was set to a value equal to the value used for recurring travel time to reflect this new research. For this sensitivity test, nonrecurring delay was valued at three times the travel time value, consistent with the *Transportation 2035* performance assessment.

Key Impacts for Specific Projects

As visible in Table F7 (included at the end of this appendix), this sensitivity test resulted in some shifting of projects within the B/C ratings and rankings:

- Three projects, SR-85 Auxiliary Lanes, Silicon Valley Express Lanes Network, and CTC Application + Alameda County Authorized Lanes Express Lanes Network, shifted from medium-high B/C rating to high with B/C ratios more than doubling the original B/C value for two of the cases. Two of these projects also realized the greatest movement in the rankings with the Silicon Valley Express Lanes project moving from a rank of 17 to 5 and CTC Application + Alameda County Authorized Lanes Express Lanes Network moving from 20 to 11.
- BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara) and SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680) also moved up in their tiering from medium-low to medium-high.
- Two of the project B/C ratings shifted downward, from medium-low to low, Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3) and Parkmerced Light Rail Corridor. The Fairfield/Vacaville station project decreased in rankings from 31 to 63. This degradation in project performance is due to both projects having substantial disbenefits from non-recurring delay.
- Dumbarton Transit Corridor (Phase 2: Commuter Rail) shifted from low to medium-low rating.

The key changes in B/C results are shown in Table F1.

TABLE F1: KEY B/C CHANGES FOR NON-RECUR. DELAY SENSITIVITY TEST

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Network	Multi-County	$408	$1,216	$70	$70	6	17	198%	17	5
Alt49	HOTe	CTC Application + Alameda County Authorized Lanes Express Lanes Network	Express Lanes Network	Multi-County	$602	$1,426	$118	$118	5	12	137%	20	11
Alt61	22009	Capitol Corridor Service	Transit Efficiency	Multi-	$1	$2	$18	$18	0.1	0.1	84%	75	75
Alt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	$20	$32	$18	$18	1	2	60%	58	43
Alt25	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Road Efficiency	Santa Clara	$81	$120	$12	$12	7	10	48%	12	12
Alt23	240062	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)	Highway Expansion	Alameda	$87	$109	$21	$21	4	5	25%	26	22
Alt74	240216	Dumbarton Transit Corridor (Phase 2: Commuter Rail)	Transit Expansion	Alameda	$31	$36	$36	$36	0.8	1	17%	62	58
Alt13	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Transit Expansion	Santa Clara	$324	$357	$70	$70	5	5	10%	23	23
Alt91	98207T	Access Improvements	Transit Efficiency	Alameda	$14	$13	$2	$2	6	6	-5%	14	20
Alt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	$6	$4	$5	$5	1	0.9	-37%	52	62
Alt56	240557	Oakdale Caltrain Station	Transit Efficiency	San	$3	$2	$1	$1	4	3	-42%	25	34
Alt51	21341	Fairfield/Vacaville Capitol	Transit Efficiency	Solano	$2	$1	$1	$1	3	0.8	-72%	31	63

Key Impacts by Project Type

Highway Expansion: B/C ratios increased nominally for all of the highway expansion projects. There were no significant changes in rankings, except for SR-239 Expressway Construction (Brentwood to Tracy) which decreased from a ranking of 11 to 15, mostly as a result of other projects improving.

Road Efficiency: B/C ratios increased moderately for road efficiency projects. The most significant improvement in ranking was for Marin-Sonoma Narrows (Phase 2: HOV Lanes) which increased in B/C from 1 to 2 and a ranking of 58 to 43.

Transit Efficiency: B/C ratio changes were mixed for transit efficiency as a result of this sensitivity test. Two projects ratings decreased from medium-low to low (Fairfield/Vacaville Capitol Corridor Station and Parkmerced Light Rail Corridor).

Transit Expansion: Impacts of the sensitivity text on transit expansion was nominal.

Adjusting Transit O&M Costs

Test Rationale

For this test, O&M costs were adjusted to reflect a ten percent reduction in projects' gross O&M costs (due to potential cost savings from MTC's Transit Sustainability

Project). Net O&M costs for these projects were then recalculated using the same farebox recovery ratios.

Key Impacts for Specific Projects

Table F8 presents the results of this adjusted transit O&M cost sensitivity test. Few projects were impacted by this test but two projects did shift in rating, BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara) and Historic Streetcar Expansion Program, improved from the medium-high to high and low to medium-low rating, respectively. The Alameda-Oakland BRT + Transit Access Improvements project improved in ranking from 14 to 11. The key changes in B/C are shown in Table F2.

TABLE F2: KEY B/C CHANGES FOR TRANSIT O&M SENSITIVITY TEST

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt13	240375	BART to San Jose/Santa Clara	Transit Expansion	Santa Clara	$324	$324	$70	$64	5	5	-8%	23	22
Alt62	22415	Historic Streetcar Expansion	Transit Efficiency	San	$9	$9	$9	$9	0.9	1	-11%	61	59
Alt91	98207T	Alameda-Oakland BRT + Transit	Transit Efficiency	Alameda	$14	$14	$2	$2	6	7	-11%	14	11
Alt63	230055	Golden Gate Ferry Service	Transit Efficiency	Multi-	$6	$6	$4	$4	1	2	-16%	53	50
Alt86	00MUNI	Muni Service Frequency	Transit Efficiency	San	$25	$25	$14	$12	2	2	-17%	43	40
Alt9	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Transit Expansion	Multi-County	$41	$41	$22	$19	2	2	-18%	41	38
Alt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	$272	$272	$220	$183	1	1	-21%	55	51

Key Impacts by Project Type

Highway Expansion: No impact.

Road Efficiency: No impact.

Transit Efficiency: The B/C ratios remained the same or had minor improvements for several of the transit efficiency projects. There were no significant changes in rankings with the most significant improvement coming from the Alameda-Oakland BRT + Transit Access Improvements project which increased from a ranking of 14 to 11.

Transit Expansion: This sensitivity test resulted in nominal improvements to transit expansion projects.

Valuing CO_2 at $178.33

Test Rationale

The value of carbon dioxide emissions in the *Transportation 2035* project assessment, conducted in 2008, was based on guidance issued in December 2007 by the United Kingdom Department for Environment, Food and Rural Affairs. For consistency with other regional plans, the current RTP performance assessment CO_2 valuation was obtained from the Bay Area Air Quality Management District (BAAQMD), and uprated for future years to reflect the additional damage caused by incremental accumulation of CO_2 over time. This sensitivity test reflects the substantially greater valuation of CO_2 developed in the United Kingdom ($178.33/metric ton), indicating how relying on a higher value of CO_2 emissions might affect B/C ratios.

Key Impacts for Specific Projects

B/C ratios and ranking changes were minimal as a result of this test, as seen in Table F9. Climate Initiatives (5-year program) resulted in a significant change with a B/C increase from 1 to 4 and a ranking increase from 50 to 27. The EV Solar Installation [BAAQMD program] also realized an improvement in rating from low to medium-low, a B/C increase from 0.8 to 2, and an increase in ranking from 64 to 43. The key changes in B/C are shown in Table F3.

TABLE F3: KEY B/C CHANGES FOR CO_2 SENSITIVITY TEST

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt100	230550	Climate Initiatives (5-year program)	Climate	Regional	$158	$431	$112	$112	1	4	172%	50	27
Alt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	$0.1	$0.4	$6	$6	0.0	0.1	163%	76	76
Alt103	240589	EV Solar Installation [BAAQMD program]	Climate	Regional	$1	$3	$2	$2	0.8	2	143%	64	43
Alt58	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Road Efficiency	Napa	$11	$10	$4	$4	3	2	-4%	32	34

Key Impacts by Project Type

Highway Expansion: The B/C impacts on the highway expansion projects were mixed with some projects slightly increasing and others decreasing. The most significant change is to the ranking of the SR-4 Bypass Completion project which decreased from 42 to 50.

Road Efficiency: Impacts were also mixed for road efficiency projects with almost no significant impact on the B/C ratios or rankings.

Transit Efficiency: All of the transit efficiency projects either remained the same or slightly improved the B/C ratio as a result of this sensitivity test.

Transit Expansion: This sensitivity test resulted in either no or nominal improvements to transit expansion projects.

Valuing Collisions at U.S. DOT Economic Values

Test Rationale

This sensitivity test involved adjusting the values of collisions to reflect those used for the U.S. DOT. Per the U.S. DOT's Treatment of the Economic Value of a Statistical Life in Departmental Analysis- 2011 Interim Adjustment memorandum dated July 2011, fatalities are valued at $6.2 million in 2011 dollars with a 1.6 percent annual growth rate. Injury and property damage only (PDO) rates are not directly provided, so the percentages of injury and PDO to fatal accidents from the Caltrans Life-Cycle Benefit-Cost Analysis - Economic Parameters 2010 were used to compute the values for injury and PDOs.

Key Impacts for Specific Projects

As shown in Table F10, this sensitivity test had virtually no impact on the B/C ratios and rankings. SR-4 Bypass Completion (SR-160 to Walnut Avenue) resulted in the most substantial change, an improvement in rankings from 42 to 39. The key changes in B/C are shown in Table F4.

TABLE F4: KEY B/C CHANGES FOR COLLISION SENSITIVITY TEST

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	$0.1	$0.3	$6	$6	0.0	0.0	101%	76	76
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-$0.1	-$0.03	$2	$2	(0.0)	(0.0)	67%	77	77
Alt73	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Highway Expansion	Contra Costa	$15	$17	$9	$9	2	2	12%	42	39
Alt49	HOTe	Express Lanes Network E	Express Lanes Network	Multi-County	$602	$594	$118	$118	5	5	-1%	20	21
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Network	Multi-County	$408	$391	$70	$70	6	6	-4%	17	18

Key Impacts by Project Type

Highway Expansion: The collision valuation sensitivity test resulted in no or very little reductions in B/C ratios for highway expansion projects.

Road Efficiency: Impacts were mixed for road efficiency projects with almost no impact on the B/C ratios or rankings.

Transit Efficiency: The transit efficiency projects either remained the same or slightly decreased the B/C ratio as a result of this sensitivity test.

Transit Expansion: This sensitivity test resulted in either no or nominal disbenefits to the B/C of the transit expansion projects.

Valuing Noise at a Higher Level

Noise benefits were valued at a level five times greater to reflect more of the health impacts associated with the projects. As there was no available literature indicating a specific higher value to use, we assumed a very significant increase noise benefit valuation to determine the maximum impact such a revision could cause. As shown in Table F11, this test resulted in almost no impacts to the B/C ratios and rankings. The key changes in B/C are shown in Table F5.

TABLE F5: KEY B/C CHANGES FOR NOISE SENSITIVITY TEST

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	$0.1	$0.2	$6	$6	0.0	0.0	19%	2	2
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-$0.1	-$0.1	$2	$2	(0.0)	(0.0)	10%	3	3

Decreasing Travel Time Valuations by 30% and 50%

Test Rationale

The value of time used in the project performance assessment is equal to one half the median wage rate of Bay Area residents. The value of travel time was reduced first by 30 percent and then by 50 percent for this sensitivity test. The 30 percent reduction is approximately equivalent to half the median post-tax wage rate of Bay Area residents. The 50 percent test reduction attempted to see how a very significant reduction in travel time benefit valuations might affect benefit-cost ratios and project rankings.

Key Impacts for Specific Projects

Tables D12 and D13 present the results of this test. This test resulted in the most significant impacts to the B/C ratios and rankings:

- In the case of the 30 percent reduction test, two high rated projects were reduced to medium-high level and ten medium-high level projects decreased to medium-low (all but two of the projects in that B/C tier). Additionally, four projects shifted from medium-low to low.

- For the 50 percent travel time reduction test, six high level projects decreased to medium-high, ten medium-high rated projects decreased to medium-low, and eight medium-low projects shifted down to low.
- The Silicon Valley Express Lanes Network project realized the greatest impact as a result of the travel time adjustments with the B/C ratio in the 50 percent test decreasing from six to one, a reduction in the rankings from 17 to 51.
- The largest improvement in ranking is for the Local Streets and Roads Capital Maintenance Needs program, which would increase from 22 to 12.

The key changes in B/C ratios are shown in Table F6; because the 50 percent reduction test impacts a greater number of total projects, this table solely focuses on the impacts of that test.

Key Impacts by Project Type

Highway Expansion: Reducing travel time valuation resulted in significant decreases in B/C for the highway expansion projects, especially under the 50 percent reduction sensitivity test. The SR-239 Expressway Construction (Brentwood to Tracy) project resulted in a reduction in B/C of 7 to 3, as well as a decrease in ranking of 11 to 15.

Road Efficiency: The roadway efficiency projects were significantly negatively impacted as a result of this sensitivity test, except the Bay Bridge Contraflow Lane which remained the same. The ITS Improvements projects in Santa Clara and San Mateo counties realized a shifting from the high rating to medium-high as a result of the 50 percent reduction in travel time valuation test.

Transit Efficiency: The transit efficiency projects were also significantly impacted by the travel time valuation sensitivity test, with benefits often decreasing by half in many of the 50 percent reduction test. The AC Transit Grand-MacArthur BRT, Irvington BART Station, and SFMTA Transit Effectiveness Projects all decreased from the high rating tier to the medium-high as a result of the 50 percent test.

Transit Expansion: This sensitivity test resulted in a mix of impacts to the B/C of the transit expansion projects with those seeing improvements being minor improvements. BART to Livermore (Phase 1) decreased from the medium-low to low rating as a result of the 50 percent test.

TABLE F6: KEY B/C CHANGES FOR TRAVEL TIME 50% SENSITIVITY TEST

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	$0.1	$2	$6	$6	0.0	0.3	1134%	76	70
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-$0.1	$0.2	$2	$2	(0.0)	0.1	316%	77	76
Alt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	$272	$188	$220	$220	1	0.9	-31%	55	56
Alt53	22062	Irvington BART Station	Transit Efficiency	Alameda	$19	$13	$2	$2	12	8	-31%	8	9
Alt54	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Transit Expansion	Alameda	$50	$33	$52	$52	1	0.6	-33%	60	62
Alt107	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Transit Expansion	Alameda	$37	$25	$29	$29	1	0.9	-33%	54	55
Alt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	$6	$4	$5	$5	1	0.9	-34%	52	53
Alt39	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Transit Expansion	Alameda	$57	$37	$153	$153	0.4	0.2	-35%	70	73
Alt67	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Transit Efficiency	Contra Costa	$12	$8	$11	$11	1	0.7	-36%	57	59
Alt83	00ACT1	AC Transit Frequent Transit Network	Transit Efficiency	Multi-County	$606	$382	$510	$510	1	0.7	-37%	56	58
Alt21	230161	Van Ness Avenue BRT	Transit Efficiency	San Francisco	$44	$27	$7	$7	6	4	-39%	16	13
Alt71	22780	AC Transit Grand-MacArthur BRT	Transit Efficiency	Alameda	$32	$18	$2	$2	18	10	-44%	4	4
Alt14	240060, 240523	US-101 Express Lanes - Whipple to County Line	Road Efficiency	Multi-County	$123	$68	$19	$19	6	4	-45%	15	14
Alt104	22274	ITS Improvements in San Mateo County	Road Efficiency	San Mateo	$56	$31	$4	$4	16	9	-45%	5	6
Alt105	240494	ITS Improvements in Santa Clara	Road	Santa Clara	$752	$413	$48	$48	16	9	-45%	5	6
Alt5	230419	Freeway Performance Initiative	FPI	Regional	$3,175	$1,745	$202	$202	16	9	-45%	5	6
Alt57	240171	SFMTA Transit Effectiveness Project	Transit Efficiency	San Francisco	$90	$47	$8	$8	11	6	-47%	9	11
Alt80	240155	Better Market Street	Transit Efficiency	San Francisco	$56	$29	$10	$10	6	3	-49%	18	22
Alt27	94506	Fremont/Union City East-West Connector	Arterial Expansion	Alameda	$65	$33	$10	$10	7	3	-49%	13	18
Alt91	98207T	Alameda-Oakland BRT + Transit Access Improvements	Transit Efficiency	Alameda	$14	$7	$2	$2	6	3	-50%	14	19
Alt44	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Highway Expansion	Santa Clara	$144	$71	$21	$21	7	3	-50%	11	15
Alt86	00MUNI	Muni Service Frequency Improvements	Transit Efficiency	San Francisco	$25	$12	$14	$14	2	0.9	-50%	43	54
Alt32	230468	I-80 Auxiliary Lanes (Airbase Parkway	Road	Solano	$18	$9	$4	$4	5	3	-51%	21	24
Alt8	22455	AC Transit East Bay BRT	Transit	Alameda	$62	$29	$12	$12	5	3	-53%	19	23
Alt49	HOTe	Express Lanes Network E	Express Lanes Network	Multi-County	$602	$235	$118	$118	5	2	-61%	20	27
Alt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	$20	$6	$18	$18	1	0.3	-70%	58	67
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Network	Multi-County	$408	$68	$70	$70	6	1	-83%	17	51

Complete Sensitivity Test Result Tables

Data tables with the complete sensitivity test results are shown on the following pages as Tables D7 through D13.

TABLE F7: NON-RECURRING DELAY SENSITIVITY TEST RESULTS

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt90	240182	BART Metro Program	Transit Efficiency	Multi-County	$161	$169	-$4	-$4	>60	>60	-	1	1
Alt93	240694	Treasure Island Congestion Pricing	Pricing	Regional	$69	$74	$1	$1	59	62	6%	2	2
Alt85	240522	Congestion Pricing Pilot	Pricing	San Francisco	$227	$233	$5	$5	45	46	2%	3	3
Alt71	22780	AC Transit Grand-MacArthur BRT	Transit Efficiency	Alameda	$32	$36	$2	$2	18	20	14%	4	4
Alt5	230419	Freeway Performance Initiative	FPI	Regional	$3,175	$3,509	$202	$202	16	17	11%	5	8
Alt104	22274	ITS Improvements in San Mateo County	Road Efficiency	San Mateo	$56	$62	$4	$4	16	17	11%	5	6
Alt105	240494	ITS Improvements in Santa Clara County	Road Efficiency	Santa Clara	$752	$831	$48	$48	16	17	11%	5	6
Alt53	22062	Irvington BART Station	Transit Efficiency	Alameda	$19	$21	$2	$2	12	14	14%	8	9
Alt57	240171	SFMTA Transit Effectiveness Project	Transit Efficiency	San Francisco	$90	$96	$8	$8	11	12	7%	9	10
Alt95	240582	Truck & Motorcycle Retirement [BAAQMD program]	Transit Efficiency	Regional	$55	$55	$6	$6	9	9	0%	10	13
Alt44	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Highway Expansion	Santa Clara	$144	$151	$21	$21	7	7	5%	11	15
Alt25	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Road Efficiency	Santa Clara	$81	$120	$12	$12	7	10	48%	12	12
Alt27	94506	Fremont/Union City East-West Connector	Arterial Expansion	Alameda	$65	$73	$10	$10	7	7	11%	13	16
Alt91	98207T	Alameda-Oakland BRT + Transit Access Improvements	Transit Efficiency	Alameda	$14	$13	$2	$2	6	6	-5%	14	20
Alt14	240060, 240523	US-101 Express Lanes - Whipple to County Line	Road Efficiency	Multi-County	$123	$162	$19	$19	6	8	32%	15	14
Alt21	230161	Van Ness Avenue BRT	Transit Efficiency	San Francisco	$44	$49	$7	$7	6	7	11%	16	17
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Netw	Multi-County	$408	$1,216	$70	$70	6	17	198%	17	5
Alt80	240155	Better Market Street	Transit Efficiency	San Francisco	$56	$69	$10	$10	6	7	23%	18	18
Alt8	22455	AC Transit East Bay BRT	Transit Efficiency	Alameda	$62	$63	$12	$12	5	5	2%	19	21
Alt49	HOTe	CTC Application + Alameda County Authorized Lanes Express Lanes Network	Express Lanes Netw	Multi-County	$602	$1,426	$118	$118	5	12	137%	20	11
Alt32	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Road Efficiency	Solano	$18	$22	$4	$4	5	6	23%	21	19
Alt96	n/a	Local Streets and Roads Capital Maintenance Needs	Maintenance	Regional	$1,369	$1,369	$280	$280	5	5	0%	22	24
Alt13	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Transit Expansion	Santa Clara	$324	$357	$70	$70	5	5	10%	23	23
Alt47	240134	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (San Francisco To Tamien)	Transit Efficiency	Multi-County	$153	$163	$34	$34	5	5	7%	24	25
Alt56	240557	Oakdale Caltrain Station	Transit Efficiency	San Francisco	$3	$2	$1	$1	4	3	-42%	25	34
Alt23	240062	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)	Highway Expansion	Alameda	$87	$109	$21	$21	4	5	25%	26	22
Alt38	230294	New SR-152 Alignment	Highway Expansion	Santa Clara	$148	$150	$41	$41	4	4	1%	27	28
Alt15	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown	Transit Expansion	Multi-County	$108	$113	$31	$31	4	4	5%	28	29
Alt97	240410	Transportation for Livable Communities	TLC	Regional	$875	$875	$255	$255	3	3	0%	29	30
Alt6	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening (Morello	Highway Expansion	Contra Costa	$65	$81	$21	$21	3	4	24%	30	26
Alt51	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Transit Efficiency	Solano	$2	$1	$1	$1	3	0.8	-72%	31	63
Alt58	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Road Efficiency	Napa	$11	$16	$4	$4	3	4	47%	32	27
Alt66	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Transit Efficiency	Multi-County	$36	$38	$15	$15	2	3	4%	33	32
Alt87	240147	Southeast Waterfront Transportation Improvements	Transit Efficiency	San Francisco	$88	$91	$36	$36	2	3	4%	34	35
Alt17	240026	SamTrans El Camino BRT	Transit Efficiency	San Mateo	$59	$65	$25	$25	2	3	11%	35	31
Alt24	240119	VTA El Camino BRT	Transit Efficiency	Santa Clara	$28	$31	$12	$12	2	3	10%	36	33
Alt77	00BART	BART Service Frequency Improvements	Transit Efficiency	Multi-County	$126	$138	$56	$56	2	2	10%	37	36
Alt84	230604	Bay Bridge Contraflow Lane	Road Efficiency	Multi-County	$67	$67	$31	$31	2	2	0%	38	38
Alt88	580_BUS	I-580 Express Bus (Dublin to Livermore)	Transit Efficiency	Alameda	$32	$35	$16	$16	2	2	10%	39	40
Alt33	240018	Dumbarton Transit Corridor (Phase 1: Express Bus)	Transit Efficiency	Alameda	$23	$25	$12	$12	2	2	12%	40	39
Alt9	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Transit Expansion	Multi-County	$41	$51	$22	$22	2	2	22%	41	37
Alt73	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Highway Expansion	Contra Costa	$15	$16	$9	$9	2	2	2%	42	42
Alt86	00MUNI	Muni Service Frequency Improvements	Transit Efficiency	San Francisco	$25	$24	$14	$14	2	2	-3%	43	45
Alt2	230164	Geary Boulevard BRT	Transit Efficiency	San Francisco	$15	$14	$9	$9	2	2	-9%	44	48
Alt75	240526	SFCTA Transit Performance Initiative	Transit Efficiency	San Francisco	$28	$30	$16	$16	2	2	6%	45	41
Alt98	22247	Regional Bikeway Network	Bike/Ped	Regional	$124	$124	$73	$73	2	2	0%	46	46
Alt106	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Transit Efficiency	Alameda	$108	$114	$65	$65	2	2	5%	47	44
Alt99	n/a	New Freedom Program	Maintenance	Regional	$3	$3	$2	$2	2	2	0%	48	47
Alt43	22268	San Mateo Countywide Shuttle Service Frequency Improvements	Transit Efficiency	San Mateo	$10	$10	$6	$6	2	2	-5%	49	50
Alt100	230550	Climate Initiatives (5-year program)	Climate	Regional	$158	$159	$112	$112	1	1	1%	50	52
Alt101	n/a	Transit Capital Maintenance Needs	Maintenance	Regional	$1,787	$1,787	$1,286	$1,286	1	1	0%	51	53
Alt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	$6	$4	$5	$5	1	0.9	-37%	52	62
Alt63	230055	Golden Gate Ferry Service Frequency Improvements	Transit Efficiency	Multi-County	$6	$7	$4	$4	1	2	15%	53	51
Alt107	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Transit Expansion	Alameda	$37	$45	$29	$29	1	2	22%	54	49
Alt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	$272	$291	$220	$220	1	1	7%	55	54
Alt83	00ACT1	AC Transit Frequent Transit Network	Transit Efficiency	Multi-County	$606	$649	$510	$510	1	1	7%	56	55
Alt67	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Transit Efficiency	Contra Costa	$12	$12	$11	$11	1	1	-1%	57	57
Alt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	$20	$32	$18	$18	1	2	60%	58	43
Alt54	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Transit Expansion	Alameda	$50	$61	$52	$52	1	1	22%	60	56
Alt102	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Climate	Regional	$42	$42	$44	$44	1	1	0%	59	59
Alt62	22415	Historic Streetcar Expansion Program	Transit Efficiency	San Francisco	$9	$8	$9	$9	0.9	0.9	-3%	61	61
Alt74	240216	Dumbarton Transit Corridor (Phase 2: Commuter Rail)	Transit Expansion	Alameda	$31	$36	$36	$36	0.8	1	17%	62	58
Alt41	240650	Sonoma Countywide Bus Service Frequency Improvements	Transit Efficiency	Sonoma	$32	$32	$41	$41	0.8	0.8	1%	63	64
Alt103	240589	EV Solar Installation [BAAQMD program]	Climate	Regional	$1	$1	$2	$2	0.8	0.8	0%	64	65
Alt16	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Transit Expansion	Multi-County	$10	$12	$13	$13	0.7	0.9	23%	65	60
Alt22	230252	Marin Countywide Bus Service Frequency Improvements	Transit Efficiency	Marin	$9	$9	$12	$12	0.7	0.7	3%	66	66
Alt40	230219, 230314	Golden Gate Bus Service Frequency Improvements	Transit Efficiency	Multi-County	$16	$16	$29	$29	0.5	0.6	3%	67	67
Alt10	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Transit Expansion	Santa Clara	$4	$3	$8	$8	0.5	0.4	-11%	68	69
Alt50	230547	Monterey Highway BRT	Transit Efficiency	Santa Clara	$15	$14	$37	$37	0.4	0.4	-5%	69	71
Alt39	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Transit Expansion	Alameda	$57	$68	$153	$153	0.4	0.4	20%	70	68
Alt30	22019	Downtown East Valley (Phase 2: LRT)	Transit Expansion	Santa Clara	$5	$4	$16	$16	0.3	0.2	-20%	71	72
Alt79	98139	ACE Expansion	Transit Efficiency	Alameda	$19	$27	$67	$67	0.3	0.4	40%	72	70
Alt52	230554	Sunnyvale-Cupertino BRT	Transit Efficiency	Santa Clara	$5	$3	$26	$26	0.2	0.1	-32%	73	74
Alt19	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Transit Expansion	Santa Clara	$3	$4	$19	$19	0.2	0.2	45%	74	73
Alt61	22009	Capitol Corridor Service Frequency Improvements (Oakland to	Transit Efficiency	Multi-County	$1	$2	$18	$18	0.1	0.1	84%	75	75
Alt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	$0.1	-$4	$6	$6	0.0	(0.5)	-2600%	76	76
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-$0.1	-$2	$2	$2	(0.0)	(1.1)	-2842%	77	77

TABLE F8: TRANSIT O&M COST SENSITIVITY TEST RESULTS

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt90	240182	BART Metro Program	Transit Efficiency	Multi-County	$161	$161	-$4	-$4	>60	>60	-	1	1
Alt93	240694	Treasure Island Congestion Pricing	Pricing	Regional	$69	$69	$1	$1	59	59	0%	2	2
Alt85	240522	Congestion Pricing Pilot	Pricing	San Francisco	$227	$227	$5	$5	45	45	0%	3	3
Alt71	22780	AC Transit Grand-MacArthur BRT	Transit Efficiency	Alameda	$32	$32	$2	$2	18	18	0%	4	4
Alt5	230419	Freeway Performance Initiative	FPI	Regional	$3,175	$3,175	$202	$202	16	16	0%	5	7
Alt104	22274	ITS Improvements in San Mateo County	Road Efficiency	San Mateo	$56	$56	$4	$4	16	16	0%	5	5
Alt105	240494	ITS Improvements in Santa Clara County	Road Efficiency	Santa Clara	$752	$752	$48	$48	16	16	0%	5	5
Alt53	22062	Irvington BART Station	Transit Efficiency	Alameda	$19	$19	$2	$2	12	12	0%	8	8
Alt57	240171	SFMTA Transit Effectiveness Project	Transit Efficiency	San Francisco	$90	$90	$8	$8	11	11	0%	9	9
Alt95	240582	Truck & Motorcycle Retirement [BAAQMD program]	Climate	Regional	$55	$55	$6	$6	9	9	0%	10	10
Alt44	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Highway Expansion	Santa Clara	$144	$144	$21	$21	7	7	0%	11	12
Alt25	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Road Efficiency	Santa Clara	$81	$81	$12	$12	7	7	0%	12	13
Alt27	94506	Fremont/Union City East-West Connector	Arterial Expansion	Alameda	$65	$65	$10	$10	7	7	0%	13	14
Alt91	98207T	Alameda-Oakland BRT + Transit Access Improvements	Transit Efficiency	Alameda	$14	$14	$2	$2	6	7	-11%	14	11
Alt14	240060, 240523	US-101 Express Lanes - Whipple to County Line	Road Efficiency	Multi-County	$123	$123	$19	$19	6	6	0%	15	15
Alt21	230161	Van Ness Avenue BRT	Transit Efficiency	San Francisco	$44	$44	$7	$7	6	6	0%	16	16
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Netw	Multi-County	$408	$408	$70	$70	6	6	0%	17	17
Alt80	240155	Better Market Street	Transit Efficiency	San Francisco	$56	$56	$10	$10	6	6	0%	18	18
Alt8	22455	AC Transit East Bay BRT	Transit Efficiency	Alameda	$62	$62	$12	$11	5	5	-1%	19	19
Alt49	HOTe	Express Lanes Network E	Express Lanes Netw	Multi-County	$602	$602	$118	$118	5	5	0%	20	20
Alt32	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Road Efficiency	Solano	$18	$18	$4	$4	5	5	0%	21	21
Alt96	n/a	Local Streets and Roads Capital Maintenance Needs	Maintenance	Regional	$1,369	$1,369	$280	$280	5	5	0%	22	23
Alt13	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Transit Expansion	Santa Clara	$324	$324	$70	$64	5	5	-8%	23	22
Alt47	240134	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (San Francisco To Tamien)	Transit Efficiency	Multi-County	$153	$153	$34	$33	5	5	-3%	24	24
Alt56	240557	Oakdale Caltrain Station	Transit Efficiency	San Francisco	$3	$3	$1	$1	4	4	0%	25	25
Alt23	240062	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)	Highway Expansion	Alameda	$87	$87	$21	$21	4	4	0%	26	26
Alt38	230294	New SR-152 Alignment	Highway Expansion	Santa Clara	$148	$148	$41	$41	4	4	0%	27	27
Alt15	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown Extension)	Transit Expansion	Multi-County	$108	$108	$31	$31	4	4	0%	28	28
Alt97	240410	Transportation for Livable Communities	TLC	Regional	$875	$875	$255	$255	3	3	0%	29	29
Alt6	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening	Highway Expansion	Contra Costa	$65	$65	$21	$21	3	3	0%	30	30
Alt51	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Transit Efficiency	Solano	$2	$2	$1	$1	3	3	0%	31	31
Alt58	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Road Efficiency	Napa	$11	$11	$4	$4	3	3	-1%	32	33
Alt66	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Transit Efficiency	Multi-County	$36	$36	$15	$14	2	3	-4%	33	35
Alt87	240147	Southeast Waterfront Transportation Improvements	Transit Efficiency	San Francisco	$88	$88	$36	$34	2	3	-7%	34	32
Alt17	240026	SamTrans El Camino BRT	Transit Efficiency	San Mateo	$59	$59	$25	$23	2	3	-10%	35	34
Alt24	240119	VTA El Camino BRT	Transit Efficiency	Santa Clara	$28	$28	$12	$12	2	2	0%	36	37
Alt77	00BART	BART Service Frequency Improvements	Transit Efficiency	Multi-County	$126	$126	$56	$52	2	2	-7%	37	36
Alt84	230604	Bay Bridge Contraflow Lane	Road Efficiency	Multi-County	$67	$67	$31	$31	2	2	0%	38	39
Alt88	580_BUS	I-580 Express Bus (Dublin to Livermore)	Transit Efficiency	Alameda	$32	$32	$16	$16	2	2	0%	39	42
Alt33	240018	Dumbarton Transit Corridor (Phase 1: Express Bus)	Transit Efficiency	Alameda	$23	$23	$12	$11	2	2	-5%	40	41
Alt9	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Transit Expansion	Multi-County	$41	$41	$22	$19	2	2	-18%	41	38
Alt73	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Highway Expansion	Contra Costa	$15	$15	$9	$9	2	2	0%	42	44
Alt86	00MUNI	Muni Service Frequency Improvements	Transit Efficiency	San Francisco	$25	$25	$14	$12	2	2	-17%	43	40
Alt2	230164	Geary Boulevard BRT	Transit Efficiency	San Francisco	$15	$15	$9	$9	2	2	0%	44	46
Alt75	240526	SFCTA Transit Performance Initiative	Transit Efficiency	San Francisco	$28	$28	$16	$16	2	2	0%	45	47
Alt98	22247	Regional Bikeway Network	Bike/Ped	Regional	$124	$124	$73	$73	2	2	0%	46	48
Alt106	240699	AC Transit Service Frequency Improvements (Restoration of	Transit Efficiency	Alameda	$108	$108	$65	$58	2	2	-11%	47	43
Alt99	n/a	New Freedom Program	Maintenance	Regional	$3	$3	$2	$2	2	2	0%	48	49
Alt43	22268	San Mateo Countywide Shuttle Service Frequency Improvements	Transit Efficiency	San Mateo	$10	$10	$6	$6	2	2	-10%	49	45
Alt100	230550	Climate Initiatives (5-year program)	Climate	Regional	$158	$158	$112	$112	1	1	0%	50	53
Alt101	n/a	Transit Capital Maintenance Needs	Maintenance	Regional	$1,787	$1,787	$1,286	$1,286	1	1	0%	51	54
Alt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	$6	$6	$5	$4	1	1	-7%	52	52
Alt63	230055	Golden Gate Ferry Service Frequency Improvements	Transit Efficiency	Multi-County	$6	$6	$4	$4	1	2	-16%	53	50
Alt107	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus	Transit Expansion	Alameda	$37	$37	$29	$28	1	1	-3%	54	56
Alt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	$272	$272	$220	$183	1	1	-21%	55	51
Alt83	00ACT1	AC Transit Frequent Transit Network	Transit Efficiency	Multi-County	$606	$606	$510	$453	1	1	-13%	56	55
Alt67	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Transit Efficiency	Contra Costa	$12	$12	$11	$10	1	1	-8%	57	57
Alt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	$20	$20	$18	$18	1	1	0%	58	58
Alt54	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Transit Expansion	Alameda	$50	$50	$52	$51	1	1	-3%	60	60
Alt102	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Climate	Regional	$42	$42	$44	$44	1	1	0%	59	61
Alt62	22415	Historic Streetcar Expansion Program	Transit Efficiency	San Francisco	$9	$9	$9	$9	0.9	1	-11%	61	59
Alt74	240216	Dumbarton Transit Corridor (Phase 2: Commuter Rail)	Transit Expansion	Alameda	$31	$31	$36	$35	0.8	0.9	-4%	62	62
Alt41	240650	Sonoma Countywide Bus Service Frequency Improvements	Transit Efficiency	Sonoma	$32	$32	$41	$40	0.8	0.8	-3%	63	64
Alt103	240589	EV Solar Installation [BAAQMD program]	Climate	Regional	$1	$1	$2	$2	0.8	0.8	0%	64	66
Alt16	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Transit Expansion	Multi-County	$10	$10	$13	$13	0.7	0.8	-4%	65	65
Alt22	230252	Marin Countywide Bus Service Frequency Improvements	Transit Efficiency	Marin	$9	$9	$12	$11	0.7	0.8	-14%	66	63
Alt40	230219, 230314	Golden Gate Bus Service Frequency Improvements	Transit Efficiency	Multi-County	$16	$16	$29	$27	0.5	0.6	-8%	67	67
Alt10	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Transit Expansion	Santa Clara	$4	$4	$8	$8	0.5	0.5	-1%	68	68
Alt50	230547	Monterey Highway BRT	Transit Efficiency	Santa Clara	$15	$15	$37	$33	0.4	0.5	-10%	69	69
Alt39	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Transit Expansion	Alameda	$57	$57	$153	$149	0.4	0.4	-3%	70	70
Alt30	22019	Downtown East Valley (Phase 2: LRT)	Transit Expansion	Santa Clara	$5	$5	$16	$15	0.3	0.3	-5%	71	71
Alt79	98139	ACE Expansion	Transit Efficiency	Alameda	$19	$19	$67	$60	0.3	0.3	-10%	72	72
Alt52	230554	Sunnyvale-Cupertino BRT	Transit Efficiency	Santa Clara	$5	$5	$26	$24	0.2	0.2	-10%	73	73
Alt19	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Transit Expansion	Santa Clara	$3	$3	$19	$18	0.2	0.2	-2%	74	74
Alt61	22009	Capitol Corridor Service Frequency Improvements (Oakland to	Transit Efficiency	Multi-County	$1	$1	$18	$18	0.1	0.1	-1%	75	75
Alt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	$0.1	$0.1	$6	$6	0.0	0.0	-2%	76	76
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-$0.1	-$0.1	$2	$2	(0.0)	(0.0)	0%	77	77

