MEMORANDUM

TO: Policy Steering Committee **DATE:** June 19, 2009

FROM: Jim Cunradi – Project Manager, AC Transit

SUBJECT: **INFORMATION** - Agenda No. 5: Request for Information

SUMMARY

After the PowerPoint presentation of the operating plan at the May 15, 2009 Policy Steering Committee meeting, member Kriss Worthington requested backup materials for several areas in the presentation. This memo provides those materials to all the PSC members. Additionally, staff will be available to answer any questions that may arise regarding this information.

BACKGROUND

At the May 15, 2009 PSC meeting, staff presented the BRT operating plan in a PowerPoint format. Shortly thereafter, PSC member Kriss Worthington requested copies of the background reports and/or data, summarized for his review. As a result, AC Transit staff has compiled the following information for all of the PSC members.

1. Compact Disc containing Federal Small Starts submittal for East Bay Bus Rapid Transit Project (CDs will be distributed at June 19 PSC meeting)

2. PowerPoint presentation from May15, 2009 PSC meeting, annotated to show sources of information (sent to PSC/TAC on June 8)

3. Supporting information from Draft EIS/R or other sources used in 5/15 presentation

4. Supporting calculations from Cambridge Systematics documenting the change in walk distance

5. Memorandum from Cambridge Systematics titled: East Bay Bus Rapid Transit – VMT, Greenhouse Gases, Emissions, Fuel Consumption.

6. Greenhouse Gas Methodology PowerPoint

This agenda item is for information only. However, staff is available to answer any questions that may be generated by the attached items.

RECOMMENDATION
Not applicable – This is an information item.

AC Transit East Bay Bus Rapid Transit

Fiscal Year 2010 Small Starts Submittal

Request to Enter Project Development
Final Submittal

Prepared for
Federal Transit Administration

Prepared by
AC Transit

September 2008

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Alameda-Contra Costa Transit District

Rick Fernandez, General Manager

September 5, 2008

Ms. Stephanie McVey
Community Planner, Office of Planning and Environment
Federal Transit Administration
1200 New Jersey Avenue SE
East Building, E43-470
Washington, DC 20590

Re: Request to Initiate Project Development, Final Submittal: AC Transit East Bay Bus Rapid Transit (BRT) Project

Dear Ms. McVey:

AC Transit is pleased to submit for your review and approval a request to initiate Project Development for the proposed East Bay BRT Project.

The proposed project is a 16.9-mile bus rapid transit corridor extending from Downtown Berkeley and the University of California at Berkeley at the northern end, through Downtown Oakland, to San Leandro at the southern end. The project will be a Small Start, with a project cost estimated at $234.6 million in year-of-expenditure dollars. The proposed BRT alignment would follow primarily Telegraph Avenue in the northern portion of the corridor and International Boulevard/East 14th Street in the southern portion, providing frequent transit service to 49 stations along the 16.9-mile corridor. The stations will include features such as shelters, boarding platforms, benches, security features, and fare machines. Buses will run on exclusive bus lanes for roughly 85 percent of the corridor. Other features of the project include: transit signal priority and signal coordination; real-time bus arrival information at stations; barrier-free self-service, proof-of-payment fare collection; and low-floor, low-emission 60-foot articulated buses. The project is expected to open for revenue service in 2015.

The East Bay BRT Project is expected to provide much needed transit capacity in a corridor with existing high transit demand (i.e., about 21,000 daily riders), but with limited opportunities to expand regular bus service, due to existing operating conditions that currently delay existing buses. The East Bay BRT is expected to carry over 40,000 passengers in opening year (2015), attracting 6,820 new transit riders. The project will also support local and regional planning goals to attract investment in transit oriented development, by providing a sense of permanence through BRT infrastructure of dedicated transit lanes and highly visible transit stations.

The project was selected following a Major Investment Study (completed in 2002) and an alternative analysis process culminating in the selection of the East Bay BRT project as the investment that best solves the transportation problems in the Telegraph Avenue/International Boulevard corridor. The project is included in both Track 1 of the Metropolitan Transportation Commission's 2030 Regional Transportation Plan (financially constrained) and its 2006 Regional Transit Expansion Plan (RTEP). The project is included in the Tier 1 list of projects to be funded by increased bridge toll revenues approved with Regional Measure 2.

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AC Transit anticipates a contribution of 32 percent of the project cost from Small Start funding. Other capital funding for this project includes federal CMAQ allocation through the Metropolitan Transportation Commission (MTC), local STIP funding, and dedicated funding from toll revenues (Regional Measure 2) and local sales taxes (Alameda County Measure B).

This submittal contains updated versions of Small Starts documentation submitted to FTA in May and July 2008, along with new information regarding:

- Certification of technical methods and planning assumptions;
- East Bay BRT cost-effectiveness;
- Local financial commitment;
- Other factors;
- NEPA scoping; and
- Local support.

The May 2008 preliminary submittal included the following documentation:

- Project description;
- O&M cost methodology (UPDATED for September 5th Submittal);
- Land use templates and supporting documentation (UPDATED for September 5th Submittal);
- Before and after study plan (UPDATED for September 5th Submittal); and
- Project management plan (PMP) (UPDATED for September 5th Submittal)

The July 2008 preliminary submittal included the following documentation:

- Making the Case (UPDATED for September 5th Submittal);
- Travel demand methodology and Summit results (UPDATED for September 5th Submittal); and
- Capital cost estimates and SCC worksheet (UPDATED for September 5th Submittal);

Throughout the past few months, AC Transit worked closely with staff at the FTA in San Francisco and Washington, D.C. The staff at AC Transit would like to thank you, Dwayne Weeks, Jim Ryan and Nazrul Islam (from Headquarters), and Ray Sukys and Lucinda Eagle (from Region IX) for guiding us throughout this process. This submittal culminates our request for inclusion in the Fiscal Year 2010 Report to Congress on New Starts/Small Starts and to initiate Project Development. Technical methods and assumptions used to prepare this submittal and previous work for the Small Starts application for the East Bay BRT Project are fully in compliance with FTA's guidance and Small Starts reporting instructions.

AC Transit will await your guidance as we prepare to initiate the project development phase. If you have any questions regarding this submittal, or about the East Bay BRT Project, please contact Mr. Jim Cunradi at (510) 891-4841.

Sincerely,

Rick Fernandez
General Manager

cc: Ray Sukys, FTA Region IX
Lucinda Eagle, FTA Region IX
Jim Cunradi, AC Transit

Enclosure

1.0 Project Background

1.0 Project Description

This section provides a general description of AC Transit East Bay BRT project and sets forth the "Making the Case" narrative. The narrative includes a summary of the purpose and need for the East Bay BRT project and a discussion of the benefits of this capital investment priority in Alameda County.