TABLE F9: CO_2 SENSITIVITY TEST RESULTS

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt90	240182	BART Metro Program	Transit Efficiency	Multi-County	$161	$163	-$4	-$4	>60	>60	-	1	1
Alt93	240694	Treasure Island Congestion Pricing	Pricing	Regional	$69	$70	$1	$1	59	60	2%	2	2
Alt85	240522	Congestion Pricing Pilot	Pricing	San Francisco	$227	$232	$5	$5	45	46	2%	3	3
Alt71	22780	AC Transit Grand-MacArthur BRT	Transit Efficiency	Alameda	$32	$33	$2	$2	18	18	3%	4	4
Alt104	22274	ITS Improvements in San Mateo County	Road Efficiency	San Mateo	$56	$61	$4	$4	16	17	8%	5	5
Alt105	240494	ITS Improvements in Santa Clara County	Road Efficiency	Santa Clara	$752	$813	$48	$48	16	17	8%	5	6
Alt5	230419	Freeway Performance Initiative	FPI	Regional	$3,175	$3,433	$202	$202	16	17	8%	5	7
Alt53	22062	Irvington BART Station	Transit Efficiency	Alameda	$19	$19	$2	$2	12	12	2%	8	8
Alt57	240171	SFMTA Transit Effectiveness Project	Transit Efficiency	San Francisco	$90	$91	$8	$8	11	12	2%	9	9
Alt95	240582	Truck & Motorcycle Retirement [BAAQMD program]	Transit Efficiency	Regional	$55	$55	$6	$6	9	9	0%	10	10
Alt44	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Highway Expansion	Santa Clara	$144	$148	$21	$21	7	7	3%	11	11
Alt25	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Road Efficiency	Santa Clara	$81	$81	$12	$12	7	7	0%	12	12
Alt27	94506	Fremont/Union City East-West Connector	Arterial Expansion	Alameda	$65	$68	$10	$10	7	7	4%	13	13
Alt91	98207T	Alameda-Oakland BRT + Transit Access Improvements	Transit Efficiency	Alameda	$14	$14	$2	$2	6	6	0%	14	14
Alt14	240060, 240523	US-101 Express Lanes - Whipple to County Line	Road Efficiency	Multi-County	$123	$123	$19	$19	6	6	0%	15	16
Alt21	230161	Van Ness Avenue BRT	Transit Efficiency	San Francisco	$44	$45	$7	$7	6	6	2%	16	15
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Netw	Multi-County	$408	$398	$70	$70	6	6	-2%	17	17
Alt80	240155	Better Market Street	Transit Efficiency	San Francisco	$56	$57	$10	$10	6	6	0%	18	18
Alt8	22455	AC Transit East Bay BRT	Transit Efficiency	Alameda	$62	$62	$12	$12	5	5	1%	19	19
Alt49	HOTe	Express Lanes Network E	Express Lanes Netw	Multi-County	$602	$597	$118	$118	5	5	-1%	20	20
Alt32	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Road Efficiency	Solano	$18	$18	$4	$4	5	5	-1%	21	21
Alt96	n/a	Local Streets and Roads Capital Maintenance Needs	Maintenance	Regional	$1,369	$1,369	$280	$280	5	5	0%	22	22
Alt13	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Transit Expansion	Santa Clara	$324	$331	$70	$70	5	5	2%	23	23
Alt47	240134	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (San Francisco To Tamien)	Transit Efficiency	Multi-County	$153	$155	$34	$34	5	5	2%	24	25
Alt56	240557	Oakdale Caltrain Station	Transit Efficiency	San Francisco	$3	$3	$1	$1	4	5	6%	25	24
Alt23	240062	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)	Highway Expansion	Alameda	$87	$89	$21	$21	4	4	3%	26	26
Alt38	230294	New SR-152 Alignment	Highway Expansion	Santa Clara	$148	$149	$41	$41	4	4	1%	27	28
Alt15	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown	Transit Expansion	Multi-County	$108	$109	$31	$31	4	4	1%	28	29
Alt97	240410	Transportation for Livable Communities	TLC	Regional	$875	$875	$255	$255	3	3	0%	29	30
Alt6	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening	Highway Expansion	Contra Costa	$65	$65	$21	$21	3	3	-1%	30	31
Alt51	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Transit Efficiency	Solano	$2	$2	$1	$1	3	3	4%	31	32
Alt58	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Road Efficiency	Napa	$11	$10	$4	$4	3	2	-4%	32	34
Alt66	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Transit Efficiency	Multi-County	$36	$37	$15	$15	2	3	3%	33	33
Alt87	240147	Southeast Waterfront Transportation Improvements	Transit Efficiency	San Francisco	$88	$89	$36	$36	2	2	1%	34	35
Alt17	240026	SamTrans El Camino BRT	Transit Efficiency	San Mateo	$59	$61	$25	$25	2	2	4%	35	36
Alt24	240119	VTA El Camino BRT	Transit Efficiency	Santa Clara	$28	$29	$12	$12	2	2	3%	36	37
Alt77	00BART	BART Service Frequency Improvements	Transit Efficiency	Multi-County	$126	$129	$56	$56	2	2	2%	37	38
Alt84	230604	Bay Bridge Contraflow Lane	Road Efficiency	Multi-County	$67	$67	$31	$31	2	2	0%	38	39
Alt88	580_BUS	I-580 Express Bus (Dublin to Livermore)	Transit Efficiency	Alameda	$32	$33	$16	$16	2	2	2%	39	40
Alt33	240018	Dumbarton Transit Corridor (Phase 1: Express Bus)	Transit Efficiency	Alameda	$23	$23	$12	$12	2	2	2%	40	41
Alt9	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Transit Expansion	Multi-County	$41	$43	$22	$22	2	2	5%	41	42
Alt73	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Highway Expansion	Contra Costa	$15	$14	$9	$9	2	2	-6%	42	50
Alt86	00MUNI	Muni Service Frequency Improvements	Transit Efficiency	San Francisco	$25	$25	$14	$14	2	2	0%	43	45
Alt2	230164	Geary Boulevard BRT	Transit Efficiency	San Francisco	$15	$15	$9	$9	2	2	2%	44	44
Alt75	240526	SFCTA Transit Performance Initiative	Transit Efficiency	San Francisco	$28	$29	$16	$16	2	2	1%	45	46
Alt98	22247	Regional Bikeway Network	Bike/Ped	Regional	$124	$124	$73	$73	2	2	0%	46	47
Alt106	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Transit Efficiency	Alameda	$108	$110	$65	$65	2	2	1%	47	49
Alt99	n/a	New Freedom Program	Maintenance	Regional	$3	$3	$2	$2	2	2	0%	48	51
Alt43	22268	San Mateo Countywide Shuttle Service Frequency Improvements	Transit Efficiency	San Mateo	$10	$11	$6	$6	2	2	3%	49	48
Alt100	230550	Climate Initiatives (5-year program)	Climate	Regional	$158	$431	$112	$112	1	4	172%	50	27
Alt101	n/a	Transit Capital Maintenance Needs	Maintenance	Regional	$1,787	$1,787	$1,286	$1,286	1	1	0%	51	53
Alt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	$6	$6	$5	$5	1	1	2%	52	52
Alt63	230055	Golden Gate Ferry Service Frequency Improvements	Transit Efficiency	Multi-County	$6	$6	$4	$4	1	1	7%	53	54
Alt107	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Transit Expansion	Alameda	$37	$38	$29	$29	1	1	4%	54	55
Alt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	$272	$278	$220	$220	1	1	2%	55	56
Alt83	00ACT1	AC Transit Frequent Transit Network	Transit Efficiency	Multi-County	$606	$615	$510	$510	1	1	1%	56	57
Alt67	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Transit Efficiency	Contra Costa	$12	$13	$11	$11	1	1	3%	57	58
Alt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	$20	$19	$18	$18	1	1	-5%	58	59
Alt54	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Transit Expansion	Alameda	$50	$52	$52	$52	1	1	4%	60	60
Alt102	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Climate	Regional	$41.80	$42	$44	$44	1	1	0%	59	61
Alt62	22415	Historic Streetcar Expansion Program	Transit Efficiency	San Francisco	$9	$9	$9	$9	0.9	0.9	2%	61	62
Alt74	240216	Dumbarton Transit Corridor (Phase 2: Commuter Rail)	Transit Expansion	Alameda	$31	$32	$36	$36	0.8	0.9	3%	62	63
Alt41	240650	Sonoma Countywide Bus Service Frequency Improvements	Transit Efficiency	Sonoma	$32	$32	$41	$41	0.8	0.8	1%	63	64
Alt103	240589	EV Solar Installation [BAAQMD program]	Climate	Regional	$1	$3	$2	$2	0.8	2	143%	64	43
Alt16	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Transit Expansion	Multi-County	$10	$10	$13	$13	0.7	0.7	2%	65	66
Alt22	230252	Marin Countywide Bus Service Frequency Improvements	Transit Efficiency	Marin	$9	$9	$12	$12	0.7	0.8	4%	66	65
Alt40	230219, 230314	Golden Gate Bus Service Frequency Improvements	Transit Efficiency	Multi-County	$16	$16	$29	$29	0.5	0.5	2%	67	67
Alt10	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Transit Expansion	Santa Clara	$4	$4	$8	$8	0.5	0.5	3%	68	68
Alt50	230547	Monterey Highway BRT	Transit Efficiency	Santa Clara	$15	$15	$37	$37	0.4	0.4	1%	69	69
Alt39	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Transit Expansion	Alameda	$57	$59	$153	$153	0.4	0.4	3%	70	70
Alt30	22019	Downtown East Valley (Phase 2: LRT)	Transit Expansion	Santa Clara	$5	$5	$16	$16	0.3	0.3	4%	71	71
Alt79	98139	ACE Expansion	Transit Efficiency	Alameda	$19	$20	$67	$67	0.3	0.3	5%	72	72
Alt52	230554	Sunnyvale-Cupertino BRT	Transit Efficiency	Santa Clara	$5	$5	$26	$26	0.2	0.2	3%	73	73
Alt19	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Transit Expansion	Santa Clara	$3	$3	$19	$19	0.2	0.2	8%	74	74
Alt61	22009	Capitol Corridor Service Frequency Improvements (Oakland to	Transit Efficiency	Multi-County	$1	$1	$18	$18	0.1	0.1	3%	75	75
Alt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	$0.1	$0.4	$6	$6	0.0	0.1	163%	76	76
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-$0.1	-$0.1	$2	$2	(0.0)	(0.0)	-11%	77	77

TABLE F10: COLLISION SENSITIVITY TEST RESULTS

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt90	240182	BART Metro Program	Transit Efficiency	Multi-County	$161	$163	-$4	-$4	>60	>60	-	1	1
Alt93	240694	Treasure Island Congestion Pricing	Pricing	Regional	$69	$70	$1	$1	59	60	2%	2	2
Alt85	240522	Congestion Pricing Pilot	Pricing	San Francisco	$227	$232	$5	$5	45	46	2%	3	3
Alt71	22780	AC Transit Grand-MacArthur BRT	Transit Efficiency	Alameda	$32	$32	$2	$2	18	18	1%	4	4
Alt104	22274	ITS Improvements in San Mateo County	Road Efficiency	San Mateo	$56	$57	$4	$4	16	16	1%	5	5
Alt105	240494	ITS Improvements in Santa Clara County	Road Efficiency	Santa Clara	$752	$763	$48	$48	16	16	1%	5	5
Alt5	230419	Freeway Performance Initiative	FPI	Regional	$3,175	$3,222	$202	$202	16	16	1%	5	7
Alt53	22062	Irvington BART Station	Transit Efficiency	Alameda	$19	$19	$2	$2	12	12	1%	8	8
Alt57	240171	SFMTA Transit Effectiveness Project	Transit Efficiency	San Francisco	$90	$90	$8	$8	11	11	1%	9	9
Alt95	240582	Truck & Motorcycle Retirement [BAAQMD program]	Transit Efficiency	Regional	$55	$55	$6	$6	9	9	0%	10	10
Alt44	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Highway Expansion	Santa Clara	$144	$145	$21	$21	7	7	1%	11	11
Alt25	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Road Efficiency	Santa Clara	$81	$81	$12	$12	7	7	0%	12	12
Alt27	94506	Fremont/Union City East-West Connector	Arterial Expansion	Alameda	$65	$66	$10	$10	7	7	1%	13	13
Alt91	98207T	Alameda-Oakland BRT + Transit Access Improvements	Transit Efficiency	Alameda	$14	$14	$2	$2	6	7	0%	14	14
Alt14	240060, 240523	US-101 Express Lanes - Whipple to County Line	Road Efficiency	Multi-County	$123	$123	$19	$19	6	6	1%	15	15
Alt21	230161	Van Ness Avenue BRT	Transit Efficiency	San Francisco	$44	$44	$7	$7	6	6	1%	16	16
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Netw	Multi-County	$408	$391	$70	$70	6	6	-4%	17	18
Alt80	240155	Better Market Street	Transit Efficiency	San Francisco	$56	$57	$10	$10	6	6	1%	18	17
Alt8	22455	AC Transit East Bay BRT	Transit Efficiency	Alameda	$62	$62	$12	$12	5	5	0%	19	19
Alt49	HOTe	Express Lanes Network E	Express Lanes Netw	Multi-County	$602	$594	$118	$118	5	5	-1%	20	21
Alt32	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Road Efficiency	Solano	$18	$18	$4	$4	5	5	2%	21	20
Alt96	n/a	Local Streets and Roads Capital Maintenance Needs	Maintenance	Regional	$1,369	$1,369	$280	$280	5	5	0%	22	22
Alt13	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Transit Expansion	Santa Clara	$324	$331	$70	$70	5	5	2%	23	23
Alt47	240134	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (San Francisco To Tamien)	Transit Efficiency	Multi-County	$153	$155	$34	$34	5	5	2%	24	24
Alt56	240557	Oakdale Caltrain Station	Transit Efficiency	San Francisco	$3	$3	$1	$1	4	5	3%	25	25
Alt23	240062	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)	Highway Expansion	Alameda	$87	$87	$21	$21	4	4	0%	26	26
Alt38	230294	New SR-152 Alignment	Highway Expansion	Santa Clara	$148	$155	$41	$41	4	4	5%	27	27
Alt15	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown	Transit Expansion	Multi-County	$108	$109	$31	$31	4	4	1%	28	28
Alt97	240410	Transportation for Livable Communities	TLC	Regional	$875	$875	$255	$255	3	3	0%	29	29
Alt6	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening	Highway Expansion	Contra Costa	$65	$65	$21	$21	3	3	0%	30	30
Alt51	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Transit Efficiency	Solano	$2	$2	$1	$1	3	3	-1%	31	31
Alt58	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Road Efficiency	Napa	$11	$11	$4	$4	3	3	5%	32	32
Alt66	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Transit Efficiency	Multi-County	$36	$36	$15	$15	2	3	1%	33	33
Alt87	240147	Southeast Waterfront Transportation Improvements	Transit Efficiency	San Francisco	$88	$89	$36	$36	2	2	1%	34	34
Alt17	240026	SamTrans El Camino BRT	Transit Efficiency	San Mateo	$59	$59	$25	$25	2	2	1%	35	36
Alt24	240119	VTA El Camino BRT	Transit Efficiency	Santa Clara	$28	$28	$12	$12	2	2	1%	36	35
Alt77	00BART	BART Service Frequency Improvements	Transit Efficiency	Multi-County	$126	$128	$56	$56	2	2	2%	37	37
Alt84	230604	Bay Bridge Contraflow Lane	Road Efficiency	Multi-County	$67	$67	$31	$31	2	2	0%	38	38
Alt88	580_BUS	I-580 Express Bus (Dublin to Livermore)	Transit Efficiency	Alameda	$32	$33	$16	$16	2	2	3%	39	40
Alt33	240018	Dumbarton Transit Corridor (Phase 1: Express Bus)	Transit Efficiency	Alameda	$23	$23	$12	$12	2	2	1%	40	41
Alt9	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Transit Expansion	Multi-County	$41	$42	$22	$22	2	2	2%	41	42
Alt73	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Highway Expansion	Contra Costa	$15	$17	$9	$9	2	2	12%	42	39
Alt86	00MUNI	Muni Service Frequency Improvements	Transit Efficiency	San Francisco	$25	$25	$14	$14	2	2	0%	43	43
Alt2	230164	Geary Boulevard BRT	Transit Efficiency	San Francisco	$15	$15	$9	$9	2	2	1%	44	44
Alt75	240526	SFCTA Transit Performance Initiative	Transit Efficiency	San Francisco	$28	$29	$16	$16	2	2	1%	45	45
Alt98	22247	Regional Bikeway Network	Bike/Ped	Regional	$124	$124	$73	$73	2	2	0%	46	46
Alt106	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Transit Efficiency	Alameda	$108	$110	$65	$65	2	2	1%	47	47
Alt99	n/a	New Freedom Program	Maintenance	Regional	$3	$3	$2	$2	2	2	0%	48	49
Alt43	22268	San Mateo Countywide Shuttle Service Frequency Improvements	Transit Efficiency	San Mateo	$10	$11	$6	$6	2	2	3%	49	48
Alt100	230550	Climate Initiatives (5-year program)	Climate	Regional	$158	$159	$112	$112	1	1	1%	50	50
Alt101	n/a	Transit Capital Maintenance Needs	Maintenance	Regional	$1,787	$1,787	$1,286	$1,286	1	1	0%	51	52
Alt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	$6	$6	$5	$5	1	1	1%	52	51
Alt63	230055	Golden Gate Ferry Service Frequency Improvements	Transit Efficiency	Multi-County	$6	$6	$4	$4	1	1	4%	53	53
Alt107	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Transit Expansion	Alameda	$37	$38	$29	$29	1	1	2%	54	54
Alt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	$272	$277	$220	$220	1	1	2%	55	55
Alt83	00ACT1	AC Transit Frequent Transit Network	Transit Efficiency	Multi-County	$606	$613	$510	$510	1	1	1%	56	56
Alt67	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Transit Efficiency	Contra Costa	$12	$12	$11	$11	1	1	2%	57	57
Alt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	$20	$19	$18	$18	1	1	-3%	58	58
Alt54	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Transit Expansion	Alameda	$50	$51	$52	$52	1	1	2%	60	59
Alt102	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Climate	Regional	$42	$42	$44	$44	1	1	0%	59	60
Alt62	22415	Historic Streetcar Expansion Program	Transit Efficiency	San Francisco	$9	$9	$9	$9	0.9	0.9	1%	61	61
Alt74	240216	Dumbarton Transit Corridor (Phase 2: Commuter Rail)	Transit Expansion	Alameda	$31	$31	$36	$36	0.8	0.9	2%	62	62
Alt41	240650	Sonoma Countywide Bus Service Frequency Improvements	Transit Efficiency	Sonoma	$32	$32	$41	$41	0.8	0.8	1%	63	63
Alt103	240589	EV Solar Installation [BAAQMD program]	Climate	Regional	$1	$1	$2	$2	0.8	0.8	0%	64	64
Alt16	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Transit Expansion	Multi-County	$10	$10	$13	$13	0.7	0.7	2%	65	66
Alt22	230252	Marin Countywide Bus Service Frequency Improvements	Transit Efficiency	Marin	$9	$9	$12	$12	0.7	0.7	3%	66	65
Alt40	230219, 230314	Golden Gate Bus Service Frequency Improvements	Transit Efficiency	Multi-County	$16	$16	$29	$29	0.5	0.5	1%	67	67
Alt10	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Transit Expansion	Santa Clara	$4	$4	$8	$8	0.5	0.5	4%	68	68
Alt50	230547	Monterey Highway BRT	Transit Efficiency	Santa Clara	$15	$15	$37	$37	0.4	0.4	1%	69	69
Alt39	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Transit Expansion	Alameda	$57	$58	$153	$153	0.4	0.4	2%	70	70
Alt30	22019	Downtown East Valley (Phase 2: LRT)	Transit Expansion	Santa Clara	$5	$5	$16	$16	0.3	0.3	3%	71	71
Alt79	98139	ACE Expansion	Transit Efficiency	Alameda	$19	$20	$67	$67	0.3	0.3	4%	72	72
Alt52	230554	Sunnyvale-Cupertino BRT	Transit Efficiency	Santa Clara	$5	$5	$26	$26	0.2	0.2	0%	73	73
Alt19	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Transit Expansion	Santa Clara	$3	$3	$19	$19	0.2	0.2	6%	74	74
Alt61	22009	Capitol Corridor Service Frequency Improvements (Oakland to	Transit Efficiency	Multi-County	$1	$1	$18	$18	0.1	0.1	-3%	75	75
Alt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	$0.1	$0.3	$6	$6	0.0	0.0	101%	76	76
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-$0.1	-$0.03	$2	$2	(0.0)	(0.0)	67%	77	77

TABLE F11: NOISE SENSITIVITY TEST RESULTS

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt90	240182	BART Metro Program	Transit Efficiency	Multi-County	$161	$162	-$4	-$4	>60	>60	-	1	1
Alt93	240694	Treasure Island Congestion Pricing	Pricing	Regional	$69	$69	$1	$1	59	59	0%	2	2
Alt85	240522	Congestion Pricing Pilot	Pricing	San Francisco	$227	$228	$5	$5	45	45	0%	3	3
Alt71	22780	AC Transit Grand-MacArthur BRT	Transit Efficiency	Alameda	$32	$32	$2	$2	18	18	0%	4	4
Alt104	22274	ITS Improvements in San Mateo County	Road Efficiency	San Mateo	$56	$56	$4	$4	16	16	0%	5	5
Alt105	240494	ITS Improvements in Santa Clara County	Road Efficiency	Santa Clara	$752	$752	$48	$48	16	16	0%	5	5
Alt5	230419	Freeway Performance Initiative	FPI	Regional	$3,175	$3,175	$202	$202	16	16	0%	5	7
Alt53	22062	Irvington BART Station	Transit Efficiency	Alameda	$19	$19	$2	$2	12	12	0%	8	8
Alt57	240171	SFMTA Transit Effectiveness Project	Transit Efficiency	San Francisco	$90	$90	$8	$8	11	11	0%	9	9
Alt95	240582	Truck & Motorcycle Retirement [BAAQMD program]	Transit Efficiency	Regional	$55	$55	$6	$6	9	9	0%	10	10
Alt44	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Highway Expansion	Santa Clara	$144	$144	$21	$21	7	7	0%	11	11
Alt25	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Road Efficiency	Santa Clara	$81	$81	$12	$12	7	7	0%	12	12
Alt27	94506	Fremont/Union City East-West Connector	Arterial Expansion	Alameda	$65	$65	$10	$10	7	7	0%	13	13
Alt91	98207T	Alameda-Oakland BRT + Transit Access Improvements	Transit Efficiency	Alameda	$14	$14	$2	$2	6	7	0%	14	14
Alt14	240060, 240523	US-101 Express Lanes - Whipple to County Line	Road Efficiency	Multi-County	$123	$123	$19	$19	6	6	0%	15	15
Alt21	230161	Van Ness Avenue BRT	Transit Efficiency	San Francisco	$44	$44	$7	$7	6	6	0%	16	16
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Netw	Multi-County	$408	$403	$70	$70	6	6	-1%	17	17
Alt80	240155	Better Market Street	Transit Efficiency	San Francisco	$56	$57	$10	$10	6	6	0%	18	18
Alt8	22455	AC Transit East Bay BRT	Transit Efficiency	Alameda	$62	$62	$12	$12	5	5	0%	19	19
Alt49	HOTe	Express Lanes Network E	Express Lanes Netw	Multi-County	$602	$599	$118	$118	5	5	0%	20	21
Alt32	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Road Efficiency	Solano	$18	$18	$4	$4	5	5	0%	21	20
Alt96	n/a	Local Streets and Roads Capital Maintenance Needs	Maintenance	Regional	$1,369	$1,369	$280	$280	5	5	0%	22	22
Alt13	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Transit Expansion	Santa Clara	$324	$325	$70	$70	5	5	0%	23	23
Alt47	240134	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (San Francisco To Tamien)	Transit Efficiency	Multi-County	$153	$153	$34	$34	5	5	0%	24	24
Alt56	240557	Oakdale Caltrain Station	Transit Efficiency	San Francisco	$3	$3	$1	$1	4	4	1%	25	25
Alt23	240062	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)	Highway Expansion	Alameda	$87	$87	$21	$21	4	4	0%	26	26
Alt38	230294	New SR-152 Alignment	Highway Expansion	Santa Clara	$148	$148	$41	$41	4	4	0%	27	27
Alt15	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown	Transit Expansion	Multi-County	$108	$108	$31	$31	4	4	0%	28	28
Alt97	240410	Transportation for Livable Communities	TLC	Regional	$875	$875	$255	$255	3	3	0%	29	29
Alt6	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening	Highway Expansion	Contra Costa	$65	$65	$21	$21	3	3	0%	30	30
Alt51	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Transit Efficiency	Solano	$2	$2	$1	$1	3	3	-1%	31	31
Alt58	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Road Efficiency	Napa	$11	$11	$4	$4	3	3	0%	32	32
Alt66	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Transit Efficiency	Multi-County	$36	$36	$15	$15	2	2	0%	33	33
Alt87	240147	Southeast Waterfront Transportation Improvements	Transit Efficiency	San Francisco	$88	$88	$36	$36	2	2	0%	34	34
Alt17	240026	SamTrans El Camino BRT	Transit Efficiency	San Mateo	$59	$59	$25	$25	2	2	0%	35	35
Alt24	240119	VTA El Camino BRT	Transit Efficiency	Santa Clara	$28	$28	$12	$12	2	2	0%	36	36
Alt77	00BART	BART Service Frequency Improvements	Transit Efficiency	Multi-County	$126	$126	$56	$56	2	2	0%	37	37
Alt84	230604	Bay Bridge Contraflow Lane	Road Efficiency	Multi-County	$67	$67	$31	$31	2	2	0%	38	38
Alt88	580_BUS	I-580 Express Bus (Dublin to Livermore)	Transit Efficiency	Alameda	$32	$32	$16	$16	2	2	1%	39	39
Alt33	240018	Dumbarton Transit Corridor (Phase 1: Express Bus)	Transit Efficiency	Alameda	$23	$23	$12	$12	2	2	0%	40	40
Alt9	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Transit Expansion	Multi-County	$41	$42	$22	$22	2	2	1%	41	41
Alt73	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Highway Expansion	Contra Costa	$15	$16	$9	$9	2	2	0%	42	42
Alt86	00MUNI	Muni Service Frequency Improvements	Transit Efficiency	San Francisco	$25	$25	$14	$14	2	2	0%	43	43
Alt2	230164	Geary Boulevard BRT	Transit Efficiency	San Francisco	$15	$15	$9	$9	2	2	0%	44	44
Alt75	240526	SFCTA Transit Performance Initiative	Transit Efficiency	San Francisco	$28	$28	$16	$16	2	2	0%	45	45
Alt98	22247	Regional Bikeway Network	Bike/Ped	Regional	$124	$124	$73	$73	2	2	0%	46	46
Alt106	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Transit Efficiency	Alameda	$108	$109	$65	$65	2	2	0%	47	47
Alt99	n/a	New Freedom Program	Maintenance	Regional	$3	$3	$2	$2	2	2	0%	48	48
Alt43	22268	San Mateo Countywide Shuttle Service Frequency Improvements	Transit Efficiency	San Mateo	$10	$10	$6	$6	2	2	1%	49	49
Alt100	230550	Climate Initiatives (5-year program)	Climate	Regional	$158	$158	$112	$112	1	1	0%	50	50
Alt101	n/a	Transit Capital Maintenance Needs	Maintenance	Regional	$1,787	$1,787	$1,286	$1,286	1	1	0%	51	51
Alt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	$6	$6	$5	$5	1	1	0%	52	52
Alt63	230055	Golden Gate Ferry Service Frequency Improvements	Transit Efficiency	Multi-County	$6	$6	$4	$4	1	1	1%	53	53
Alt107	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Transit Expansion	Alameda	$37	$37	$29	$29	1	1	1%	54	54
Alt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	$272	$273	$220	$220	1	1	0%	55	55
Alt83	00ACT1	AC Transit Frequent Transit Network	Transit Efficiency	Multi-County	$606	$607	$510	$510	1	1	0%	56	56
Alt67	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Transit Efficiency	Contra Costa	$12	$12	$11	$11	1	1	0%	57	57
Alt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	$20	$20	$18	$18	1	1	-1%	58	58
Alt54	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Transit Expansion	Alameda	$50	$50	$52	$52	1	1	1%	60	59
Alt102	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Climate	Regional	$42	$42	$44	$44	1	1	0%	59	60
Alt62	22415	Historic Streetcar Expansion Program	Transit Efficiency	San Francisco	$9	$9	$9	$9	0.9	0.9	0%	61	61
Alt74	240216	Dumbarton Transit Corridor (Phase 2: Commuter Rail)	Transit Expansion	Alameda	$31	$31	$36	$36	0.8	0.9	1%	62	62
Alt41	240650	Sonoma Countywide Bus Service Frequency Improvements	Transit Efficiency	Sonoma	$32	$32	$41	$41	0.8	0.8	0%	63	63
Alt103	240589	EV Solar Installation [BAAQMD program]	Climate	Regional	$1	$1	$2	$2	0.8	0.8	0%	64	64
Alt16	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Transit Expansion	Multi-County	$10	$10	$13	$13	0.7	0.7	1%	65	65
Alt22	230252	Marin Countywide Bus Service Frequency Improvements	Transit Efficiency	Marin	$9	$9	$12	$12	0.7	0.7	1%	66	66
Alt40	230219, 230314	Golden Gate Bus Service Frequency Improvements	Transit Efficiency	Multi-County	$16	$16	$29	$29	0.5	0.5	0%	67	67
Alt10	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Transit Expansion	Santa Clara	$4	$4	$8	$8	0.5	0.5	1%	68	68
Alt50	230547	Monterey Highway BRT	Transit Efficiency	Santa Clara	$15	$15	$37	$37	0.4	0.4	0%	69	69
Alt39	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Transit Expansion	Alameda	$57	$57	$153	$153	0.4	0.4	0%	70	70
Alt30	22019	Downtown East Valley (Phase 2: LRT)	Transit Expansion	Santa Clara	$5	$5	$16	$16	0.3	0.3	1%	71	71
Alt79	98139	ACE Expansion	Transit Efficiency	Alameda	$19	$19	$67	$67	0.3	0.3	1%	72	72
Alt52	230554	Sunnyvale-Cupertino BRT	Transit Efficiency	Santa Clara	$5	$5	$26	$26	0.2	0.2	0%	73	73
Alt19	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Transit Expansion	Santa Clara	$3	$3	$19	$19	0.2	0.2	2%	74	74
Alt61	22009	Capitol Corridor Service Frequency Improvements (Oakland to	Transit Efficiency	Multi-County	$1	$1	$18	$18	0.1	0.1	-1%	75	75
Alt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	$0.1	$0.2	$6	$6	0.0	0.0	19%	76	76
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-$0.1	-$0.1	$2	$2	(0.0)	(0.0)	10%	77	77

TABLE F12: TRAVEL TIME SENSITIVITY TEST RESULTS (-30% VALUATION)

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt90	240182	BART Metro Program	Transit Efficiency	Multi-County	$161	$122	-$4	-$4	>60	>60	-	1	1
Alt93	240694	Treasure Island Congestion Pricing	Pricing	Regional	$69	$57	$1	$1	59	49	-17%	2	2
Alt85	240522	Congestion Pricing Pilot	Pricing	San Francisco	$227	$206	$5	$5	45	40	-10%	3	3
Alt71	22780	AC Transit Grand-MacArthur BRT	Transit Efficiency	Alameda	$32	$23	$2	$2	18	13	-26%	4	4
Alt104	22274	ITS Improvements in San Mateo County	Road Efficiency	San Mateo	$56	$41	$4	$4	16	11	-27%	5	5
Alt105	240494	ITS Improvements in Santa Clara County	Road Efficiency	Santa Clara	$752	$549	$48	$48	16	11	-27%	5	6
Alt5	230419	Freeway Performance Initiative	FPI	Regional	$3,175	$2,317	$202	$202	16	11	-27%	5	7
Alt53	22062	Irvington BART Station	Transit Efficiency	Alameda	$19	$15	$2	$2	12	10	-19%	8	8
Alt57	240171	SFMTA Transit Effectiveness Project	Transit Efficiency	San Francisco	$90	$64	$8	$8	11	8	-28%	9	10
Alt95	240582	Truck & Motorcycle Retirement [BAAQMD program]	Transit Efficiency	Regional	$55	$55	$6	$6	9	9	0%	10	9
Alt44	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Highway Expansion	Santa Clara	$144	$100	$21	$21	7	5	-30%	11	13
Alt25	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Road Efficiency	Santa Clara	$81	$75	$12	$12	7	6	-7%	12	11
Alt27	94506	Fremont/Union City East-West Connector	Arterial Expansion	Alameda	$65	$46	$10	$10	7	5	-30%	13	16
Alt91	98207T	Alameda-Oakland BRT + Transit Access Improvements	Transit Efficiency	Alameda	$14	$9	$2	$2	6	5	-30%	14	17
Alt14	240060, 240523	US-101 Express Lanes - Whipple to County Line	Road Efficiency	Multi-County	$123	$90	$19	$19	6	5	-27%	15	15
Alt21	230161	Van Ness Avenue BRT	Transit Efficiency	San Francisco	$44	$34	$7	$7	6	5	-24%	16	14
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Netw	Multi-County	$408	$204	$70	$70	6	3	-50%	17	26
Alt80	240155	Better Market Street	Transit Efficiency	San Francisco	$56	$40	$10	$10	6	4	-29%	18	18
Alt8	22455	AC Transit East Bay BRT	Transit Efficiency	Alameda	$62	$42	$12	$12	5	4	-32%	19	21
Alt49	HOTe	Express Lanes Network E	Express Lanes Netw	Multi-County	$602	$382	$118	$118	5	3	-37%	20	25
Alt32	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Road Efficiency	Solano	$18	$13	$4	$4	5	4	-30%	21	23
Alt96	n/a	Local Streets and Roads Capital Maintenance Needs	Maintenance	Regional	$1,369	$1,369	$280	$280	5	5	0%	22	12
Alt13	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Transit Expansion	Santa Clara	$324	$261	$70	$70	5	4	-19%	23	20
Alt47	240134	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (San Francisco To Tamien)	Transit Efficiency	Multi-County	$153	$124	$34	$34	5	4	-19%	24	22
Alt56	240557	Oakdale Caltrain Station	Transit Efficiency	San Francisco	$3	$2	$1	$1	4	4	-14%	25	19
Alt23	240062	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)	Highway Expansion	Alameda	$87	$59	$21	$21	4	3	-32%	26	27
Alt38	230294	New SR-152 Alignment	Highway Expansion	Santa Clara	$148	$107	$41	$41	4	3	-28%	27	28
Alt15	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown	Transit Expansion	Multi-County	$108	$80	$31	$31	4	3	-26%	28	29
Alt97	240410	Transportation for Livable Communities	TLC	Regional	$875	$875	$255	$255	3	3	0%	29	24
Alt6	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening	Highway Expansion	Contra Costa	$65	$44	$21	$21	3	2	-33%	30	31
Alt51	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Transit Efficiency	Solano	$2	$1	$1	$1	3	2	-30%	31	32
Alt58	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Road Efficiency	Napa	$11	$9	$4	$4	3	2	-22%	32	33
Alt66	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Transit Efficiency	Multi-County	$36	$27	$15	$15	2	2	-26%	33	35
Alt87	240147	Southeast Waterfront Transportation Improvements	Transit Efficiency	San Francisco	$88	$65	$36	$36	2	2	-26%	34	37
Alt17	240026	SamTrans El Camino BRT	Transit Efficiency	San Mateo	$59	$46	$25	$25	2	2	-23%	35	36
Alt24	240119	VTA El Camino BRT	Transit Efficiency	Santa Clara	$28	$23	$12	$12	2	2	-19%	36	34
Alt77	00BART	BART Service Frequency Improvements	Transit Efficiency	Multi-County	$126	$98	$56	$56	2	2	-22%	37	38
Alt84	230604	Bay Bridge Contraflow Lane	Road Efficiency	Multi-County	$67	$67	$31	$31	2	2	0%	38	30
Alt88	580_BUS	I-580 Express Bus (Dublin to Livermore)	Transit Efficiency	Alameda	$32	$26	$16	$16	2	2	-19%	39	42
Alt33	240018	Dumbarton Transit Corridor (Phase 1: Express Bus)	Transit Efficiency	Alameda	$23	$17	$12	$12	2	1	-24%	40	44
Alt9	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Transit Expansion	Multi-County	$41	$35	$22	$22	2	2	-14%	41	41
Alt73	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Highway Expansion	Contra Costa	$15	$13	$9	$9	2	1	-19%	42	45
Alt86	00MUNI	Muni Service Frequency Improvements	Transit Efficiency	San Francisco	$25	$17	$14	$14	2	1	-30%	43	52
Alt2	230164	Geary Boulevard BRT	Transit Efficiency	San Francisco	$15	$12	$9	$9	2	1	-23%	44	48
Alt75	240526	SFCTA Transit Performance Initiative	Transit Efficiency	San Francisco	$28	$22	$16	$16	2	1	-22%	45	49
Alt98	22247	Regional Bikeway Network	Bike/Ped	Regional	$124	$124	$73	$73	2	2	0%	46	39
Alt106	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Transit Efficiency	Alameda	$108	$82	$65	$65	2	1	-25%	47	51
Alt99	n/a	New Freedom Program	Maintenance	Regional	$3	$3	$2	$2	2	2	0%	48	40
Alt43	22268	San Mateo Countywide Shuttle Service Frequency Improvements	Transit Efficiency	San Mateo	$10	$9	$6	$6	2	1	-9%	49	43
Alt100	230550	Climate Initiatives (5-year program)	Climate	Regional	$158	$153	$112	$112	1	1	-3%	50	47
Alt101	n/a	Transit Capital Maintenance Needs	Maintenance	Regional	$1,787	$1,787	$1,286	$1,286	1	1	0%	51	46
Alt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	$6	$5	$5	$5	1	1	-20%	52	53
Alt63	230055	Golden Gate Ferry Service Frequency Improvements	Transit Efficiency	Multi-County	$6	$6	$4	$4	1	1	2%	53	50
Alt107	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Transit Expansion	Alameda	$37	$30	$29	$29	1	1	-20%	54	54
Alt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	$272	$221	$220	$220	1	1	-19%	55	55
Alt83	00ACT1	AC Transit Frequent Transit Network	Transit Efficiency	Multi-County	$606	$472	$510	$510	1	0.9	-22%	56	57
Alt67	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Transit Efficiency	Contra Costa	$12	$10	$11	$11	1	0.9	-22%	57	58
Alt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	$20	$12	$18	$18	1	0.7	-42%	58	64
Alt54	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Transit Expansion	Alameda	$50	$40	$52	$52	1	0.8	-20%	60	60
Alt102	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Climate	Regional	$42	$42	$44	$44	1	1	0%	59	56
Alt62	22415	Historic Streetcar Expansion Program	Transit Efficiency	San Francisco	$9	$7	$9	$9	0.9	0.8	-16%	61	59
Alt74	240216	Dumbarton Transit Corridor (Phase 2: Commuter Rail)	Transit Expansion	Alameda	$31	$25	$36	$36	0.8	0.7	-18%	62	63
Alt41	240650	Sonoma Countywide Bus Service Frequency Improvements	Transit Efficiency	Sonoma	$32	$26	$41	$41	0.8	0.6	-18%	63	65
Alt103	240589	EV Solar Installation [BAAQMD program]	Climate	Regional	$1	$1	$2	$2	0.8	0.8	0%	64	61
Alt16	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Transit Expansion	Multi-County	$10	$8	$13	$13	0.7	0.6	-19%	65	66
Alt22	230252	Marin Countywide Bus Service Frequency Improvements	Transit Efficiency	Marin	$9	$9	$12	$12	0.7	0.7	-3%	66	62
Alt40	230219, 230314	Golden Gate Bus Service Frequency Improvements	Transit Efficiency	Multi-County	$16	$12	$29	$29	0.5	0.4	-23%	67	68
Alt10	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Transit Expansion	Santa Clara	$4	$4	$8	$8	0.5	0.5	9%	68	67
Alt50	230547	Monterey Highway BRT	Transit Efficiency	Santa Clara	$15	$11	$37	$37	0.4	0.3	-24%	69	69
Alt39	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Transit Expansion	Alameda	$57	$45	$153	$153	0.4	0.3	-21%	70	71
Alt30	22019	Downtown East Valley (Phase 2: LRT)	Transit Expansion	Santa Clara	$5	$5	$16	$16	0.3	0.3	-2%	71	70
Alt79	98139	ACE Expansion	Transit Efficiency	Alameda	$19	$16	$67	$67	0.3	0.2	-14%	72	72
Alt52	230554	Sunnyvale-Cupertino BRT	Transit Efficiency	Santa Clara	$5	$4	$26	$26	0.2	0.2	-15%	73	75
Alt19	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Transit Expansion	Santa Clara	$3	$4	$19	$19	0.2	0.2	41%	74	73
Alt61	22009	Capitol Corridor Service Frequency Improvements (Oakland to	Transit Efficiency	Multi-County	$1	$1	$18	$18	0.1	0.0	-36%	75	76
Alt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	$0.1	$1	$6	$6	0.0	0.2	681%	76	74
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-$0.1	$0.1	$2	$2	(0.0)	0.0	190%	77	77

TABLE F13: TRAVEL TIME SENSITIVITY TEST RESULTS (-50% VALUATION)

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt90	240182	BART Metro Program	Transit Efficiency	Multi-County	$161	$95	-$4	-$4	>60	>60	-	1	1
Alt93	240694	Treasure Island Congestion Pricing	Pricing	Regional	$69	$49	$1	$1	59	42	-29%	2	2
Alt85	240522	Congestion Pricing Pilot	Pricing	San Francisco	$227	$191	$5	$5	45	38	-16%	3	3
Alt71	22780	AC Transit Grand-MacArthur BRT	Transit Efficiency	Alameda	$32	$18	$2	$2	18	10	-44%	4	4
Alt104	22274	ITS Improvements in San Mateo County	Road Efficiency	San Mateo	$56	$31	$4	$4	16	9	-45%	5	6
Alt105	240494	ITS Improvements in Santa Clara County	Road Efficiency	Santa Clara	$752	$413	$48	$48	16	9	-45%	5	6
Alt5	230419	Freeway Performance Initiative	FPI	Regional	$3,175	$1,745	$202	$202	16	9	-45%	5	6
Alt53	22062	Irvington BART Station	Transit Efficiency	Alameda	$19	$13	$2	$2	12	8	-31%	8	9
Alt57	240171	SFMTA Transit Effectiveness Project	Transit Efficiency	San Francisco	$90	$47	$8	$8	11	6	-47%	9	11
Alt95	240582	Truck & Motorcycle Retirement [BAAQMD program]	Transit Efficiency	Regional	$55	$55	$6	$6	9	9	0%	10	5
Alt44	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Highway Expansion	Santa Clara	$144	$71	$21	$21	7	3	-50%	11	15
Alt25	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Road Efficiency	Santa Clara	$81	$71	$12	$12	7	6	-12%	12	10
Alt27	94506	Fremont/Union City East-West Connector	Arterial Expansion	Alameda	$65	$33	$10	$10	7	3	-49%	13	18
Alt91	98207T	Alameda-Oakland BRT + Transit Access Improvements	Transit Efficiency	Alameda	$14	$7	$2	$2	6	3	-50%	14	19
Alt14	240060, 240523	US-101 Express Lanes - Whipple to County Line	Road Efficiency	Multi-County	$123	$68	$19	$19	6	4	-45%	15	14
Alt21	230161	Van Ness Avenue BRT	Transit Efficiency	San Francisco	$44	$27	$7	$7	6	4	-39%	16	13
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Netw	Multi-County	$408	$68	$70	$70	6	1	-83%	17	51
Alt80	240155	Better Market Street	Transit Efficiency	San Francisco	$56	$29	$10	$10	6	3	-49%	18	22
Alt8	22455	AC Transit East Bay BRT	Transit Efficiency	Alameda	$62	$29	$12	$12	5	3	-53%	19	23
Alt49	HOTe	Express Lanes Network E	Express Lanes Netw	Multi-County	$602	$235	$118	$118	5	2	-61%	20	27
Alt32	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Road Efficiency	Solano	$18	$9	$4	$4	5	3	-51%	21	24
Alt96	n/a	Local Streets and Roads Capital Maintenance Needs	Maintenance	Regional	$1,369	$1,369	$280	$280	5	5	0%	22	12
Alt13	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Transit Expansion	Santa Clara	$324	$220	$70	$70	5	3	-32%	23	20
Alt47	240134	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (San Francisco To Tamien)	Transit Efficiency	Multi-County	$153	$105	$34	$34	5	3	-31%	24	21
Alt56	240557	Oakdale Caltrain Station	Transit Efficiency	San Francisco	$3	$2	$1	$1	4	3	-23%	25	17
Alt23	240062	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)	Highway Expansion	Alameda	$87	$40	$21	$21	4	2	-54%	26	29
Alt38	230294	New SR-152 Alignment	Highway Expansion	Santa Clara	$148	$80	$41	$41	4	2	-46%	27	28
Alt15	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown	Transit Expansion	Multi-County	$108	$61	$31	$31	4	2	-43%	28	26
Alt97	240410	Transportation for Livable Communities	TLC	Regional	$875	$875	$255	$255	3	3	0%	29	16
Alt6	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening	Highway Expansion	Contra Costa	$65	$29	$21	$21	3	1	-55%	30	40
Alt51	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Transit Efficiency	Solano	$2	$1	$1	$1	3	1	-51%	31	35
Alt58	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Road Efficiency	Napa	$11	$7	$4	$4	3	2	-36%	32	32
Alt66	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Transit Efficiency	Multi-County	$36	$21	$15	$15	2	1	-43%	33	38
Alt87	240147	Southeast Waterfront Transportation Improvements	Transit Efficiency	San Francisco	$88	$50	$36	$36	2	1	-44%	34	42
Alt17	240026	SamTrans El Camino BRT	Transit Efficiency	San Mateo	$59	$37	$25	$25	2	1	-38%	35	34
Alt24	240119	VTA El Camino BRT	Transit Efficiency	Santa Clara	$28	$19	$12	$12	2	2	-31%	36	33
Alt77	00BART	BART Service Frequency Improvements	Transit Efficiency	Multi-County	$126	$80	$56	$56	2	1	-37%	37	36
Alt84	230604	Bay Bridge Contraflow Lane	Road Efficiency	Multi-County	$67	$67	$31	$31	2	2	0%	38	25
Alt88	580_BUS	I-580 Express Bus (Dublin to Livermore)	Transit Efficiency	Alameda	$32	$22	$16	$16	2	1	-31%	39	45
Alt33	240018	Dumbarton Transit Corridor (Phase 1: Express Bus)	Transit Efficiency	Alameda	$23	$14	$12	$12	2	1	-40%	40	47
Alt9	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Transit Expansion	Multi-County	$41	$32	$22	$22	2	1	-24%	41	37
Alt73	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Highway Expansion	Contra Costa	$15	$11	$9	$9	2	1	-31%	42	46
Alt86	00MUNI	Muni Service Frequency Improvements	Transit Efficiency	San Francisco	$25	$12	$14	$14	2	0.9	-50%	43	54
Alt2	230164	Geary Boulevard BRT	Transit Efficiency	San Francisco	$15	$9	$9	$9	2	1	-38%	44	49
Alt75	240526	SFCTA Transit Performance Initiative	Transit Efficiency	San Francisco	$28	$18	$16	$16	2	1	-37%	45	48
Alt98	22247	Regional Bikeway Network	Bike/Ped	Regional	$124	$124	$73	$73	2	2	0%	46	30
Alt106	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Transit Efficiency	Alameda	$108	$64	$65	$65	2	1	-41%	47	50
Alt99	n/a	New Freedom Program	Maintenance	Regional	$3	$3	$2	$2	2	2	0%	48	31
Alt43	22268	San Mateo Countywide Shuttle Service Frequency Improvements	Transit Efficiency	San Mateo	$10	$9	$6	$6	2	1	-15%	49	39
Alt100	230550	Climate Initiatives (5-year program)	Climate	Regional	$158	$150	$112	$112	1	1	-5%	50	44
Alt101	n/a	Transit Capital Maintenance Needs	Maintenance	Regional	$1,787	$1,787	$1,286	$1,286	1	1	0%	51	41
Alt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	$6	$4	$5	$5	1	0.9	-34%	52	53
Alt63	230055	Golden Gate Ferry Service Frequency Improvements	Transit Efficiency	Multi-County	$6	$6	$4	$4	1	1	3%	53	43
Alt107	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Transit Expansion	Alameda	$37	$25	$29	$29	1	0.9	-33%	54	55
Alt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	$272	$188	$220	$220	1	0.9	-31%	55	56
Alt83	00ACT1	AC Transit Frequent Transit Network	Transit Efficiency	Multi-County	$606	$382	$510	$510	1	0.7	-37%	56	58
Alt67	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Transit Efficiency	Contra Costa	$12	$8	$11	$11	1	0.7	-36%	57	59
Alt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	$20	$6	$18	$18	1	0.3	-70%	58	67
Alt54	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Transit Expansion	Alameda	$50	$33	$52	$52	1	0.6	-33%	60	62
Alt102	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Climate	Regional	$42	$42	$44	$44	1	1	0%	59	52
Alt62	22415	Historic Streetcar Expansion Program	Transit Efficiency	San Francisco	$9	$6	$9	$9	0.9	0.7	-26%	61	61
Alt74	240216	Dumbarton Transit Corridor (Phase 2: Commuter Rail)	Transit Expansion	Alameda	$31	$21	$36	$36	0.8	0.6	-30%	62	63
Alt41	240650	Sonoma Countywide Bus Service Frequency Improvements	Transit Efficiency	Sonoma	$32	$23	$41	$41	0.8	0.6	-29%	63	64
Alt103	240589	EV Solar Installation [BAAQMD program]	Climate	Regional	$1	$1	$2	$2	0.8	0.8	0%	64	57
Alt16	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Transit Expansion	Multi-County	$10	$7	$13	$13	0.7	0.5	-32%	65	66
Alt22	230252	Marin Countywide Bus Service Frequency Improvements	Transit Efficiency	Marin	$9	$8	$12	$12	0.7	0.7	-6%	66	60
Alt40	230219, 230314	Golden Gate Bus Service Frequency Improvements	Transit Efficiency	Multi-County	$16	$10	$29	$29	0.5	0.3	-38%	67	68
Alt10	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Transit Expansion	Santa Clara	$4	$4	$8	$8	0.5	0.5	15%	68	65
Alt50	230547	Monterey Highway BRT	Transit Efficiency	Santa Clara	$15	$9	$37	$37	0.4	0.2	-40%	69	72
Alt39	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Transit Expansion	Alameda	$57	$37	$153	$153	0.4	0.2	-35%	70	73
Alt30	22019	Downtown East Valley (Phase 2: LRT)	Transit Expansion	Santa Clara	$5	$5	$16	$16	0.3	0.3	-4%	71	69
Alt79	98139	ACE Expansion	Transit Efficiency	Alameda	$19	$15	$67	$67	0.3	0.2	-24%	72	74
Alt52	230554	Sunnyvale-Cupertino BRT	Transit Efficiency	Santa Clara	$5	$4	$26	$26	0.2	0.1	-26%	73	75
Alt19	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Transit Expansion	Santa Clara	$3	$5	$19	$19	0.2	0.3	68%	74	71
Alt61	22009	Capitol Corridor Service Frequency Improvements (Oakland to	Transit Efficiency	Multi-County	$1	$0.4	$18	$18	0.1	0.0	-59%	75	77
Alt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	$0.1	$2	$6	$6	0.0	0.3	1134%	76	70
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-$0.1	$0.2	$2	$2	(0.0)	0.1	316%	77	76

APPENDIX G: Project Performance Assessment Equity Considerations Documentation

By relying on the targets assessment, this analysis highlights equity considerations contained in the overall performance assessment, while at the same time looking at projects from a geographical perspective. Projects were identified as serving a community of concern if they were located in a community of concern and if they provided an access point for residents (e.g. train station, freeway on-ramp, etc.).

Three of the ten Plan Bay Area performance targets were used to calculate a project's Equity Targets Score:

- Adequate Housing
- Particulate Matter in CARE Communities
- Low-Income Household Transportation Cost

A project's Equity Targets Score indicates that project's level of support for equity concerns; it can range from +3.0 (Strong Support) to -3.0 (Strong Adverse Impacts). The same ratings and scale from the targets assessment were used to examine the scores for equity considerations:

- strong support (1)
- moderate support (0.5)
- minimal impact (0)
- moderate adverse impact (-0.5)
- strong adverse impact (-1)

Adequate Housing

Target scores are consistent with the overall targets assessment methodology as documented in Appendix D.

PM in CARE Communities

The results for target 3c are reported separately in the Project Assessment Equity Considerations Table. Projects were mapped against the six Community Air Risk Evaluation (CARE) Impacted Communities. These are areas that are highly impacted from outdoor Toxic Air Contaminants (TAC) due to their proximity to ports or freeways and a high density of sensitive populations (seniors, children, and low income residents). Projects likely to increase transit, biking or walking and are located in a CARE community are considered to support the target. Conversely, projects that

increase VMT and are located in a CARE community are considered to adversely affect this target. The degree of support or adverse impact is a function of the project scale and likely increase or decrease in VMT. Projects receive a minimal rating if they do not affect VMT substantially, even if they are located in a CARE community. Projects that are not located in a CARE community also receive a minimal rating.

Examples

El Camino Real Complete Streets Improvements – This project is located in a CARE community and supports bicycle, pedestrian, and transit improvements along a major corridor. Therefore, the project receives a **moderate support** rating for the PM in CARE target.

I-80 Ashby Interchange Improvements – Despite improvements to Interstate 80 that largely favor cars, this project does not increase VMT substantially and therefore does not increase particulate matter emissions. The project receives a **minimal impact** rating for PM in CARE, despite the project being located adjacent to a CARE community.

Fremont/Union City East-West Connector – This project is an expansion of an arterial roadway and is expected to increase VMT. As expected, the project receives a moderate adverse impact rating for VMT and PM, but since the project is not located in a CARE community, it scores **minimal impact** for PM in CARE.

Silicon Valley Express Lanes Network – The addition of express lanes would make driving more attractive and increase vehicle use throughout the county. This project receives a **moderate adverse impact** rating for PM in CARE because some express lane corridors intersect with South Bay CARE communities.

<u>Low-Income H+T Affordability</u>

Target scores are consistent with the overall targets assessment methodology as documented in Appendix D.

Summary of Benefit-Cost Ratios and Target Scores (listed by benefit-cost ratio)

	Row #	Project ID	Project Name	County	Project Type	Project Capital Costs (in millions of 2013 dollars)	Total Annualized 2035 Benefits (in millions of 2013 dollars)	Total Annualized 2035 Costs (in millions of 2013 dollars)	Plan Bay Area B/C Ratio	T-2035 B/C Ratio	Overall Targets Score	Targets Supported	Targets Adversely Affected
High B/C	1	240182	BART Metro Program (including Bay Fair Connection & Civic Center Turnback)	Multi-County	Transit Efficiency	650	161	-10	>60	n/a	8.5	8.5	0
	2	240694	Treasure Island Congestion Pricing	San Francisco	Pricing	59	69	1	59	n/a	4.0	4.0	0
	3	240522	Congestion Pricing Pilot	San Francisco	Pricing	102	227	5	45	n/a	6.0	6.0	0
	4	22780	AC Transit Grand-MacArthur BRT	Alameda/ 3434	Transit Efficiency	36	32	2	18	n/a	5.5	5.5	0
	5	230419	Freeway Performance Initiative	Regional	FPI	2,991	3,175	202	16	28	4.0	4.0	0
	6	22274	ITS Improvements in San Mateo County	San Mateo	Road Efficiency	66	56	4	16	n/a	4.0	4.0	0
	7	240494	ITS Improvements in Santa Clara County	Santa Clara	Road Efficiency	320	752	48	16	n/a	4.0	4.0	0
	8	22062	Irvington BART Station	Alameda	Transit Efficiency	123	19	2	12	n/a	5.5	5.5	0
	9	240171	SFMTA Transit Effectiveness Project	San Francisco	Transit Efficiency	157	90	8	11	n/a	7.5	7.5	0
Medium-High B/C	10	240582	Truck & Motorcycle Retirement [BAAQMD program]	Regional	Climate	29	55	6	9	n/a	0.5	1.5	1.0
	11	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Contra Costa	Highway Expansion	373	144	21	7	1	-3.5	1.0	4.5
	12	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Santa Clara	Road Efficiency	198	81	12	7	n/a	0.5	0.5	0
	13	94506	Fremont/Union City East-West Connector	Alameda	Arterial Expansion	190	65	10	7	1	0.5	2.0	1.5
	14	98207T	Alameda-Oakland BRT + Transit Access Improvements	Alameda	Transit Efficiency	16	14	2	6	n/a	5.0	5.0	0
	15	240523, 240060	US-101 HOV Lanes (Whipple Avenue to Cesar Chavez Street)	Multi-County	Road Efficiency	331	123	19	6	n/a	2.5	2.5	0
	16	230161	Van Ness Avenue BRT	San Francisco/ 3434	Transit Efficiency	140	44	7	6	n/a	6.5	6.5	0
	17	HOTd	Silicon Valley Express Lanes Network	Santa Clara	Express Lanes Network	1,398	408	70	6	n/a	-0.5	2.0	2.5
	18	240155	Better Market Street	San Francisco	Transit Efficiency	200	56	10	6	n/a	6.0	6.0	0
	19	22455	AC Transit East Bay BRT	Alameda/ 3434	Transit Efficiency	211	62	12	5	n/a	5.5	5.5	0
	20	HOTe	CTC Application + Alameda County Authorized Lanes Express Lanes Network	Multi-County	Express Lanes Network	2,364	602	118	5	n/a	-0.5	2.0	2.5
	21	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Solano	Road Efficiency	50	18	4	5	2†	1.0	1.0	0
	22	n/a	Local Streets and Roads Capital Maintenance Needs	Regional	Maintenance	n/a	1,369	280	5	5	5.0	5.0	0
	23	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Santa Clara/ 3434	Transit Expansion	4,094	324	70	5	n/a	7.0	7.0	0
	24	240134, 21627	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (SF to Tamien)	Multi-County	Transit Efficiency	848	153	34	5	n/a	7.5	7.5	0
	25	240557	Oakdale Caltrain Station	San Francisco	Transit Efficiency	51	3	1	4	n/a	4.5	4.5	0
	26	240062, 22776	SR-84/I-680 Interchange Improvements + SR-84 Widening (Jack London to I-680)	Alameda	Highway Expansion	381	87	21	4	n/a	-2.5	0.5	3.0
	27	230294	New SR-152 Alignment	Santa Clara	Highway Expansion	776	148	41	4	n/a	-2.0	2.0	4.0
	28	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown Extension)	San Francisco/ 3434	Transit Expansion	2,348	108	31	4	n/a	7.5	7.5	0
	29	240410	Transportation for Livable Communities	Regional	TLC	7,131	875	255	3	2	7.0	7.0	0
	30	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening (Morello Avenue to SR-242)	Contra Costa	Highway Expansion	396	65	21	3	1	0.5	1.0	0.5
	31	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Solano	Transit Efficiency	54	2	1	3	n/a	3.5	3.5	0

† = project definition has changed somewhat since T-2035

	Row #	Project ID	Project Name	County	Project Type	Project Capital Costs (in millions of 2013 dollars)	Total Annualized 2035 Benefits (in millions of 2013 dollars)	Total Annualized 2035 Costs (in millions of 2013 dollars)	Plan Bay Area B/C Ratio	T-2035 B/C Ratio	Overall Targets Score	Targets Supported	Targets Adversely Affected
Medium-Low B/C	32	240617	SR-29 HOV Lanes and BRT (Napa Junction to Vallejo)	Napa	Road Efficiency	60	11	4	3	n/a	1.5	1.5	0
	33	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Multi-County	Transit Efficiency	216	36	15	2	n/a	4.5	4.5	0
	34	240147	Southeast Waterfront Transportation Improvements	San Francisco	Transit Efficiency	397	88	36	2	n/a	3.5	3.5	0
	35	240026	SamTrans El Camino BRT	San Mateo	Transit Efficiency	120	59	25	2	n/a	5.5	5.5	0
	36	240119	VTA El Camino BRT	Santa Clara	Transit Efficiency	239	28	12	2	n/a	7.0	7.0	0
	37	00BART	BART Service Frequency Improvements	Multi-County	Transit Efficiency	1,275	126	56	2	n/a	8.5	8.5	0
	38	230604	Bay Bridge Contraflow Lane	Multi-County	Pricing	611	67	31	2	n/a	4.5	4.5	0
	39	580_BUS	I-580 Express Bus (Dublin to Livermore)	Alameda	Transit Efficiency	150	32	16	2	n/a	4.5	4.5	0
	40	240018	Dumbarton Corridor Express Bus	Multi-County	Transit Efficiency	101	23	12	2	n/a	6.5	6.5	0
	41	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Multi-County/ 3434	Transit Expansion	320	41	22	2	n/a	4.5	4.5	0
	42	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Contra Costa	Highway Expansion	150	15	9	2	1†	-2.5	2.0	4.5
	43	00MUNI	Muni Service Frequency Improvements	San Francisco	Transit Efficiency	0	25	14	2	n/a	5.5	5.5	0
	44	230164	Geary Boulevard BRT	San Francisco	Transit Efficiency	172	15	9	2	7	6.5	6.5	0
	45	240526	SFCTA Transit Performance Initiative	San Francisco	Transit Efficiency	490	28	16	2	n/a	7.5	7.5	0
	46	22247	Regional Bikeway Network	Regional	Bike/Ped	1,464	124	73	2	0.5	7.0	7.0	0
	47	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Multi-County	Transit Efficiency	0	108	65	2	n/a	5.5	5.5	0
	48	n/a	New Freedom Program	Regional	Lifeline/New Freedom	n/a	3	2	2	n/a	5.5	5.5	0
	49	22268	San Mateo Countywide Shuttle Service Frequency Improvements	San Mateo	Transit Efficiency	0	10	6	2	n/a	2.5	2.5	0
	50	230550	Climate Initiatives (5-year program)	Regional	Climate	560	158	112	1	0.4	3.5	3.5	0
	51	n/a	Transit Capital Maintenance Needs	Regional	Maintenance	n/a	1,787	1,286	1	1	5.0	5.0	0
	52	240545	Parkmerced Light Rail Corridor	San Francisco	Transit Efficiency	76	6	5	1	n/a	5.0	5.0	0
	53	230055	Golden Gate Ferry Service Frequency Improvements	Multi-County	Transit Efficiency	34	6	4	1	n/a	4.5	4.5	0
	54	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Alameda	Transit Expansion	555	37	29	1	n/a	5.0	5.0	0
	55	240521, 240134, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (SF to Tamien)	Multi-County/ 3434	Transit Efficiency	5,599	272	220	1	n/a	7.5	7.5	0
	56	00ACT1	AC Transit Frequent Transit Network	Multi-County	Transit Efficiency	654	606	510	1	n/a	5.5	5.5	0
	57	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Contra Costa	Transit Efficiency	60	12	11	1	1	4.5	4.5	0
	58	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Multi-County	Road Efficiency	300	20	18	1	8†	0.5	2.5	2.0
	59	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Regional	Climate	211	42	44	1	n/a	0.5	1.5	1.0

† = project definition has changed somewhat since T-2035

Summary of Benefit-Cost Ratios and Target Scores (listed by benefit-cost ratio)

REVISED 3/27/2013

	Row #	Project ID	Project Name	County	Project Type	Project Capital Costs (in millions of 2013 dollars)	Total Annualized 2035 Benefits (in millions of 2013 dollars)	Total Annualized 2035 Costs (in millions of 2013 dollars)	Plan Bay Area B/C Ratio	T-2035 B/C Ratio	Overall Targets Score	Targets Supported	Targets Adversely Affected
	60	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Alameda	Transit Expansion	1,135	50	52	1	4†	5.0	5.0	0
Low B/C	61	22415	Historic Streetcar Expansion Program	San Francisco	Transit Efficiency	66	9	9	0.9	2	5.0	5.0	0
	62	240216	Dumbarton Rail	Multi-County/ 3434	Transit Expansion	755	31	36	0.8	n/a	6.0	6.0	0
	63	240589	EV Solar Installation [BAAQMD program]	Regional	Climate	25	1	2	0.8	n/a	1.0	1.5	0.5
	64	240650	Sonoma Countywide Bus Service Frequency Improvements	Sonoma	Transit Efficiency	428	32	41	0.8	n/a	5.0	5.0	0
	65	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Multi-County/ 3434	Transit Expansion	283	10	13	0.7	n/a	5.0	5.0	0
	66	230252	Marin Countywide Bus Service Frequency Improvements	Marin	Transit Efficiency	0	9	12	0.7	1	4.5	4.5	0
	67	230219, 230314	Golden Gate Bus Service Frequency Improvements	Multi-County	Transit Efficiency	143	16	29	0.5	n/a	4.5	4.5	0
	68	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Santa Clara	Transit Expansion	276	4	8	0.5	n/a	6.0	6.0	0
	69	230547	Monterey Highway BRT	Santa Clara	Transit Efficiency	140	15	37	0.4	n/a	5.5	5.5	0
	70	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Alameda	Transit Expansion	4,177	57	153	0.4	n/a	5.0	5.0	0
	71	22019	Downtown East Valley (Phase 2: LRT)	Santa Clara/ 3434	Transit Expansion	307	5	16	0.3	n/a	6.0	6.0	0
	72	98139	ACE Service Expansion	Multi-County/ 3434	Transit Efficiency	600	19	67	0.3	n/a	4.0	4.0	0
	73	230554	Sunnyvale-Cupertino BRT	Santa Clara	Transit Efficiency	100	5	26	0.2	n/a	5.0	5.0	0
	74	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Santa Clara	Transit Expansion	435	3	19	0.2	n/a	6.0	6.0	0
	75	240690	Lifeline Transportation Program	Regional	Lifeline/New Freedom	n/a	10	119	0.1	0	5.5	5.5	0
	76	22009	Capitol Corridor Service Frequency Improvements (Oakland to San Jose)	Multi-County/ 3434	Transit Efficiency	509	1	18	0.1	n/a	6.0	6.0	0
	77	98119	Vasona Light Rail Extension (Phase 2)	Santa Clara	Transit Expansion	176	0	6	0.0	n/a	5.5	5.5	0
	78	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Alameda/ 3434	Transit Efficiency	180	0	2	0.0	n/a	5.0	5.0	0

B/C RATIO - COLOR KEY	
High B/C (B/C ratio greater than 10)	
Medium-High B/C (B/C ratio between 5 and 9)	
Medium-Low B/C (B/C ratio between 1 and 4)	
Low B/C (B/C ratio less than 1)	

TARGETS SCORE - COLOR KEY	
	Strong Support (score of 6.0 or higher)
	Moderate Support (score between 1.5 and 5.5)
	Minimal Impact (score between -1.0 and 1.0)
	Moderate Adverse Impact (score between -1.5 and -5.5)
	Strong Adverse Impact (score of -6.0 or lower)

† = project definition has changed somewhat since T-2035

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Benefit-Cost Assessment - Nominal Annual Benefits (sorted by county and ranked by benefit-cost ratio)

Row #	Project ID	Project Name	County	Project Type	Project Capital Costs [in millions]	Net Annual O&M Costs [in millions]	Total Annualized 2035 Benefits [in millions]	Total Annualized 2035 Costs [in millions]	B/C Ratio	TRAVEL TIME BENEFITS: Auto/Truck [in millions of hours]	Auto/ Truck (Non-Recurr. Delay) [in millions of hours]	Transit In-Vehicle [in millions of hours]	Transit Out-of-Vehicle [in millions of hours]	Walk/Bike [in millions of hours]	TOTAL	TRAVEL COST BENEFITS: VMT [in millions]	Vehicles Owned	AIR POLLUTANT BENEFITS: PM2.5 [in tons]	CO_2 [in thousands of metric tons]	COLLISIONS & ACTIVE TRANSPORT BENEFITS: Fatalities due to Collisions	Injuries due to Collisions	Property Damage Only (PDO) Collisions	Active Individuals
1	22780	AC Transit Grand-MacArthur BRT	ALA/3434	Transit Efficiency	$ 36.0	$ -	$ 31.5	$ 1.8	18	(1.4)	(0.1)	0.1	(0.1)	0.0	(1.5)	(6)	(53)	(0.9)	(8)	(0.1)	(4)	(7)	98
2	22062	Irvington BART Station	ALA	Transit Efficiency	$ 123.0	$ -	$ 18.7	$ 1.5	12	(0.6)	(0.1)	0.2	(0.1)	(0.0)	(0.6)	(6)	(357)	(0.5)	(4)	(0.1)	(4)	(6)	763
3	94506	Fremont/Union City East-West Connector	ALA	Arterial Expansion	$ 190.0	$ 0.5	$ 65.5	$ 10.0	7	(3.7)	(0.2)	0.0	0.0	0.0	(3.9)	2	164	(1.6)	(20)	(0.1)	(10)	3	(449)
4	98207T	Alameda-Oakland BRT + Transit Access Improvements	ALA	Transit Efficiency	$ 15.8	$ 1.3	$ 13.6	$ 2.1	6	(0.1)	0.0	(0.0)	(0.3)	0.0	(0.4)	(1)	12	0.0	0	(0.0)	(1)	(1)	(200)
5	22455	AC Transit East Bay BRT	ALA/3434	Transit Efficiency	$ 211.0	$ 1.0	$ 62.0	$ 11.6	5	(0.8)	(0.0)	(1.2)	(0.9)	(0.1)	(3.0)	6	187	(0.3)	(4)	0.0	3	8	(100)
6	240062, 22776	SR-84/I-680 Interchange Improvements + SR-84 Widening (Jack London to I-680)	ALA	Highway Expansion	$ 380.5	$ 1.7	$ 87.1	$ 20.7	4	(5.0)	(0.6)	(0.1)	0.1	(0.0)	(5.6)	16	446	(1.4)	(19)	(0.0)	(2)	23	(624)
7	580_BUS	I-580 Express Bus (Dublin to Livermore)	ALA	Transit Efficiency	$ 150.0	$ 8.1	$ 31.8	$ 16.4	2	(1.2)	(0.1)	0.5	(0.2)	(0.0)	(1.0)	(17)	(156)	(0.8)	(6)	(0.2)	(12)	(18)	329
8	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	ALA	Transit Expansion	$ 555.3	$ 10.1	$ 36.7	$ 28.6	1	(1.6)	(0.2)	1.3	(0.4)	(0.1)	(1.0)	(19)	(482)	(1.4)	(12)	(0.2)	(12)	(20)	486
9	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	ALA	Transit Expansion	$ 1,134.5	$ 14.6	$ 49.6	$ 52.4	1	(2.2)	(0.3)	1.8	(0.5)	(0.1)	(1.3)	(26)	(651)	(1.9)	(16)	(0.2)	(16)	(27)	657
10	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	ALA	Transit Expansion	$ 4,177.0	$ 14.2	$ 56.7	$ 153.4	0.4	(2.2)	(0.3)	1.4	(0.5)	(0.1)	(1.7)	(26)	(651)	(1.9)	(16)	(0.2)	(16)	(27)	657
11	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	ALA/3434	Transit Efficiency	$ 180.0	$ -	$ (0.1)	$ 2.3	0.0	(0.1)	0.1	0.0	0.0	(0.0)	0.0	(1)	(8)	0.0	0	(0.0)	(1)	(1)	29
12	22400	SR-239 Expressway Construction (Brentwood to Tracy)	CC	Highway Expansion	$ 372.7	$ 1.9	$ 143.8	$ 20.6	7	(8.5)	(0.2)	0.0	0.0	(0.0)	(8.6)	18	363	(2.7)	(38)	(0.4)	(32)	28	(553)
13	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening (Morello Avenue to SR-242)	CC	Highway Expansion	$ 396.3	$ 1.4	$ 65.4	$ 21.2	3	(2.8)	(0.5)	(0.4)	(0.3)	0.0	(4.0)	6	2,774	0.2	6	(0.1)	(6)	19	(244)
14	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	CC	Highway Expansion	$ 149.9	$ 1.1	$ 15.5	$ 8.6	2	(0.6)	(0.0)	0.0	(0.0)	(0.0)	(0.6)	(5)	(32)	0.2	8	(0.5)	(38)	(5)	(16)
15	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	CC	Transit Efficiency	$ 59.7	$ 6.4	$ 12.2	$ 10.7	1	(0.5)	0.0	0.2	(0.1)	(0.0)	(0.4)	(4)	(181)	(0.4)	(3)	(0.0)	(3)	(4)	333
16	230252	Marin Countywide Bus Service Frequency Improvements	MRN	Transit Efficiency	$ -	$ 12.3	$ 8.9	$ 12.3	0.7	(0.3)	(0.0)	0.5	(0.1)	(0.1)	0.0	(8)	(475)	(0.4)	(3)	(0.1)	(6)	(8)	1,439
17	240182	BART Metro Program (including Bay Fair Connection and Civic Center Turnback)	Multi-Cty.	Transit Efficiency	$ 650.0	$ (18.5)	$ 161.3	$ (10.4)	>60	(3.0)	(0.2)	0.9	(2.6)	(0.1)	(5.0)	(31)	(1,373)	(1.9)	(17)	(0.3)	(21)	(32)	2,735
18	240523, 240060	US-101 HOV Lanes (Whipple Avenue to Cesar Chavez Street)	Multi-Cty.	Road Efficiency	$ 330.7	$ 2.8	$ 122.7	$ 19.3	6	(5.0)	(1.2)	(0.4)	(0.0)	0.1	(6.5)	(29)	(451)	(0.8)	(1)	(0.2)	(14)	(5)	(281)
19	HOTe	CTC Application + Alameda County Authorized Lanes Express Lanes Network	Multi-Cty.	Express Lanes Network	$ 2,364.0	$ -	$ 601.6	$ 118.2	5	(15.7)	(24.3)	(2.7)	(0.6)	(0.3)	(43.5)	235	5,456	9.8	39	1.3	78	298	(5,050)
20	240134, 21627	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (SF to Tamien)	Multi-Cty.	Transit Efficiency	$ 847.7	$ 5.6	$ 152.5	$ 33.9	5	(3.3)	(0.3)	1.0	(1.5)	(0.0)	(4.1)	(69)	(2,438)	(3.0)	(23)	(0.6)	(42)	(70)	5,760
21	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Multi-Cty.	Transit Efficiency	$ 215.7	$ 3.7	$ 36.1	$ 14.5	2	(1.5)	(0.0)	(0.1)	(0.1)	(0.0)	(1.7)	(6)	(174)	(1.0)	(9)	(0.1)	(7)	(5)	(105)
22	00BART	BART Service Frequency Improvements	Multi-Cty.	Transit Efficiency	$ 1,274.7	$ 13.1	$ 126.0	$ 55.6	2	(3.2)	(0.4)	1.2	(1.5)	(0.0)	(3.8)	(42)	(1,390)	(2.6)	(23)	(0.4)	(28)	(43)	2,753
23	230604	Bay Bridge Contraflow Lane	Multi-Cty.	Road Efficiency	$ 610.5	$ -	$ 66.8	$ 30.5	2	(2.7)	0.1	(2.6)	0.3	0.1	(4.9)	(7)	317	(1.2)	(11)	0.4	32	4	(2,591)
24	240018	Dumbarton Corridor Express Bus	Multi-Cty.	Transit Efficiency	$ 101.0	$ 4.5	$ 22.6	$ 11.7	2	(0.5)	(0.1)	0.4	(0.4)	(0.0)	(0.6)	(6)	(200)	(0.4)	(4)	(0.1)	(4)	(6)	552
25	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Multi-Cty./ 3434	Transit Expansion	$ 320.2	$ 15.7	$ 41.3	$ 22.1	2	(2.8)	(0.3)	0.7	0.6	0.0	(1.8)	(27)	(790)	(1.9)	(16)	(0.3)	(18)	(28)	1,714
26	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Multi-Cty.	Transit Efficiency	$ -	$ 64.9	$ 108.5	$ 64.9	2	(1.8)	(0.2)	1.8	(2.4)	(0.2)	(2.6)	(29)	(1,847)	(1.4)	(11)	(0.3)	(20)	(28)	(4,761)
27	230055	Golden Gate Ferry Service Frequency Improvements	Multi-Cty.	Transit Efficiency	$ 34.4	$ 3.3	$ 5.8	$ 4.4	1	(0.4)	(0.0)	0.5	0.0	(0.0)	0.0	(4)	(286)	(0.4)	(3)	(0.1)	(4)	(4)	661
28	240521, 240134, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (SF to Tamien)	Multi-Cty.	Transit Efficiency	$ 5,598.7	$ 33.7	$ 272.0	$ 220.3	1	(5.6)	(0.5)	2.3	(2.8)	(0.1)	(6.9)	(124)	(4,553)	(5.7)	(44)	(1.1)	(75)	(126)	10,025
29	00ACT1	AC Transit Frequent Transit Network	Multi-Cty.	Transit Efficiency	$ 654.3	$ 463.6	$ 605.7	$ 510.3	1	(12.7)	(1.3)	13.0	(11.6)	(0.6)	(13.2)	(173)	(9,548)	(8.7)	(72)	(1.7)	(118)	(171)	9,442

All benefits and costs are shown in 2013 dollars. For all benefit types except active transportation, a negative value shown above reflects a benefit.

Benefit-Cost Assessment - Nominal Annual Benefits (sorted by county and ranked by benefit-cost ratio)

Row #	Project ID	Project Name	County	Project Type	Project Capital Costs [in millions]	Net Annual O&M Costs [in millions]	Total Annualized 2035 Benefits [in millions]	Total Annualized 2035 Costs [in millions]	B/C Ratio	TRAVEL TIME BENEFITS: Auto/Truck [in millions of hours]	Auto/ Truck (Non-Recurr. Delay) [in millions of hours]	Transit In-Vehicle [in millions of hours]	Transit Out-of-Vehicle [in millions of hours]	Walk/Bike [in millions of hours]	TOTAL	TRAVEL COST BENEFITS: VMT [in millions]	Vehicles Owned	AIR POLLUTANT BENEFITS: PM2.5 [in tons]	CO_2 [in thousands of metric tons]	COLLISIONS & ACTIVE TRANSPORT BENEFITS: Fatalities due to Collisions	Injuries due to Collisions	Property Damage Only (PDO) Collisions	Active Individuals
30	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Multi-Cty.	Road Efficiency	$ 300.0	$ 2.7	$ 20.0	$ 17.7	1	(0.5)	(0.4)	(0.4)	(0.1)	0.0	(1.4)	14	235	0.5	9	0.1	8	17	(601)
31	240216	Dumbarton Rail	Multi-Cty./ 3434	Transit Expansion	$ 755.0	$ 11.1	$ 30.7	$ 36.3	0.8	(1.1)	(0.2)	0.4	(0.1)	(0.0)	(1.0)	(16)	(502)	(0.9)	(8)	(0.2)	(11)	(16)	942
32	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Multi-Cty./ 3434	Transit Expansion	$ 282.9	$ 3.8	$ 9.7	$ 13.2	0.7	(0.3)	(0.1)	0.1	(0.1)	(0.0)	(0.3)	(5)	(161)	(0.2)	(1)	(0.0)	(3)	(5)	252
33	230219, 230314	Golden Gate Bus Service Frequency Improvements	Multi-Cty.	Transit Efficiency	$ 143.2	$ 18.9	$ 15.7	$ 29.1	0.5	(0.3)	(0.0)	0.3	(0.3)	(0.0)	(0.4)	(5)	(144)	(0.3)	(2)	(0.0)	(4)	(5)	248
34	98139	ACE Service Expansion	Multi-Cty./ 3434	Transit Efficiency	$ 600.0	$ 46.5	$ 19.1	$ 66.5	0.3	(0.8)	(0.2)	(0.2)	0.3	(0.0)	(0.9)	(17)	(267)	(1.0)	(8)	(0.2)	(11)	(19)	537
35	22009	Capitol Corridor Service Frequency Improvements (Oakland to San Jose)	Multi-Cty./ 3434	Transit Efficiency	$ 508.5	$ 1.2	$ 1.0	$ 18.2	0.1	(0.1)	(0.0)	0.0	0.0	(0.0)	(0.1)	1	(12)	(0.0)	(0)	0.0	0	1	29
36	240617	SR-29 HOV Lanes and BRT (Napa Junction to Vallejo)	NAP	Road Efficiency	$ 60.0	$ 1.2	$ 10.9	$ 4.2	3	(0.4)	(0.2)	(0.0)	0.0	0.0	(0.5)	(1)	(45)	0.0	3	(0.1)	(11)	(0)	976
37	230419	Freeway Performance Initiative	Reg.	FPI	$ 2,991.0	$ 54.2	$ 3,174.9	$ 202.5	16	(155.9)	(9.8)	(2.9)	(0.9)	(0.5)	(170.0)	(65)	(5,163)	(100.1)	(2,100)	(29.0)	201	4	(3,021)
38	240582	Truck & Motorcycle Retirement [BAAQMD program]	Reg.	Climate	$ 5.7	$ 0.3	$ 54.5	$ 6.0	9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	(63.0)	0	n/a	n/a	n/a	n/a
39	n/a	Local Streets and Roads Capital Maintenance Needs	Reg.	Maintenance	$ -	$ 280.0	$ 1,369.3	$ 280.0	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
40	240410	Transportation for Livable Communities	Reg.	TLC	$ 7,131.3	$ 0.0	$ 874.8	$ 254.7	3	(15.3)	(0.6)	(1.5)	(1.7)	2.6	(16.5)	(392)	(27,961)	(7.7)	(174)	(4.2)	(298)	(461)	167,639
41	22247	Regional Bikeway Network	Reg.	Bike/Ped	$ 1,464.0	$ -	$ 124.5	$ 73.2	2	(1.2)	(0.1)	(0.1)	(0.1)	0.2	(1.4)	(34)	(2,417)	(0.7)	(15)	(0.4)	(26)	(40)	54,406
42	n/a	New Freedom Program	Reg.	Lifeline/New Freedom	$ -	$ 2.0	$ 3.3	$ 2.0	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
43	230550	Climate Initiatives (5-year program)	Reg.	Climate	$ 560.0	$ -	$ 158.0	$ 112.0	1	(0.8)	(0.0)	(0.1)	(0.1)	0.1	(0.9)	(21)	(1,497)	(0.4)	(2,216)	(0.2)	(16)	(25)	n/a
44	n/a	Transit Capital Maintenance Needs	Reg.	Maintenance	$ -	$ 1,285.7	$ 1,787.1	$ 1,285.7	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
45	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Reg.	Climate	$ 42.2	$ 1.8	$ 41.8	$ 44.0	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	(48.0)	0	n/a	n/a	n/a	n/a
46	240589	EV Solar Installation [BAAQMD program]	Reg.	Climate	$ 1.3	$ 0.3	$ 1.1	$ 1.5	0.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0	(13)	n/a	n/a	n/a	n/a
47	240690	Lifeline Transportation Program	Reg.	Lifeline/New Freedom	$ -	$ 119.0	$ 10.0	$ 119.0	0.1	(0.2)	(0.0)	(0.0)	(0.0)	0.0	(0.2)	(6)	418	(0.1)	(3)	(0.1)	(4)	(7)	n/a
48	240694	Treasure Island Congestion Pricing	SF	Pricing	$ 58.9	$ -	$ 69.1	$ 1.2	59	(2.3)	(0.1)	1.3	(0.5)	0.0	(1.7)	(25)	(1,540)	(1.4)	(11)	(0.2)	(18)	(25)	2,483
49	240522	Congestion Pricing Pilot	SF	Pricing	$ 101.8	$ -	$ 227.4	$ 5.1	45	(6.3)	(0.2)	4.3	(1.5)	1.2	(2.4)	(85)	(9,583)	(4.6)	(40)	(1.0)	(75)	(91)	11,899
50	240171	SFMTA Transit Effectiveness Project	SF	Transit Efficiency	$ 156.9	$ -	$ 89.5	$ 7.8	11	(2.1)	(0.2)	1.0	(1.7)	(0.1)	(3.1)	(11)	(311)	(1.5)	(14)	(0.1)	(8)	(10)	(3,811)
51	230161	Van Ness Avenue BRT	SF/3434	Transit Efficiency	$ 139.5	$ -	$ 44.1	$ 7.0	6	(1.2)	(0.1)	(0.4)	(0.1)	(0.1)	(2.0)	(11)	(340)	(0.9)	(8)	(0.1)	(9)	(12)	895
52	240155	Better Market Street	SF	Transit Efficiency	$ 200.0	$ -	$ 56.5	$ 10.0	6	(2.0)	(0.4)	(0.9)	(0.2)	0.3	(3.1)	(12)	436	(0.4)	(1)	(0.2)	(14)	(2)	(423)
53	240557	Oakdale Caltrain Station	SF	Transit Efficiency	$ 51.2	$ -	$ 2.8	$ 0.6	4	(0.1)	0.0	0.1	(0.0)	(0.0)	(0.0)	(1)	(68)	(0.1)	(1)	(0.0)	(1)	(2)	76
54	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown Extension)	SF/3434	Transit Expansion	$ 2,348.0	$ 1.4	$ 107.9	$ 30.8	4	(5.4)	(0.2)	1.8	(0.9)	(0.0)	(4.7)	(22)	(545)	(1.0)	(8)	(0.2)	(14)	(22)	942
55	240147	Southeast Waterfront Transportation Improvements	SF	Transit Efficiency	$ 397.0	$ 16.1	$ 88.1	$ 36.0	2	(1.7)	(0.1)	0.2	(1.4)	(0.1)	(3.0)	(12)	(558)	(1.0)	(9)	(0.2)	(13)	(11)	(756)
56	00MUNI	Muni Service Frequency Improvements	SF	Transit Efficiency	$ -	$ 14.0	$ 24.7	$ 14.0	2	(0.2)	0.0	0.2	(0.7)	0.0	(0.7)	(1)	(58)	(0.0)	(0)	(0.0)	(2)	(1)	(1,058)
57	230164	Geary Boulevard BRT	SF	Transit Efficiency	$ 172.3	$ -	$ 15.1	$ 8.6	2	(0.1)	0.0	0.1	(0.3)	(0.0)	(0.3)	(2)	(191)	(0.1)	(2)	(0.0)	(1)	(2)	463
58	240526	SFCTA Transit Performance Initiative	SF	Transit Efficiency	$ 489.8	$ -	$ 28.4	$ 16.3	2	(0.4)	(0.1)	(0.6)	(0.1)	(0.1)	(1.2)	(5)	(404)	(0.4)	(3)	(0.1)	(4)	(5)	338
59	240545	Parkmerced Light Rail Corridor	SF	Transit Efficiency	$ 76.0	$ 2.0	$ 6.3	$ 4.5	1	(0.2)	0.1	0.4	(0.2)	(0.1)	(0.0)	(0)	(168)	(0.1)	(1)	(0.0)	(1)	(0)	(135)
60	22415	Historic Streetcar Expansion Program	SF	Transit Efficiency	$ 66.4	$ 7.2	$ 8.6	$ 9.4	0.9	(0.3)	0.0	0.1	0.0	(0.2)	(0.3)	(1)	(306)	(0.2)	(1)	(0.0)	(1)	(0)	76
61	22274	ITS Improvements in San Mateo County	SM	Road Efficiency	$ 65.7	$ 0.3	$ 56.0	$ 3.6	16	(2.7)	(0.2)	(0.1)	(0.0)	(0.0)	(3.0)	(1)	(82)	(1.8)	(37)	(0.5)	4	0	(48)

All benefits and costs are shown in 2013 dollars. For all benefit types except active transportation, a negative value shown above reflects a benefit.