Section 1.0 is organized as follows:

- **Section 1.1 –** East Bay BRT Project Description;
- **Section 1.2 –** Baseline Alternative;
- **Section 1.3 –** Project Development Status; and
- **Section 1.4 –** The Case for the East Bay BRT.

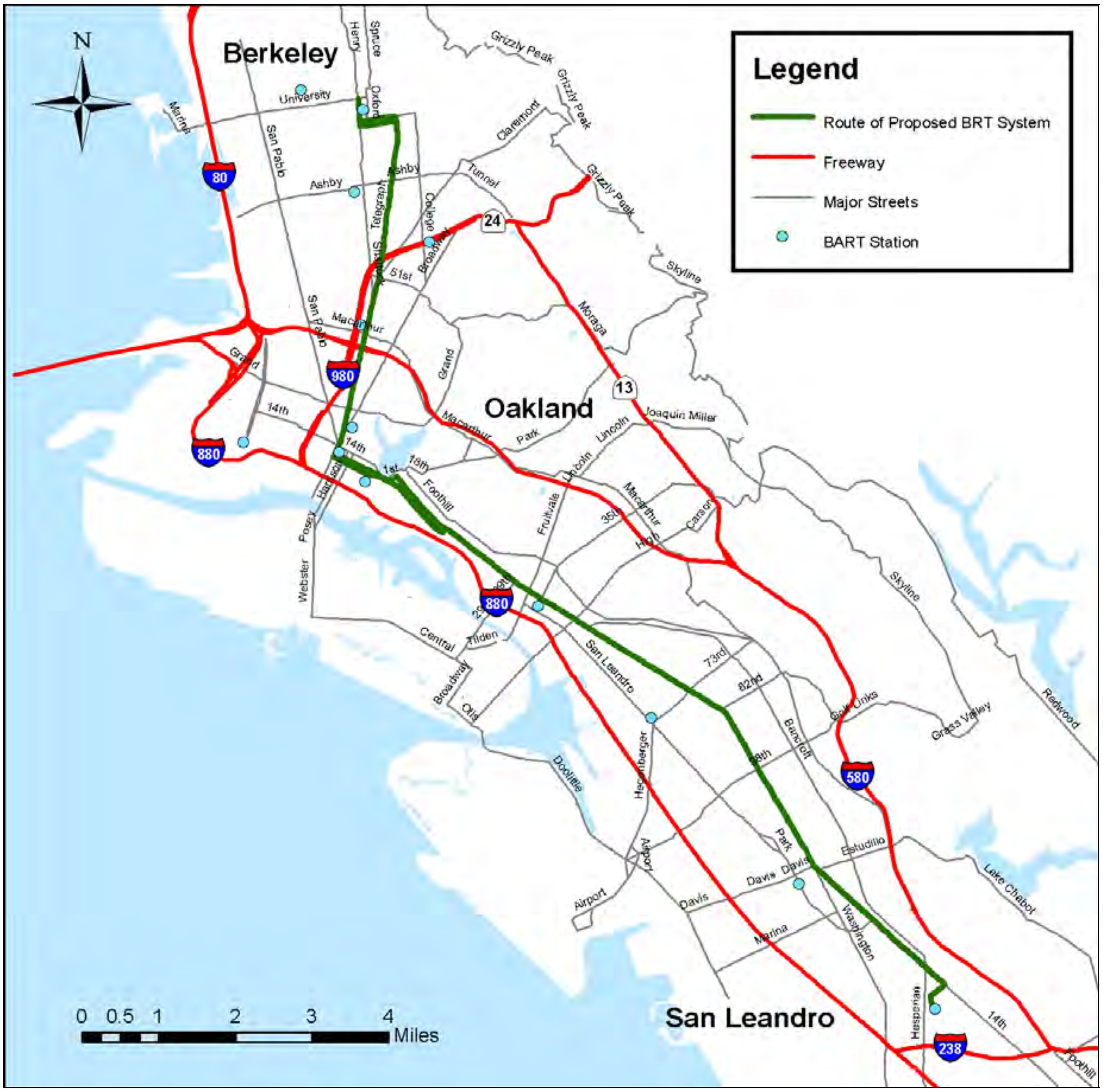
1.1 East Bay BRT Project Description

The AC Transit East Bay Bus Rapid Transit Project would provide high-quality, fast, and frequent express bus service along an approximately 17-mile-long heavily urbanized corridor. The project extends from Downtown Berkeley and the University of California at Berkeley at the northern end, through Downtown Oakland to San Leandro at the southern end. The project cost is estimated at $234.6 million (year-of-expenditure (YOE) dollars).

The proposed BRT alignment follows primarily Telegraph Avenue in the northern portion of the corridor and International Boulevard/East 14th Street in the southern portion (see Figure 1.1). The alignment begins near the Downtown Berkeley BART Station, continues along the south side of the UC Berkeley campus to Telegraph Avenue, and then follows Telegraph Avenue to Broadway and Downtown Oakland. The alignment continues south of Downtown Oakland along International Boulevard/East 14th Street through Downtown San Leandro to the Bayfair Center Shopping Mall and terminates at the Bayfair BART Station.

The proposed BRT service would increase ridership on the already strong bus network; bus routes along the proposed BRT project alignment are projected to serve approximately 24,400 boardings a day in 2015.

Figure 1.1 East Bay Bus Rapid Transit Alignment



The project includes the following features:

- **Dedicated Bus Lanes –** The BRT transitway consists of traffic lanes converted for exclusive transit use, for approximately 85 percent of the 16.9-mile corridor (see Figure 1.2 for BRT corridor lane configuration, including mixed traffic lanes). The dedicated lanes provide improved travel times and better schedule reliability. Median transitways 22 to 24 feet in width will serve two-directional travel while side-running transitways 11 to 12 feet in width serve single direction travel. Along most roadways, transit lanes would be established by converting mixed-flow traffic lanes to transit-only lanes.

- **Intelligent Transportation Systems Elements (ITS) –** Two main elements of ITS would be implemented as part of the East Bay BRT project: 1) transit signal priority treatments and signal coordination throughout the BRT project alignment; and 2) real-time bus arrival information displayed (and announced) at stations as well as available on the Internet.

- **Bus Frequencies of Five-Minute Headways during Peak and Midday Periods –** All bus service along the project alignment would be operated along the BRT transitway as express service. The only routes that would use mixed-flow lanes would be those that operate along short segments of the alignment before continuing onto other streets.

- **Forty-Nine BRT Stations –** The BRT system would include 49 stations, spaced approximately every one-quarter to one-half mile. Stations would include: comfortable shelters, level boarding platforms, benches, security technologies, and fare machines, among other features.

- **Fare Collection –** The proposed East Bay BRT fare system would be barrier-free self-service, proof-of-payment fare collection.