Benefit-Cost Assessment - Nominal Annual Benefits (sorted by county and ranked by benefit-cost ratio)

										TRAVEL TIME BENEFITS						TRAVEL COST BENEFITS		AIR POLLUTANT BENEFITS		COLLISIONS & ACTIVE TRANSPORT BENEFITS			
Row #	Project ID	Project Name	County	Project Type	Project Capital Costs [in millions]	Net Annual O&M Costs [in millions]	Total Annualized 2035 Benefits [in millions]	Total Annualized 2035 Costs [in millions]	B/C Ratio	Auto/Truck [in millions of hours]	Auto/ Truck (Non-Recurr. Delay) [in millions of hours]	Transit In-Vehicle [in millions of hours]	Transit Out-of-Vehicle [in millions of hours]	Walk/Bike [in millions of hours]	TOTAL	VMT [in millions]	Vehicles Owned	PM2.5 [in tons]	CO_2 [in thousands of metric tons]	Fatalities due to Collisions	Injuries due to Collisions	Property Damage Only (PDO) Collisions	Active Individuals
62	240026	SamTrans El Camino BRT	SM	Transit Efficiency	$ 120.0	$ 19.0	$ 59.1	$ 25.0	2	(2.9)	(0.2)	0.8	(0.2)	(0.0)	(2.4)	(14)	(593)	(1.7)	(17)	(0.1)	(10)	(13)	3,253
63	22268	San Mateo Countywide Shuttle Service Frequency Improvements	SM	Transit Efficiency	$ -	$ 6.3	$ 10.3	$ 6.3	2	(0.5)	0.0	0.4	(0.0)	(0.0)	(0.1)	(7)	(404)	(0.4)	(3)	(0.1)	(5)	(6)	1,321
64	240494	ITS Improvements in Santa Clara County	SCL	Road Efficiency	$ 319.5	$ 32.0	$ 752.2	$ 48.0	16	(36.9)	(2.3)	(0.7)	(0.2)	(0.1)	(40.3)	(15)	(1,230)	(23.7)	(498)	(6.9)	48	1	(715)
65	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	SCL	Road Efficiency	$ 197.8	$ 1.7	$ 81.0	$ 11.6	7	(3.7)	(1.1)	(0.1)	0.0	0.0	(4.9)	0	(179)	(0.3)	2	(0.1)	(9)	16	(125)
66	HOTd	Silicon Valley Express Lanes Network	SCL	Express Lanes Network	$ 1,398.0	$ -	$ 407.8	$ 69.9	6	(13.4)	(23.8)	(2.6)	(0.5)	(0.3)	(40.6)	471	13,292	17.6	78	3.2	208	544	(5,430)
67	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	SCL/3434	Transit Expansion	$ 4,094.3	$ 18.7	$ 323.5	$ 69.9	5	(8.5)	(1.0)	3.4	(2.9)	(0.1)	(9.1)	(161)	(6,667)	(7.7)	(63)	(1.5)	(106)	(164)	12,117
68	230294	New SR-152 Alignment	SCL	Highway Expansion	$ 775.8	$ 1.9	$ 147.8	$ 40.7	4	(8.0)	(0.1)	(0.1)	0.0	(0.0)	(8.1)	21	257	(1.3)	(6)	(1.9)	(152)	20	(194)
69	240119	VTA El Camino BRT	SCL	Transit Efficiency	$ 239.0	$ -	$ 28.1	$ 12.0	2	(0.9)	(0.1)	(0.0)	(0.0)	(0.1)	(1.0)	(12)	(638)	(0.8)	(6)	(0.1)	(8)	(12)	1,501
70	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	SCL	Transit Expansion	$ 276.0	$ 0.9	$ 3.8	$ 8.3	0.5	(0.3)	0.0	0.2	0.1	(0.0)	(0.0)	(5)	(297)	(0.2)	(1)	(0.1)	(4)	(5)	1,012
71	230547	Monterey Highway BRT	SCL	Transit Efficiency	$ 140.0	$ 29.6	$ 15.0	$ 36.6	0.4	(0.2)	0.0	0.3	(0.4)	0.0	(0.3)	(3)	(203)	(0.2)	(2)	(0.0)	(2)	(3)	297
72	22019	Downtown East Valley (Phase 2: LRT)	SCL/3434	Transit Expansion	$ 307.2	$ 5.4	$ 4.8	$ 15.6	0.3	(0.2)	0.0	0.3	(0.0)	(0.1)	0.0	(3)	(331)	(0.2)	(1)	(0.0)	(4)	(3)	755
73	230554	Sunnyvale-Cupertino BRT	SCL	Transit Efficiency	$ 100.0	$ 21.1	$ 4.8	$ 26.1	0.2	(0.1)	0.0	0.1	(0.1)	0.0	(0.0)	(0)	(147)	(0.1)	(1)	(0.0)	(0)	0	959
74	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	SCL	Transit Expansion	$ 434.8	$ 4.2	$ 2.8	$ 18.7	0.2	(0.3)	(0.0)	0.3	0.1	(0.0)	0.1	(6)	(414)	(0.3)	(2)	(0.1)	(4)	(6)	1,407
75	98119	Vasona Light Rail Extension (Phase 2)	SCL	Transit Expansion	$ 176.0	$ 0.6	$ 0.1	$ 6.5	0.0	(0.2)	0.1	0.2	0.0	(0.0)	0.1	(3)	(211)	(0.1)	(2)	(0.0)	(2)	(3)	622
76	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	SOL	Road Efficiency	$ 50.0	$ 1.0	$ 18.0	$ 3.5	5	(1.1)	(0.1)	0.1	0.0	0.0	(1.1)	3	(13)	0.1	2	(0.1)	(9)	4	(399)
77	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	SOL	Transit Efficiency	$ 54.0	$ -	$ 2.0	$ 0.7	3	(0.2)	0.0	0.0	(0.0)	(0.0)	(0.1)	1	(26)	(0.1)	(1)	0.0	0	1	26
78	240650	Sonoma Countywide Bus Service Frequency Improvements	SON	Transit Efficiency	$ 427.8	$ 10.4	$ 32.0	$ 41.0	0.8	(0.6)	(0.0)	0.6	(0.5)	(0.1)	(0.6)	(9)	(914)	(0.5)	(3)	(0.1)	(6)	(8)	2,594

All benefits and costs are shown in 2013 dollars. For all benefit types except active transportation, a negative value shown above reflects a benefit.

Benefit-Cost Assessment - Monetized Annual Benefits (sorted by county and ranked by benefit-cost ratio)

										TRAVEL TIME BENEFITS						TRAVEL COST BENEFITS				AIR POLLUTANT REDUCTION BENEFITS				COLLISIONS, ACTIVE TRANSPORT, & NOISE REDUCTION BENEFITS					
Row #	Project ID	Project Name	County	Project Type	Project Capital Costs [in millions]	Net Annual O&M Costs [in millions]	Total Annualized 2035 Benefits [in millions]	Total Annualized 2035 Costs [in millions]	B/C Ratio	Auto/Truck	Auto/ Truck (Non-Recurr. Delay)	Transit In-Vehicle	Transit Out-of-Vehicle	Walk/Bike	TOTAL	Vehicle Operating	Vehicle Ownership	Parking	TOTAL	PM2.5	CO2	Other	TOTAL	Fatalities due to Collisions	Injuries due to Collisions	Property Damage Only (PDO) Collisions	Active Transport	Noise	TOTAL
1	22780	AC Transit Grand-MacArthur BRT	ALA/3434	Transit Efficiency	$ 36.0	$ -	$ 31.5	$ 1.8	18	$ 22.6	$ 2.2	$ (0.8)	$ 3.9	$ (0.1)	$ 27.7	$ 1.8	$ 0.3	$ 0.1	$ 2.3	$ 0.4	$ 0.5	$ 0.0	$ 0.9	$ 0.3	$ 0.3	$ 0.0	$ 0.1	$ 0.0	$ 0.7
2	22062	Irvington BART Station	ALA	Transit Efficiency	$ 123.0	$ -	$ 18.7	$ 1.5	12	$ 10.7	$ 1.3	$ (3.5)	$ 3.1	$ 0.2	$ 11.8	$ 1.8	$ 2.2	$ 1.0	$ 5.1	$ 0.2	$ 0.2	$ 0.0	$ 0.4	$ 0.3	$ 0.2	$ 0.0	$ 0.9	$ 0.0	$ 1.5
3	94506	Fremont/Union City East-West Connector	ALA	Arterial Expansion	$ 190.0	$ 0.5	$ 65.5	$ 10.0	7	$ 62.1	$ 3.7	$ (0.2)	$ (0.8)	$ (0.2)	$ 64.6	$ (0.7)	$ (1.0)	$ (0.1)	$ (1.8)	$ 0.8	$ 1.1	$ 0.0	$ 1.9	$ 0.6	$ 0.7	$ (0.0)	$ (0.5)	$ (0.0)	$ 0.7
4	98207T	Alameda-Oakland BRT + Transit Access Improvements	ALA	Transit Efficiency	$ 15.8	$ 1.3	$ 13.6	$ 2.1	6	$ 1.9	$ (0.4)	$ 0.6	$ 11.5	$ (0.1)	$ 13.6	$ 0.2	$ (0.1)	$ (0.0)	$ 0.1	$ (0.0)	$ (0.0)	$ (0.0)	$ (0.0)	$ 0.1	$ 0.1	$ 0.0	$ (0.2)	$ 0.0	$ (0.1)
5	22455	AC Transit East Bay BRT	ALA/3434	Transit Efficiency	$ 211.0	$ 1.0	$ 62.0	$ 11.6	5	$ 13.3	$ 0.6	$ 19.6	$ 30.2	$ 1.6	$ 65.3	$ (1.8)	$ (1.2)	$ (0.1)	$ (3.1)	$ 0.1	$ 0.2	$ 0.0	$ 0.3	$ (0.2)	$ (0.2)	$ (0.0)	$ (0.1)	$ (0.0)	$ (0.5)
6	240062, 22776	SR-84/I-680 Interchange Improvements + SR-84 Widening (Jack London to I-680)	ALA	Highway Expansion	$ 380.5	$ 1.7	$ 87.1	$ 20.7	4	$ 83.4	$ 10.8	$ 1.5	$ (2.3)	$ 0.1	$ 93.5	$ (4.4)	$ (2.8)	$ (0.2)	$ (7.4)	$ 0.7	$ 1.0	$ (0.0)	$ 1.7	$ 0.0	$ 0.1	$ (0.1)	$ (0.7)	$ (0.0)	$ (0.7)
7	580_BUS	I-580 Express Bus (Dublin to Livermore)	ALA	Transit Efficiency	$ 150.0	$ 8.1	$ 31.8	$ 16.4	2	$ 20.9	$ 1.6	$ (8.1)	$ 5.5	$ 0.1	$ 20.0	$ 4.8	$ 2.9	$ 0.5	$ 8.3	$ 0.4	$ 0.4	$ (0.0)	$ 0.7	$ 0.8	$ 0.8	$ 0.0	$ 1.2	$ 0.0	$ 2.8
8	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	ALA	Transit Expansion	$ 555.3	$ 10.1	$ 36.7	$ 28.6	1	$ 26.9	$ 4.1	$ (21.5)	$ 13.0	$ 1.4	$ 23.9	$ 5.4	$ 3.0	$ 0.7	$ 9.2	$ 0.7	$ 0.7	$ 0.0	$ 1.4	$ 0.8	$ 0.8	$ 0.0	$ 0.6	$ 0.0	$ 2.2
9	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	ALA	Transit Expansion	$ 1,134.5	$ 14.6	$ 49.6	$ 52.4	1	$ 36.4	$ 5.6	$ (29.0)	$ 17.5	$ 1.9	$ 32.4	$ 7.3	$ 4.1	$ 1.0	$ 12.4	$ 0.9	$ 0.9	$ 0.0	$ 1.8	$ 1.0	$ 1.0	$ 0.1	$ 0.8	$ 0.1	$ 3.0
10	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	ALA	Transit Expansion	$ 4,177.0	$ 14.2	$ 56.7	$ 153.4	0.4	$ 36.4	$ 5.6	$ (21.9)	$ 17.5	$ 1.9	$ 39.5	$ 7.3	$ 4.1	$ 1.0	$ 12.4	$ 0.9	$ 0.9	$ 0.0	$ 1.8	$ 1.0	$ 1.0	$ 0.1	$ 0.8	$ 0.1	$ 3.0
11	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	ALA/3434	Transit Efficiency	$ 180.0	$ -	$ (0.1)	$ 2.3	0.0	$ 1.0	$ (1.2)	$ (0.1)	$ (0.2)	$ 0.0	$ (0.5)	$ 0.2	$ 0.1	$ 0.0	$ 0.3	$ (0.0)	$ (0.0)	$ 0.0	$ (0.0)	$ 0.1	$ 0.1	$ 0.0	$ 0.0	$ 0.0	$ 0.2
12	22400	SR-239 Expressway Construction (Brentwood to Tracy)	CC	Highway Expansion	$ 372.7	$ 1.9	$ 143.8	$ 20.6	7	$ 142.2	$ 3.6	$ (0.1)	$ (1.2)	$ 0.3	$ 144.8	$ (5.2)	$ (2.3)	$ -	$ (7.5)	$ 1.3	$ 2.1	$ (0.0)	$ 3.4	$ 1.8	$ 2.1	$ (0.1)	$ (0.7)	$ (0.0)	$ 3.1
13	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening (Morello Avenue to SR-242)	CC	Highway Expansion	$ 396.3	$ 1.4	$ 65.4	$ 21.2	3	$ 47.5	$ 7.8	$ 5.9	$ 10.9	$ (0.1)	$ 71.9	$ (1.5)	$ (3.4)	$ -	$ (4.9)	$ (0.1)	$ (0.3)	$ (0.1)	$ (0.5)	$ 0.2	$ 0.4	$ (0.0)	$ (1.5)	$ (0.0)	$ (1.0)
14	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	CC	Highway Expansion	$ 149.9	$ 1.1	$ 15.5	$ 8.6	2	$ 9.4	$ 0.2	$ (0.1)	$ 0.1	$ 0.1	$ 9.7	$ 1.5	$ 0.2	$ 0.0	$ 1.7	$ (0.1)	$ (0.4)	$ (0.0)	$ (0.6)	$ 2.2	$ 2.4	$ 0.0	$ (0.0)	$ 0.0	$ 4.6
15	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	CC	Transit Efficiency	$ 59.7	$ 6.4	$ 12.2	$ 10.7	1	$ 8.1	$ (0.1)	$ (2.5)	$ 3.1	$ 0.1	$ 8.7	$ 1.1	$ 1.1	$ 0.0	$ 2.3	$ 0.2	$ 0.2	$ 0.0	$ 0.4	$ 0.2	$ 0.2	$ 0.0	$ 0.4	$ 0.0	$ 0.8
16	230252	Marin Countywide Bus Service Frequency Improvements	MRN	Transit Efficiency	$ -	$ 12.3	$ 8.9	$ 12.3	0.7	$ 5.5	$ 0.1	$ (8.7)	$ 3.1	$ 1.0	$ 1.0	$ 2.4	$ 3.0	$ -	$ 5.3	$ 0.2	$ 0.2	$ 0.0	$ 0.3	$ 0.0	$ 0.4	$ 0.0	$ 1.8	$ 0.0	$ 2.2
17	240182	BART Metro Program (including Bay Fair Connection and Civic Center Turnback)	Multi-Cty.	Transit Efficiency	$ 650.0	$ (18.5)	$ 161.3	$ (10.4)	>60	$ 50.1	$ 3.8	$ (14.1)	$ 91.1	$ 1.3	$ 132.2	$ 8.8	$ 8.6	$ 3.6	$ 21.0	$ 0.9	$ 0.9	$ 0.0	$ 1.9	$ 1.3	$ 1.3	$ 0.1	$ 3.3	$ 0.1	$ 6.2
18	240523, 240060	US-101 HOV Lanes (Whipple Avenue to Cesar Chavez Street)	Multi-Cty.	Road Efficiency	$ 330.7	$ 2.8	$ 122.7	$ 19.3	6	$ 84.2	$ 19.6	$ 5.7	$ 1.2	$ (1.5)	$ 109.3	$ 8.0	$ 2.8	$ 0.9	$ 11.7	$ 0.4	$ 0.0	$ (0.2)	$ 0.2	$ 0.8	$ 0.9	$ 0.0	$ (0.3)	$ 0.1	$ 1.4
19	HOTe	CTC Application + Alameda County Authorized Lanes Express Lanes Network	Multi-Cty.	Express Lanes Network	$ 2,364.0	$ -	$ 601.6	$ 118.2	5	$ 252.7	$ 412.3	$ 43.2	$ 20.6	$ 4.3	$ 733.0	$ (66.0)	$ (34.3)	$ (5.3)	$ (105.5)	$ (4.8)	$ (2.2)	$ (0.7)	$ (7.6)	$ (5.9)	$ (5.0)	$ (0.7)	$ (6.2)	$ (0.6)	$ (18.3)
20	240134, 21627	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (SF to Tamien)	Multi-Cty.	Transit Efficiency	$ 847.7	$ 5.6	$ 152.5	$ 33.9	5	$ 54.3	$ 5.2	$ (16.7)	$ 52.8	$ 0.2	$ 96.0	$ 19.4	$ 15.3	$ 6.3	$ 41.1	$ 1.4	$ 1.3	$ 0.0	$ 2.7	$ 2.7	$ 2.7	$ 0.2	$ 7.0	$ 0.2	$ 12.8
21	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Multi-Cty.	Transit Efficiency	$ 215.7	$ 3.7	$ 36.1	$ 14.5	2	$ 25.2	$ 0.7	$ 1.1	$ 3.7	$ 0.0	$ 30.8	$ 1.8	$ 1.1	$ 0.7	$ 3.6	$ 0.5	$ 0.5	$ 0.0	$ 1.0	$ 0.4	$ 0.4	$ 0.0	$ (0.1)	$ 0.0	$ 0.7
22	00BART	BART Service Frequency Improvements	Multi-Cty.	Transit Efficiency	$ 1,274.7	$ 13.1	$ 126.0	$ 55.6	2	$ 53.6	$ 6.1	$ (20.0)	$ 51.5	$ 0.8	$ 92.0	$ 11.7	$ 8.7	$ 3.7	$ 24.1	$ 1.3	$ 1.3	$ 0.1	$ 2.6	$ 1.8	$ 1.8	$ 0.1	$ 3.4	$ 0.1	$ 7.2
23	230604	Bay Bridge Contraflow Lane	Multi-Cty.	Road Efficiency	$ 610.5	$ -	$ 66.8	$ 30.5	2	$ 47.0	$ (1.2)	$ 41.3	$ (11.5)	$ (0.9)	$ 74.7	$ 2.1	$ (2.0)	$ (2.1)	$ (2.0)	$ 0.6	$ 0.6	$ 0.0	$ 1.2	$ (1.9)	$ (2.1)	$ (0.0)	$ (3.2)	$ 0.0	$ (7.1)
24	240018	Dumbarton Corridor Express Bus	Multi-Cty.	Transit Efficiency	$ 101.0	$ 4.5	$ 22.6	$ 11.7	2	$ 8.0	$ 1.4	$ (6.8)	$ 14.7	$ 0.7	$ 18.1	$ 1.6	$ 1.3	$ 0.3	$ 3.2	$ 0.2	$ 0.2	$ 0.0	$ 0.4	$ 0.0	$ 0.3	$ 0.0	$ 0.7	$ 0.0	$ 1.0
25	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Multi-Cty./ 3434	Transit Expansion	$ 320.2	$ 15.7	$ 41.3	$ 22.1	2	$ 46.5	$ 4.6	$ (10.7)	$ (20.9)	$ (0.1)	$ 19.5	$ 7.7	$ 5.0	$ 4.0	$ 16.7	$ 0.9	$ 0.9	$ 0.0	$ 1.8	$ 0.0	$ 1.1	$ 0.1	$ 2.1	$ 0.1	$ 3.4
26	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Multi-Cty.	Transit Efficiency	$ -	$ 64.9	$ 108.5	$ 64.9	2	$ 29.4	$ 2.7	$ (29.5)	$ 84.9	$ 2.4	$ 89.8	$ 8.1	$ 11.6	$ 0.7	$ 20.4	$ 0.7	$ 0.6	$ 0.0	$ 1.3	$ 1.3	$ 1.3	$ 0.1	$ (5.8)	$ 0.1	$ (3.1)
27	230055	Golden Gate Ferry Service Frequency Improvements	Multi-Cty.	Transit Efficiency	$ 34.4	$ 3.3	$ 5.8	$ 4.4	1	$ 6.7	$ 0.4	$ (7.5)	$ (0.1)	$ 0.1	$ (0.4)	$ 1.2	$ 1.8	$ 1.4	$ 4.5	$ 0.2	$ 0.2	$ 0.0	$ 0.4	$ 0.2	$ 0.2	$ 0.0	$ 0.8	$ 0.0	$ 1.3
28	240521, 240134, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (SF to Tamien)	Multi-Cty.	Transit Efficiency	$ 5,598.7	$ 33.7	$ 272.0	$ 220.3	1	$ 93.9	$ 9.3	$ (36.4)	$ 100.2	$ 1.9	$ 168.9	$ 34.8	$ 28.6	$ 11.8	$ 75.2	$ 2.8	$ 2.5	$ 0.1	$ 5.3	$ 5.0	$ 4.8	$ 0.3	$ 12.2	$ 0.3	$ 22.6
29	00ACT1	AC Transit Frequent Transit Network	Multi-Cty.	Transit Efficiency	$ 654.3	$ 463.6	$ 605.7	$ 510.3	1	$ 212.2	$ 21.7	$ (208.1)	$ 410.4	$ 10.2	$ 446.4	$ 48.6	$ 60.1	$ 14.7	$ 123.4	$ 4.3	$ 4.0	$ 0.1	$ 8.4	$ 7.6	$ 7.5	$ 0.4	$ 11.5	$ 0.4	$ 27.5
30	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Multi-Cty.	Road Efficiency	$ 300.0	$ 2.7	$ 20.0	$ 17.7	1	$ 11.2	$ 6.0	$ 6.3	$ 4.8	$ (0.1)	$ 28.2	$ (3.9)	$ (1.5)	$ (0.1)	$ (5.5)	$ (0.3)	$ (0.5)	$ (0.0)	$ (0.8)	$ (0.5)	$ (0.5)	$ (0.0)	$ (0.7)	$ (0.0)	$ (1.8)
31	240216	Dumbarton Rail	Multi-Cty./ 3434	Transit Expansion	$ 755.0	$ 11.1	$ 30.7	$ 36.3	0.8	$ 18.4	$ 2.6	$ (7.1)	$ 4.5	$ 0.0	$ 18.5	$ 4.4	$ 3.2	$ 1.1	$ 8.6	$ 0.4	$ 0.4	$ 0.0	$ 0.9	$ 0.7	$ 0.7	$ 0.0	$ 1.1	$ 0.0	$ 2.6
32	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Multi-Cty./ 3434	Transit Expansion	$ 282.9	$ 3.8	$ 9.7	$ 13.2	0.7	$ 4.1	$ 1.1	$ (2.2)	$ 3.2	$ 0.1	$ 6.2	$ 1.5	$ 1.0	$ 0.1	$ 2.6	$ 0.1	$ 0.1	$ 0.0	$ 0.2	$ 0.2	$ 0.2	$ 0.0	$ 0.3	$ 0.0	$ 0.7
33	230219, 230314	Golden Gate Bus Service Frequency Improvements	Multi-Cty.	Transit Efficiency	$ 143.2	$ 18.9	$ 15.7	$ 29.1	0.5	$ 5.7	$ 0.2	$ (5.3)	$ 10.7	$ 0.7	$ 12.0	$ 1.4	$ 0.9	$ 0.6	$ 2.9	$ 0.1	$ 0.1	$ 0.0	$ 0.3	$ 0.0	$ 0.2	$ 0.0	$ 0.3	$ 0.0	$ 0.6
34	98139	ACE Service Expansion	Multi-Cty./ 3434	Transit Efficiency	$ 600.0	$ 46.5	$ 19.1	$ 66.5	0.3	$ 13.5	$ 3.8	$ 2.7	$ (11.0)	$ 0.1	$ 9.1	$ 4.9	$ 1.9	$ 0.1	$ 6.8	$ 0.5	$ 0.4	$ 0.0	$ 1.0	$ 0.8	$ 0.7	$ 0.0	$ 0.7	$ 0.0	$ 2.3
35	22009	Capitol Corridor Service Frequency Improvements (Oakland to San Jose)	Multi-Cty./ 3434	Transit Efficiency	$ 508.5	$ 1.2	$ 1.0	$ 18.2	0.1	$ 1.8	$ 0.4	$ (0.4)	$ (0.7)	$ 0.0	$ 1.2	$ (0.3)	$ 0.1	$ 0.0	$ (0.2)	$ 0.0	$ 0.0	$ 0.0	$ 0.0	$ (0.0)	$ (0.0)	$ (0.0)	$ 0.0	$ (0.0)	$ (0.0)
36	240617	SR-29 HOV Lanes and BRT (Napa Junction to Vallejo)	NAP	Road Efficiency	$ 60.0	$ 1.2	$ 10.9	$ 4.2	3	$ 6.1	$ 2.6	$ 0.2	$ (1.0)	$ (0.1)	$ 7.8	$ 0.4	$ 0.3	$ -	$ 0.7	$ (0.0)	$ (0.2)	$ (0.0)	$ (0.2)	$ 0.7	$ 0.7	$ 0.0	$ 1.2	$ 0.0	$ 2.6
37	230419	Freeway Performance Initiative	Reg.	FPI	$ 2,991.0	$ 54.2	$ 3,174.9	$ 202.5	16	$ 2,608.5	$ 166.9	$ 46.9	$ 30.0	$ 7.7	$ 2,860.0	$ 17.3	$ 19.0	$ (1.6)	$ 34.7	$ 48.8	$ 116.3	$ 1.2	$ 166.3	$ 133.0	$ (12.9)	$ (0.0)	$ (6.3)	$ 0.1	$ 113.9

All benefits and costs are shown in 2013 dollars.

Benefit-Cost Assessment - Monetized Annual Benefits (sorted by county and ranked by benefit-cost ratio)