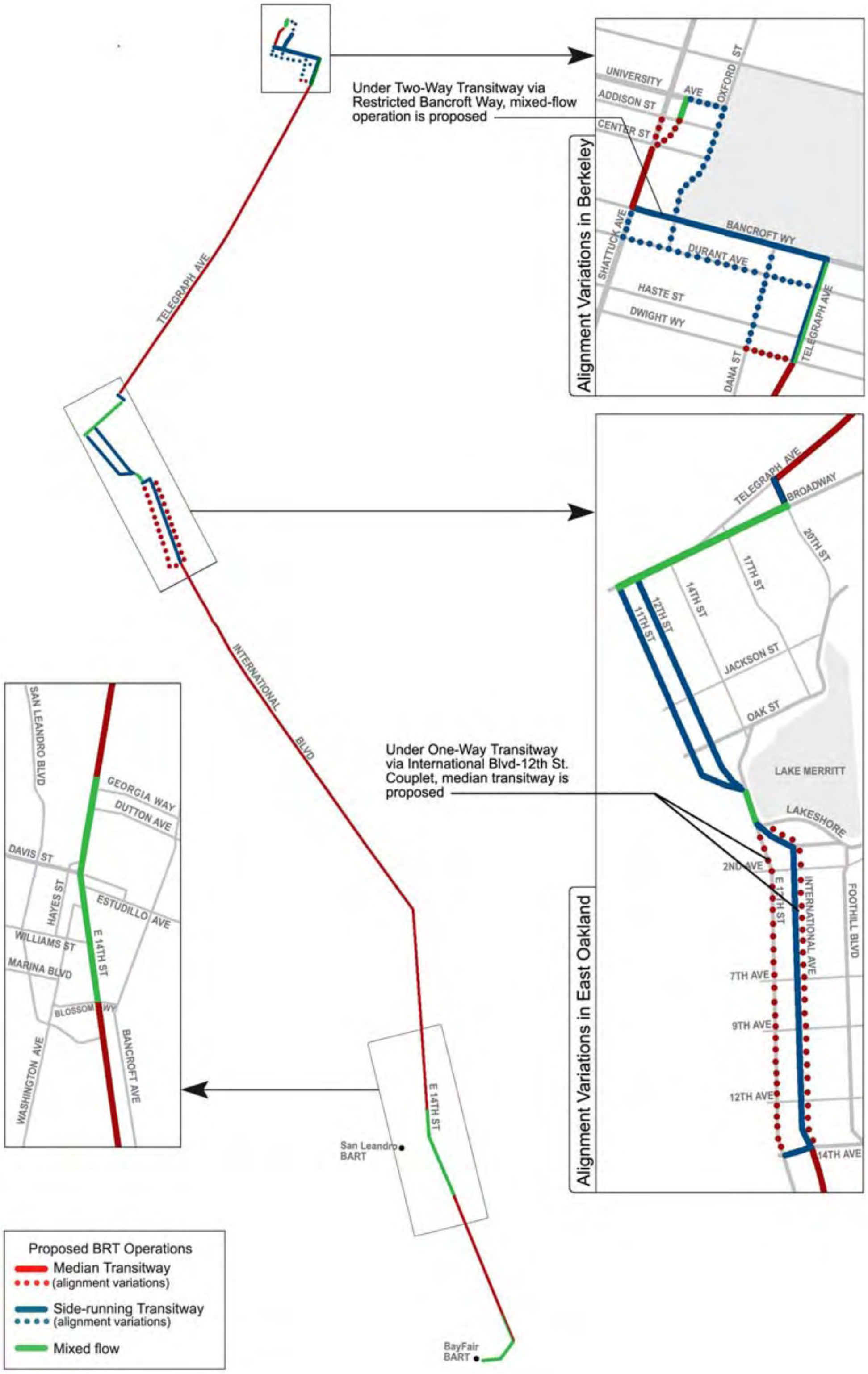
- **BRT Vehicles –** AC Transit would deploy low-floor, low-emission, and 60-foot articulated buses on East Bay BRT service. These could be similar to the articulated coaches currently assigned to Rapid Bus Route 1R. Because the BRT operates with a higher average speed than existing services, it makes more productive use of the bus fleet. As a result, AC Transit would be able to deploy the East Bay BRT service without procuring additional buses.

1.2 Baseline Alternative

The Baseline alternative for the East Bay BRT project is the No-Build Alternative, which continues the current AC Transit services operating in the East Bay BRT corridor: local Route 1 and limited-stop Rapid Bus 1R. The No-Build Alternative also includes all currently planned and programmed projects in the study area, such as the Uptown Transit Center, MacArthur BART Station Transit Village, San Leandro BART Station Transit Village (Phase 1), Fruitvale Transit Village (Phase II), and expansion of express bus services in various transportation corridors throughout the San Francisco Bay Area.

Both Route 1 and Rapid Bus 1R operate for the most part on the same alignment proposed for the East Bay BRT – along Telegraph Avenue from Downtown Berkeley and the University of California at Berkeley to Downtown Oakland; International Boulevard from Downtown Oakland to the Oakland/San Leandro border; and East 14th Street from the Oakland/San Leandro border to Bay Fair BART. Route 1 is a local bus, with stops approximately every two blocks. It operates every 15 minutes during peak periods and every 20 minutes off peak.

Figure 1.2 East Bay BRT, Configuration of Transitway



Route 1R is a new Rapid Bus service – service was initiated June 2007. The Rapid Bus improvements are included in the No-Build Alternative and consist of low-floor buses, widened stop spacing to decrease running time, improvements to selected bus stops (benches, shelters, maps/signs, and bus arrival information), and transit signal priority (TSP). Route 1R Rapid Bus stops are spaced approximately one-half miles apart and located near major activity centers and transfer points. Service frequencies are every 12 minutes during most of the day. The combined service frequency of Route 1R and Route 1 is about every 6 to 7 minutes during peak periods.

Compared to the pre-June 2007 bus service within the corridor, Route 1R service improves both service quality and convenience. There is about a 12-minute travel-time savings during the peak period between Downtown Berkeley and Bayfair BART (the pre-June 2007 bus travel time was 92 minutes). These improvements are expected to increase weekday corridor boardings by 4,200 and annual boardings by approximately 1.25 million by 2025.

To date, AC Transit has invested approximately $20 million to implement Rapid Bus improvements in the East Bay BRT corridor. The annual cost of operating Rapid Bus services is estimated to be $20.5 million (2008 dollars), or $3 million more than the cost of pre-June 2007 operations.

Rationale for Designating No-Build as Baseline Alternative

Table 1.1 summarizes the main differences between the local bus service operated by AC Transit in the East Bay BRT corridor, Route 1R Rapid Bus, and the proposed BRT system.