										TRAVEL TIME BENEFITS						TRAVEL COST BENEFITS				AIR POLLUTANT REDUCTION BENEFITS				COLLISIONS, ACTIVE TRANSPORT, & NOISE REDUCTION BENEFITS					
Row #	Project ID	Project Name	County	Project Type	Project Capital Costs [in millions]	Net Annual O&M Costs [in millions]	Total Annualized 2035 Benefits [in millions]	Total Annualized 2035 Costs [in millions]	B/C Ratio	Auto/Truck	Auto/ Truck (Non-Recurr. Delay)	Transit In-Vehicle	Transit Out-of-Vehicle	Walk/Bike	TOTAL	Vehicle Operating	Vehicle Ownership	Parking	TOTAL	PM2.5	CO2	Other	TOTAL	Fatalities due to Collisions	Injuries due to Collisions	Property Damage Only (PDO) Collisions	Active Transport	Noise	TOTAL
38	240582	Truck & Motorcycle Retirement [BAAQMD program]	Reg.	Climate	$ 5.7	$ 0.3	$ 54.5	$ 6.0	9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	$ 30.9	$ -	$ 23.6	$ 54.5	n/a	n/a	n/a	n/a	n/a	n/a
39	n/a	Local Streets and Roads Capital Maintenance Needs	Reg.	Maintenance	$ -	$ 280.0	$ 1,369.3	$ 280.0	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
40	240410	Transportation for Livable Communities	Reg.	TLC	$ 7,131.3	$ 0.0	$ 874.8	$ 254.7	3	$ 256.1	$ 10.3	$ 23.8	$ 59.8	$ (41.2)	$ 308.8	$ 105.4	$ 175.9	$ 26.1	$ 307.4	$ 3.7	$ 9.7	$ 0.6	$ 14.0	$ 19.4	$ 19.1	$ 1.1	$ 204.5	$ 0.5	$ 244.6
41	22247	Regional Bikeway Network	Reg.	Bike/Ped	$ 1,464.0	$ -	$ 124.5	$ 73.2	2	$ 22.2	$ 0.9	$ 2.1	$ 5.2	$ (3.6)	$ 26.8	$ 9.1	$ 15.2	$ 2.3	$ 26.6	$ 0.3	$ 0.8	$ 0.1	$ 1.2	$ 1.7	$ 1.7	$ 0.1	$ 66.4	$ 0.0	$ 69.9
42	n/a	New Freedom Program	Reg.	Lifeline/New Freedom	$ -	$ 2.0	$ 3.3	$ 2.0	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
43	230550	Climate Initiatives (5-year program)	Reg.	Climate	$ 560.0	$ -	$ 158.0	$ 112.0	1	$ 13.7	$ 0.6	$ 1.3	$ 3.2	$ (2.2)	$ 16.5	$ 5.6	$ 9.4	$ 1.4	$ 16.5	$ 0.2	$ 122.6	$ 0.0	$ 122.9	$ 1.0	$ 1.0	$ 0.1	n/a	$ 0.0	$ 2.1
44	n/a	Transit Capital Maintenance Needs	Reg.	Maintenance	$ -	$ 1,285.7	$ 1,787.1	$ 1,285.7	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
45	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Reg.	Climate	$ 42.2	$ 1.8	$ 41.8	$ 44.0	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	$ 23.5	$ -	$ 18.3	$ 41.8	n/a	n/a	n/a	n/a	n/a	n/a
46	240589	EV Solar Installation [BAAQMD program]	Reg.	Climate	$ 1.3	$ 0.3	$ 1.1	$ 1.5	0.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	$ -	$ 0.7	$ 0.4	$ 1.1	n/a	n/a	n/a	n/a	n/a	n/a
47	240690	Lifeline Transportation Program	Reg.	Lifeline/New Freedom	$ -	$ 119.0	$ 10.0	$ 119.0	0.1	$ 3.8	$ 0.2	$ 0.4	$ 0.9	$ (0.6)	$ 4.6	$ 1.6	$ 2.6	$ 0.4	$ 4.6	$ 0.1	$ 0.1	$ 0.0	$ 0.2	$ 0.3	$ 0.3	$ 0.0	n/a	$ 0.0	$ 0.6
48	240694	Treasure Island Congestion Pricing	SF	Pricing	$ 58.9	$ -	$ 69.1	$ 1.2	59	$ 39.4	$ 2.2	$ (20.1)	$ 18.3	$ (0.1)	$ 39.7	$ 7.1	$ 9.7	$ 6.0	$ 22.7	$ 0.7	$ 0.6	$ 0.0	$ 1.3	$ 1.1	$ 1.1	$ 0.1	$ 3.0	$ 0.1	$ 5.4
49	240522	Congestion Pricing Pilot	SF	Pricing	$ 101.8	$ -	$ 227.4	$ 5.1	45	$ 105.7	$ 2.8	$ (68.2)	$ 52.3	$ (19.8)	$ 72.7	$ 23.7	$ 60.3	$ 41.6	$ 125.6	$ 2.2	$ 2.2	$ 0.1	$ 4.5	$ 4.8	$ 4.8	$ 0.2	$ 14.5	$ 0.2	$ 24.5
50	240171	SFMTA Transit Effectiveness Project	SF	Transit Efficiency	$ 156.9	$ -	$ 89.5	$ 7.8	11	$ 34.8	$ 3.1	$ (16.5)	$ 61.3	$ 2.3	$ 85.0	$ 3.0	$ 2.0	$ 1.6	$ 6.6	$ 0.7	$ 0.8	$ 0.0	$ 1.5	$ 0.5	$ 0.5	$ 0.0	$ (4.6)	$ 0.0	$ (3.6)
51	230161	Van Ness Avenue BRT	SF/3434	Transit Efficiency	$ 139.5	$ -	$ 44.1	$ 7.0	6	$ 20.8	$ 2.5	$ 6.8	$ 3.4	$ 1.4	$ 34.8	$ 3.1	$ 2.1	$ 1.4	$ 6.7	$ 0.5	$ 0.4	$ 0.0	$ 0.9	$ 0.0	$ 0.6	$ 0.0	$ 1.1	$ 0.0	$ 1.7
52	240155	Better Market Street	SF	Transit Efficiency	$ 200.0	$ -	$ 56.5	$ 10.0	6	$ 33.6	$ 6.5	$ 14.9	$ 5.6	$ (5.3)	$ 55.2	$ 3.4	$ (0.5)	$ (0.9)	$ 2.0	$ 0.2	$ 0.0	$ (0.0)	$ 0.2	$ 0.8	$ 0.9	$ 0.0	$ (2.7)	$ 0.0	$ (0.9)
53	240557	Oakdale Caltrain Station	SF	Transit Efficiency	$ 51.2	$ -	$ 2.8	$ 0.6	4	$ 2.4	$ (0.6)	$ (2.0)	$ 1.4	$ 0.1	$ 1.3	$ 0.4	$ 0.4	$ 0.2	$ 1.1	$ 0.1	$ 0.1	$ 0.0	$ 0.1	$ 0.1	$ 0.1	$ 0.0	$ 0.1	$ 0.0	$ 0.3
54	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown Extension)	SF/3434	Transit Expansion	$ 2,348.0	$ 1.4	$ 107.9	$ 30.8	4	$ 87.9	$ 2.6	$ (29.2)	$ 31.4	$ 0.7	$ 93.3	$ 6.0	$ 3.4	$ 2.1	$ 11.5	$ 0.5	$ 0.4	$ 0.0	$ 0.9	$ 0.0	$ 0.9	$ 0.1	$ 1.1	$ 0.1	$ 2.1
55	240147	Southeast Waterfront Transportation Improvements	SF	Transit Efficiency	$ 397.0	$ 16.1	$ 88.1	$ 36.0	2	$ 28.1	$ 1.7	$ (3.9)	$ 50.2	$ 0.9	$ 77.0	$ 3.3	$ 3.5	$ 2.5	$ 9.3	$ 0.5	$ 0.5	$ 0.0	$ 1.0	$ 0.8	$ 0.8	$ 0.0	$ (0.9)	$ 0.0	$ 0.7
56	00MUNI	Muni Service Frequency Improvements	SF	Transit Efficiency	$ -	$ 14.0	$ 24.7	$ 14.0	2	$ 3.3	$ (0.3)	$ (2.6)	$ 25.1	$ (0.4)	$ 25.0	$ 0.2	$ 0.4	$ 0.3	$ 0.8	$ 0.0	$ 0.0	$ (0.0)	$ 0.0	$ 0.1	$ 0.1	$ 0.0	$ (1.3)	$ 0.0	$ (1.1)
57	230164	Geary Boulevard BRT	SF	Transit Efficiency	$ 172.3	$ -	$ 15.1	$ 8.6	2	$ 2.2	$ (0.7)	$ (1.9)	$ 11.2	$ 0.8	$ 11.5	$ 0.6	$ 1.2	$ 0.9	$ 2.7	$ 0.1	$ 0.1	$ 0.0	$ 0.2	$ 0.1	$ 0.1	$ 0.0	$ 0.6	$ 0.0	$ 0.8
58	240526	SFCTA Transit Performance Initiative	SF	Transit Efficiency	$ 489.8	$ -	$ 28.4	$ 16.3	2	$ 7.1	$ 0.9	$ 9.4	$ 2.6	$ 1.1	$ 21.1	$ 1.3	$ 2.5	$ 2.0	$ 5.9	$ 0.2	$ 0.2	$ 0.0	$ 0.4	$ 0.3	$ 0.3	$ 0.0	$ 0.4	$ 0.0	$ 1.0
59	240545	Parkmerced Light Rail Corridor	SF	Transit Efficiency	$ 76.0	$ 2.0	$ 6.3	$ 4.5	1	$ 3.7	$ (1.2)	$ (5.9)	$ 6.1	$ 1.5	$ 4.2	$ 0.1	$ 1.1	$ 0.8	$ 2.0	$ 0.1	$ 0.1	$ 0.0	$ 0.1	$ 0.1	$ 0.1	$ 0.0	$ (0.2)	$ 0.0	$ (0.1)
60	22415	Historic Streetcar Expansion Program	SF	Transit Efficiency	$ 66.4	$ 7.2	$ 8.6	$ 9.4	0.9	$ 4.9	$ (0.1)	$ (1.4)	$ (1.6)	$ 2.6	$ 4.4	$ 0.2	$ 1.9	$ 1.6	$ 3.7	$ 0.1	$ 0.1	$ 0.0	$ 0.2	$ 0.1	$ 0.1	$ 0.0	$ 0.1	$ 0.0	$ 0.3
61	22274	ITS Improvements in San Mateo County	SM	Road Efficiency	$ 65.7	$ 0.3	$ 56.0	$ 3.6	16	$ 46.0	$ 2.9	$ 0.8	$ 0.5	$ 0.1	$ 50.4	$ 0.3	$ 0.3	$ (0.0)	$ 0.6	$ 0.9	$ 2.0	$ 0.0	$ 2.9	$ 2.3	$ (0.2)	$ (0.0)	$ (0.1)	$ 0.0	$ 2.0
62	240026	SamTrans El Camino BRT	SM	Transit Efficiency	$ 120.0	$ 19.0	$ 59.1	$ 25.0	2	$ 47.9	$ 3.1	$ (13.4)	$ 6.6	$ 0.4	$ 44.7	$ 3.9	$ 3.7	$ 0.3	$ 7.9	$ 0.8	$ 1.0	$ 0.0	$ 1.8	$ 0.0	$ 0.6	$ 0.0	$ 4.0	$ 0.0	$ 4.6
63	22268	San Mateo Countywide Shuttle Service Frequency Improvements	SM	Transit Efficiency	$ -	$ 6.3	$ 10.3	$ 6.3	2	$ 8.6	$ (0.3)	$ (6.9)	$ 1.2	$ 0.3	$ 3.0	$ 1.9	$ 2.5	$ 0.2	$ 4.7	$ 0.2	$ 0.1	$ 0.0	$ 0.3	$ 0.3	$ 0.3	$ 0.0	$ 1.6	$ 0.0	$ 2.2
64	240494	ITS Improvements in Santa Clara County	SCL	Road Efficiency	$ 319.5	$ 32.0	$ 752.2	$ 48.0	16	$ 618.0	$ 39.5	$ 11.1	$ 7.1	$ 1.8	$ 677.6	$ 4.1	$ 4.5	$ (0.4)	$ 8.2	$ 11.6	$ 27.5	$ 0.3	$ 39.4	$ 31.5	$ (3.0)	$ (0.0)	$ (1.5)	$ 0.0	$ 27.0
65	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	SCL	Road Efficiency	$ 197.8	$ 1.7	$ 81.0	$ 11.6	7	$ 61.9	$ 19.3	$ 1.3	$ (0.8)	$ (0.1)	$ 81.6	$ (0.1)	$ (1.1)	$ (0.0)	$ (1.2)	$ 0.1	$ (0.1)	$ (0.1)	$ (0.1)	$ 0.4	$ 0.6	$ (0.0)	$ (0.2)	$ (0.0)	$ 0.8
66	HOTd	Silicon Valley Express Lanes Network	SCL	Express Lanes Network	$ 1,398.0	$ -	$ 407.8	$ 69.9	6	$ 210.7	$ 404.0	$ 41.0	$ 18.5	$ 5.5	$ 679.6	$ (132.0)	$ (83.6)	$ (5.5)	$ (221.1)	$ (8.6)	$ (4.3)	$ (0.9)	$ (13.8)	$ (14.5)	$ (13.3)	$ (1.3)	$ (6.6)	$ (1.2)	$ (37.0)
67	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	SCL/3434	Transit Expansion	$ 4,094.3	$ 18.7	$ 323.5	$ 69.9	5	$ 142.3	$ 16.5	$ (55.1)	$ 101.8	$ 1.7	$ 207.3	$ 45.3	$ 33.7	$ 3.9	$ 82.9	$ 3.7	$ 3.5	$ 0.1	$ 7.3	$ 6.9	$ 6.8	$ 0.4	$ 11.6	$ 0.4	$ 26.0
68	230294	New SR-152 Alignment	SCL	Highway Expansion	$ 775.8	$ 1.9	$ 147.8	$ 40.7	4	$ 134.1	$ 1.0	$ 1.0	$ (0.1)	$ 0.4	$ 136.4	$ (6.0)	$ (1.6)	$ (0.0)	$ (7.6)	$ 0.6	$ 0.3	$ (0.0)	$ 0.9	$ 8.8	$ 9.7	$ (0.1)	$ (0.2)	$ (0.1)	$ 18.2
69	240119	VTA El Camino BRT	SCL	Transit Efficiency	$ 239.0	$ -	$ 28.1	$ 12.0	2	$ 14.9	$ 1.4	$ 0.1	$ 0.3	$ 0.9	$ 17.5	$ 3.4	$ 4.0	$ 0.1	$ 7.5	$ 0.4	$ 0.3	$ 0.0	$ 0.7	$ 0.0	$ 0.5	$ 0.0	$ 1.8	$ 0.0	$ 2.4
70	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	SCL	Transit Expansion	$ 276.0	$ 0.9	$ 3.8	$ 8.3	0.5	$ 5.1	$ (0.2)	$ (3.3)	$ (2.7)	$ 0.0	$ (1.1)	$ 1.3	$ 1.9	$ 0.1	$ 3.3	$ 0.1	$ 0.0	$ 0.0	$ 0.1	$ 0.0	$ 0.3	$ 0.0	$ 1.2	$ 0.0	$ 1.5
71	230547	Monterey Highway BRT	SCL	Transit Efficiency	$ 140.0	$ 29.6	$ 15.0	$ 36.6	0.4	$ 3.8	$ (0.4)	$ (4.8)	$ 14.0	$ (0.5)	$ 12.1	$ 0.7	$ 1.3	$ 0.0	$ 2.1	$ 0.1	$ 0.1	$ 0.0	$ 0.2	$ 0.1	$ 0.1	$ 0.0	$ 0.4	$ 0.0	$ 0.6
72	22019	Downtown East Valley (Phase 2: LRT)	SCL/3434	Transit Expansion	$ 307.2	$ 5.4	$ 4.8	$ 15.6	0.3	$ 2.9	$ (0.5)	$ (4.2)	$ 1.3	$ 0.8	$ 0.4	$ 0.9	$ 2.1	$ 0.1	$ 3.0	$ 0.1	$ 0.1	$ 0.0	$ 0.2	$ 0.0	$ 0.2	$ 0.0	$ 0.9	$ 0.0	$ 1.2
73	230554	Sunnyvale-Cupertino BRT	SCL	Transit Efficiency	$ 100.0	$ 21.1	$ 4.8	$ 26.1	0.2	$ 2.5	$ (0.8)	$ (2.4)	$ 3.3	$ (0.1)	$ 2.5	$ 0.1	$ 0.9	$ 0.0	$ 1.0	$ 0.1	$ 0.1	$ 0.0	$ 0.1	$ 0.0	$ 0.0	$ (0.0)	$ 1.2	$ 0.0	$ 1.2
74	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	SCL	Transit Expansion	$ 434.8	$ 4.2	$ 2.8	$ 18.7	0.2	$ 4.8	$ 0.6	$ (5.3)	$ (4.2)	$ 0.1	$ (3.8)	$ 1.7	$ 2.6	$ 0.1	$ 4.4	$ 0.1	$ 0.1	$ 0.0	$ 0.2	$ 0.0	$ 0.3	$ 0.0	$ 1.7	$ 0.0	$ 2.0
75	98119	Vasona Light Rail Extension (Phase 2)	SCL	Transit Expansion	$ 176.0	$ 0.6	$ 0.1	$ 6.5	0.0	$ 3.0	$ (1.8)	$ (2.9)	$ (1.6)	$ 0.1	$ (3.2)	$ 0.7	$ 1.3	$ 0.0	$ 2.1	$ 0.1	$ 0.1	$ 0.0	$ 0.2	$ 0.1	$ 0.1	$ 0.0	$ 0.8	$ 0.0	$ 1.1
76	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	SOL	Road Efficiency	$ 50.0	$ 1.0	$ 18.0	$ 3.5	5	$ 18.9	$ 2.1	$ (1.6)	$ (0.9)	$ (0.1)	$ 18.3	$ (0.8)	$ 0.1	$ (0.0)	$ (0.7)	$ (0.0)	$ (0.1)	$ (0.0)	$ (0.2)	$ 0.5	$ 0.6	$ (0.0)	$ (0.5)	$ (0.0)	$ 0.6
77	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	SOL	Transit Efficiency	$ 54.0	$ -	$ 2.0	$ 0.7	3	$ 2.8	$ (0.7)	$ (0.7)	$ 0.6	$ 0.0	$ 2.0	$ (0.3)	$ 0.2	$ 0.0	$ (0.1)	$ 0.0	$ 0.0	$ (0.0)	$ 0.1	$ (0.0)	$ (0.0)	$ (0.0)	$ 0.0	$ (0.0)	$ 0.0
78	240650	Sonoma Countywide Bus Service Frequency Improvements	SON	Transit Efficiency	$ 427.8	$ 10.4	$ 32.0	$ 41.0	0.8	$ 10.0	$ 0.2	$ (10.2)	$ 17.4	$ 1.4	$ 18.8	$ 2.5	$ 5.7	$ 0.9	$ 9.2	$ 0.2	$ 0.1	$ (0.0)	$ 0.4	$ 0.0	$ 0.4	$ 0.0	$ 3.2	$ 0.0	$ 3.6

All benefits and costs are shown in 2013 dollars.

Targets Assessment of Large Projects (sorted by county and targets net score)

REVISED 5/22/2013

					TARGETS SUMMARY				ADOPTED TARGETS									
Row #	Project ID	Project Name	County	Project Type	Targets Supported	Targets Adversely Impacted	Targets Net Score	In PDA?	CO2	Housing	PM	Collisions	Active Transportation	Open Space / AG	Low Income HH Transportation Cost	Economic Vitality	Non-Auto Mode Share/VMT	Maintenance
1	240391	Alameda County TOD/PDA Multimodal Investments	Alameda	TLC	7.0	0.0	7.0	Yes	STRONG	MODERATE	STRONG	STRONG	STRONG	MODERATE	MODERATE	MODERATE	STRONG	MINIMAL
2	240180	BART Bay Fair Connection	Alameda	Transit Efficiency	6.0	0.0	6.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	STRONG	MODERATE	STRONG	MINIMAL
3	22062	Irvington BART Station	Alameda	Transit Efficiency	5.5	0.0	5.5	Yes	MODERATE	MINIMAL	MODERATE	MODERATE	STRONG	MODERATE	STRONG	MODERATE	STRONG	MINIMAL
4	22455	AC Transit East Bay BRT	Alameda/ 3434	Transit Efficiency	5.5	0.0	5.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL
5	22780	AC Transit Grand-MacArthur BRT	Alameda/ 3434	Transit Efficiency	5.5	0.0	5.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL
6	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Alameda	Transit Expansion	5.0	0.0	5.0	Yes	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL	STRONG	STRONG	STRONG	MINIMAL
7	98207T, 98207R	Alameda-Oakland BRT & I-880 Broadway/Jackson Interchange Improvements	Alameda	Transit Efficiency	5.0	0.0	5.0	Yes	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	STRONG	MODERATE	MINIMAL
8	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Alameda/ 3434	Transit Efficiency	5.0	0.0	5.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL
9	240113	BART Hayward Maintenance Complex	Alameda	Transit Efficiency	5.0	0.0	5.0	No	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL	STRONG	MODERATE	MODERATE	STRONG
10	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Alameda	Transit Expansion	5.0	0.0	5.0	Yes	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL	STRONG	STRONG	STRONG	MINIMAL
11	240382, 240383	Alameda County Transit Enhancements, Expansion, Safety, Operations, and Maintenance	Alameda	Transit Efficiency	5.0	0.0	5.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	STRONG	MODERATE	MODERATE	MODERATE
12	LBART	BART to Livermore (Phase 1: 1-Station Rail Extension with DMU)	Alameda	Transit Expansion	5.0	0.0	5.0	Yes	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL	STRONG	STRONG	STRONG	MINIMAL
13	580_BUS	I-580 Express Bus (Dublin to Livermore)	Alameda	Transit Efficiency	4.5	0.0	4.5	Yes	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL
14	240347	Iron Horse Trail, Bay Trail, and East Bay Greenway Expansions	Alameda	Bike/Ped	4.5	0.0	4.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL	MODERATE	MINIMAL
15	240226	Berkeley Ferry Terminal Access Improvements	Alameda	Transit Efficiency	4.0	0.0	4.0	No	MODERATE	STRONG	MODERATE	MODERATE	MODERATE	MINIMAL	MINIMAL	MODERATE	MODERATE	MINIMAL
16	240227	Oakland Bay Trail Extensions	Alameda	Bike/Ped	4.0	0.0	4.0	Yes	MODERATE	MINIMAL	MODERATE	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL	MODERATE	MINIMAL
17	240393	Alameda County Transportation & Parking Demand Management Program	Alameda	Other	4.0	0.0	4.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL
18	22089	Martinez Subdivision & Rail Improvements	Alameda	Transit Efficiency	3.0	0.0	3.0	Yes	MINIMAL	MODERATE	MINIMAL	MODERATE	MINIMAL	MINIMAL	STRONG	STRONG	MINIMAL	MINIMAL
19	22765	I-580/I-680 Interchange HOV Direct Connectors	Alameda	Road Efficiency	2.0	0.0	2.0	No	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG	MODERATE	MINIMAL
20	240318	I-80 Ashby Interchange Improvements	Alameda	Road Efficiency	2.0	0.0	2.0	Yes	MINIMAL	STRONG	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
21	240324	Miller Sweeney Bridge Retrofit	Alameda	Maintenance	2.0	0.0	2.0	Yes	MINIMAL	MODERATE	MINIMAL	MODERATE	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE
22	22769	I-880 23rd/29th Interchange Improvements	Alameda	Road Efficiency	1.5	0.0	1.5	Yes	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
23	22779	I-880/SR-262 Interchange Improvements (Phase 2: Warren Avenue Grade Separation)	Alameda	Road Efficiency	1.5	0.0	1.5	No	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
24	240052	I-880 Whipple Road Interchange Improvements	Alameda	Road Efficiency	1.5	0.0	1.5	No	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
25	240100	Park Street Bridge Replacement	Alameda	Maintenance	1.5	0.0	1.5	Yes	MINIMAL	MINIMAL	MINIMAL	MODERATE	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE
26	240317	Port of Oakland Wharf Replacement & Berth Deepening (Berths 60-63)	Alameda	Other	1.5	0.0	1.5	No	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MODERATE
27	240394	Alameda County Goods Movement Program	Alameda	Other	1.5	0.0	1.5	Yes	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
28	240657	I-580 Corridor Spot Intersection Improvements	Alameda	Road Efficiency	1.5	0.0	1.5	No	MINIMAL	MODERATE	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
29	21100	I-580 Vasco Road Interchange Improvements & Auxiliary Lanes	Alameda	Road Efficiency	1.5	0.5	1.0	No	MINIMAL	MINIMAL	MODERATE AD	MODERATE	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
30	22082	Port of Oakland 7th Street Grade Separation & Roadway Improvements	Alameda	Road Efficiency	1.0	0.0	1.0	Yes	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
31	22760	Port of Oakland Outer Harbor Intermodal Terminals	Alameda	Other	1.0	0.0	1.0	No	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
32	230103	Decoto Neighborhood Grade Separation	Alameda	Road Efficiency	1.0	0.0	1.0	Yes	MINIMAL	MODERATE	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
33	240024	Oakland Army Base Infrastructure Improvements	Alameda	Other	1.0	0.0	1.0	No	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
34	240279	Mandela Parkway & 3rd Street Corridor Street Reconstruction	Alameda	Road Efficiency	1.0	0.0	1.0	Yes	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
35	240562	SR-92 Clawiter/Whitesell Interchange Improvements	Alameda	Road Efficiency	1.0	0.0	1.0	No	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL

LEGEND	IMPACT TO TARGETS			
STRONG	MODERATE	MINIMAL	MODERATE ADVERSE	STRONG

Targets Assessment of Large Projects (sorted by county and targets net score)

REVISED 5/22/2013

Row #	Project ID	Project Name	County	Project Type	TARGETS SUMMARY: Targets Supported	Targets Adversely Impacted	Targets Net Score	In PDA?	ADOPTED TARGETS: CO2	Housing	PM	Collisions	Active Transportation	Open Space / AG	Low Income HH Transportation Cost	Economic Vitality	Non-Auto Mode Share/VMT	Maintenance
36	21477	I-580/Greenville Road Interchange Improvements	Alameda	Road Efficiency	0.5	0.0	0.5	Yes	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
37	94506	Fremont/Union City East-West Connector	Alameda	Arterial Expansion	2.0	1.5	0.5	Yes	MODERATE AD	MODERATE	MODERATE AD	MODERATE AD	MODERATE	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
38	240047	I-880/A Street Interchange Improvements & Auxiliary Lanes	Alameda	Road Efficiency	0.5	0.0	0.5	No	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
39	240101	Fruitvale Bridge Replacement & Widening	Alameda	Arterial Expansion	1.5	1.0	0.5	Yes	MODERATE AD	MINIMAL	MODERATE AD	MODERATE	MODERATE	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
40	240397	Alameda County Transportation Technology and Revenue Enhancement Program	Alameda	Other	0.5	0.0	0.5	Yes	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
41	230099	I-580/I-680 Interchange Improvements (Phase 1)	Alameda	Road Efficiency	1.0	1.0	0.0	No	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE AD	MINIMAL	MODERATE	MODERATE AD	MINIMAL
42	240726	Alameda County Transportation Project Development	Alameda	Planning	0.0	0.0	0.0	Yes	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
43	240062, 22776	SR-84/I-680 Interchange Improvements + SR-84 Widening (Jack London to I-680)	Alameda	Highway Expansion	0.5	3.0	-2.5	No	MODERATE AD	MINIMAL	MODERATE AD	MODERATE AD	MODERATE AD	MODERATE AD	MINIMAL	MODERATE	MODERATE AD	MINIMAL
44	240053	Whipple Road Widening (Mission Boulevard to I-880)	Alameda	Highway Expansion	1.0	6.0	-5.0	No	STRONG AD	MINIMAL	STRONG AD	STRONG AD	STRONG AD	STRONG AD	MINIMAL	STRONG	STRONG AD	MINIMAL
45	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Contra Costa	Transit Efficiency	4.5	0.0	4.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL
46	230321	Hercules Intermodal Station (Phases 2, 3, and 4)	Contra Costa	Transit Efficiency	4.5	0.0	4.5	Yes	MODERATE	STRONG	MODERATE	MODERATE	STRONG	MODERATE	MINIMAL	MINIMAL	MODERATE	MINIMAL
47	240364	Contra Costa County Paratransit Program	Contra Costa	Lifeline	4.5	0.0	4.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	STRONG	MODERATE	MODERATE	MINIMAL
48	240365	Contra Costa County Transportation for Liveable Communities Program	Contra Costa	TLC	4.5	0.0	4.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL
49	22360	I-80 San Pablo Dam Road Interchange Improvements	Contra Costa	Road Efficiency	2.5	0.0	2.5	No	MINIMAL	STRONG	MINIMAL	MODERATE	MODERATE	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
50	22353, 21223	I-680 HOV Gap Closure in Walnut Creek (N. Main to Livorna)	Contra Costa	Road Efficiency	1.5	0.0	1.5	Yes	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG	MODERATE	MINIMAL
51	230232	New SR-4 Phillips Lane Interchange + Phillips Lane Extension	Contra Costa	Arterial Expansion	1.5	0.0	1.5	Yes	MINIMAL	STRONG	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
52	22604	Vasco Road Safety & Operational Improvements (Brentwood to San Joaquin County line)	Contra Costa	Highway Expansion	1.0	0.0	1.0	No	MINIMAL	MODERATE	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
53	22352	New I-680 Norris Canyon HOV-only Interchange	Contra Costa	Highway Expansion	1.0	0.0	1.0	Yes	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
54	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening (Morello Avenue to SR-242)	Contra Costa	Highway Expansion	1.0	0.5	0.5	No	MINIMAL	MINIMAL	MINIMAL	MODERATE	MODERATE AD	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
55	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Contra Costa	Highway Expansion	2.0	4.5	-2.5	No	STRONG AD	STRONG	STRONG AD	MODERATE AD	STRONG AD	MINIMAL	MINIMAL	STRONG	STRONG AD	MINIMAL
56	22981	SR-4 Widening (Marsh Creek Road to San Joaquin County line)	Contra Costa	Highway Expansion	1.0	3.5	-2.5	No	STRONG AD	MINIMAL	STRONG AD	MODERATE AD	MINIMAL	MINIMAL	MINIMAL	STRONG	STRONG AD	MINIMAL
57	98133	Pacheco Boulevard Widening (Blum Road to Arthur Road)	Contra Costa	Highway Expansion	1.0	4.0	-3.0	No	STRONG AD	MINIMAL	STRONG AD	STRONG AD	MODERATE	MINIMAL	MINIMAL	MODERATE	STRONG AD	MINIMAL
58	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Contra Costa	Highway Expansion	1.0	4.5	-3.5	No	STRONG AD	MINIMAL	STRONG AD	MODERATE	STRONG AD	MODERATE AD	MINIMAL	MODERATE	STRONG AD	MINIMAL
59	94050	SR-4 Upgrade to Full Freeway (Phase 2: Cummings Skyway to I-80)	Contra Costa	Highway Expansion	1.0	5.5	-4.5	Yes	STRONG AD	MINIMAL	MODERATE AD	STRONG AD	STRONG AD	STRONG AD	MINIMAL	STRONG	STRONG AD	MINIMAL
60	230233	James Donlon Boulevard/Expressway (Kirker Pass Road to Somersville Road) + Kirker Pass Road Operational Improvements	Contra Costa	Highway Expansion	1.5	6.0	-4.5	No	STRONG AD	STRONG	STRONG AD	STRONG AD	STRONG AD	STRONG AD	MINIMAL	MODERATE	STRONG AD	MINIMAL
61	230252	Marin Countywide Bus Service Frequency Improvements	Marin	Transit Efficiency	4.5	0.0	4.5	Yes	MODERATE	MINIMAL	MODERATE	MODERATE	STRONG	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL
62	21325	US-101 Twin Cities Corridor Improvements	Marin	Road Efficiency	3.0	0.0	3.0	No	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL	MINIMAL	MODERATE	MODERATE	MINIMAL
63	240644	Marin Countywide Senior Mobility Program	Marin	Safety	1.5	0.0	1.5	Yes	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MODERATE	MINIMAL	MODERATE	MINIMAL
64	240660	Marin County Arterial & Local Street Operational Improvements	Marin	Road Efficiency	0.5	0.0	0.5	Yes	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
65		Transit Operations & Maintenance (Large Operators) *[RTPIDs: 94636, 240541, 94525, 94610, 94526, 22481, 94666, 94572]*	Multi-County	Transit Operations	8.5	0.0	8.5	Yes	STRONG	MODERATE	STRONG	STRONG	STRONG	MINIMAL	STRONG	STRONG	STRONG	STRONG
66	240182	BART Metro Program	Multi-County	Transit Efficiency	8.5	0.0	8.5	Yes	STRONG	MODERATE	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	MINIMAL
67	00BART	BART Service Frequency Improvements	Multi-County	Transit Efficiency	8.5	0.0	8.5	Yes	STRONG	MODERATE	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	MINIMAL
68	230603	California High-Speed Train - Bay Area to Central Valley	Multi-County	Transit Expansion	7.5	0.0	7.5	Yes	STRONG	MODERATE	STRONG	STRONG	STRONG	MODERATE	MODERATE	STRONG	STRONG	MINIMAL
69	240134, 21627	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (SF to Tamien)	Multi-County	Transit Efficiency	7.5	0.0	7.5	Yes	STRONG	MODERATE	STRONG	STRONG	STRONG	MODERATE	MODERATE	STRONG	STRONG	MINIMAL
70	240521, 21627, 240134	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (SF to Tamien)	Multi-County/ 3434	Transit Efficiency	7.5	0.0	7.5	Yes	STRONG	MODERATE	STRONG	STRONG	STRONG	MODERATE	MODERATE	STRONG	STRONG	MINIMAL

LEGEND	IMPACT TO TARGETS			
STRONG	MODERATE	MINIMAL	MODERATE ADVERSE	STRONG

Targets Assessment of Large Projects (sorted by county and targets net score)

REVISED 5/22/2013

Row #	Project ID	Project Name	County	Project Type	TARGETS SUMMARY: Targets Supported	Targets Adversely Impacted	Targets Net Score	In PDA?	ADOPTED TARGETS: CO2	Housing	PM	Collisions	Active Transportation	Open Space / AG	Low Income HH Transportation Cost	Economic Vitality	Non-Auto Mode Share/VMT	Maintenance
71		Bicycle & Pedestrian Programs *[RTPIDs: 240381, 21225, 240678, 240612, 230527, 240488, 240486, 240533, 230430, 240509, 240651, 98212, 240556]*	Multi-County	Bike/Ped	7.0	0.0	7.0	Yes	STRONG	MODERATE	STRONG	STRONG	STRONG	MODERATE	MODERATE	MODERATE	STRONG	MINIMAL
72	240018	Dumbarton Corridor Express Bus	Multi-County	Transit Efficiency	6.5	0.0	6.5	Yes	STRONG	MODERATE	STRONG	MODERATE	STRONG	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL
73	22009	Capitol Corridor Service Frequency Improvements (Oakland to San Jose)	Multi-County/ 3434	Transit Efficiency	6.0	0.0	6.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	MODERATE	STRONG	STRONG	MINIMAL
74	240216	Dumbarton Rail	Multi-County/ 3434	Transit Expansion	6.0	0.0	6.0	Yes	STRONG	MODERATE	STRONG	MODERATE	STRONG	MODERATE	MINIMAL	STRONG	MODERATE	MINIMAL
75		Transit Operations & Maintenance (Small Operators) *[RTPIDs: 21017, 94558, 94527, 94683, 240723, 240578]*	Multi-County	Transit Operations	5.5	0.0	5.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	STRONG	MODERATE	MODERATE	STRONG
76	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Multi-County	Transit Efficiency	5.5	0.0	5.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	STRONG	MODERATE	MINIMAL
77	00ACT1	AC Transit Frequent Transit Network	Multi-County	Transit Efficiency	5.5	0.0	5.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	STRONG	MODERATE	MINIMAL
78		Local Streets & Roads Maintenance *[RTPIDs: 240387, 240386, 230693, 230694, 240714, 230695, 240490, 240535, 230697, 240740, 230700, 240600, 240680]*	Multi-County	Maintenance	5.0	0.0	5.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	STRONG
79	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Multi-County/ 3434	Transit Expansion	5.0	0.0	5.0	Yes	STRONG	MINIMAL	MODERATE	MODERATE	STRONG	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL
80	n/a	BART Station Capacity Improvements	Multi-County	Transit Efficiency	5.0	0.0	5.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL
81	n/a	BART Station Access Improvements	Multi-County	Transit Efficiency	5.0	0.0	5.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL
82	21013	State Toll Bridge Rehabilitation & Retrofit	Multi-County	Maintenance	4.5	0.0	4.5	No	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	STRONG
83	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Multi-County/ 3434	Transit Expansion	4.5	0.0	4.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	MINIMAL	MODERATE	MODERATE	MINIMAL
84	230055	Golden Gate Ferry Service Frequency Improvements	Multi-County	Transit Efficiency	4.5	0.0	4.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL
85	230604	Bay Bridge Contraflow Lane	Multi-County	Pricing	4.5	0.0	4.5	Yes	STRONG	MODERATE	STRONG	MINIMAL	MINIMAL	MINIMAL	MODERATE	STRONG	MODERATE	MINIMAL
86	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Multi-County	Transit Efficiency	4.5	0.0	4.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	STRONG	MODERATE	MODERATE	MINIMAL
87	230219, 230314	Golden Gate Bus Service Frequency Improvements	Multi-County	Transit Efficiency	4.5	0.0	4.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL
88	98139	ACE Expansion	Multi-County/ 3434	Transit Efficiency	4.0	0.0	4.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	MODERATE	MODERATE	MINIMAL
89	240019	Caltrain Station Improvements (Phase 1)	Multi-County	Transit Efficiency	3.5	0.0	3.5	Yes	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL
90	240036	Caltrain Communications-Based Overlay Signal System (CBOSS) and Positive Train Control System (PTC)	Multi-County	Transit Efficiency	2.5	0.0	2.5	Yes	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MODERATE
91	240060, 240523	US-101 HOV Lanes (Whipple to Cesar Chavez)	Multi-County	Road Efficiency	2.5	0.0	2.5	Yes	MODERATE	MODERATE	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MODERATE	MINIMAL
92	22003	Capitol Corridor Reliability Improvements (Phase 2)	Multi-County	Road Efficiency	1.5	0.0	1.5	Yes	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
93	22657	I-580 Westbound Truck Climbing Lane (Altamont Pass)	Multi-County	Road Efficiency	1.5	0.0	1.5	No	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
94	240140	Caltrain At-Grade Crossing Improvements	Multi-County	Transit Efficiency	1.5	0.0	1.5	Yes	MINIMAL	MODERATE	MINIMAL	STRONG	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
95	21012	Golden Gate Bridge Seismic Retrofit (Phase 3)	Multi-County	Maintenance	1.0	0.0	1.0	No	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG
96	22636	Transbay Tube Seimsic Retrofit (Phase 1)	Multi-County	Maintenance	1.0	0.0	1.0	No	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG
97	240571	I-80/I-880 Congestion Pricing and Clean Vehicle Incentive Program	Multi-County	Pricing	2.0	1.0	1.0	Yes	MODERATE	MODERATE	MODERATE	MINIMAL	MODERATE AD	MINIMAL	MINIMAL	MODERATE	MODERATE AD	MINIMAL
98	98147, 240691	Marin-Sonoma Narrows (Phase 2)	Multi-County	Highway Expansion	2.5	2.0	0.5	Yes	MODERATE AD	MINIMAL	MODERATE AD	STRONG	MODERATE AD	MODERATE	MINIMAL	STRONG	MODERATE AD	MINIMAL
99	HOTe	CTC Application + Alameda County Authorized Lanes Express Lanes Network	Multi-County	Express Lanes Network	2.0	2.5	-0.5	Yes	MODERATE AD	MODERATE	MODERATE AD	MODERATE AD	MODERATE AD	MODERATE	MINIMAL	STRONG	MODERATE AD	MINIMAL
100	240122	SR-29 Complete Streets Improvements	Napa	Road Efficiency	1.5	0.0	1.5	Yes	MINIMAL	MINIMAL	MINIMAL	MODERATE	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL
101	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Napa	Road Efficiency	1.5	0.0	1.5	Yes	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MODERATE	MINIMAL
102	94075	SR-12 Jameson Canyon Project (Phase 3: New SR-12/SR-29 Interchange)	Napa	Road Efficiency	1.5	1.0	0.5	No	MODERATE AD	MINIMAL	MODERATE AD	MODERATE	MINIMAL	MODERATE	MINIMAL	MODERATE	MINIMAL	MINIMAL
103	22247	Regional Bikeway Network	Regional	Bike/Ped	7.0	0.0	7.0	Yes	STRONG	MODERATE	STRONG	STRONG	STRONG	MODERATE	MODERATE	MODERATE	STRONG	MINIMAL
104	240410	Transportation for Livable Communities	Regional	TLC	7.0	0.0	7.0	Yes	STRONG	MODERATE	STRONG	STRONG	STRONG	MODERATE	MODERATE	MODERATE	STRONG	MINIMAL
105	240735	Transit Performance Initiative	Regional	Transit Efficiency	6.5	0.0	6.5	Yes	STRONG	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL	STRONG	STRONG	STRONG	MINIMAL

LEGEND	IMPACT TO TARGETS			
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106	240690	Lifeline Program	Regional	Lifeline/New Freedom	5.5	0.0	5.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MINIMAL	STRONG	MODERATE	STRONG	MINIMAL
107	230716	New Freedom	Regional	Lifeline/New Freedom	5.5	0.0	5.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MINIMAL	STRONG	MODERATE	STRONG	MINIMAL
108	240744	One Bay Area Grant Program	Regional	OBAG	5.5	0.0	5.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE
109	n/a	Safe Routes to School Program	Regional	Bike/Ped	5.0	0.0	5.0	Yes	MODERATE	MODERATE	MODERATE	STRONG	STRONG	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL
110	n/a	State Highway Maintenance	Regional	Maintenance	5.0	0.0	5.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	STRONG
111	LS&R	Local Streets and Roads Capital Maintenance Needs	Regional	Maintenance	5.0	0.0	5.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	STRONG
112	Transitshort	Transit Capital Maintenance Needs	Regional	Maintenance	5.0	0.0	5.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	STRONG
113	230419	Freeway Performance Initiative	Regional	FPI	4.0	0.0	4.0	Yes	MODERATE	MODERATE	MINIMAL	MODERATE	MINIMAL	MODERATE	MODERATE	STRONG	MODERATE	MINIMAL
114	n/a	Local Bridge Maintenance	Regional	Safety	3.5	0.0	3.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL
115	230550	Climate Initiatives	Regional	Climate	3.5	0.0	3.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	MODERATE	MINIMAL	MODERATE	MINIMAL
116	n/a	Clipper Program	Regional	Other	3.0	0.0	3.0	Yes	MODERATE	MODERATE	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL
117	n/a	Highway Safety Improvement Program	Regional	Safety	2.0	0.0	2.0	Yes	MINIMAL	MODERATE	MINIMAL	STRONG	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
118	240749	Section 130 State Rail Program	Regional	Safety	2.0	0.0	2.0	Yes	MINIMAL	MODERATE	MINIMAL	STRONG	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE
119	n/a	Highway-Rail Grade Crossing Improvement Program	Regional	Safety	1.5	0.0	1.5	Yes	MINIMAL	MODERATE	MINIMAL	STRONG	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
120	240589	EV Solar Installation [BAAQMD program]	Regional	Climate	1.5	0.5	1.0	Yes	STRONG	MODERATE	MINIMAL	MINIMAL	MODERATE AD	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
121	240731	Priority Conservation Area Program	Regional	Other	1.0	0.0	1.0	No	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL	MINIMAL	MINIMAL
122	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Regional	Climate	1.5	1.0	0.5	Yes	MINIMAL	MODERATE	STRONG	MINIMAL	MODERATE AD	MINIMAL	MINIMAL	MINIMAL	MODERATE AD	MINIMAL
123	240582	Truck & Motorcycle Retirement [BAAQMD program]	Regional	Climate	1.5	1.0	0.5	Yes	MINIMAL	MODERATE	STRONG	MINIMAL	MODERATE AD	MINIMAL	MINIMAL	MINIMAL	MODERATE AD	MINIMAL
124	22425	Regional & Countywide Planning Funds	Regional	Planning	0.0	0.0	0.0	Yes	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
125	240674	Transbay Transit Center - Phase 3 (Pedestrian Connector Tunnel to BART/Muni)	San Francisco	Transit Expansion	8.0	0.0	8.0	Yes	STRONG	MODERATE	STRONG	STRONG	STRONG	MODERATE	STRONG	STRONG	STRONG	MINIMAL
126	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown Extension)	San Francisco/ 3434	Transit Expansion	7.5	0.0	7.5	Yes	STRONG	MODERATE	STRONG	STRONG	STRONG	MODERATE	MODERATE	STRONG	STRONG	MINIMAL
127	240171	SFMTA Transit Effectiveness Project	San Francisco	Transit Efficiency	7.5	0.0	7.5	Yes	STRONG	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	STRONG	MODERATE	STRONG	STRONG
128	240526	SFCTA Transit Performance Initiative	San Francisco	Transit Efficiency	7.5	0.0	7.5	Yes	STRONG	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	STRONG	MODERATE	STRONG	STRONG
129	240309	Muni Fleet Expansion	San Francisco	Transit Efficiency	7.0	0.0	7.0	Yes	STRONG	MODERATE	STRONG	STRONG	MODERATE	MINIMAL	STRONG	STRONG	STRONG	MINIMAL
130	230161	Van Ness Avenue BRT	San Francisco/ 3434	Transit Efficiency	6.5	0.0	6.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	STRONG	STRONG	STRONG	MINIMAL
131	230164	Geary Boulevard BRT	San Francisco	Transit Efficiency	6.5	0.0	6.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	STRONG	STRONG	STRONG	MINIMAL
132	240155	Better Market Street	San Francisco	Transit Efficiency	6.0	0.0	6.0	Yes	MINIMAL	MODERATE	MODERATE	STRONG	STRONG	MINIMAL	STRONG	MODERATE	STRONG	MODERATE
133	240522	Congestion Pricing Pilot	San Francisco	Pricing	6.0	0.0	6.0	Yes	STRONG	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL	MINIMAL	STRONG	STRONG	MODERATE
134	00MUNI	Muni Service Frequency Improvements	San Francisco	Transit Efficiency	5.5	0.0	5.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	STRONG	MODERATE	MINIMAL
135	22415	Historic Streetcar Expansion Program	San Francisco	Transit Efficiency	5.0	0.0	5.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MINIMAL	STRONG	MODERATE	MODERATE	MINIMAL
136	240545	Parkmerced Light Rail Corridor	San Francisco	Transit Efficiency	5.0	0.0	5.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL
137	240557	Oakdale Caltrain Station	San Francisco	Transit Efficiency	4.5	0.0	4.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL
138	240158	Eastern Neighborhoods (EN TRIPS) Circulation & Streetscape Improvements	San Francisco	Road Efficiency	4.0	0.0	4.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL
139	240493	San Francisco Local Street Safety Program	San Francisco	Safety	4.0	0.0	4.0	Yes	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	MINIMAL	MODERATE	MINIMAL	MODERATE	MINIMAL
140	240694	Treasure Island Congestion Pricing	San Francisco	Pricing	4.0	0.0	4.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL

LEGEND	IMPACT TO TARGETS			
STRONG	MODERATE	MINIMAL	MODERATE ADVERSE	STRONG

Targets Assessment of Large Projects (sorted by county and targets net score)

REVISED 5/22/2013

					TARGETS SUMMARY				ADOPTED TARGETS									
Row #	Project ID	Project Name	County	Project Type	Targets Supported	Targets Adversely Impacted	Targets Net Score	In PDA?	CO2	Housing	PM	Collisions	Active Transportation	Open Space / AG	Low Income HH Transportation Cost	Economic Vitality	Non-Auto Mode Share/VMT	Maintenance
141	98593	SFgo Integrated Transportation Management System	San Francisco	Road Efficiency	3.5	0.0	3.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	MINIMAL	MINIMAL	STRONG	MODERATE	MINIMAL
142	240147	Southeast Waterfront Transportation Improvements	San Francisco	Transit Efficiency	3.5	0.0	3.5	Yes	MINIMAL	MODERATE	MODERATE	MINIMAL	MODERATE	MINIMAL	STRONG	MODERATE	MODERATE	MINIMAL
143	240163	Hunters Point & Candlestick Point Local Road Network	San Francisco	Road Efficiency	2.5	0.0	2.5	Yes	MINIMAL	MODERATE	MINIMAL	MINIMAL	STRONG	MINIMAL	MODERATE	MODERATE	MINIMAL	MINIMAL
144	240344	SFpark	San Francisco	Parking	2.5	0.0	2.5	Yes	MODERATE	MODERATE	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MODERATE	MINIMAL
145	240358	Mission Bay Local Road Network	San Francisco	Arterial Expansion	2.5	0.0	2.5	Yes	MINIMAL	MODERATE	MINIMAL	MINIMAL	STRONG	MINIMAL	MODERATE	MODERATE	MINIMAL	MINIMAL
146	240543	San Francisco Local Intersection Improvements	San Francisco	Road Efficiency	2.0	0.0	2.0	Yes	MINIMAL	MODERATE	MINIMAL	STRONG	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
147	240035	Caltrain Terminal Station Improvements (4th & King)	San Francisco	Transit Efficiency	1.5	0.0	1.5	Yes	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MODERATE	MINIMAL	MINIMAL
148	230555	I-80 Yerba Buena Island Interchange Improvements	San Francisco	Road Efficiency	2.0	1.0	1.0	No	MODERATE AD	MODERATE	MODERATE AD	MODERATE	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
149	240471	San Francisco Transit Enhancement Program	San Francisco	Transit Efficiency	1.0	0.0	1.0	Yes	MINIMAL	MODERATE	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
150	22227	Geneva Avenue Extension	San Mateo	Arterial Expansion	0.5	0.0	0.5	Yes	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
151	240026	SamTrans El Camino BRT	San Mateo	Transit Efficiency	5.5	0.0	5.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL
152	22274	ITS Improvements in San Mateo County	San Mateo	Road Efficiency	4.0	0.0	4.0	Yes	MODERATE	MODERATE	MINIMAL	MODERATE	MINIMAL	MODERATE	MODERATE	STRONG	MODERATE	MINIMAL
153	240086	San Mateo County Transportation for Liveable Communities Program	San Mateo	TLC	4.0	0.0	4.0	Yes	MODERATE	MINIMAL	MODERATE	MODERATE	STRONG	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL
154	240590	El Camino Real Complete Streets Improvements	San Mateo	Road Efficiency	4.0	0.0	4.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL
155	22268	San Mateo Countywide Shuttle Service Frequency Improvements	San Mateo	Transit Efficiency	2.5	0.0	2.5	Yes	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG	MODERATE	MINIMAL	MODERATE
156	21624	San Mateo County TOD Incentive Program	San Mateo	Other	3.0	0.0	3.0	Yes	MODERATE	MINIMAL	MODERATE	MINIMAL	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL
157	21602	US-101 Broadway Interchange Improvements	San Mateo	Road Efficiency	2.0	0.0	2.0	No	MINIMAL	MINIMAL	MINIMAL	MODERATE	MODERATE	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
158	21603	US-101 Woodside Road Interchange Improvements	San Mateo	Road Efficiency	2.0	0.0	2.0	Yes	MINIMAL	MINIMAL	MINIMAL	MODERATE	MODERATE	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
159	21606	US-101 Willow Road Interchange Improvements	San Mateo	Road Efficiency	2.0	0.0	2.0	No	MINIMAL	MINIMAL	MINIMAL	MODERATE	MODERATE	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
160	21613	SR-92 Improvements (Phase 1: San Mateo Bridge to I-280)	San Mateo	Road Efficiency	1.5	0.0	1.5	Yes	MINIMAL	MODERATE	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
161	22279	US-101 Produce Road Interchange Improvements	San Mateo	Road Efficiency	1.5	0.0	1.5	No	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
162	22756	US-101 Candlestick Point Interchange Improvements	San Mateo	Road Efficiency	1.5	0.0	1.5	No	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
163	240064	Caltrain Grade Separations (Phase 1: San Mateo County)	San Mateo	Transit Efficiency	1.5	0.0	1.5	No	MINIMAL	MODERATE	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE
164	21604	US-101 Auxiliary Lane Modifications (Oyster Point to San Francisco County line)	San Mateo	Road Efficiency	1.0	0.0	1.0	No	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
165	21615	I-280/SR-1 Interchange Improvements	San Mateo	Road Efficiency	1.0	0.0	1.0	No	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
166	22229	US-101 Sierra Point Parkway Interchange Improvements + Lagoon Way Extension	San Mateo	Road Efficiency	1.0	0.0	1.0	No	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
167	22230	I-280 Auxiliary Lanes (Hickey Boulevard to I-380)	San Mateo	Road Efficiency	1.0	0.0	1.0	No	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
168	94644	SR-92 Westbound Slow-Vehicle Climbing Lane (I-280 to SR-35)	San Mateo	Road Efficiency	1.0	0.0	1.0	No	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
169	21612	Dumbarton Bridge/US-101 Access Improvements (Phase 1)	San Mateo	Road Efficiency	0.5	0.0	0.5	Yes	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
170	240114	SR-1 Safety & Operational Improvements (Pacifica to Half Moon Bay)	San Mateo	Road Efficiency	1.0	0.5	0.5	No	MINIMAL	MODERATE AD	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE
171	22282	US-101 Operational Improvements (near US-101/SR-92 Interchange)	San Mateo	Road Efficiency	0.0	0.0	0.0	Yes	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
172	98204	SR-1 Widening (Fassler Avenue to Westport Drive)	San Mateo	Highway Expansion	0.0	0.5	-0.5	No	MINIMAL	MODERATE AD	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
173	240119	VTA El Camino BRT	Santa Clara	Transit Efficiency	7.0	0.0	7.0	Yes	MODERATE	STRONG	MODERATE	MODERATE	STRONG	MODERATE	STRONG	STRONG	STRONG	MINIMAL
174	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Santa Clara/ 3434	Transit Expansion	7.0	0.0	7.0	Yes	STRONG	MINIMAL	STRONG	STRONG	MODERATE	MODERATE	STRONG	STRONG	STRONG	MINIMAL
175	22019	Downtown East Valley (Phase 2: LRT)	Santa Clara/ 3434	Transit Expansion	6.0	0.0	6.0	Yes	MODERATE	STRONG	MODERATE	MODERATE	STRONG	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL

LEGEND	IMPACT TO TARGETS			
STRONG	MODERATE	MINIMAL	MODERATE ADVERSE	STRONG

Targets Assessment of Large Projects (sorted by county and targets net score)

REVISED 5/22/2013

					TARGETS SUMMARY				ADOPTED TARGETS									
Row #	Project ID	Project Name	County	Project Type	Targets Supported	Targets Adversely Impacted	Targets Net Score	In PDA?	CO2	Housing	PM	Collisions	Active Transportation	Open Space / AG	Low Income HH Transportation Cost	Economic Vitality	Non-Auto Mode Share/VMT	Maintenance
176	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Santa Clara	Transit Expansion	6.0	0.0	6.0	Yes	MODERATE	STRONG	MODERATE	MODERATE	STRONG	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL
177	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Santa Clara	Transit Expansion	6.0	0.0	6.0	Yes	MODERATE	STRONG	MODERATE	MODERATE	STRONG	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL
178	98119	Vasona Light Rail Extension (Phase 2)	Santa Clara	Transit Expansion	5.5	0.0	5.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL
179	230547	Monterey Highway BRT	Santa Clara	Transit Efficiency	5.5	0.0	5.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL
180	230554	Sunnyvale-Cupertino BRT	Santa Clara	Transit Efficiency	5.0	0.0	5.0	Yes	MODERATE	MINIMAL	MODERATE	MODERATE	STRONG	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL
181	240118	Stevens Creek BRT	Santa Clara	Transit Efficiency	5.0	0.0	5.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL
182	21760	Caltrain Double-Track Improvements (San Jose to Gilroy)	Santa Clara	Transit Efficiency	4.5	0.0	4.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL
183	230534	Caltrain Electrification (Tamien to Gilroy)	Santa Clara	Transit Efficiency	4.5	0.0	4.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL
184	240508	VTA Community Design & Transportation Program	Santa Clara	TLC	4.5	0.0	4.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL
185	240494	ITS Improvements in Santa Clara County	Santa Clara	Road Efficiency	4.0	0.0	4.0	Yes	MODERATE	MODERATE	MINIMAL	MODERATE	MINIMAL	MODERATE	MODERATE	STRONG	MODERATE	MINIMAL
186	22965	New US-101 Mabury/Taylor Interchange	Santa Clara	Arterial Expansion	2.5	0.0	2.5	Yes	MINIMAL	STRONG	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
187	22979	New US-101 Zanker/Skyport/Fourth Street Interchange	Santa Clara	Arterial Expansion	2.5	0.0	2.5	Yes	MINIMAL	STRONG	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
188	240437	US-101 Braided Ramps (Capitol Expressway to Yerba Buena Road)	Santa Clara	Arterial Expansion	2.5	0.0	2.5	Yes	MINIMAL	STRONG	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
189	240441	US-101/Oregon Expressway/Embarcadero Road Interchange Improvements	Santa Clara	Arterial Expansion	2.5	0.0	2.5	No	MINIMAL	STRONG	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
190	21719	I-880/I-280/Stevens Creek Boulevard Interchange Improvements	Santa Clara	Arterial Expansion	2.0	0.0	2.0	Yes	MINIMAL	STRONG	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
191	230537	I-280 Winchester Boulevard Interchange Improvements	Santa Clara	Arterial Expansion	2.0	0.0	2.0	No	MINIMAL	STRONG	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
192	240048	Caltrain Diridon Station Track Capacity Expansion (Phases 2 & 3)	Santa Clara	Transit Efficiency	2.0	0.0	2.0	Yes	MINIMAL	STRONG	MINIMAL	MODERATE	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL
193	240063	Caltrain Terminal Station Improvements (San Jose Diridon)	Santa Clara	Transit Efficiency	2.0	0.0	2.0	Yes	MINIMAL	STRONG	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MODERATE	MINIMAL	MINIMAL
194	240429	I-880/US-101 Interchange Improvements	Santa Clara	Arterial Expansion	2.0	0.0	2.0	Yes	MINIMAL	STRONG	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
195	240444	US-101/SR-237 Interchange Improvements	Santa Clara	Arterial Expansion	2.0	0.0	2.0	Yes	MINIMAL	STRONG	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
196	240671	New I-280 Senter Road Interchange	Santa Clara	Arterial Expansion	2.0	0.0	2.0	No	MINIMAL	STRONG	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
197	230337	New Lawrence Expressway Interchange (Monroe Street)	Santa Clara	Arterial Expansion	1.5	0.0	1.5	No	MINIMAL	MODERATE	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
198	240479	I-680 Auxiliary Lanes (McKee Road to Berryessa Road)	Santa Clara	Road Efficiency	1.5	0.0	1.5	No	MINIMAL	STRONG	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
199	240586	Oregon Expressway Alma Bridge Interchange Improvements	Santa Clara	Road Efficiency	1.5	0.0	1.5	Yes	MINIMAL	STRONG	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
200	21922	Mineta San Jose International Airport APM Connector	Santa Clara	Transit Efficiency	1.0	0.0	1.0	Yes	MINIMAL	STRONG	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
201	22814	Foothill Expressway Deceleration Lane Extension	Santa Clara	Road Efficiency	1.0	0.0	1.0	No	MINIMAL	STRONG	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
202	230340	New Lawrence Expressway Interchange (Kifer Road)	Santa Clara	Arterial Expansion	1.0	0.0	1.0	No	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
203	240473	I-280 Braided Ramps (SR-85 to Foothill Expressway)	Santa Clara	Road Efficiency	1.0	0.0	1.0	No	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
204	240580	I-280/Lawrence Expressway/Stevens Creek Interchange Improvements	Santa Clara	Arterial Expansion	1.0	0.0	1.0	Yes	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
205	230332	Rengstorff Avenue Grade Separation	Santa Clara	Road Efficiency	0.5	0.0	0.5	No	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
206	240404	Calaveras Boulevard Overpass Widening (Abel Street to Milpitas Boulevard)	Santa Clara	Road Efficiency	0.5	0.0	0.5	Yes	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
207	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Santa Clara	Road Efficiency	0.5	0.0	0.5	Yes	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
208	240436	US-101 Auxiliary Lane (San Antonio Road to Rengstorff Avenue)	Santa Clara	Road Efficiency	0.5	0.0	0.5	Yes	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
209	240468	SR-237/SR-85 Interchange Improvements	Santa Clara	Road Efficiency	0.5	0.0	0.5	Yes	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
210	240443	Mary Avenue Extension	Santa Clara	Road Efficiency	0.0	0.0	0.0	No	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL

LEGEND	IMPACT TO TARGETS			
STRONG	MODERATE	MINIMAL	MODERATE ADVERSE	STRONG

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REVISED 5/22/2013

Row #	Project ID	Project Name	County	Project Type	TARGETS SUMMARY				ADOPTED TARGETS									
					Targets Supported	Targets Adversely Impacted	Targets Net Score	In PDA?	CO2	Housing	PM	Collisions	Active Transportation	Open Space / AG	Low Income HH Transportation Cost	Economic Vitality	Non-Auto Mode Share/VMT	Maintenance
211	HOTd	Silicon Valley Express Lanes Network	Santa Clara	Express Lanes Network	2.0	2.5	-0.5	Yes	MODERATE AD	MODERATE	MODERATE AD	MODERATE AD	MODERATE AD	MODERATE	MINIMAL	STRONG	MODERATE AD	MINIMAL
212	22186	San Tomas Expressway Widening (SR-82 to Williams Road)	Santa Clara	Highway Expansion	1.5	3.5	-2.0	Yes	STRONG AD	MODERATE	STRONG AD	MODERATE AD	MODERATE	MINIMAL	MINIMAL	MODERATE	STRONG AD	MINIMAL
213	230294	New SR-152 Alignment	Santa Clara	Highway Expansion	2.0	4.0	-2.0	No	STRONG AD	MODERATE	STRONG AD	MODERATE	STRONG AD	MINIMAL	MINIMAL	STRONG	STRONG AD	MINIMAL
214	21714	US-101 Widening (Monterey Street to SR-129)	Santa Clara	Road Efficiency	1.5	5.5	-4.0	No	STRONG AD	MODERATE	MODERATE AD	STRONG AD	STRONG AD	STRONG AD	MINIMAL	STRONG	STRONG AD	MINIMAL
215	230558	Solano County Lifeline Transit Program	Solano	Lifeline	4.0	0.0	4.0	Yes	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL	STRONG	MODERATE	MODERATE	MINIMAL
216	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Solano	Transit Efficiency	3.5	0.0	3.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	MINIMAL	MODERATE	MODERATE	MINIMAL
217	22629	Vallejo Ferry Terminal Intermodal Station	Solano	Transit Expansion	3.5	0.0	3.5	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	MINIMAL	MODERATE	MODERATE	MINIMAL
218	94151	Jepson Parkway Construction (SR-12 to I-80)	Solano	Highway Expansion	2.0	0.5	1.5	Yes	MINIMAL	MINIMAL	MINIMAL	MODERATE	MODERATE	MODERATE AD	MINIMAL	MODERATE	MODERATE	MINIMAL
219	230325	I-80 Westbound Cordelia Truck Scales Relocation	Solano	Road Efficiency	1.0	0.0	1.0	No	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
220	230326	I-80/I-680/SR-12 Widening & Interchange Improvements (Phase 1)	Solano	Highway Expansion	1.5	0.5	1.0	No	MINIMAL	MODERATE AD	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
221	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Solano	Highway Expansion	1.0	0.0	1.0	Yes	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL
222	230561	SR-113 Relocation out of Dixon	Solano	Highway Expansion	0.5	0.0	0.5	No	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
223	230575	Rio Vista Bridge Reconstruction & Realignment	Solano	Road Efficiency	0.5	0.0	0.5	No	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE
224	22794	Curtola Transit Center Improvements	Solano	Transit Efficiency	0.5	0.5	0.0	No	MINIMAL	MODERATE	MINIMAL	MINIMAL	MODERATE AD	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
225	230313	Redwood Parkway & Fairground Drive Roadway Improvements	Solano	Road Efficiency	1.0	1.0	0.0	No	MINIMAL	MODERATE	MINIMAL	MODERATE AD	MINIMAL	MINIMAL	MINIMAL	MODERATE	MODERATE AD	MINIMAL
226	230477	SR-12 Widening (SR-29 to Sacramento County line)	Solano	Highway Expansion	1.5	4.5	-3.0	Yes	STRONG AD	MINIMAL	STRONG AD	STRONG	STRONG AD	MODERATE AD	MINIMAL	MODERATE	STRONG AD	MINIMAL
227	240650	Sonoma Countywide Bus Service Frequency Improvements	Sonoma	Transit Efficiency	5.0	0.0	5.0	Yes	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	MODERATE	STRONG	MODERATE	MODERATE	MINIMAL
228	240524	New SR-12 Fulton Road Interchange	Sonoma	Road Efficiency	1.5	0.0	1.5	Yes	MINIMAL	MODERATE	MINIMAL	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	MINIMAL	MINIMAL
229	230366	Caulfield Lane Extension (Southern Crossing)	Sonoma	Road Efficiency	1.0	0.0	1.0	Yes	MINIMAL	STRONG	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL
230	21998	SR-116 Widening & Rehabilitation (Elphick Road to Redwood Drive)	Sonoma	Highway Expansion	0.5	2.0	-1.5	Yes	MODERATE AD	MINIMAL	MODERATE AD	MODERATE AD	MODERATE AD	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MODERATE
231	21884	Petaluma Cross-Town Connector/Interchange	Sonoma	Road Efficiency	1.0	3.0	-2.0	No	MODERATE AD	STRONG	MODERATE AD	MODERATE AD	MODERATE AD	MODERATE AD	MINIMAL	MINIMAL	MODERATE AD	MINIMAL
232	22207	Farmers Lane Extension (Bellevue Avenue to SR-12)	Sonoma	Highway Expansion	0.5	3.0	-2.5	Yes	MODERATE AD	MODERATE	MODERATE AD	MODERATE AD	MODERATE AD	MODERATE AD	MINIMAL	MINIMAL	MODERATE AD	MINIMAL

LEGEND	IMPACT TO TARGETS			
STRONG	MODERATE	MINIMAL	MODERATE ADVERSE	STRONG

Targets Assessment of Small Projects by Project Type (sorted by Targets Net Score)

Summarized Categories of Small Projects	# of Projects	CO_2	Housing	PM	PM in CARE*	Collisions	Active Transport	Open Space/AG*	Low-Inc HH Trans. Cost	Economic Vitality*	Non Auto Mode Share/VMT	Maintenance	Targets Net Score
Transit Expansion & Efficiency	65	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	STRONG	MINIMAL	9.0
Emissions Reduction	10	STRONG	MINIMAL	STRONG	STRONG	MINIMAL	STRONG	MINIMAL	STRONG	STRONG	STRONG	MINIMAL	6.0
Bicycle and Pedestrian Improvements	109	STRONG	MODERATE	MODERATE	MODERATE	STRONG	STRONG	MINIMAL	MODERATE	MINIMAL	MODERATE	MINIMAL	4.5
State Highways, Arterials, and Local Streets (Maintenance & Safety)	71	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	STRONG	3.5
Transit Maintenance & Safety	16	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MODERATE	MINIMAL	MINIMAL	MINIMAL	MODERATE	STRONG	3.5
Public Outreach/Info/ Preparedness	9	MODERATE	MINIMAL	MODERATE	MINIMAL	MODERATE	MODERATE	MODERATE	MINIMAL	MODERATE	MINIMAL	MINIMAL	3.0
ITS/TDM/Parking	22	MODERATE	MINIMAL	MODERATE	MINIMAL	MODERATE	MODERATE	MINIMAL	MINIMAL	MODERATE	MODERATE	MINIMAL	3.0
State Highways, Arterials, and Local Streets (Expansion & Efficiency)	259	MINIMAL	STRONG	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	STRONG	MINIMAL	MINIMAL	0.0
Other	6	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	MINIMAL	0.0
Freeways and Interchanges	102	STRONG AD	STRONG	STRONG AD	STRONG AD	MINIMAL	STRONG AD	MINIMAL	MINIMAL	STRONG	STRONG AD	MINIMAL	-2.0

* Assessment based on the project geography

LEGEND	IMPACT TO TARGETS			
STRONG	MODERATE	MINIMAL	MODERATE ADVERSE	STRONG ADVERSE

Confidence Assessment of Benefit-Cost Results (listed by benefit-cost ratio)

Row #	Project ID	Project Name	County	Project Type	Plan Bay Area B/C Ratio	T-2035 B/C Ratio	CONFIDENCE ASSESSMENT CRITERIA *if marked with a star, see comments to the right* Travel Model Output	Framework Completeness	Timeframe Inclusiveness	Starred Comments
1	240182	BART Metro Program (including Bay Fair Connection & Civic Center Turnback)	Multi-County	Transit Efficiency	>60	n/a	✓	✓	✓	
2	240694	Treasure Island Congestion Pricing	San Francisco	Pricing	59	n/a	✓	✓	✓	
3	240522	Congestion Pricing Pilot	San Francisco	Pricing	45	n/a	✓	✓	✓	
4	22780	AC Transit Grand-MacArthur BRT	Alameda/ 3434	Transit Efficiency	18	n/a	✓	✓	*	BRT project can be implemented quickly for near-term benefits.
5	230419	Freeway Performance Initiative	Regional	FPI	16	28	✓	✓	✓	
6	22274	ITS Improvements in San Mateo County	San Mateo	Road Efficiency	16	n/a	n/a	✓	✓	
7	240494	ITS Improvements in Santa Clara County	Santa Clara	Road Efficiency	16	n/a	n/a	✓	✓	
8	22062	Irvington BART Station	Alameda	Transit Efficiency	12	n/a	✓	✓	*	Infill stations can be implemented quickly to achieve benefits in the near-term.
9	240171	SFMTA Transit Effectiveness Project	San Francisco	Transit Efficiency	11	n/a	*	*	*	Model may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. B/C framework doesn't consider transit crowding, which may result in underestimate of emissions and VMT reductions and overestimate of travel time reductions; bus frequency improvements can be implemented quickly for near-term benefits.
10	240582	Truck & Motorcycle Retirement [BAAQMD program]	Regional	Climate	9	n/a	n/a	✓	✓	
11	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Contra Costa	Highway Expansion	7	1	*	✓	✓	Because the land uses outside of the 9-county Bay Area are not explicitly represented, the model does not fully understand the likely impact of projects located near the boundaries of the planning region.
12	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Santa Clara	Road Efficiency	7	n/a	*	✓	✓	The model does not explicitly represent weaving (thus ignoring the benefits of longer weaving sections or other improvements).
13	94506	Fremont/Union City East-West Connector	Alameda	Arterial Expansion	7	1	*	✓	✓	Due to their relative proximity, the travel model has difficulty assigning travelers who could use either I-680 or I-880 to the correct facility. This route choice decision is important to the performance of the East-West Connector.
14	98207T	Alameda-Oakland BRT + Transit Access Improvements	Alameda	Transit Efficiency	6	n/a	✓	✓	*	BRT project can be implemented quickly to achieve benefits in the near-term.
15	240523, 240060	US-101 HOV Lanes (Whipple Avenue to Cesar Chavez Street)	Multi-County	Road Efficiency	6	n/a	✓	✓	✓	
16	230161	Van Ness Avenue BRT	San Francisco/ 3434	Transit Efficiency	6	n/a	*	*	*	Model may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. Project can be implemented quickly for near-term benefits.
17	HOTd	Silicon Valley Express Lanes Network	Santa Clara	Express Lanes Network	6	n/a	*	✓	*	The travel model has difficulty representing the benefits of an operational strategy that relies on real-time price changes throughout the morning and evening commute periods. Some portions of the project may be implemented early and accrue benefits over a long period in the Plan, the Network likely will not be complete until near the end of the Plan period.
18	240155	Better Market Street	San Francisco	Transit Efficiency	6	n/a	*	*	✓	Model may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. B/C framework doesn't consider transit crowding, which may result in underestimate of emissions and VMT reductions and overestimate of travel time reductions.
19	22455	AC Transit East Bay BRT	Alameda/ 3434	Transit Efficiency	5	n/a	✓	✓	*	BRT project can be implemented quickly for near-term benefits.
20	HOTe	CTC Application + Alameda County Authorized Lanes Express Lanes Network	Multi-County	Express Lanes Network	5	n/a	*	✓	*	The travel model has difficulty representing the benefits of an operational strategy that relies on real-time price changes throughout the morning and evening commute periods. Some portions of the project may be implemented early and accrue benefits over a long period in the Plan, the Network likely will not be complete until near the end of the Plan period.

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21	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Solano	Road Efficiency	5	2†	*	*	✓	The model does not explicitly represent weaving (thus ignoring the benefits of longer weaving sections or other improvements). Analysis is performed for a typical weekday, but many of the project's benefits will be accrued on weekends due to recreational traffic.
22	n/a	Local Streets and Roads Capital Maintenance Needs	Regional	Maintenance	5	5	n/a	*	✓	The benefit-cost framework doesn't consider the impacts that state of repair has on air quality, goods movement, transit operations and emergency services. Furthermore, the assessment does not capture travel time savings from avoided delays (e.g. potholes leading to slower vehicle travel speeds).
23	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Santa Clara/ 3434	Transit Expansion	5	n/a	*	✓	*	The travel model does not forecast air passenger trips or special events, which are markets served by this project. The project is likely to be complete toward the end of the Plan so much of the benefits would likely be accrued after the Plan period.
24	240134, 21627	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (SF to Tamien)	Multi-County	Transit Efficiency	5	n/a	✓	✓	✓	
25	240557	Oakdale Caltrain Station	San Francisco	Transit Efficiency	4	n/a	✓	✓	*	Infill stations can be implemented quickly to achieve benefits in the near-term.
26	240062, 22776	SR-84/I-680 Interchange Improvements + SR-84 Widening (Jack London to I-680)	Alameda	Highway Expansion	4	n/a	*	✓	✓	The model does not explicitly represent weaving (thus ignoring the benefits of longer weaving sections or other improvements), acceleration or deceleration behavior (thus ignoring the benefits of longer ramps), or queue spillback.
27	230294	New SR-152 Alignment	Santa Clara	Highway Expansion	4	n/a	*	*	✓	Because the land uses outside of the 9-county Bay Area are not explicitly represented, the model does not fully understand the likely impact of projects located near the boundaries of the planning region. Analysis also underestimates the freight benefits of this project, both in terms of the number of truck trips and the impacts of steep grades on trucks. Furthermore, the route serves a large number of interregional trips, which are not captured very well in the travel model.
28	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown Extension)	San Francisco/ 3434	Transit Expansion	4	n/a	✓	✓	*	The project is likely to be complete toward the end of the Plan, so much of the benefits would likely be accrued after the Plan period. (Note: since November draft release, project benefits were revised to reflect associated benefits of high-speed rail.)
29	240410	Transportation for Livable Communities	Regional	TLC	3	2	✓	✓	✓	
30	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening (Morello Avenue to SR-242)	Contra Costa	Highway Expansion	3	1	*	✓	✓	The model does not explicitly represent weaving (thus ignoring the benefits of longer weaving sections or other improvements), acceleration or deceleration behavior (thus ignoring the benefits of longer ramps), or queue spillback.
31	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Solano	Transit Efficiency	3	n/a	*	✓	*	Greater TOD around the station (as included in the Fairfield General Plan but not in the Current Regional Plans land use) could significantly increase ridership and the corresponding B/C ratio. Infill stations can be implemented quickly for near-term benefits
32	240617	SR-29 HOV Lanes and BRT (Napa Junction to Vallejo)	Napa	Road Efficiency	3	n/a	✓	✓	✓	
33	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Multi-County	Transit Efficiency	2	n/a	*	✓	*	Model may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. BRT project can be implemented quickly to achieve benefits in the near-term.
34	240147	Southeast Waterfront Transportation Improvements	San Francisco	Transit Efficiency	2	n/a	*	✓	*	Model may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. Project can be implemented quickly for near-term benefits.
35	240026	SamTrans El Camino BRT	San Mateo	Transit Efficiency	2	n/a	✓	✓	*	BRT can be implemented quickly for near-term benefits.
36	240119	VTA El Camino BRT	Santa Clara	Transit Efficiency	2	n/a	✓	✓	*	BRT can be implemented quickly for near-term benefits.
37	00BART	BART Service Frequency Improvements	Multi-County	Transit Efficiency	2	n/a	✓	*	✓	B/C framework doesn't consider transit crowding, which may result in underestimate of emissions and VMT reductions and overestimate of travel time reductions.
38	230604	Bay Bridge Contraflow Lane	Multi-County	Pricing	2	n/a	✓	*	✓	Modeling for this project doesn't fully capture the transit benefits of such a project. Because the project was represented as an HOV lane, rather than a bus-only lane, many of the benefits are accruing due to increased carpooling. A bus-only lane would provide faster speeds for buses and increase transit ridership more substantially.
39	580_BUS	I-580 Express Bus (Dublin to Livermore)	Alameda	Transit Efficiency	2	n/a	✓	✓	*	Express bus service can be implemented quickly for near-term benefits.

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40	240018	Dumbarton Corridor Express Bus	Multi-County	Transit Efficiency	2	n/a	✓	✓	✓	
41	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Multi-County/ 3434	Transit Expansion	2	n/a	✓	✓	✓	
42	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Contra Costa	Highway Expansion	2	1†	✓	✓	✓	
43	00MUNI	Muni Service Frequency Improvements	San Francisco	Transit Efficiency	2	n/a	*	*	*	Model may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. B/C framework doesn't consider transit crowding, which may result in underestimate of emissions and VMT reductions and overestimate of travel time reductions; bus frequency improvements can be implemented quickly for near-term benefits.
44	230164	Geary Boulevard BRT	San Francisco	Transit Efficiency	2	7	*	*	*	Model may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. B/C framework doesn't consider transit crowding, which may result in underestimate of emissions and VMT reductions and overestimate of travel time reductions; BRT improvements can be implemented quickly for near-term benefits.
45	240526	SFCTA Transit Performance Initiative	San Francisco	Transit Efficiency	2	n/a	*	*	✓	Model may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. B/C framework doesn't consider transit crowding, which may result in underestimate of emissions and VMT reductions and overestimate of travel time reductions.
46	22247	Regional Bikeway Network	Regional	Bike/Ped	2	0.5	n/a	✓	✓	
47	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Multi-County	Transit Efficiency	2	n/a	✓	✓	*	Bus frequency improvements can be implemented quickly for near-term benefits.
48	n/a	New Freedom Program	Regional	Lifeline/New Freedom	2	n/a	n/a	✓	✓	
49	22268	San Mateo Countywide Shuttle Service Frequency Improvements	San Mateo	Transit Efficiency	2	n/a	✓	✓	*	Shuttle service can be implemented quickly for near-term benefits.
50	230550	Climate Initiatives (5-year program)	Regional	Climate	1	0	n/a	✓	✓	
51	n/a	Transit Capital Maintenance Needs	Regional	Maintenance	1	1	n/a	*	✓	The benefit-cost framework doesn't consider many impacts state of repair has on maintaining an operable transit system, such as maintaining or increasing transit ridership, reducing congestion and emissions and increasing mobility.
52	240545	Parkmerced Light Rail Corridor	San Francisco	Transit Efficiency	1	n/a	*	✓	✓	
53	230055	Golden Gate Ferry Service Frequency Improvements	Multi-County	Transit Efficiency	1	n/a	✓	✓	*	Ferry frequency improvements can be implemented quickly for near-term benefits.
54	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Alameda	Transit Expansion	1	n/a	n/a	✓	✓	Project's quantative results reflect a sketch-level planning adjustment to the BART to Livermore (Phase 1) project, reflecting the slower travel speeds of DMU technology. This was due to the model's inability to reflect the unique proposed bus/rail transfer station without auto, ped, or bike access.
55	240521, 240134, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (SF to Tamien)	Multi-County/ 3434	Transit Efficiency	1	n/a	✓	✓	✓	
56	00ACT1	AC Transit Frequent Transit Network	Multi-County	Transit Efficiency	1	n/a	*	✓	✓	Project includes a wide range of services; some service improvements may have higher benefit-cost ratios and some may have lower benefit-cost ratios.
57	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Contra Costa	Transit Efficiency	1	1	✓	✓	*	Bus frequency improvements can be implemented quickly for near-term benefits.

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58	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Multi-County	Road Efficiency	1	8†	✓	*	✓	Analysis is performed for a typical weekday, but many of the project's benefits will be accrued on weekends due to recreational traffic.
59	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Regional	Climate	1	n/a	n/a	✓	✓	
60	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Alameda	Transit Expansion	1	4†	n/a	✓	✓	Project's quantative results were based on the full BART to Livemore extension model results. This was due to the model's inability to reflect the unique proposed bus/rail transfer station without auto, ped, or bike access.
61	22415	Historic Streetcar Expansion Program	San Francisco	Transit Efficiency	0.9	2	*	✓	*	Model doesn't capture tourist ridership and may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. Project can be implemented quickly for near-term benefits.
62	240216	Dumbarton Rail	Multi-County/ 3434	Transit Expansion	0.8	n/a	✓	✓	✓	
63	240589	EV Solar Installation [BAAQMD program]	Regional	Climate	0.8	n/a	n/a	*	*	Most project benefits accrue in the near term before widespread electric vehicle adoption.
64	240650	Sonoma Countywide Bus Service Frequency Improvements	Sonoma	Transit Efficiency	0.8	n/a	✓	✓	*	Bus frequency improvements can be implemented quickly for near-term benefits.
65	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Multi-County/ 3434	Transit Expansion	0.7	n/a	*	✓	✓	The travel model does not forecast tourist trips, which are served by this project.
66	230252	Marin Countywide Bus Service Frequency Improvements	Marin	Transit Efficiency	0.7	1	✓	✓	*	Bus frequency improvements can be implemented quickly for near-term benefits.
67	230219, 230314	Golden Gate Bus Service Frequency Improvements	Multi-County	Transit Efficiency	0.5	n/a	✓	✓	*	Bus frequency improvements can be implemented quickly for near-term benefits.
68	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Santa Clara	Transit Expansion	0.5	n/a	✓	✓	✓	
69	230547	Monterey Highway BRT	Santa Clara	Transit Efficiency	0.4	n/a	✓	✓	*	BRT can be implemented quickly for near-term benefits.
70	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Alameda	Transit Expansion	0.4	n/a	✓	✓	✓	
71	22019	Downtown East Valley (Phase 2: LRT)	Santa Clara/ 3434	Transit Expansion	0.3	n/a	✓	✓	✓	
72	98139	ACE Service Expansion	Multi-County/ 3434	Transit Efficiency	0.3	n/a	✓	✓	*	The project is likely to be complete toward the end of the Plan so much of the benefits would likely be accrued after the Plan period.
73	230554	Sunnyvale-Cupertino BRT	Santa Clara	Transit Efficiency	0.2	n/a	✓	✓	*	BRT can be implemented quickly for near-term benefits.
74	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Santa Clara	Transit Expansion	0.2	n/a	✓	✓	✓	
75	240690	Lifeline Transportation Program	Regional	Lifeline/New Freedom	0.1	0	n/a	*	✓	The benefit-cost framework doesn't reflect the primary justifications for this program, which revolve around providing basic mobility rather than travel time or emissions reductions.
76	22009	Capitol Corridor Service Frequency Improvements (Oakland to San Jose)	Multi-County/ 3434	Transit Efficiency	0.1	n/a	✓	✓	✓	
77	98119	Vasona Light Rail Extension (Phase 2)	Santa Clara	Transit Expansion	0.0	n/a	*	✓	✓	Model may not fully capture benefits from this relatively short extension.
78	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Alameda/ 3434	Transit Efficiency	0.0	n/a	✓	✓	*	Infill stations can be implemented quickly to achieve benefits in the near-term.