Table 1.1 Comparison of Local Bus, Rapid Bus, and BRT

Feature	Local Bus	Rapid Bus	BRT
Low-Floor Buses	●	●	●
Wider Station Spacing, Express Service		●	●
Traffic Signal Priority, Signal Coordination		●	●
Real-Time Arrival Signs		●	●
Bus-Only Lanes			●
Rail-Like Stations, Level Boarding			●
Ticket Machines, Proof-of-Payment Ticketing			●

The Rapid Bus service decreased headways in the corridor and incorporated transit signal priority and wider station spacing to improve the level of transit service. Enhancements beyond the Rapid Bus features, such as adding buses to reduce current headways, may not be operationally feasible under current and future traffic conditions. Other improvements to increase travel speed would require significant capital investment. Consequently, the recent implementation of Route 1R within the East Bay BRT corridor is the best that can be done on the East Bay BRT corridor short of a significant capital investment.

The proposed Baseline Alternative was originally documented in a memorandum to FTA in December 2007. Conditional concurrence of the Baseline definition was received from the FTA via e-mail on January 17, 2008.

1.3 Project Development Status

In the early 1990s, AC Transit completed a systematic study of its busiest routes. That study, called the Alternative Modes Analysis, was completed in 1993 and it identified priority corridors and candidate technologies for major transit investments that would serve ridership cost-effectively. The study identified the Berkeley/Oakland/San Leandro corridor as the single best corridor for further evaluation.

Over a three-year period from 1999 to 2002, the District conducted a major investment study (MIS) of the Berkeley/Oakland/San Leandro corridor to examine alternatives for improved transit service. The MIS identified three modal options that could best meet established objectives while satisfying the needs of the market. The modal alternatives examined were Light Rail Transit (LRT), Bus Rapid Transit (BRT), and Enhanced Bus. Three alignment alternatives in the northern portion of the corridor and three in the southern portion were analyzed for each of these modes. Referenced by their major arterials, the northern alignments were Telegraph Avenue, College Avenue/Broadway, and Shattuck Avenue/Telegraph Avenue. The southern alignments were International Boulevard/East 14th Street, Foothill Boulevard/Bancroft Avenue and San Leandro Street/San Leandro Boulevard.

On August 2, 2001 the AC Transit Board of Directors adopted BRT along Telegraph Avenue in the north and International Boulevard/East 14th Street in the south as the Locally Preferred Alternative (LPA). BRT was selected because it could provide many of the same features as LRT and would attract a large number of new riders at a much lower cost with fewer traffic, parking, and construction impacts than LRT. The Board also recommended that an early implementation of “Rapid Bus” be pursued with the understanding that the investments made during the early implementation would be preserved to the greatest extent possible for use in future BRT alternatives.

Following the MIS, AC Transit initiated the NEPA process and the preparation of the Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/DEIR) in spring of 2004. The DEIS/DEIR was circulated for public comment in May 2007. Work on the final EIS/EIR will begin in 2009 concurrent with preliminary engineering.

Table 1.2 summarizes major milestones of the East Bay BRT planning and project development process, including actual/expected completion dates.

Table 1.2 East Bay BRT Major Milestones

Milestone	Actual/Expected Completion Date	Comments
Alternative Modes Analysis Study	May 12, 1993	Berkeley/Oakland/San Leandro corridor identified as the single best corridor for further evaluation.
Measure B (one-half percent sales tax) approved by voters	November 2000	Included funding for capital improvements along a Berkeley/Oakland corridor.
BRT adopted by AC Transit Board of Directors as Locally Preferred Alternative (LPA)	August 2, 2001	In addition, early implementation of "rapid bus" was adopted.
Major Investment Study	1999-2002	
Regional Measure 2 ($1 toll increase in seven state-owned region bridges) approved by voters	March 2004	The Regional Traffic Relief Plan included $65 million for capital investment on the East Bay BRT corridor, in addition to $3 million annually in operational subsidy for current "Rapid Bus" and future BRT service.
Approval of BRT options for evaluation in DEIS/DEIR	May 5, 2004	
Release of DEIS/DEIR for public comment	May 4, 2007	
Public Hearings for DEIS/DEIR	June 2007	Four public hearings conducted at different venues.
Close of DEIS/DEIR comment period	July 3, 2007	
City staff and community outreach to define details of the LPA for preparation of the Final EIS/EIR	July 2007 through late 2008	
FTA Small Starts preliminary submittal, FY 2010	July 2008	
FTA Small Starts (full submittal)	September 2008	Request to enter project development.
Local city approval of LPA	Late 2008	For evaluation in final EIS/EIR.
AC Transit Board of Directors adoption of LPA	Late 2008	For evaluation in final EIS/EIR.
FTA approval to enter project development	Late 2008	
Preliminary Engineering	2009	
Preparation of final EIS/EIR	2009 through early 2010	
Record of Decision	Early 2010	

1.4 The Case for the East Bay BRT Project

1.4.1 Project Identification

The East Bay BRT project would provide improved transit service, connecting the cities of Berkeley, Oakland, and San Leandro (see Figure 1.1). The project would operate in an exclusive lane for roughly 85 percent of its 16.9-mile length, and includes 49 stations and a proof-of-payment fare collection system. Other features of the project to enhance operations and ensure fast, reliable service include: level boarding, transit signal priority, signal coordination, and real-time bus arrival information. High-frequency service would be operated at five-minute headways during peak and midday periods. The project cost has been estimated at $234.6 million in year of expenditure (YOE) dollars.

1.4.2 Setting

The 16.9-mile East Bay corridor extends from Downtown Berkeley and the University of California at Berkeley at its northern end through Downtown Oakland, to San Leandro at the southern end.

AC Transit currently operates local and Rapid Bus service in the project corridor, projected to serve about 24,400 passengers daily in 2015 (see Section 1.2 for a description of services). Eleven BART stations also are located within one mile of the East Bay BRT's alignment, providing access to four BART lines (Richmond-Fremont; Richmond-Daly City; Fremont-Daly City; and Dublin/Pleasanton-Daly City).

The primary roadways used by the proposed East Bay BRT are Telegraph Avenue between Downtown Berkeley and Downtown Oakland and International Boulevard/East 14th Street between Downtown Oakland and Bayfair BART. For the most part, these roadways are typical major urban arterials with two through traffic lanes in each direction and left-turn pockets at major intersections. An approximately 1.5-mile-long segment of East 14th Street in San Leandro has a reduced number of lanes. There are several parallel arterial roadways within the study area. These include Martin Luther King Junior Way, Adeline Street, Shattuck Avenue, College Avenue, and Broadway between Berkeley and Downtown Oakland; and Foothill Boulevard, Bancroft Avenue, San Leandro Street, and San Leandro Boulevard between Downtown Oakland and Bayfair BART.