Table 1: Potential for Housing Growth **Focused Growth**

County	Jurisdiction	Jurisdiction Growth 2010-2040	Rating for Growth Component of Housing Target
Alameda	Alameda	5,812	Support
Alameda	Alameda County Unincorporated	11,540	Support
Alameda	Albany	955	Minimal
Alameda	Berkeley	8,370	Support
Alameda	Dublin	13,811	Support
Alameda	Emeryville	5,235	Support
Alameda	Fremont	17,381	Support
Alameda	Hayward	15,477	Support
Alameda	Livermore	11,213	Support
Alameda	Newark	5,802	Support
Alameda	Oakland	57,721	Support
Alameda	Piedmont	627	Minimal
Alameda	Pleasanton	7,381	Support
Alameda	San Leandro	7,119	Support
Alameda	Union City	4,549	Support
Contra Costa	Antioch	6,891	Support
Contra Costa	Brentwood	8,157	Support
Contra Costa	Clayton	532	Minimal
Contra Costa	Concord	17,280	Support
Contra Costa	Contra Costa County Unincorporated	9,923	Support
Contra Costa	Danville	2,879	Support
Contra Costa	El Cerrito	1,843	Support
Contra Costa	Hercules	4,653	Support
Contra Costa	Lafayette	1,645	Support
Contra Costa	Martinez	2,549	Support
Contra Costa	Moraga	1,103	Minimal
Contra Costa	Oakley	3,868	Support
Contra Costa	Orinda	976	Minimal
Contra Costa	Pinole	2,633	Support
Contra Costa	Pittsburg	10,197	Support
Contra Costa	Pleasant Hill	5,771	Support
Contra Costa	Richmond	12,253	Support
Contra Costa	San Pablo	2,347	Support
Contra Costa	San Ramon	8,094	Support
Contra Costa	Walnut Creek	7,334	Support
Marin	Belvedere	60	Minimal
Marin	Corte Madera	561	Minimal
Marin	Fairfax	237	Minimal
Marin	Larkspur	528	Minimal
Marin	Marin County Unincorporated	3,917	Support
Marin	Mill Valley	504	Minimal
Marin	Novato	1,599	Support

County	Jurisdiction	Jurisdiction Growth 2010-2040	Rating for Growth Component of Housing Target
Marin	Ross	69	Minimal
Marin	San Anselmo	410	Minimal
Marin	San Rafael	2,792	Support
Marin	Sausalito	279	Minimal
Marin	Tiburon	303	Minimal
Napa	American Canyon	1,745	Support
Napa	Calistoga	121	Minimal
Napa	Napa	3,162	Support
Napa	Napa County Unincorporated	993	Minimal
Napa	St. Helena	116	Minimal
Napa	Yountville	151	Minimal
San Francisco	San Francisco	90,467	Support
San Mateo	Atherton	399	Minimal
San Mateo	Belmont	1,387	Minimal
San Mateo	Brisbane	1,582	Support
San Mateo	Burlingame	3,928	Support
San Mateo	Colma	521	Minimal
San Mateo	Daly City	7,469	Support
San Mateo	East Palo Alto	3,050	Support
San Mateo	Foster City	1,667	Support
San Mateo	Half Moon Bay	702	Minimal
San Mateo	Hillsborough	820	Minimal
San Mateo	Menlo Park	3,048	Support
San Mateo	Millbrae	2,178	Support
San Mateo	Pacifica	1,106	Minimal
San Mateo	Portola Valley	243	Minimal
San Mateo	Redwood City	9,070	Support
San Mateo	San Bruno	4,669	Support
San Mateo	San Carlos	2,402	Support
San Mateo	San Mateo	11,805	Support
San Mateo	San Mateo County Unincorporated	5,911	Support
San Mateo	South San Francisco	6,304	Support
San Mateo	Woodside	307	Minimal
Santa Clara	Campbell	2,944	Support
Santa Clara	Cupertino	3,960	Support
Santa Clara	Gilroy	6,441	Support
Santa Clara	Los Altos	2,157	Support
Santa Clara	Los Altos Hills	728	Minimal
Santa Clara	Los Gatos	2,333	Support
Santa Clara	Milpitas	12,807	Support
Santa Clara	Monte Sereno	304	Minimal
Santa Clara	Morgan Hill	4,153	Support
Santa Clara	Mountain View	12,458	Support
Santa Clara	Palo Alto	12,250	Support

County	Jurisdiction	Jurisdiction Growth 2010-2040	Rating for Growth Component of Housing Target
Santa Clara	San Jose	130,887	Support
Santa Clara	Santa Clara	21,129	Support
Santa Clara	Santa Clara County Unincorporated	10,484	Support
Santa Clara	Saratoga	2,249	Support
Santa Clara	Sunnyvale	16,781	Support
Solano	Benicia	1,192	Minimal
Solano	Dixon	1,681	Support
Solano	Fairfield	12,519	Support
Solano	Rio Vista	1,904	Support
Solano	Solano County Unincorporated	1,176	Minimal
Solano	Suisun City	1,435	Minimal
Solano	Vacaville	5,316	Support
Solano	Vallejo	5,641	Support
Sonoma	Cloverdale	1,045	Minimal
Sonoma	Cotati	471	Minimal
Sonoma	Healdsburg	977	Minimal
Sonoma	Petaluma	2,801	Support
Sonoma	Rohnert Park	3,211	Support
Sonoma	Santa Rosa	18,154	Support
Sonoma	Sebastopol	525	Minimal
Sonoma	Sonoma	519	Minimal
Sonoma	Sonoma County Unincorporated	8,327	Support
Sonoma	Windsor	1,355	Minimal

Table 2: Support for Affordable Housing
Bay Area Affordable Housing, 1999 to 2006

		Very Low			Low			
City	County	RHNA Allocation	Permits Issued	Allocation Permitted	RHNA Allocation	Permits Issued	Allocation Permitted	Rating
ACE	Alameda							Minimal
Alameda	Alameda	443	300	68%	265	36	14%	Minimal
Alameda Countywide	Alameda							Minimal
Albany	Alameda	64	5	8%	33	10	30%	Adverse
BART to Livermore	Alameda							Adverse
Berkeley	Alameda	354	239	68%	150	257	171%	Support
Dublin	Alameda	796	263	33%	531	243	46%	Adverse
Emeryville	Alameda	178	124	70%	95	63	66%	Minimal
Fremont	Alameda	1,079	361	33%	636	142	22%	Adverse
Hayward	Alameda	625	40	6%	344	17	5%	Adverse
Livermore	Alameda	875	202	23%	482	259	54%	Adverse
Newark	Alameda	205	0	0%	111	0	0%	Adverse
Oakland	Alameda	2,238	610	27%	969	690	71%	Adverse
Piedmont	Alameda	6	0	0%	4	0	0%	Adverse
Pleasanton	Alameda	729	120	16%	455	410	90%	Minimal
San Leandro	Alameda	195	108	55%	107	0	0%	Minimal
Unincorporated	Alameda	1,785	50	3%	767	253	33%	Adverse
Union City	Alameda	338	177	52%	189	55	29%	Minimal
Martinez Subdivision	Alameda/Contra Costa							Minimal
BART	Bay Area							Minimal
Capital Corridor	Bay Area							Minimal
WETA	Bay Area							Minimal
Antioch	Contra Costa	921	435	47%	509	403	79%	Support
Brentwood	Contra Costa	906	376	42%	476	238	50%	Adverse
Clayton	Contra Costa	55	67	122%	33	17	52%	Minimal
Concord	Contra Costa	453	171	38%	273	115	42%	Adverse
Contra Costa County Unicorp	Contra Costa	1,101	372	34%	642	177	28%	Adverse
Contra Costa Countywide	Contra Costa							Minimal
Danville	Contra Costa	140	85	61%	88	56	64%	Minimal
El Cerrito	Contra Costa	37	0	0%	23	5	22%	Adverse
Hercules	Contra Costa	101	96	95%	62	68	110%	Support
Lafayette	Contra Costa	30	15	50%	17	2	12%	Minimal
Martinez	Contra Costa	248	0	0%	139	0	0%	Adverse
Moraga	Contra Costa	32	21	66%	17	0	0%	Minimal
Oakley	Contra Costa	209	168	80%	125	293	234%	Support
Orinda	Contra Costa	31	0	0%	18	0	0%	Adverse
Pinole	Contra Costa	48	34	71%	35	6	17%	Minimal
Pittsburg	Contra Costa	534	247	46%	296	381	129%	Support
Pleasant Hill	Contra Costa	129	95	74%	79	69	87%	Support
Richmond	Contra Costa	471	200	42%	273	1,093	400%	Minimal
San Pablo	Contra Costa	147	214	146%	69	70	101%	Support
San Ramon	Contra Costa	599	157	26%	372	407	109%	Minimal
Walnut Creek	Contra Costa	289	99	34%	195	80	41%	Adverse
Belvedere	Marin	1	0	0%	1	0	0%	Adverse
Corte Madera	Marin	29	0	0%	17	0	0%	Adverse
Fairfax	Marin	12	0	0%	7	0	0%	Adverse
Larkspur	Marin	56	7	13%	29	6	21%	Adverse
Marin Countywide	Marin							Adverse
Mill Valley	Marin	40	69	173%	21	28	133%	Support
Novato	Marin	476	297	62%	242	527	218%	Support
Ross	Marin	3	0	0%	2	0	0%	Adverse
San Anselmo	Marin	32	0	0%	13	0	0%	Adverse
San Rafael	Marin	445	25	6%	207	87	42%	Adverse
Sausalito	Marin	36	22	61%	17	0	0%	Minimal
Tiburon	Marin	26	4	15%	14	3	21%	Adverse
Unincorporated	Marin	85	104	122%	48	100	208%	Support
American Canyon	Napa	230	114	50%	181	60	33%	Minimal
Calistoga	Napa	44	3	7%	31	15	48%	Adverse
Napa	Napa	703	177	25%	500	351	70%	Adverse
Napa Countywide	Napa							Adverse
St. Helena	Napa	31	10	32%	20	10	50%	Adverse
Unincorporated	Napa	405	30	7%	272	45	17%	Adverse
Yountville	Napa	21	0	0%	15	2	13%	Adverse
San Francisco	San Francisco	5,244	4,203	80%	2,126	1,101	52%	Minimal
Atherton	San Mateo	22	0	0%	10	0	0%	Adverse

Bay Area Affordable Housing, 1999 to 2006

		Very Low			Low			
City	County	RHNA Allocation	Permits Issued	Allocation Permitted	RHNA Allocation	Permits Issued	Allocation Permitted	Rating
Belmont	San Mateo	57	24	42%	30	20	67%	Adverse
Brisbane	San Mateo	107	7	7%	43	1	2%	Adverse
Burlingame	San Mateo	110	0	0%	56	0	0%	Adverse
Colma	San Mateo	17	0	0%	8	73	913%	Minimal
Daly City	San Mateo	282	11	4%	139	22	16%	Adverse
East Palo Alto	San Mateo	358	57	16%	148	155	105%	Minimal
Foster City	San Mateo	96	88	92%	53	0	0%	Minimal
Half Moon Bay	San Mateo	86	0	0%	42	106	252%	Minimal
Hillsborough	San Mateo	11	0	0%	5	15	300%	Minimal
Menlo Park	San Mateo	184	0	0%	90	0	0%	Adverse
Millbrae	San Mateo	67	0	0%	32	0	0%	Adverse
Pacifica	San Mateo	120	0	0%	60	10	17%	Adverse
Portola Valley	San Mateo	13	12	92%	5	3	60%	Minimal
Redwood City	San Mateo	534	36	7%	256	70	27%	Adverse
San Bruno	San Mateo	72	138	192%	39	187	479%	Support
San Carlos	San Mateo	65	0	0%	32	0	0%	Adverse
San Mateo	San Mateo	479	125	26%	239	85	36%	Adverse
San Mateo Countywide	San Mateo							Minimal
So. San Francisco	San Mateo	277	121	44%	131	71	54%	Minimal
Unincorporated	San Mateo	252	31	12%	146	0	0%	Adverse
Woodside	San Mateo	5	0	0%	3	0	0%	Adverse
Campbell	Santa Clara	165	2	1%	77	14	18%	Adverse
Cupertino	Santa Clara	412	36	9%	198	12	6%	Adverse
Gilroy	Santa Clara	906	189	21%	334	327	98%	Minimal
Los Altos	Santa Clara	38	24	63%	20	16	80%	Support
Los Altos Hills	Santa Clara	10	26	260%	5	6	120%	Support
Los Gatos	Santa Clara	72	13	18%	35	73	209%	Minimal
Milpitas	Santa Clara	698	524	75%	351	177	50%	Minimal
Monte Sereno	Santa Clara	10	12	120%	5	7	140%	Support
Morgan Hill	Santa Clara	455	258	57%	228	298	131%	Support
Mountain View	Santa Clara	698	118	17%	331	5	2%	Adverse
Palo Alto	Santa Clara	265	214	81%	116	130	112%	Support
San Jose	Santa Clara	5,337	4,415	83%	2,364	3,886	164%	Support
Santa Clara	Santa Clara	1,294	279	22%	590	479	81%	Minimal
Santa Clara Countywide	Santa Clara							Minimal
Saratoga	Santa Clara	75	60	80%	36	1	3%	Minimal
Sunnyvale	Santa Clara	736	55	7%	361	57	16%	Adverse
Unincorporated	Santa Clara	325	325	100%	158	158	100%	Support
Benicia	Solano	70	54	77%	49	128	261%	Support
Dixon	Solano	268	0	0%	237	0	0%	Adverse
Fairfield	Solano	761	57	7%	573	192	34%	Adverse
Rio Vista	Solano	357	12	3%	190	27	14%	Adverse
Solano County Unincorporate	Solano	500	0	0%	363	71	20%	Adverse
Solano Countywide	Solano							Minimal
Suisun City	Solano	191	16	8%	123	64	52%	Adverse
Vacaville	Solano	860	87	10%	629	691	110%	Minimal
Vallejo	Solano	690	84	12%	474	1,065	225%	Minimal
Cloverdale	Sonoma	95	104	109%	51	59	116%	Support
Cotati	Sonoma	113	74	65%	63	40	63%	Minimal
Healdsburg	Sonoma	112	76	68%	78	112	144%	Support
Petaluma	Sonoma	206	250	121%	124	201	162%	Support
Rohnert Park	Sonoma	401	293	73%	270	467	173%	Support
Santa Rosa	Sonoma	1,539	591	38%	970	1,338	138%	Minimal
Sebastapol	Sonoma	58	0	0%	35	5	14%	Adverse
Sonoma	Sonoma	146	111	76%	90	68	76%	Minimal
Sonoma Countywide	Sonoma							Minimal
Unincorporated	Sonoma	1,311	650	50%	1,116	339	30%	Minimal
Windsor	Sonoma	430	161	37%	232	171	74%	Adverse

Table 3: Equitable Access
Transit Operators Low Income Riders FY 2005-2006

Operators	Share of Low Income Riders	Total Ridership (000)	Operator's Total Low Income Riders	% of Region's Low Income Riders	Target Rating Share of LI Riders	Target Rating % of Regional Total LI Riders	Overall Rating	Notes
SC Transit	74.1%	1,360	1,008	0.7%	**STRONG**	**MODERATE**	**STRONG**	Operator's Low Income % served over 40%
VINE	66.7%	754	503	0.4%	**STRONG**	**MINIMAL**	**STRONG**	Operator's Low Income % served over 40%
SR CityBus	65.1%	2,678	1,743	1.2%	**STRONG**	**MODERATE**	**STRONG**	Operator's Low Income % served over 40%
VTA Total	52.7%	40,935	21,562	15.3%	**STRONG**	**STRONG**	**STRONG**	Operator's Low Income % served over 40%
Benicia Breeze	49.3%	138	68	0.0%	**STRONG**	**MINIMAL**	**STRONG**	Operator's Low Income % served over 40%
Vacaville	46.0%	212	97	0.1%	**STRONG**	**MINIMAL**	**STRONG**	Operator's Low Income % served over 40%
SamTrans	41.7%	14,507	6,045	4.3%	**STRONG**	**MODERATE**	**STRONG**	Operator's Low Income % served over 40%
AC Total	40.2%	67,416	27,086	19.2%	**MODERATE**	**STRONG**	**STRONG**	Operator's Low Income % served over 40%
Wheels	40.2%	2,104	845	0.6%	**STRONG**	**MODERATE**	**STRONG**	Operator's Low Income % served over 40%
Muni Total	27.2%	216,764	58,985	41.9%	**MINIMAL**	**STRONG**	**STRONG**	Regional Low Income people served above 10%
BART	14.5%	104,230	15,099	10.7%	**MINIMAL**	**STRONG**	**STRONG**	Regional Low Income people served above 10%
Tri Delta	36.1%	2,544	919	0.7%	**MODERATE**	**MODERATE**	**MODERATE**	Regional Low Income people served above 0.5%
CCCTA	34.8%	4,280	1,487	1.1%	**MODERATE**	**MODERATE**	**MODERATE**	Regional Low Income people served above 0.5%
GGT Total	23.8%	9,403	2,238	1.6%	**MINIMAL**	**MODERATE**	**MODERATE**	Regional Low Income people served above 0.5%
Caltrain	16.6%	10,149	1,684	1.2%	**MINIMAL**	**MODERATE**	**MODERATE**	Regional Low Income people served above 0.5%
FST	33.3%	797	265	0.2%	**MODERATE**	**MINIMAL**	**MINIMAL**	Regional Low Income people served less than 0.5%
WestCat	31.9%	1,260	402	0.3%	**MODERATE**	**MINIMAL**	**MINIMAL**	Regional Low Income people served less than 0.5%
Vallejo Total	22.0%	3,044	669	0.5%	**MINIMAL**	**MINIMAL**	**MINIMAL**	Regional Low Income people served less than 0.5%
Union City	20.2%	418	84	0.1%	**MINIMAL**	**MINIMAL**	**MINIMAL**	Regional Low Income people served less than 0.5%
ACE	7.5%	637	48	0.0%	**MINIMAL**	**MINIMAL**	**MINIMAL**	Regional Low Income people served less than 0.5%
Alameda Ferry	4.3%	394	17	0.0%	**MINIMAL**	**MINIMAL**	**MINIMAL**	Regional Low Income people served less than 0.5%
Totals		**484,024**	**140,855**	**100%**				

*Low income riders defined as income less than $25,000/year
*From Transit Demographics Survey 2006
*Stastical Summary of Bay Area Operators FY 05-06 Total passengers

Project Assessment Equity Considerations (listed by county)

APPENDIX L REVISED 2/15/2012

Map ID	Project ID	Project Name	County	Project Type	EQUITY-RELATED TARGETS: Housing	PM in CARE	Low Income HH Transportation Cost	Equity Targets Score	Serves Community of Concern?*	In Community of Concern?	In CARE Community?
1	240180	BART Bay Fair Connection	Alameda	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
2	22062	Irvington BART Station	Alameda	Transit Efficiency	MINIMAL	MINIMAL	STRONG	1.0	Yes	Yes	No
3	22455	AC Transit East Bay BRT	Alameda/ 3434	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
4	22780	AC Transit Grand-MacArthur BRT	Alameda/ 3434	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
5	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Alameda	Transit Expansion	MINIMAL	MINIMAL	STRONG	1.0	No	No	No
6	98207T, 98207R	Alameda-Oakland BRT & I-880 Broadway/Jackson Interchange Improvements	Alameda	Transit Efficiency	MINIMAL	MODERATE	STRONG	1.5	Yes	Yes	Yes
7	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Alameda/ 3434	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
8	240113	BART Hayward Maintenance Complex	Alameda	Transit Efficiency	MINIMAL	MINIMAL	STRONG	1.0	No	Yes	No
9	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Alameda	Transit Expansion	MINIMAL	MINIMAL	STRONG	1.0	No	No	No
10	LBART	BART to Livermore (Phase 1: 1-Station Rail Extension with DMU)	Alameda	Transit Expansion	MINIMAL	MINIMAL	STRONG	1.0	No	No	No
11	580_BUS	I-580 Express Bus (Dublin to Livermore)	Alameda	Transit Efficiency	MINIMAL	MINIMAL	STRONG	1.0	No	No	No
12	22089	Martinez Subdivision & Rail Improvements	Alameda	Transit Efficiency	MODERATE	MINIMAL	STRONG	1.5	No	Yes	Yes
13	22765	I-580/I-680 Interchange HOV Direct Connectors	Alameda	Road Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	No	No	No
14	240318	I-80 Ashby Interchange Improvements	Alameda	Road Efficiency	STRONG	MINIMAL	MINIMAL	1.0	No	No	Yes
15	22769	I-880 23rd/29th Interchange Improvements	Alameda	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	Yes	Yes	Yes
16	22779	I-880/SR-262 Interchange Improvements (Phase 2: Warren Avenue Grade Separation)	Alameda	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
17	240052	I-880 Whipple Road Interchange Improvements	Alameda	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
18	240317	Port of Oakland Wharf Replacement & Berth Deepening (Berths 60-63)	Alameda	Other	MINIMAL	MINIMAL	MINIMAL	0.0	No	Yes	Yes
19	240657	I-580 Corridor Spot Intersection Improvements	Alameda	Road Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	No	No	No
20	21100	I-580 Vasco Road Interchange Improvements & Auxiliary Lanes	Alameda	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
21	22082	Port of Oakland 7th Street Grade Separation & Roadway Improvements	Alameda	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	Yes	Yes	Yes
22	22760	Port of Oakland Outer Harbor Intermodal Terminals	Alameda	Other	MINIMAL	MINIMAL	MINIMAL	0.0	No	Yes	Yes
23	230103	Decoto Neighborhood Grade Separation	Alameda	Road Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	Yes	Yes	No
24	240024	Oakland Army Base Infrastructure Improvements	Alameda	Other	MINIMAL	MINIMAL	MINIMAL	0.0	No	Yes	Yes
25	240279	Mandela Parkway & 3rd Street Corridor Street Reconstruction	Alameda	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	Yes	Yes	Yes
26	240562	SR-92 Clawiter/Whitesell Interchange Improvements	Alameda	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
27	94506	Fremont/Union City East-West Connector	Alameda	Arterial Expansion	MODERATE	MINIMAL	MINIMAL	0.5	No	No	No
28	230099	I-580/I-680 Interchange Improvements (Phase 1)	Alameda	Road Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	No	No	No
29	240062, 22776	SR-84/I-680 Interchange Improvements + SR-84 Widening (Jack London to I-680)	Alameda	Highway Expansion	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
30	240053	Whipple Road Widening (Mission Boulevard to I-880)	Alameda	Highway Expansion	MINIMAL	MINIMAL	MINIMAL	0.0	Yes	Yes	No

* = serving a CoC is defined as being located within a CoC and providing an access point for residents

Map ID	Project ID	Project Name	County	Project Type	EQUITY-RELATED TARGETS			Equity Targets Score	Serves Community of Concern?*	In Community of Concern?	In CARE Community?
					Housing	PM in CARE	Low Income HH Transportation Cost				
31	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Contra Costa	Transit Efficiency	MODERATE	MODERATE	MODERATE	1.5	Yes	Yes	Yes
32	230321	Hercules Intermodal Station (Phases 2, 3, and 4)	Contra Costa	Transit Efficiency	STRONG	MINIMAL	MINIMAL	1.0	No	No	No
33	22360	I-80 San Pablo Dam Road Interchange Improvements	Contra Costa	Road Efficiency	STRONG	MINIMAL	MINIMAL	1.0	Yes	Yes	Yes
34	22353, 21223	I-680 HOV Gap Closure in Walnut Creek (N. Main to Livorna)	Contra Costa	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
35	22604	Vasco Road Safety & Operational Improvements (Brentwood to San Joaquin County line)	Contra Costa	Highway Expansion	MODERATE	MINIMAL	MINIMAL	0.5	No	No	No
36	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening (Morello Avenue to SR-242)	Contra Costa	Highway Expansion	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
37	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Contra Costa	Highway Expansion	STRONG	MINIMAL	MINIMAL	1.0	No	No	No
38	22981	SR-4 Widening (Marsh Creek Road to San Joaquin County line)	Contra Costa	Highway Expansion	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
39	98133	Pacheco Boulevard Widening (Blum Road to Arthur Road)	Contra Costa	Highway Expansion	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
40	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Contra Costa	Highway Expansion	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
41	94050	SR-4 Upgrade to Full Freeway (Phase 2: Cummings Skyway to I-80)	Contra Costa	Highway Expansion	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
42	230252	Marin Countywide Bus Service Frequency Improvements	Marin	Transit Efficiency	MINIMAL	MINIMAL	MODERATE	0.5	Yes	Yes	No
43	21325	US-101 Twin Cities Corridor Improvements	Marin	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
44	240644	Marin Countywide Senior Mobility Program	Marin	Safety	MINIMAL	MINIMAL	MODERATE	0.5	Yes	Yes	No
45	240182	BART Metro Program	Multi-County	Transit Efficiency	MODERATE	STRONG	STRONG	2.5	Yes	Yes	Yes
46	00BART	BART Service Frequency Improvements	Multi-County	Transit Efficiency	MODERATE	STRONG	STRONG	2.5	Yes	Yes	Yes
47	230603	California High-Speed Train - Bay Area to Central Valley	Multi-County	Transit Expansion	MODERATE	STRONG	MODERATE	2.0	Yes	Yes	Yes
48	240134, 21627	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (SF to Tamien)	Multi-County	Transit Efficiency	MODERATE	STRONG	MODERATE	2.0	Yes	Yes	Yes
49	240521, 21627, 240134	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (SF to Tamien)	Multi-County/ 3434	Transit Efficiency	MODERATE	STRONG	MODERATE	2.0	Yes	Yes	Yes
50	240018	Dumbarton Corridor Express Bus	Multi-County	Transit Efficiency	MODERATE	STRONG	STRONG	2.5	Yes	Yes	Yes
51	22009	Capitol Corridor Service Frequency Improvements (Oakland to San Jose)	Multi-County/ 3434	Transit Efficiency	MODERATE	MODERATE	MODERATE	1.5	Yes	Yes	Yes
52	240216	Dumbarton Rail	Multi-County/ 3434	Transit Expansion	MODERATE	STRONG	MINIMAL	1.5	Yes	Yes	Yes
53	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Multi-County	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
54	00ACT1	AC Transit Frequent Transit Network	Multi-County	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
55	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Multi-County/ 3434	Transit Expansion	MINIMAL	MINIMAL	MODERATE	0.5	No	Yes	No
56	n/a	BART Station Capacity Improvements	Multi-County	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
57	n/a	BART Station Access Improvements	Multi-County	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
58	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Multi-County/ 3434	Transit Expansion	MODERATE	MODERATE	MINIMAL	1.0	Yes	Yes	Yes
59	230055	Golden Gate Ferry Service Frequency Improvements	Multi-County	Transit Efficiency	MODERATE	MODERATE	MODERATE	1.5	No	No	Yes

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Map ID	Project ID	Project Name	County	Project Type	EQUITY-RELATED TARGETS			Equity Targets Score	Serves Community of Concern?*	In Community of Concern?	In CARE Community?
					Housing	PM in CARE	Low Income HH Transportation Cost				
60	230604	Bay Bridge Contraflow Lane	Multi-County	Pricing	MODERATE	STRONG	MODERATE	2.0	No	Yes	Yes
61	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Multi-County	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
62	230219, 230314	Golden Gate Bus Service Frequency Improvements	Multi-County	Transit Efficiency	MODERATE	MODERATE	MODERATE	1.5	No	No	Yes
63	98139	ACE Expansion	Multi-County/ 3434	Transit Efficiency	MODERATE	MODERATE	MINIMAL	1.0	No	Yes	Yes
64	240036	Caltrain Communications-Based Overlay Signal System (CBOSS) and Positive Train Control System (PTC)	Multi-County	Transit Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	Yes	Yes
65	240060, 240523	US-101 HOV Lanes (Whipple to Cesar Chavez)	Multi-County	Road Efficiency	MODERATE	MODERATE	MINIMAL	1.0	Yes	Yes	Yes
66	22003	Capitol Corridor Reliability Improvements (Phase 2)	Multi-County	Road Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	Yes	Yes	Yes
67	22657	I-580 Westbound Truck Climbing Lane (Altamont Pass)	Multi-County	Road Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	No	No	No
68	240140	Caltrain At-Grade Crossing Improvements	Multi-County	Transit Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	No	No	Yes
69	240571	I-80/I-880 Congestion Pricing and Clean Vehicle Incentive Program	Multi-County	Pricing	MODERATE	MODERATE	MINIMAL	1.0	Yes	Yes	Yes
70	98147, 240691	Marin-Sonoma Narrows (Phase 2)	Multi-County	Highway Expansion	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
71	HOTe	CTC Application + Alameda County Authorized Lanes Express Lanes Network	Multi-County	Express Lanes Network	MODERATE	MODERATE AD	MINIMAL	0.0	Yes	Yes	Yes
72	240122	SR-29 Complete Streets Improvements	Napa	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
73	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Napa	Road Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	Yes	Yes	No
74	94075	SR-12 Jameson Canyon Project (Phase 3: New SR-12/SR-29 Interchange)	Napa	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
75	22247	Regional Bikeway Network	Regional	Bike/Ped	MODERATE	STRONG	MODERATE	2.0	Yes	Yes	Yes
76	240410	Transportation for Livable Communities	Regional	TLC	MODERATE	STRONG	MODERATE	2.0	Yes	Yes	Yes
77	240690	Lifeline Program	Regional	Lifeline/New Freedom	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
78	NewFree	New Freedom	Regional	Lifeline/New Freedom	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
79	LS&R	Local Streets and Roads Capital Maintenance Needs	Regional	Maintenance	MODERATE	MODERATE	MODERATE	1.5	Yes	Yes	Yes
80	Transitshort	Transit Capital Maintenance Needs	Regional	Maintenance	MODERATE	MODERATE	MODERATE	1.5	Yes	Yes	Yes
81	230419	Freeway Performance Initiative	Regional	FPI	MODERATE	MINIMAL	MODERATE	1.0	Yes	Yes	Yes
82	230550	Climate Initiatives	Regional	Climate	MODERATE	MODERATE	MODERATE	1.5	Yes	Yes	Yes
83	240589	EV Solar Installation [BAAQMD program]	Regional	Climate	MODERATE	MINIMAL	MINIMAL	0.5	Yes	Yes	Yes
84	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Regional	Climate	MODERATE	STRONG	MINIMAL	1.5	No	Yes	Yes
85	240582	Truck & Motorcycle Retirement [BAAQMD program]	Regional	Climate	MODERATE	STRONG	MINIMAL	1.5	Yes	Yes	Yes
86	240674	Transbay Transit Center - Phase 3 (Pedestrian Connector Tunnel to BART/Muni)	San Francisco	Transit Expansion	MODERATE	STRONG	STRONG	2.5	No	No	Yes
87	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown Extension)	San Francisco/ 3434	Transit Expansion	MODERATE	STRONG	MODERATE	2.0	Yes	Yes	Yes
88	240171	SFMTA Transit Effectiveness Project	San Francisco	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
89	240526	SFCTA Transit Performance Initiative	San Francisco	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes

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					Housing	PM in CARE	Low Income HH Transportation Cost				
90	230161	Van Ness Avenue BRT	San Francisco/ 3434	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
91	230164	Geary Boulevard BRT	San Francisco	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
92	240155	Better Market Street	San Francisco	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
93	240522	Congestion Pricing Pilot	San Francisco	Pricing	MODERATE	STRONG	MINIMAL	1.5	Yes	Yes	Yes
94	00MUNI	Muni Service Frequency Improvements	San Francisco	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
95	22415	Historic Streetcar Expansion Program	San Francisco	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
96	240545	Parkmerced Light Rail Corridor	San Francisco	Transit Efficiency	MODERATE	MINIMAL	STRONG	1.5	No	No	No
97	240557	Oakdale Caltrain Station	San Francisco	Transit Efficiency	MODERATE	MODERATE	MODERATE	1.5	Yes	Yes	Yes
98	240158	Eastern Neighborhoods (EN TRIPS) Circulation & Streetscape Improvements	San Francisco	Road Efficiency	MODERATE	MODERATE	MODERATE	1.5	Yes	Yes	Yes
99	240694	Treasure Island Congestion Pricing	San Francisco	Pricing	MODERATE	MINIMAL	MODERATE	1.0	Yes	Yes	No
100	240147	Southeast Waterfront Transportation Improvements	San Francisco	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
101	240163	Hunters Point & Candlestick Point Local Road Network	San Francisco	Road Efficiency	MODERATE	MINIMAL	MODERATE	1.0	Yes	Yes	Yes
102	240344	SFpark	San Francisco	Parking	MODERATE	MODERATE	MINIMAL	1.0	Yes	Yes	Yes
103	240358	Mission Bay Local Road Network	San Francisco	Arterial Expansion	MODERATE	MINIMAL	MODERATE	1.0	Yes	Yes	Yes
104	240035	Caltrain Terminal Station Improvements (4th & King)	San Francisco	Transit Efficiency	MODERATE	MINIMAL	MODERATE	1.0	Yes	Yes	Yes
105	230555	I-80 Yerba Buena Island Interchange Improvements	San Francisco	Road Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	Yes	Yes	No
106	240026	SamTrans El Camino BRT	San Mateo	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
107	22274	ITS Improvements in San Mateo County	San Mateo	Road Efficiency	MODERATE	MINIMAL	MODERATE	1.0	Yes	Yes	Yes
108	240590	El Camino Real Complete Streets Improvements	San Mateo	Road Efficiency	MODERATE	MODERATE	MODERATE	1.5	Yes	Yes	Yes
109	22268	San Mateo Countywide Shuttle Service Frequency Improvements	San Mateo	Transit Efficiency	MODERATE	MINIMAL	STRONG	1.5	Yes	Yes	Yes
110	21602	US-101 Broadway Interchange Improvements	San Mateo	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
111	21603	US-101 Woodside Road Interchange Improvements	San Mateo	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	Yes	Yes	Yes
112	21606	US-101 Willow Road Interchange Improvements	San Mateo	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	Yes	Yes	Yes
113	21613	SR-92 Improvements (Phase 1: San Mateo Bridge to I-280)	San Mateo	Road Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	No	No	No
114	22279	US-101 Produce Road Interchange Improvements	San Mateo	Road Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	No	No	No
115	22756	US-101 Candlestick Point Interchange Improvements	San Mateo	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	Yes
116	240064	Caltrain Grade Separations (Phase 1: San Mateo County)	San Mateo	Transit Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	No	No	No
117	21604	US-101 Auxiliary Lane Modifications (Oyster Point to San Francisco County line)	San Mateo	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
118	21615	I-280/SR-1 Interchange Improvements	San Mateo	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
119	22229	US-101 Sierra Point Parkway Interchange Improvements + Lagoon Way Extension	San Mateo	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No

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					Housing	PM in CARE	Low Income HH Transportation Cost				
120	22230	I-280 Auxiliary Lanes (Hickey Boulevard to I-380)	San Mateo	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
121	94644	SR-92 Westbound Slow-Vehicle Climbing Lane (I-280 to SR-35)	San Mateo	Road Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	No	No	No
122	21612	Dumbarton Bridge/US-101 Access Improvements (Phase 1)	San Mateo	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	Yes	Yes	Yes
123	240114	SR-1 Safety & Operational Improvements (Pacifica to Half Moon Bay)	San Mateo	Road Efficiency	MODERATE AD	MINIMAL	MINIMAL	-0.5	No	No	No
124	22282	US-101 Operational Improvements (near US-101/SR-92 Interchange)	San Mateo	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
125	98204	SR-1 Widening (Fassler Avenue to Westport Drive)	San Mateo	Highway Expansion	MODERATE AD	MINIMAL	MINIMAL	-0.5	No	No	No
126	240119	VTA El Camino BRT	Santa Clara	Transit Efficiency	STRONG	MODERATE	STRONG	2.5	Yes	Yes	Yes
127	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Santa Clara/ 3434	Transit Expansion	MINIMAL	STRONG	STRONG	2.0	Yes	Yes	Yes
128	22019	Downtown East Valley (Phase 2: LRT)	Santa Clara/ 3434	Transit Expansion	STRONG	MODERATE	STRONG	2.5	Yes	Yes	Yes
129	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Santa Clara	Transit Expansion	STRONG	MODERATE	STRONG	2.5	Yes	Yes	Yes
130	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Santa Clara	Transit Expansion	STRONG	MODERATE	STRONG	2.5	Yes	Yes	Yes
131	98119	Vasona Light Rail Extension (Phase 2)	Santa Clara	Transit Expansion	MODERATE	MINIMAL	STRONG	1.5	No	No	No
132	230547	Monterey Highway BRT	Santa Clara	Transit Efficiency	MODERATE	MODERATE	STRONG	2.0	Yes	Yes	Yes
133	230554	Sunnyvale-Cupertino BRT	Santa Clara	Transit Efficiency	MINIMAL	MINIMAL	STRONG	1.0	Yes	Yes	No
134	21760	Caltrain Double-Track Improvements (San Jose to Gilroy)	Santa Clara	Transit Efficiency	MODERATE	MODERATE	MODERATE	1.5	Yes	Yes	Yes
135	230534	Caltrain Electrification (Tamien to Gilroy)	Santa Clara	Transit Efficiency	MODERATE	MODERATE	MODERATE	1.5	Yes	Yes	Yes
136	240494	ITS Improvements in Santa Clara County	Santa Clara	Road Efficiency	MODERATE	MINIMAL	MODERATE	1.0	Yes	Yes	Yes
137	22965	New US-101 Mabury/Taylor Interchange	Santa Clara	Arterial Expansion	STRONG	MINIMAL	MINIMAL	1.0	Yes	Yes	Yes
138	22979	New US-101 Zanker/Skyport/Fourth Street Interchange	Santa Clara	Arterial Expansion	STRONG	MINIMAL	MINIMAL	1.0	No	No	Yes
139	240437	US-101 Braided Ramps (Capitol Expressway to Yerba Buena Road)	Santa Clara	Arterial Expansion	STRONG	MINIMAL	MINIMAL	1.0	No	No	No
140	240441	US-101/Oregon Expressway/Embarcadero Road Interchange Improvements	Santa Clara	Arterial Expansion	STRONG	MINIMAL	MINIMAL	1.0	No	No	Yes
141	21719	I-880/I-280/Stevens Creek Boulevard Interchange Improvements	Santa Clara	Arterial Expansion	STRONG	MINIMAL	MINIMAL	1.0	No	No	No
142	230537	I-280 Winchester Boulevard Interchange Improvements	Santa Clara	Arterial Expansion	STRONG	MINIMAL	MINIMAL	1.0	No	No	No
143	240048	Caltrain Diridon Station Track Capacity Expansion (Phases 2 & 3)	Santa Clara	Transit Efficiency	STRONG	MINIMAL	MODERATE	1.5	No	No	Yes
144	240063	Caltrain Terminal Station Improvements (San Jose Diridon)	Santa Clara	Transit Efficiency	STRONG	MINIMAL	MODERATE	1.5	No	No	Yes
145	240429	I-880/US-101 Interchange Improvements	Santa Clara	Arterial Expansion	STRONG	MINIMAL	MINIMAL	1.0	No	Yes	Yes
146	240444	US-101/SR-237 Interchange Improvements	Santa Clara	Arterial Expansion	STRONG	MINIMAL	MINIMAL	1.0	No	Yes	No
147	240671	New I-280 Senter Road Interchange	Santa Clara	Arterial Expansion	STRONG	MINIMAL	MINIMAL	1.0	Yes	Yes	Yes
148	230337	New Lawrence Expressway Interchange (Monroe Street)	Santa Clara	Arterial Expansion	MODERATE	MINIMAL	MINIMAL	0.5	No	No	No
149	240479	I-680 Auxiliary Lanes (McKee Road to Berryessa Road)	Santa Clara	Road Efficiency	STRONG	MINIMAL	MINIMAL	1.0	No	No	Yes

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150	240586	Oregon Expressway Alma Bridge Interchange Improvements	Santa Clara	Road Efficiency	STRONG	MINIMAL	MINIMAL	1.0	No	No	No
151	21922	Mineta San Jose International Airport APM Connector	Santa Clara	Transit Efficiency	STRONG	MINIMAL	MINIMAL	1.0	Yes	Yes	Yes
152	22814	Foothill Expressway Deceleration Lane Extension	Santa Clara	Road Efficiency	STRONG	MINIMAL	MINIMAL	1.0	No	No	No
153	230340	New Lawrence Expressway Interchange (Kifer Road)	Santa Clara	Arterial Expansion	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
154	240580	I-280/Lawrence Expressway/Stevens Creek Interchange Improvements	Santa Clara	Arterial Expansion	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
155	230332	Rengstorff Avenue Grade Separation	Santa Clara	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	Yes	No
156	240404	Calaveras Boulevard Overpass Widening (Abel Street to Milpitas Boulevard)	Santa Clara	Road Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	Yes	Yes	No
157	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Santa Clara	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	Yes	Yes	No
158	240443	Mary Avenue Extension	Santa Clara	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	Yes	Yes	No
159	HOTd	Silicon Valley Express Lanes Network	Santa Clara	Express Lanes Network	MODERATE	MODERATE AD	MINIMAL	0.0	Yes	Yes	Yes
160	230294	New SR-152 Alignment	Santa Clara	Highway Expansion	MODERATE	MINIMAL	MINIMAL	0.5	No	No	No
161	21714	US-101 Widening (Monterey Street to SR-129)	Santa Clara	Road Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	No	No	No
162	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Solano	Transit Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	No	No	No
163	22629	Vallejo Ferry Terminal Intermodal Station	Solano	Transit Expansion	MODERATE	MINIMAL	MINIMAL	0.5	Yes	Yes	No
164	94151	Jepson Parkway Construction (SR-12 to I-80)	Solano	Highway Expansion	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
165	230325	I-80 Westbound Cordelia Truck Scales Relocation	Solano	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
166	230326	I-80/I-680/SR-12 Widening & Interchange Improvements (Phase 1)	Solano	Highway Expansion	MODERATE AD	MINIMAL	MINIMAL	-0.5	No	No	No
167	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Solano	Highway Expansion	MINIMAL	MINIMAL	MINIMAL	0.0	No	Yes	No
168	230561	SR-113 Relocation out of Dixon	Solano	Highway Expansion	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
169	230575	Rio Vista Bridge Reconstruction & Realignment	Solano	Road Efficiency	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
170	22794	Curtola Transit Center Improvements	Solano	Transit Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	Yes	Yes	No
171	230313	Redwood Parkway & Fairground Drive Roadway Improvements	Solano	Road Efficiency	MODERATE	MINIMAL	MINIMAL	0.5	Yes	Yes	No
172	230477	SR-12 Widening (SR-29 to Sacramento County line)	Solano	Highway Expansion	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
173	240650	Sonoma Countywide Bus Service Frequency Improvements	Sonoma	Transit Efficiency	MODERATE	MINIMAL	STRONG	1.5	Yes	Yes	No
174	230366	Caulfield Lane Extension (Southern Crossing)	Sonoma	Road Efficiency	STRONG	MINIMAL	MINIMAL	1.0	No	No	No
175	21998	SR-116 Widening & Rehabilitation (Elphick Road to Redwood Drive)	Sonoma	Highway Expansion	MINIMAL	MINIMAL	MINIMAL	0.0	No	No	No
176	21884	Petaluma Cross-Town Connector/Interchange	Sonoma	Road Efficiency	STRONG	MINIMAL	MINIMAL	1.0	No	No	No
177	22207	Farmers Lane Extension (Bellevue Avenue to SR-12)	Sonoma	Highway Expansion	MODERATE	MINIMAL	MINIMAL	0.5	Yes	Yes	No

LEGEND	IMPACT TO TARGETS			
STRONG	MODERATE	MINIMAL	MODERATE ADVERSE	STRONG ADVERSE

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Plan Bay Area: Equity Considerations Map

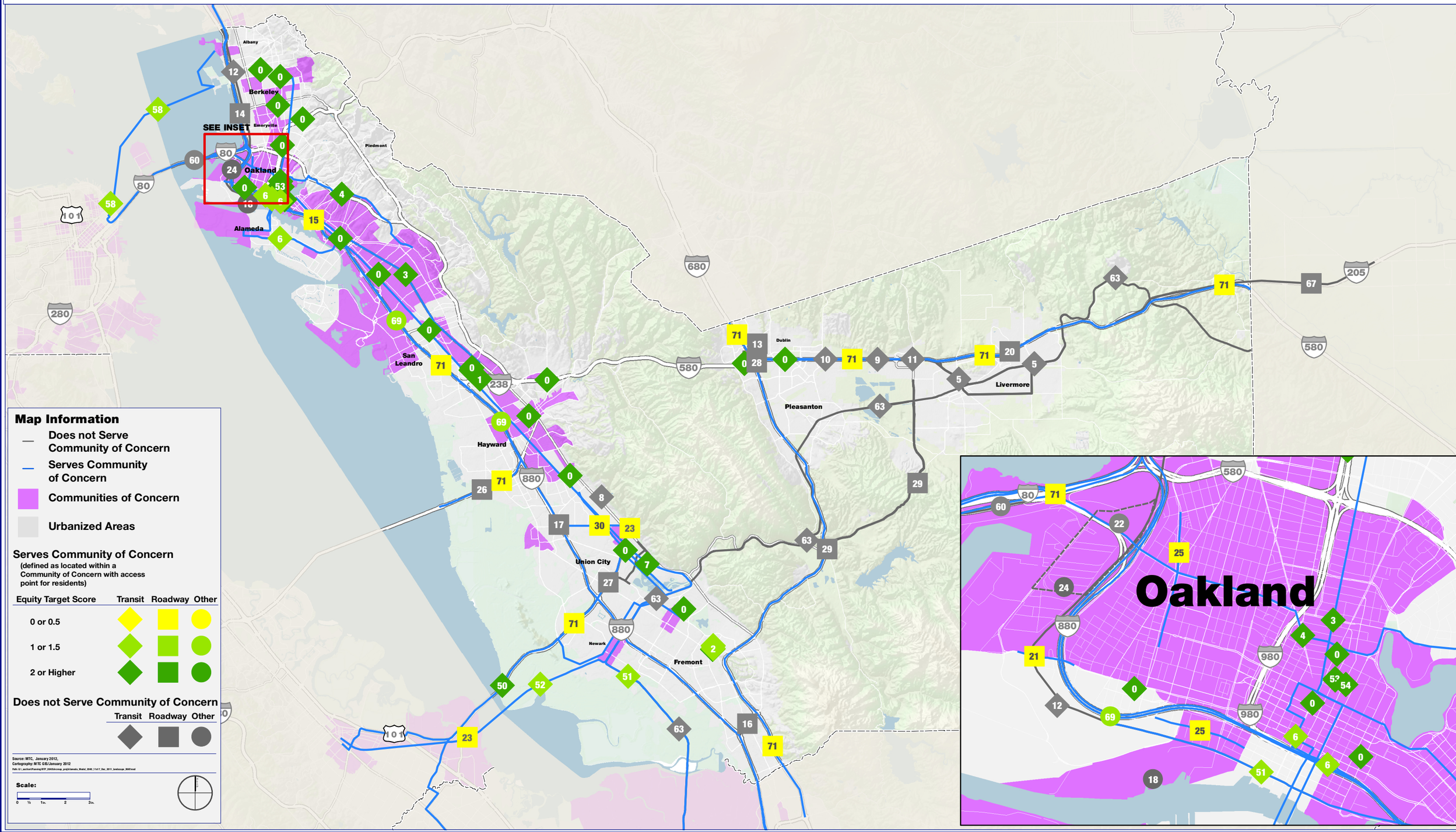
Alameda County

Metropolitan Transportation Commission

Planning, Financing and Coordinating Transportation for the nine-county San Francisco Bay Area

Research and Demographic Unit

APPENDIX M Geographic Information Systems Unit



Plan Bay Area: Equity Considerations Map

Alameda County

Metropolitan Transportation Commission
Planning, Financing and Coordinating Transportation for the nine-county San Francisco Bay Area

Research and Demographic Unit

Geographic Information Systems Unit

Map ID	Project ID	Project Name
1	240180	BART Bay Fair Connection
2	22062	Irvington BART Station
3	22455	AC Transit East Bay BRT
4	22780	AC Transit Grand-MacArthur BRT
5	22667	BART to Livermore (Phases 1 & 2: Rail Extension)
6	98207T, 98207R	Alameda-Oakland BRT + Transit Access Improvements I-880 Broadway/Jackson Interchange
7	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements
8	240113	BART Hayward Maintenance Complex
9	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)
10	LBART	BART to Livermore (Phase 1: 1-Station Rail Extension with DMU)
11	580_BUS	I-580 Express Bus (Dublin to Livermore)
12	22089	Martinez Subdivision & Rail Improvements
13	22765	I-580/I-680 Interchange HOV Direct Connectors
14	240318	I-80 Ashby Interchange Improvements
15	22769	I-880 23rd/29th Interchange Improvements
16	22779	I-880/SR-262 Interchange Improvements (Phase 2: Warren Avenue Grade Separation)
17	240052	I-880 Whipple Road Interchange Improvements
18	240317	Port of Oakland Wharf Replacement & Berth Deepening (Berths 60-63)
19	240657	I-580 Corridor Spot Intersection Improvements
20	21100	I-580 Vasco Road Interchange Improvements & Auxiliary Lanes
21	22082	Port of Oakland 7th Street Grade Separation & Roadway Improvements
22	22760	Port of Oakland Outer Harbor Intermodal Terminals
23	230103	Decoto Neighborhood Grade Separation
24	240024	Oakland Army Base Infrastructure Improvements
25	240279	Mandela Parkway & 3rd Street Corridor Street Reconstruction
26	240562	SR-92 Clawiter/Whitesell Interchange Improvements
27	94506	Fremont/Union City East-West Connector
28	230099	I-580/I-680 Interchange Improvements (Phase 1)
29	240062, 22776	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)
30	240053	Whipple Road Widening (Mission Boulevard to I-880)
0	240182, 00BART	45 - BART Metro Program 46 - BART Service Frequency Improvements 56 - BART Station Capacity Improvements 57 - BART Station Access Improvements
50	240018	Dumbarton Corridor Express Bus
51	22009	Capitol Corridor Service Frequency Improvements (Oakland to San Jose)
52	240216	Dumbarton Rail
53	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)
54	00ACT1	AC Transit Frequent Transit Network
58	22120, 22122, 22511, 22512, 230613, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)
60	230604	Bay Bridge Contraflow Lane
63	98139	ACE Expansion
67	22657	I-580 Westbound Truck Climbing Lane (Altamont Pass)
69	240571	I-80/I-880 Congestion Pricing and Clean Vehicle Incentive Program
71	HOTe	CTC Application + Alameda County Authorized Lanes Express Lanes Network
75	22247	Bicycle/Pedestrian Expansion
76	240410	Transportation for Livable Communities (TLC)
77	240690	Lifeline Transportation Program
78	NewFree	New Freedom
79	LS&R	Local Streets and Roads Capital Maintenance Needs
80	Transitshort	Transit Capital Maintenance Needs
81	230419	Freeway Performance Initiative
82	230550	Climate Initiatives Program
83	240589	Solar Installations to Offset Electric Vehicle Use
84	240577	Heavy Duty Truck Replacement Program
85	240582	Heavy-Duty Diesel Truck and Motorcycle Early Retirement Program

NOTE: Project names appearing in grey are not shown on the map.