1.4.3 Current Conditions in the East Bay BRT Corridor

Although transit ridership is strong in this corridor, AC Transit's ability to expand regular bus service and improve speed and reliability is limited. Transit vehicles currently operate in congested mixed-flow conditions throughout much of the corridor. They are subject to several sources of delay, including general congestion, parallel parking vehicles, right-turning vehicles (often blocked by pedestrians), double parking, and wheelchair boardings. Existing Rapid Bus service travel time from end-to-end is 80 minutes, averaging 13 mph. Nearly 50 percent of 1R trips operate more than 5 minutes late, and almost 25 percent operate more than 10 minutes late.

As a target of investment, the corridor has characteristics that are highly conducive to expand transit use and particularly well-suited to BRT. It is home to 260,000 residents and contains some of the highest employment and residential densities in the East Bay. The corridor also experiences congestion and delay that limit the ability to improve travel time without BRT level investments.

The corridor contains many regional activity centers, reflected by the 180,200 jobs located in the corridor. The corridor is centered on Downtown Oakland. With 71,000 jobs, it is the largest employment center in the corridor. The northern end of the corridor is anchored by the University of California at Berkeley (UC Berkeley), host to almost 35,000 students and over 15,000 employees. An additional 14,000 employees work in Downtown Berkeley. South of Downtown Oakland, a third of the corridor passes through some of the San Francisco Bay Area's densest residential neighborhoods, averaging 13,440 persons per square mile (21 persons per acre).[1] The southern end of the corridor is anchored by the Bayfair Bay Area Rapid Transit (BART) station, a major transfer station for three BART lines and seven local bus routes. The station also serves the Bayfair Center, a regional shopping mall that currently is under expansion.

These activity centers generate high trip volumes that strain the capacity of the existing roadway and transit networks. Telegraph Avenue, International Boulevard/East 14th Street, and other parallel routes are heavily used roadways, with typical congested conditions as those experienced in urban areas. Telegraph Avenue, International Boulevard, East 14th Street, and other parallel arterials all currently operate with volumes approaching capacity during the afternoon peak hour. Of the 88 intersections analyzed on these roadways for the DEIS/R, 6 were found to operate with LOS E or F and 10 were found to operate with LOS D.

The East Bay BRT corridor also is home to many people who are traditionally high transit users. Some 46 percent of the people in the corridor have incomes that are below the regional poverty level,[2] and 20 percent do not own a car. The corridor also has a high percentage of minority populations: over 75 percent of corridor residents are minority. Other transit dependent populations include seniors and youth, accounting for 9.5 percent and 22.3 percent of the population, respectively living within one-half mile of the proposed BRT alignment.

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[1] For comparison, the citywide population density of San Francisco is 16,000 persons per square mile.

[2] Low-income populations are defined by the MTC as those falling under 200 percent of the Federal poverty level (Source: MTC's Transportation 2030 Equity Analysis Report, November 2004).

1.4.4 Future Conditions

Existing population, employment, and traffic conditions in the corridor already are conducive to transit use. Population and employment in the corridor are expected to grow and traffic conditions worsen, resulting in an even greater demand for transit improvements in the future.

- **Population, Employment, and Travel Demand are Increasing –** According to socioeconomic forecasts from the Association of Bay Area Governments (ABAG), over 43,000 new residents will move into the East Bay BRT corridor by 2025, an increase of approximately 16 percent from the 2000 population. This growth would increase the overall population density from 13,900 to 16,300 persons per square mile. Population growth will be highest in Downtown Oakland, where there is substantial new housing that is under construction or planned. Considerable population growth is forecast in the vicinity of the UC Berkeley campus and Downtown Berkeley, two areas with substantial student housing. Significant growth also is expected in the southern portion of the BRT corridor through East Oakland and San Leandro. Employment within the corridor is projected to increase by 23 percent over the same period. Central Oakland, Berkeley, and San Leandro will experience particularly high net employment increases, accounting for 86 percent of the additional jobs in 2025. Most of the jobs are added in downtown Oakland (22,300 new jobs within one-half mile of BRT stations), Berkeley (almost 5,700 new jobs within one-half mile of BRT stations), and San Leandro (almost 4,500 new jobs within one-half mile of BRT stations).

- **Growth in Automobile Traffic will Deteriorate Travel Conditions in the Corridor for All Users –** Travel projections suggest that without roadway or transit capacity increases, corridor traffic will operate under increasingly congested conditions by 2025. Traffic volumes on Telegraph Avenue, International Boulevard, and East 14th Street are expected to increase roughly 20 percent by 2025. As a result, roadway performance will deteriorate and transit operating speed will drop. Of the 88 intersections analyzed in the DEIS, 18 are forecast to operate at LOS E or F and 20 at LOS D.

- **High-Quality Transit Service is Needed to Support Transit-Oriented Development in the Corridor –** Building upon strong existing transit-supportive land use patterns, the cities within the East Bay corridor are carrying out extensive development and redevelopment efforts along Telegraph Avenue, International Boulevard/East 14th Street, and in the downtown portions of the corridor. Land use and zoning policies are in place that promote higher-density, transit-oriented development in the downtown areas and along transit corridors. At the northern end of the corridor, Downtown Berkeley and Telegraph Avenue in the vicinity of the UC Berkeley campus are expected to add substantial amounts of university research space, commercial development, and housing. The entire corridor in Oakland lies within Priority Development Areas and a large part of the south corridor area is within Oakland's Enterprise and Empowerment Zone. A major focus of Oakland's updated *General Plan* policies is to invest in transit-oriented development at transit nodes and stations such as the Fruitvale Transit Village, in the Fruitvale BART Station area. In San Leandro, the *General Plan* envisions reshaping the East 14th Street corridor from a three-mile commercial strip to a series of transit-oriented "districts" focused around the downtown, Bayfair Shopping Center, and other destinations. The San Leandro BART Station area is adjacent to downtown and is under development as a transit village with commercial and residential uses. Bayfair Center, adjacent to the Bayfair BART station, at the southern terminus of the project also is under development as a transit village.

1.4.5 Purpose

The East Bay BRT project has been developed to meet the following purposes:

- **Improve Transit Service and Better Accommodate High Existing Bus Ridership –** The project would improve speed and reliability of service to current riders, including large numbers of minority, low-income, and transit-dependent residents, by offering higher frequency service, reduced travel time, and greater schedule reliability. Daily trips (524,400) are projected within the corridor in 2015, of which 53,700 are anticipated on transit under Baseline conditions. Downtown Oakland is expected to attract 144,300 trips per day from places throughout the corridor, of which 29,900 would be on transit. Daily trips (116,900) are forecast from locations throughout the corridor to Downtown Berkeley and UC Berkeley, of which 12,000 would be on transit. The proposed BRT project would improve both the travel time and reliability for these trips by providing a transit alternative that avoids general congestion and removes disruptions caused by parallel parking vehicles, right-turning vehicles, and pervasive double parking.

- **Increase Transit Ridership by Providing a Viable and Competitive Transit Alternative to the Private Automobile –** The project would attract new riders and reduce single occupant automobile use by providing a rail-like experience by improving transit service and facilities along the corridor. The project would improve the two factors most important in attracting motorists to transit service: competitive transit travel times and a high degree of reliability.

- **Improve and Maintain Efficiency of Transit Service Delivery and Lower AC Transit's Operating Costs per Rider –** The project would improve fleet speeds and service efficiencies by reducing delays from operating in mixed-flow traffic and the slow boarding and alighting of passengers.

- **Support Local and Regional Planning Goals to Organize Development along Transit Corridors and Around Transit Stations –** Providing BRT infrastructure of dedicated transit lanes and highly visible transit stations offers a sense of permanence that can help cities attract investment in transit-oriented development.

1.4.6 Merits of the Proposed East Bay BRT Project

Identification of the No-Build as the Baseline Alternative for this project is in recognition of the inability to further increase or enhance service beyond improvements already implemented, short of a major capital investment. The implementation of the 1R Rapid Bus service initiated in the corridor in 2007 has reduced transit travel times, ranging from a 13 percent reduction in the peak period to an 11 percent reduction midday. However, to meet demand by just adding more buses would not provide the benefits necessary to attract new riders. Further, it would be both inefficient and costly because buses would face the same operating constraints that delay them today. With 1 and 1R buses operating every six to seven minutes in each direction, the ability of the roadway to support reliable mixed-flow bus operations is strained. A recent capacity analysis found that frequencies could only be increased marginally without significantly worsening reliability and increasing bus bunching. Thus the Baseline Alternative will not adequately serve travel demand in the East Bay corridor.

In contrast, the proposed East Bay BRT project would improve transit travel time and reliability, and increase the capacity of the roadway to handle more buses and of the system to handle more riders.

- **Significant Ridership Increases Would Occur with the Proposed Improvements and the Resulting Additional Capacity and Travel-Time Savings –** Compared to the baseline alternative, peak period end-to-end transit travel time would improve from 80 to 66 minutes and average speed would improve from 13 to 15 mph. Transit boardings in the corridor will increase by 18,200 per day in 2015 (opening year), of which 6,820 will be new riders to transit. To accommodate these riders, peak-period transit headway would be reduced from 6-7 minutes to 5 minutes, resulting in an increase in bus seat miles of 33 percent.

- **The Proposed BRT Project Would Attract New Riders and Create Benefits to Existing Riders –** Daily user benefits for the East Bay BRT by 2015 are estimated at 6,790 hours, as a result of improved travel times through the implementation of this project.[3] Table 1.3 provides detail on user benefits by the origin and destination districts of East Bay BRT riders.

- **Operating Costs Per Rider Would Decrease with the East Bay BRT Implementation –** With the proposed BRT service, the operating cost per rider will decrease to $1.91 (constant 2008 dollars), for a 32 percent decrease compared to the baseline.

- **VMT Reductions –** Improved transit service along the project corridor will help to provide a viable and competitive alternative to the automobile. Compared to the baseline, vehicle miles traveled will decrease by 21,000 per day in 2025.

[3] Per instructions from the FTA (via conference call, on August 14, 2008), the sum of transit and auto user benefits is reported in this document.

- **The East Bay BRT Would Benefit Low-Income and Transit-Dependent Populations** that currently live within one-half of the BRT corridor (see Section 1.4.3).

- **The East Bay BRT Would Help Support Transit-Oriented Development –** The East Bay BRT Project would construct infrastructure, including distinctive stations, supporting transit-oriented residential and commercial development of the corridor by providing a sense of permanence and nodes for new activity.

Table 1.3 shows the transit user benefits by district for all trip purposes. Table 1.4 summarizes user benefits for trips generated and attracted within the East Bay BRT corridor. Fifty-seven percent of the transit user benefits accrue to trips within the East Bay BRT corridor cities of Berkeley, Oakland, and San Leandro. An additional 16.0 percent accrue to trips to San Francisco and 4.0 percent to the City of Alameda.

The largest share of benefits accrue to home-based work trips, estimated at 2,360 hours of travel-time savings (i.e., 35 percent of total user benefit), and attracting about 2,450 new riders. The largest beneficiary is Downtown Oakland, with 800 new transit trips per day and 840 hours of travel-time savings in 2015. 510 of the new home-based work transit trips and 600 hours of savings are for trips coming from locations spread throughout the corridor. San Francisco County also enjoys significant home-based work trip benefits because the BRT project improves transit service to BART stations. San Francisco County is forecast to gain 120 new home-based work transit trips and 380 hours of travel-time savings.

Home-based shopping/other trips account for over one-quarter (i.e., 1,800 hours) of the travel-time saving resulting from the BRT implementation. Again, Downtown Oakland (840 new transit trips, 910 hours) and San Francisco County (60 new transit trips, 310 hours) show the largest benefits.

The most important destination market for the East Bay BRT project is, not surprisingly, Downtown Oakland. Combining all trip purposes, the project will result in 2,060 hours of travel-time savings for this destination, and attract 1,980 new riders. Forty-one percent of the time savings are from home-based work trips and 44 percent from home-based shopping/other trips. Eighty percent of the benefits are for trips from other locations in the corridor (1,670 hours and 1,600 new riders). A particularly important origin for trips to Downtown Oakland is from the lower-income, low-vehicle ownership East Oakland neighborhoods of San Antonio, Fruitvale, Central East Oakland, and Elmhurst. For these trips, the BRT improves in-vehicle travel time by roughly 20 percent and total transit travel time (including access, wait, and egress) by roughly 25 percent. As a result, transit ridership in this market increases by 1,180 and 1,400 hours of travel time are saved.

Downtown Berkeley and UC Berkeley also are major beneficiaries (580 hours of travel time savings and 820 new transit trips). Most of the benefit is from home-based college trips, primarily attracted to UC Berkeley (310 hours of time savings). Trips from Downtown Oakland and the East Oakland neighborhoods of San Antonio, Fruitvale, Central East Oakland, and Elmhurst play a large role. For these trips, in-vehicle transit travel time is improved by 20 percent and total transit travel time by 25 percent. Transit ridership in this market increases by 190 per day and 550 hours of travel time are saved.