Plan Bay Area: Equity Considerations Map

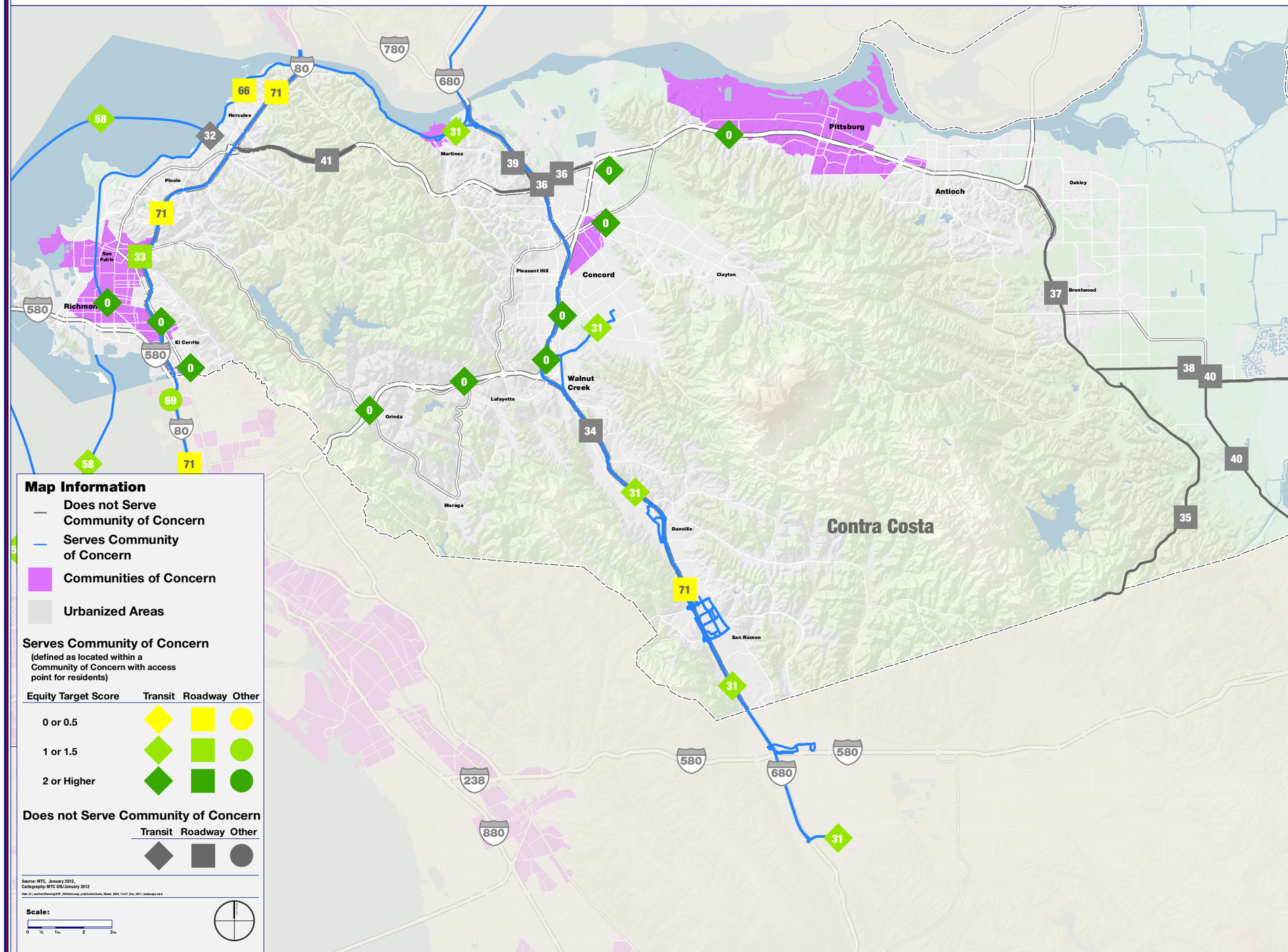
Contra Costa County

Metropolitan Transportation Commission

Planning, Financing and Coordinating Transportation for the nine-county San Francisco Bay Area

Research and Demographic Unit

Geographic Information Systems Unit



Map ID	Project ID	Project Name
31	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)
32	230321	Hercules Intermodal Station (Phases 2, 3, and 4)
33	22360	I-80 San Pablo Dam Road Interchange Improvements
34	21223, 22353	I-680 HOV Gap Closure (North Main Street to Livorna Road)
35	22604	Vasco Road Safety & Operational Improvements (Brentwood to San Joaquin County line)
36	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening (Morello Avenue to SR-242)
37	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)
38	22981	SR-4 Widening (Marsh Creek Road to San Joaquin County line)
39	98133	Pacheco Boulevard Widening (Blum Road to Arthur Road)
40	22400	SR-239 Expressway Construction (Brentwood to Tracy)
41	94050	SR-4 Upgrade to Full Freeway (Phase 2: Cummings Skyway to I-80)
0	240182 00BART	45 - BART Metro Program 46 - BART Service Frequency Improvements 56 - BART Station Capacity Improvements 57 - BART Station Access Improvements
58	22120, 22122, 22511, 22512, 230613, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)
66	22003	Capitol Corridor Reliability Improvements (Phase 2)
69	240571	I-80/I-880 Congestion Pricing and Clean Vehicle Incentive Program
71	HOTe	CTC Application + Alameda County Authorized Lanes Express Lanes Network
75	22247	Bicycle/Pedestrian Expansion
76	240410	Transportation for Livable Communities (TLC)
77	240690	Lifeline Transportation Program
78	NewFree	New Freedom
79	LS&R	Local Streets and Roads Capital Maintenance Needs
80	Transitshort	Transit Capital Maintenance Needs
81	230419	Freeway Performance Initiative
82	230550	Climate Initiatives Program
83	240589	Solar Installations to Offset Electric Vehicle Use
84	240577	Heavy Duty Truck Replacement Program
85	240582	Heavy-Duty Diesel Truck and Motorcycle Early Retirement Program

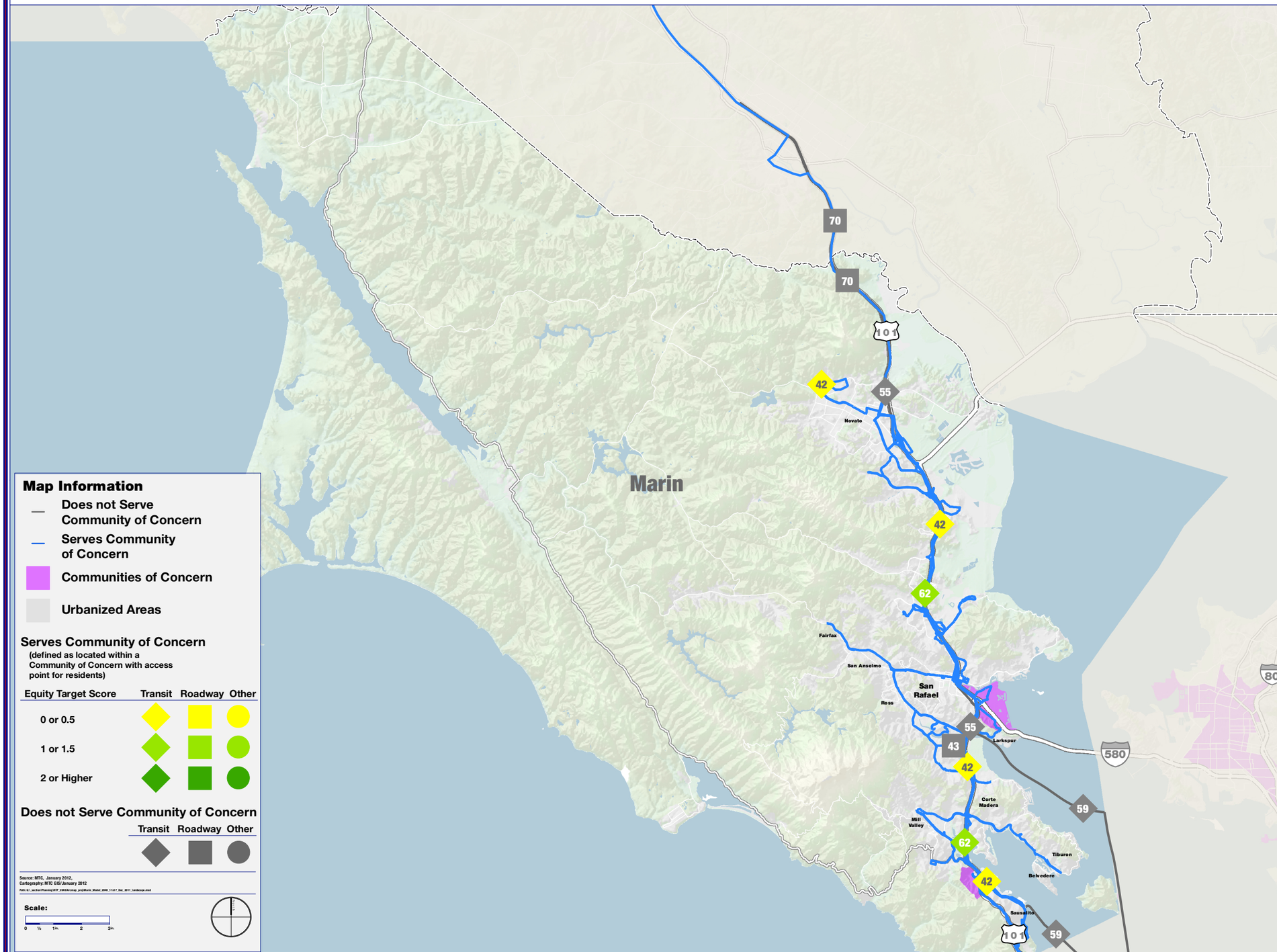
NOTE: Project names appearing in grey are not shown on the map.

Plan Bay Area: Equity Considerations Map
Marin County

Metropolitan Transportation Commission
Planning, Financing and Coordinating Transportation for the nine-county San Francisco Bay Area

Research and Demographic Unit

Geographic Information Systems Unit



Map ID	Project ID	Project Name
42	230252	Marin Countywide Bus Service Frequency
43	21325	US-101 Twin Cities Corridor Improvements
44	240644	Marin Countywide Senior Mobility Program
55	240675, 240676, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)
59	230055	Golden Gate Ferry Service Frequency Improvements
62	230219, 230314	Golden Gate Bus Service Frequency Improvements
70	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)
75	22247	Bicycle/Pedestrian Expansion
76	240410	Transportation for Livable Communities (TLC)
77	240690	Lifeline Transportation Program
78	NewFree	New Freedom
79	LS&R	Local Streets and Roads Capital
80	Transitshort	Transit Capital Maintenance Needs
81	230419	Freeway Performance Initiative
82	230550	Climate Initiatives Program
83	240589	Solar Installations to Offset Electric Vehicle Use
84	240577	Heavy Duty Truck Replacement Program
85	240582	Heavy-Duty Diesel Truck and Motorcycle Early Retirement Program

NOTE: Project names appearing in grey are not shown on the map.

Plan Bay Area: Equity Considerations Map

North Bay Counties

Metropolitan Transportation Commission
Planning, Financing and Coordinating Transportation for the nine-county San Francisco Bay Area

Research and Demographic Unit
Geographic Information Systems Unit

Plan Bay Area: Equity Considerations Map

North Bay Counties

Metropolitan Transportation Commission

Planning, Financing and Coordinating Transportation for the nine-county San Francisco Bay Area

Research and Demographic Unit

Geographic Information Systems Unit

Map ID	Project ID	Project Name
55	240675, 240676, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)
62	230219, 230314	Golden Gate Bus Service Frequency Improvements
66	22003	Capitol Corridor Reliability Improvements (Phase 2)
70	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)
71	HOTe	CTC Application + Alameda County Authorized Lanes Express Lanes
72	240122	SR-29 Complete Streets Improvements
73	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)
74	94075	SR-12 Jameson Canyon Project (Phase 3: New SR-12/SR-29 Interchange)
75	22247	Bicycle/Pedestrian Expansion
76	240410	Transportation for Livable Communities (TLC)
77	240690	Lifeline Transportation Program
78	NewFree	New Freedom
79	LS&R	Local Streets and Roads Capital
80	Transitshort	Transit Capital Maintenance Needs
81	230419	Freeway Performance Initiative
82	230550	Climate Initiatives Program
83	240589	Solar Installations to Offset Electric Vehicle Use
84	240577	Heavy Duty Truck Replacement Program
85	240582	Heavy-Duty Diesel Truck and Motorcycle Early Retirement Program
162	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)
163	22629	Vallejo Ferry Terminal Intermodal Station
164	94151	Jepson Parkway Construction (SR-12 to I-80)
165	230325	I-80 Westbound Cordelia Truck Scales Relocation
166	230326	I-80/I-680/SR-12 Widening & Interchange Improvements (Phase 1)
167	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)
168	230561	SR-113 Relocation out of Dixon
169	230575	Rio Vista Bridge Reconstruction & Realignment
170	22794	Curtola Transit Center Improvements
171	230313	Redwood Parkway & Fairground Drive Roadway Improvements
172	230477	SR-12 Widening (SR-29 to Sacramento County line)
173	240650	Sonoma Countywide Bus Service Frequency
174	230366	Caulfield Lane Extension (Southern Crossing)
175	21998	SR-116 Widening & Rehabilitation (Elphick Road to Redwood Drive)
176	21884	Petaluma Cross-Town Connector/Interchange
177	22207	Farmers Lane Extension (Bellevue Avenue to SR-12)

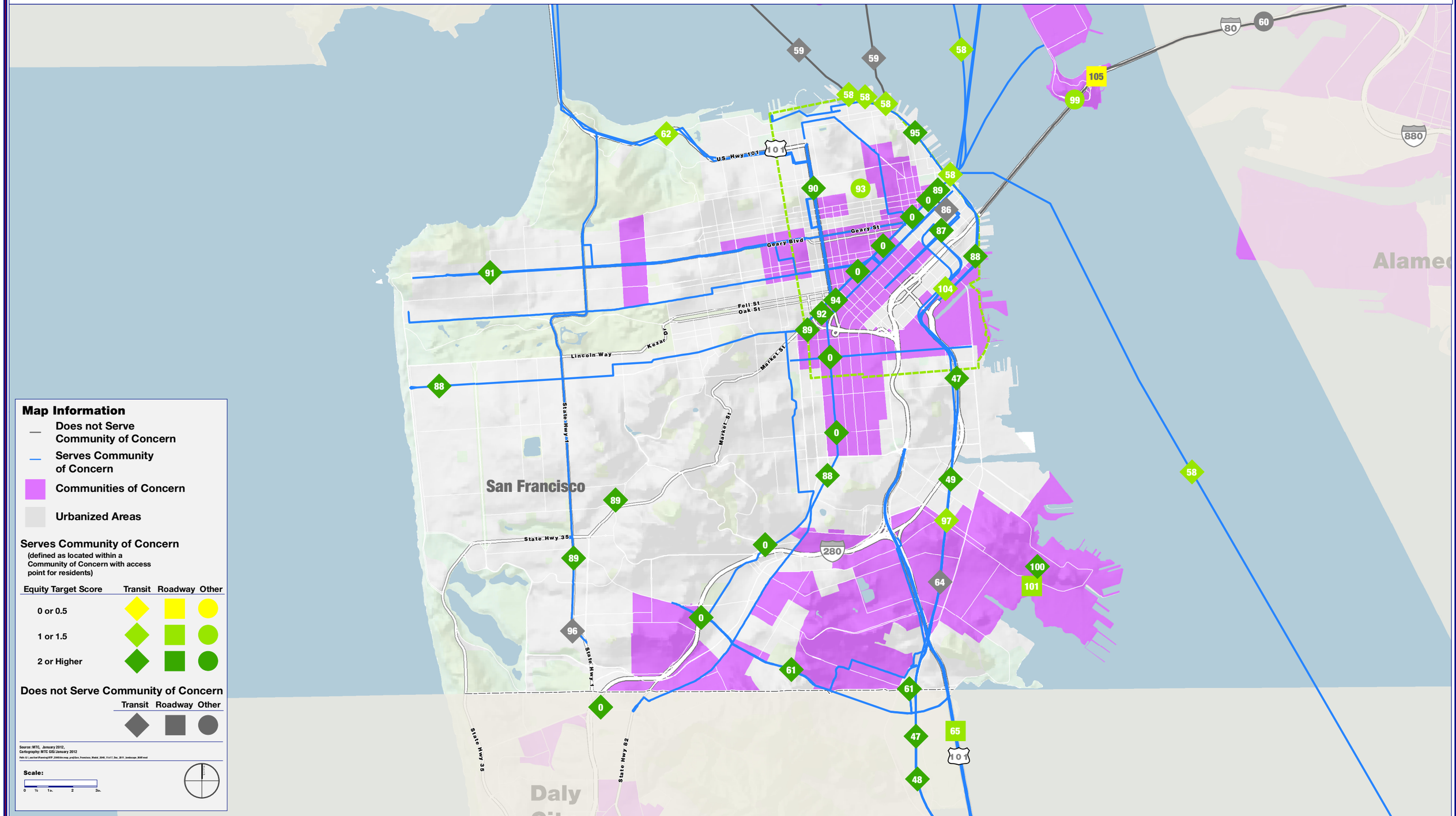
NOTE: Project names appearing in grey are not shown on the map.

Plan Bay Area: Equity Considerations Map

San Francisco

Metropolitan Transportation Commission
Planning, Financing and Coordinating Transportation for the nine-county San Francisco Bay Area

Research and Demographic Unit
Geographic Information Systems Unit



Plan Bay Area: Equity Considerations Map

San Francisco

Metropolitan Transportation Commission
Planning, Financing and Coordinating Transportation for the nine-county San Francisco Bay Area

Research and Demographic Unit

Geographic Information Systems Unit

Map ID	Project ID	Project Name
0	240182 00BART	45 - BART Metro Program 46 - BART Service Frequency Improvements 56 - BART Station Capacity Improvements 57 - BART Station Access Improvements
47	230603	California High-Speed Train - Bay Area to Central Valley
48	240134, 21627	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (SF to Tamien)
49	21627, 240134, 240521	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)
58	22120, 22122, 22511, 22512, 230613, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)
59	230055	Golden Gate Ferry Service Frequency Improvements
60	230604	Bay Bridge Contraflow Lane
61	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)
62	230219, 230314	Golden Gate Bus Service Frequency Improvements
64	240036	Caltrain Communications-Based Overlay Signal System (CBOSS) and Positive Train Control System (PTC)
65	240060, 240523	US-101 Express Lanes (Whipple Avenue to Cesar Chavez Street)
75	22247	Bicycle/Pedestrian Expansion
76	240410	Transportation for Livable Communities (TLC)
77	NewFree	New Freedom
78	230161	Van Ness Avenue BRT
79	LS&R	Local Streets and Roads Capital Maintenance Needs
80	Transitshort	Transit Capital Maintenance Needs
81	230419	Freeway Performance Initiative
82	230550	Climate Initiatives Program
83	240589	Solar Installations to Offset Electric Vehicle Use
84	240577	Heavy Duty Truck Replacement Program
85	240582	Heavy-Duty Diesel Truck and Motorcycle Early Retirement Program
86	240674	Transbay Transit Center - Phase 3 (Pedestrian Connector Tunnel to BART/Muni)
87	240674	Transbay Transit Center - Phase 2B (Caltrain Downtown Extension)
88	240171	SFMTA Transit Effectiveness Project
89	240526	SFCTA Transit Performance Initiative
90	230161	Van Ness Avenue BRT
91	230164	Geary Boulevard BRT
92	240155	Better Market Street
93	240522	Congestion Pricing Pilot
94	00MUNI	Muni Service Frequency Improvements
95	22415	Historic Streetcar Expansion Program
96	240545	Parkmerced Light Rail Corridor
97	240557	Oakdale Caltrain Station
98	240158	Eastern Neighborhoods (EN TRIPS) Circulation & Streetscape Improvements
99	240694	Treasure Island Congestion Pricing
100	240147	Southeast Waterfront Transportation Improvements
101	240163	Hunters Point & Candlestick Point Local Road Network
102	240344	SFpark
103	240358	Mission Bay Local Road Network
104	240035	Caltrain Terminal Station Improvements (4th & King)
105	230555	I-80 Yerba Buena Island Interchange Improvements

NOTE: Project names appearing in grey are not shown on the map.

Plan Bay Area: Equity Considerations Map

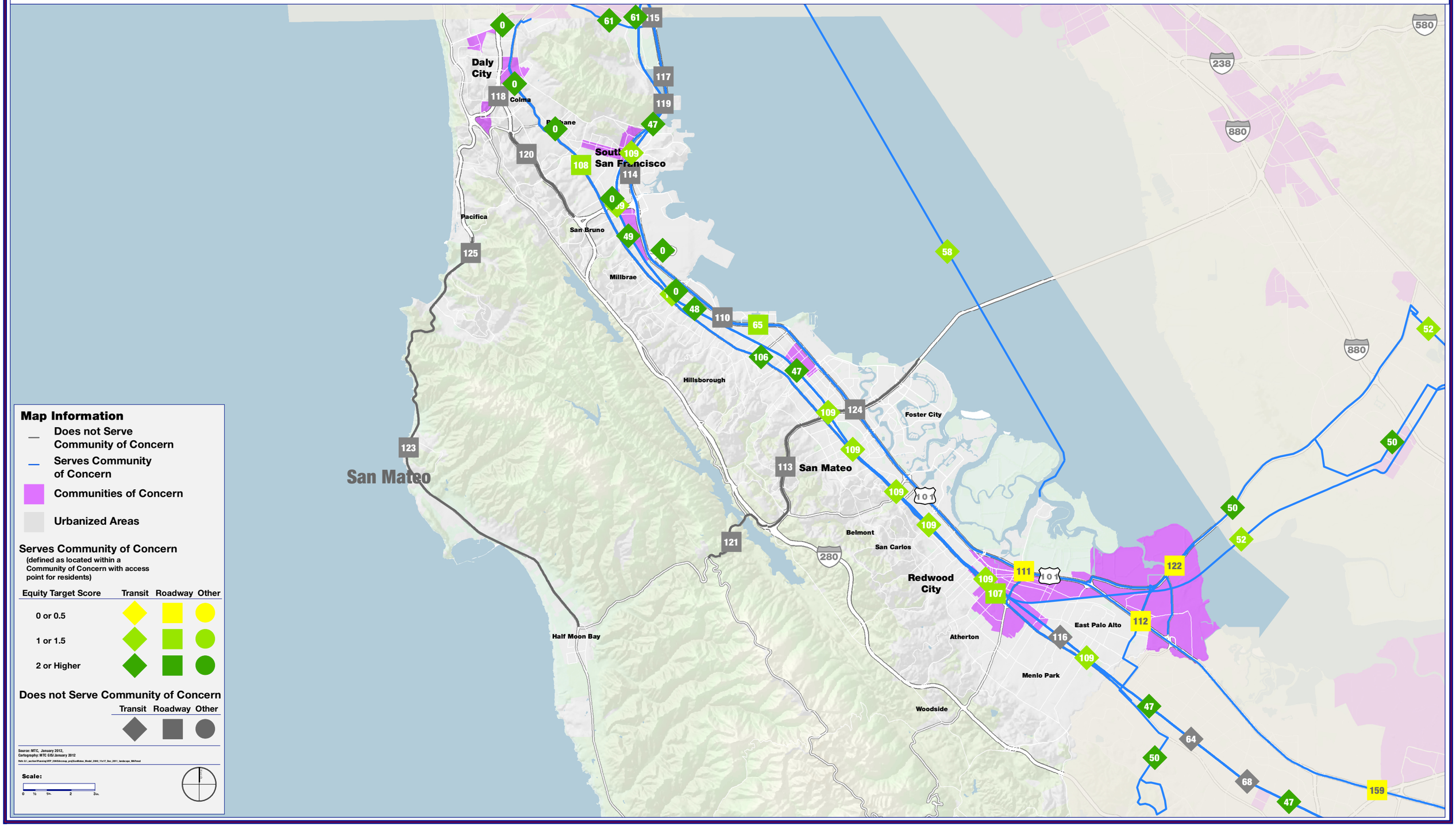
San Mateo

Metropolitan Transportation Commission

Planning, Financing and Coordinating Transportation for the nine-county San Francisco Bay Area

Research and Demographic Unit

Geographic Information Systems Unit



Plan Bay Area: Equity Considerations Map

San Mateo

Metropolitan Transportation Commission
Planning, Financing and Coordinating Transportation for the nine-county San Francisco Bay Area

Research and Demographic Unit

Geographic Information Systems Unit

Map ID	Project ID	Project Name
0	240182 00BART	45 - BART Metro Program 46 - BART Service Freq. Improvements 56 - BART Station Capacity Improvements 57 - BART Station Access Improvements
47	230603	California High-Speed Train - Bay Area to Central Valley
48	240134, 21627	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (SF to Tamien)
49	21627, 240134, 240521	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)
50	240018	Dumbarton Corridor Express Bus
52	240216	Dumbarton Rail
58	22120, 22122, 22511, 22512, 230613, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)
61	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)
64	240036	Caltrain Communications-Based Overlay Signal System (CBOSS) and Positive Train Control System (PTC)
65	240060, 240523	US-101 HOV Lanes (Whipple Avenue to Cesar Chavez Street)
68	240140	Caltrain At-Grade Crossing Improvements
75	22247	Bicycle/Pedestrian Expansion
76	240410	Transportation for Livable Communities (TLC)
77	240690	Lifeline Transportation Program
78	NewFree	New Freedom
79	LS&R	Local Streets and Roads Capital
80	Transitshort	Transit Capital Maintenance Needs
81	230419	Freeway Performance Initiative
82	230550	Climate Initiatives Program
83	240589	Solar Installations to Offset Electric Vehicle Use
84	240577	Heavy Duty Truck Replacement Program
85	240582	Heavy-Duty Diesel Truck and Motorcycle Early Retirement Program
106	240026	SamTrans El Camino BRT
107	22274	ITS Improvements in San Mateo County
108	240590	El Camino Real Complete Streets Improvements
109	22268	San Mateo Countywide Shuttle Service Frequency Improvements
110	21602	US-101 Broadway Interchange Improvements
111	21603	US-101 Woodside Road Interchange Improvements
112	21606	US-101 Willow Road Interchange Improvements
113	21613	SR-92 Improvements (Phase 1: San Mateo Bridge to I-280)
114	22279	US-101 Produce Road Interchange Improvements
115	22756	US-101 Candlestick Point Interchange Improvements
116	240064	Caltrain Grade Separations (Phase 1: San Mateo County)
117	21604	US-101 Auxiliary Lane Modifications (Oyster Point to San Francisco County line)
118	21615	I-280/SR-1 Interchange Improvements
119	22229	US-101 Sierra Point Parkway Interchange Improvements + Lagoon Way Extension
120	22230	I-280 Auxiliary Lanes (Hickey Boulevard to I-380)
121	94644	SR-92 Westbound Slow-Vehicle Climbing Lane (I-280 to SR-35)
122	21612	Dumbarton Bridge/US-101 Access Improvements (Phase 1)
123	240114	SR-1 Safety & Operational Improvements (Pacifica to Half Moon Bay)
124	22282	US-101 Operational Improvements (near US-101/SR-92 Interchange)
125	98204	SR-1 Widening (Fassler Avenue to Westport Drive)
159	HOTd	Silicon Valley Express Lanes Network

NOTE: Project names appearing in grey are not shown on the map.

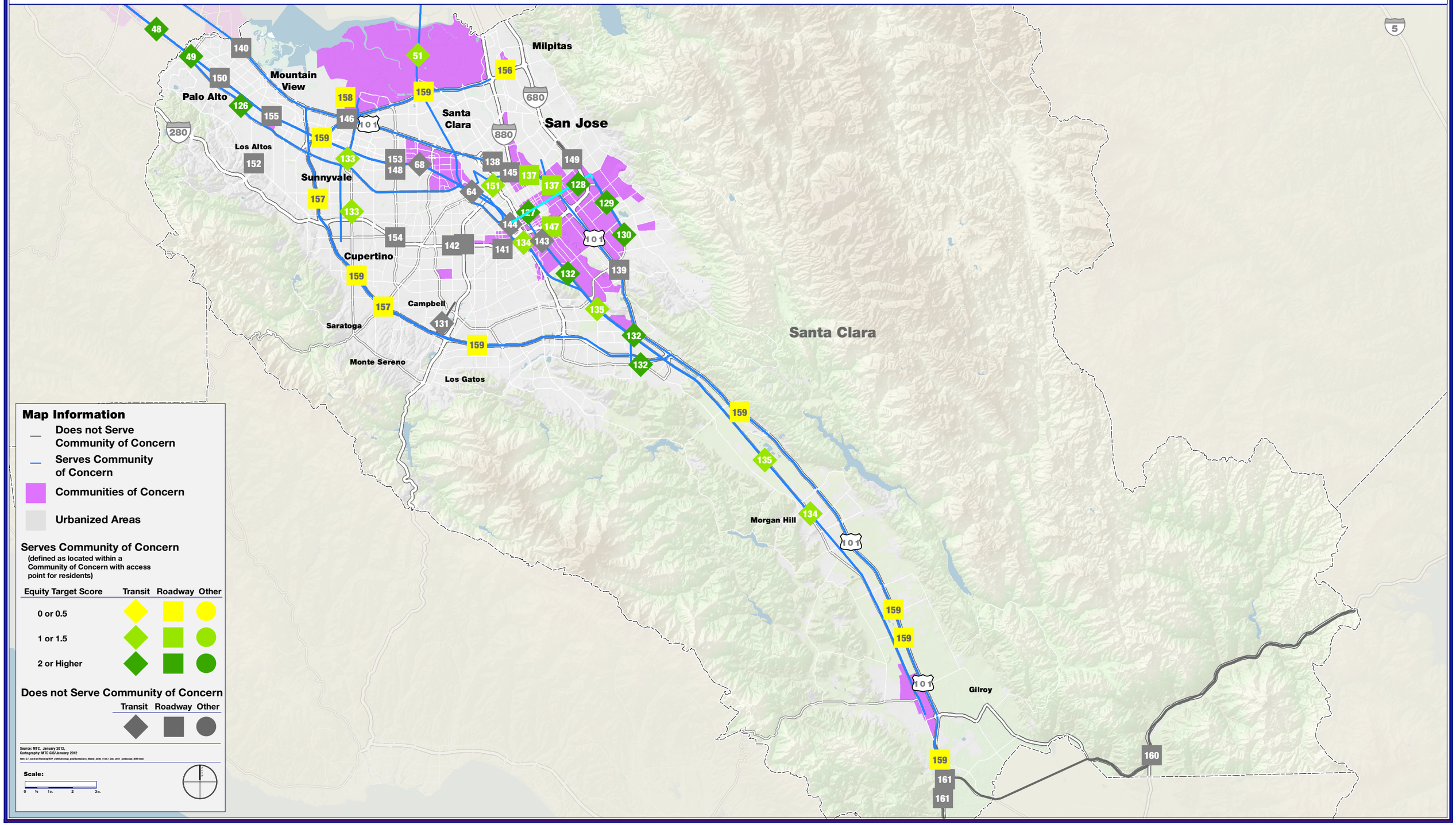
Plan Bay Area: Equity Considerations Map

Santa Clara County

Metropolitan Transportation Commission
Planning, Financing and Coordinating Transportation for the nine-county San Francisco Bay Area

Research and Demographic Unit

Geographic Information Systems Unit



Plan Bay Area: Equity Considerations Map

Santa Clara County

Metropolitan Transportation Commission
Planning, Financing and Coordinating Transportation for the nine-county San Francisco Bay Area

Research and Demographic Unit

Geographic Information Systems Unit

Map ID	Project ID	Project Name
48	240134, 21627	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (SF to Tamien)
49	240134, 240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)
51	22009	Capitol Corridor Service Frequency Improvements (Oakland to San Jose)
64	240036	Caltrain Communications-Based Overlay Signal System (CBOSS) and Positive Train Control System (PTC)
68	240140	Caltrain At-Grade Crossing Improvements
75	22247	Bicycle/Pedestrian Expansion
76	240410	Transportation for Livable Communities (TLC)
77	240690	Lifeline Transportation Program
78	NewFree	New Freedom
79	LS&R	Local Streets and Roads Capital Maintenance Needs
80	Transitshort	Transit Capital Maintenance Needs
81	230419	Freeway Performance Initiative
82	230550	Climate Initiatives Program
83	240589	Solar Installations to Offset Electric Vehicle
84	240577	Heavy Duty Truck Replacement Program
85	240582	Heavy-Duty Diesel Truck and Motorcycle Early Retirement Program
126	240119	VTA El Camino BRT
127	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)
128	22019	Downtown East Valley (Phase 2: LRT)
129	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)
130	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)
131	98119	Vasona Light Rail Extension (Phase 2)
132	230547	Monterey Highway BRT
133	230554	Sunnyvale-Cupertino BRT
134	21760	Caltrain Double-Track Improvements (San Jose to Gilroy)
135	230534	Caltrain Electrification (Tamien to Gilroy)
136	240494	ITS Improvements in Santa Clara County
137	22965	New US-101 Mabury/Taylor Interchange
138	22979	New US-101 Zanker/Skyport/Fourth Street
139	240437	US-101 Braided Ramps (Capitol Expressway to Yerba Buena Road)
140	240441	US-101/Oregon Expressway/Embarcadero Road Interchange Improvements
141	21719	I-880/I-280/Stevens Creek Boulevard Interchange Improvements
142	230537	I-280 Winchester Boulevard Interchange Improvements
143	240048	Caltrain Diridon Station Track Capacity Expansion (Phases 2 & 3)
144	240063	Caltrain Terminal Station Improvements
145	240429	I-880/US-101 Interchange Improvements
146	240444	US-101/SR-237 Interchange Improvements
147	240671	New I-280 Senter Road Interchange
148	230337	New Lawrence Expressway Interchange (Monroe Street)
149	240479	I-680 Auxiliary Lanes (McKee Road to Berryessa Road)
150	240586	Oregon Expressway Alma Bridge Interchange Improvements
151	21922	Mineta San Jose International Airport APM Connector
152	22814	Foothill Expressway Deceleration Lane Extension
153	230340	New Lawrence Expressway Interchange (Kifer Road)
154	240580	I-280/Lawrence Expressway/Stevens Creek Interchange Improvements
155	230332	Rengstorff Avenue Grade Separation
156	240404	Calaveras Boulevard Overpass Widening (Abel Street to Milpitas Boulevard)
157	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)
158	240443	Mary Avenue Extension
159	HOTd	Silicon Valley Express Lanes Network
160	230294	New SR-152 Alignment
161	21714	US-101 Widening (Monterey Street to SR-129)

NOTE: Project names appearing in grey are not shown on the map.

Metropolitan Transportation Commission

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