Table 1.3 Total User Benefits
Transit and Highway (Hours, All Purposes)

	Attraction																										
Production	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**Total**
1 North Bay	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 San Francisco County	0	0	0	0	-1	0	-1	-1	0	0	0	0	-3	27	-1	20	43	13	0	7	17	4	0	-7	7	1	125
3 San Mateo County	0	0	0	0	0	2	0	2	0	0	0	0	-1	-1	0	0	0	0	0	0	0	0	-1	-1	0	0	1
4 Santa Clara County	0	0	0	0	0	-16	-1	-2	0	0	0	0	0	-1	0	0	-1	0	0	0	0	0	0	0	0	0	-21
5 Contra Costa County	0	-17	0	0	0	47	14	25	1	-6	-6	-1	-17	11	-24	4	6	10	5	13	15	14	1	-5	23	13	135
6 South Alameda County	0	-15	-41	158	-3	-33	-1	-13	-1	0	-1	-1	0	0	-2	1	8	6	0	8	21	-2	-2	-4	9	16	111
7 East Alameda County	0	-3	21	45	-16	61	16	-18	4	0	-1	0	3	-5	-2	0	-2	0	0	0	1	2	-1	0	3	7	117
8 City of Hayward	0	-6	4	27	-3	3	-2	1	-1	0	0	0	2	4	-1	0	39	3	0	4	8	2	-1	-4	16	26	119
9 Uninc Alameda County	0	-10	1	12	-3	-1	0	-8	0	0	-1	0	-1	0	-2	0	30	4	0	1	5	-2	-3	-41	16	0	-3
10 City of Albany	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	1	1	0	0	0	0	0	0	0	0	0	16
11 City of Emeryville	0	0	0	0	0	0	0	0	0	0	0	0	0	-9	0	0	0	2	0	0	0	0	0	0	0	0	-2
12 City of Piedmont	0	-1	0	0	0	0	0	0	0	0	0	0	-2	8	0	2	3	6	1	3	2	-1	0	0	1	0	23
13 City of Alameda	0	-4	3	8	0	8	3	7	3	0	0	0	-27	22	1	2	43	22	3	18	14	8	1	-3	14	9	161
14 Berkeley Downtown and South	0	222	15	17	20	8	4	9	3	5	16	0	13	-3	26	10	33	14	7	10	8	19	11	-1	11	10	492
15 Berkeley North and West	0	0	0	2	1	0	0	0	0	0	0	0	-1	14	0	3	3	2	2	4	2	2	0	-1	2	1	39
16 Oakland North	0	187	9	3	8	1	0	3	1	1	1	0	3	-101	18	1	79	14	8	9	5	6	6	-4	8	3	273
17 Oakland Downtown	0	61	1	0	0	1	0	3	1	0	0	0	-1	91	6	14	76	31	22	24	18	20	3	4	30	8	417
18 Oakland San Antonio	0	394	56	15	34	14	0	19	6	3	18	10	95	136	29	19	431	6	11	22	13	25	30	9	23	21	1,446
19 Oakland Fruitvale	0	-1	2	3	7	5	1	6	2	1	9	3	6	92	15	10	354	12	0	13	10	7	15	12	11	11	608
20 Oakland Cent East	0	130	31	7	19	7	0	21	5	1	5	5	66	86	19	7	253	23	16	3	30	17	14	41	10	18	836
21 Oakland Elmhurst	0	143	40	6	30	9	2	40	29	2	10	5	100	146	25	18	363	22	21	39	25	14	21	50	62	33	1,258
22 Oakland Airport and Shore	0	8	0	0	0	0	0	2	4	0	0	0	14	11	0	1	40	9	3	3	2	1	2	-3	15	10	125
23 Oakland West	0	0	0	0	0	0	0	0	0	0	0	0	-1	1	0	3	7	0	1	4	3	2	0	-1	4	2	27
24 Oakland Hills	0	-122	-7	7	-4	6	-1	5	2	-1	-3	0	-29	-21	-10	12	137	14	3	20	16	14	-7	-6	14	10	51
25 San Leandro Downtown and East	0	70	20	9	4	8	0	46	27	0	2	0	16	59	2	3	85	4	2	1	9	7	3	-6	36	10	426
26 San Leandro West	0	-4	-1	2	-1	-3	0	-7	1	0	-1	0	2	0	-1	1	15	3	1	2	1	2	-1	-7	3	0	9
Total	**0**	**1,034**	**154**	**325**	**94**	**129**	**38**	**145**	**89**	**11**	**47**	**24**	**239**	**579**	**101**	**136**	**2,056**	**223**	**112**	**210**	**229**	**166**	**92**	**19**	**322**	**216**	**6,789**

Corridor Cities: Berkeley, Oakland, San Leandro

Increase >= 35

Decrease <=35

Table 1.4 User Benefits within the East Bay BRT Corridor
Transit and Highway (Hours, All Purposes)

Production	2[a]	13 [a]	14	16	17	18	19	20	21	25	Total
14 Berkeley Downtown and South	222	13	-3	10	33	14	7	10	8	11	325
16 Oakland North	187	3	-101	1	79	14	8	9	5	8	213
17 Oakland Downtown	61	-1	91	14	76	31	22	24	18	30	366
18 Oakland San Antonio	394	95	136	19	431	6	11	22	13	23	1150
19 Oakland Fruitvale	-1	6	92	10	354	12	0	13	10	11	507
20 Oakland Cent East	130	66	86	7	253	23	16	3	30	10	624
21 Oakland Elmhurst	143	100	146	18	363	22	21	39	25	62	939
25 San Leandro Downtown and East	70	16	59	3	85	4	2	1	9	36	285
Total	**1,206**	**298**	**506**	**82**	**1,674**	**126**	**87**	**121**	**118**	**191**	**4,409**

[a] Includes benefits from trips originating within the East Bay BRT corridor cities to San Francisco (District 2) and the City of Alameda (District 13).

Increase >= 35   Decrease <=35

As mentioned earlier, trips destined to San Francisco receive significant benefits, because the BRT project improves transit service to BART stations. When accounting for all trip purposes, this market gains 330 transit riders per day and enjoys 1,030 hours of user benefit. Thirty-seven percent of the user benefit is from home-based work trips and 30 percent from home-based shopping/other trips.

The capital cost of the project is estimated at $199.0 million in 2008 dollars ($234.6 million in YOE dollars). The added capital costs of the project are equivalent to $15.9 million per year over the life of the project, and operating costs will add $3.9 million per year. The projected time savings of 6,790 hours per day in 2015 translate into over 2.0 million hours per year. Overall, the project cost per hour of time savings is projected to be $9.74 per hour over the life of the project.

1.4.7 Uncertainties

Cost Uncertainties

Every effort has been made to anticipate and plan for variations in cost. Sources of risk include cost-inflation assumptions, field conditions compared to basis for costing, and the implementation and construction schedule.

The cost estimate was developed in 2008 dollars; an average escalation factor of 3.5 percent was applied to convert the project cost to year-of-expenditure dollars (YOE). The escalation rate is based on the average 5-year Construction Cost Index (CCI) in the San Francisco Bay Area. This is a higher rate than the 10- and 20-year CCI in the San Francisco Bay Area of 3.0 and 2.5 percent, respectively.[4]

Another source of risk related to project cost is related to actual field conditions for several cost items, including:

- The costs associated with guideway construction were estimated at $12.5 million (2008 dollars), before contingencies. This cost estimate is based upon rehabilitation of the existing roadway pavement structural section. Should pavement conditions be worse than we are assuming, more expensive construction techniques might be needed along some parts of the transitway.

- Utility work and relocations were assumed at $4.7 million (2008 dollars), before contingencies. As detail design progresses, we may discover additional utility work is needed, thus increasing project costs.

- The cost estimates include $2.9 million (2008 dollars) to cover mitigation measures to address parking and traffic impacts, before contingencies. The overall project cost could increase if the scope or cost of mitigations be larger than anticipated.

The project cost estimates include both allocated and unallocated contingencies to mitigate the impact of these and other cost items. At the current level of design, the cost estimates include an allocated contingency of almost 54 percent, in addition to an unallocated contingency of 4 percent.

Finally, the cost estimates were developed assuming a realistic schedule for project development and implementation. However, project delays will result in increased escalation of construction and professional service costs.

While there are several sources of cost uncertainty, this project has few design elements that are associated with a high degree of risk:

- The project is 100 percent at-grade, with no tunnels, bridges, or other aerial structures;

- Construction is mostly within existing roadways through conversion of existing mixed-flow traffic lanes to dedicated busways;

- There is little below grade excavation; and

- There are minor right-of-way requirements and little right-of-way risk, again because the project is primarily constructed within existing roadways.

[4] CCI data was obtained from Engineering News Record in April 2008.

In conclusion, while the cost estimates for this project contains a number of elements of risk, the risk is accounted for by conservative contingencies assumptions built into the preliminary cost estimates.

Ridership Uncertainties

The uncertainties surrounding the ridership forecast for the proposed East Bay BRT corridor are related to projected growth in the corridor, and difficulties resulting from a dense transit network in the travel demand model.

The primary risk is whether the projected growth occurs in the corridor between 2005 and 2015. Model assumptions on growth were based on the regionally adopted ABAG Projections 2002 forecasts, which estimate average annual growth rates of 0.6 percent in population and 0.8 percent in employment in the corridor between 2005 and 2015. The assumed growth rate is relatively modest; therefore, the downside risk exposure is not too great should this growth not occur.

A second risk factor is the existence of a fairly dense transit network in the vicinity of the East Bay BRT corridor, with major parallel transit routes often within one-half mile of each other. This causes difficulty for the travel model's transit assignment procedures. To account for this, we made downward adjustments to the model's results for boardings on the BRT system,[5] resulting in a conservative estimate for BRT ridership. This risk factor, however, does not apply to the model's mode choice procedures; thus the most important ridership measures (i.e., new transit trips and user benefits) are not significantly affected.

While there are uncertainties in the ridership estimates, we believe this project is subject to relatively less ridership risk because it is an improvement to an existing bus route in an older urbanized area with a significant existing transit system. In contrast to transit construction projects in areas with relatively little existing transit and an uncertain market for transit, there is an established market for transit in the BRT corridor.

To address the possible ridership and benefits uncertainties, we have made conservative assumptions in our forecasting methodology, including:

- In the application of the travel model, we took ridership credit for improvements in in-vehicle and out-of-vehicle travel time. Though we believe the proposed BRT project also would improve transit reliability, ease-of-use, and comfort and security, we did not take ridership credit for any of these, by assuming the same modal constant (i.e., local bus) for both the Build and Baseline alternatives.

- The model also assumes that automobile operating costs increase between 2005 and 2015 on average at the same rate as general inflation, even though recent trends indicate automobile operating costs are escalating at a higher rate than this.

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[5] These adjustments were discussed with FTA and documented in the travel demand methodology report that is included in Section 3.0 of this submittal.

Community Uncertainties

As with many projects that are innovative and groundbreaking, a small group of project opponents within the City of Berkeley is attempting to block the implementation of transitways within the city limits. While vocal, these opponents are small in number and do not have the support of either city leaders or city staff. However, they recently placed an initiative on the Berkeley November 2008 ballot that would require a popular vote before implementation of any transitway, high-occupancy vehicle (HOV), or high-occupancy toll (HOT) lane project that would require conversion of traffic lanes within Berkeley. City staff is opposed to the measure and has indicated it may be illegal or face legal challenge should it be approved.

To combat this small but vocal opposition, a pro-BRT coalition has developed within the community to support the project and defeat the initiative. They have helped gain support for the project and opposition to the initiative through national groups such as the Sierra Club's local chapter and the League of Women Voters. Local and regional advocacy groups also oppose the initiative.

No such organized opposition currently exists in the other two corridor cities of Oakland and San Leandro.

Should the project suffer a political setback in Berkeley, AC Transit would revise cost calculations and transit system benefits to reflect the reduction in length of dedicated lanes. While cost and user benefits are calculated for BRT in the full corridor, contingency estimates indicate that should Berkeley restrict BRT lanes within their city, the project's cost-effectiveness measure would still score between "high" and "medium high."[6]

1.4.8 Summary

The East Bay BRT project will provide improved transit service in a heavily urbanized corridor that also is home to large concentrations of low-income and minority populations. The proposed project would improve end-to-end transit travel times by 14 minutes compared to the baseline, attract 6,820 daily new riders, and generate 6,790 hours of travel-time savings. Based on current user benefit and project cost estimates, the East Bay BRT is a highly cost-effective solution for this corridor. Uncertainties associated to cost, ridership, and community support for the project are relatively manageable.

[6] Estimate developed by adjusting Summit results for the removal of dedicated bus lanes in Berkeley.

PROJECT DESCRIPTION TEMPLATE		
PROJECT NAME:	**East Bay Bus Rapid Transit**	
Participating Agencies		
Lead Agency	**Name**	Alameda Contra-Costa Transit District (AC Transit)
	Contact Person	Jim Cunradi
	Address	1600 Franklin Street, Oakland, CA 94612
	Telephone Number	510-891-4841
	Fax Number	510-891-4874
	Email	jcunradi@actransit.org
Metropolitan Planning Organization	**Name**	Metropolitan Transportation Commission
	Contact Person	Valerie Knepper
	Address	Joseph P. Bort MetroCenter, 101 Eighth Street Oakland, CA 94607-4700
	Telephone Number	510-817-5824
	Fax Number	510-817-5848
	Email	vknepper@mtc.ca.gov
Transit Agency	**Name**	Alameda Contra-Costa Transit District (AC Transit)
	Contact Person	Jim Cunradi
	Address	1600 Franklin Street, Oakland, CA 94612
	Telephone Number	510-891-4841
	Fax Number	510-891-4874
	Email	jcunradi@actransit.org
State Department of Transportation	**Name**	California Department of Transportation (Caltrans)
	Contact Person	Jean Finney
	Address	111 Grand Ave, PO Box 23660, Oakland, CA 94623-0660
	Telephone Number	510-286-6196
	Fax Number	510-286-5559
	Email	jean_finney@dot.ca.gov
Other Relevant Agencies	**Name**	City of Berkeley
	Contact Person	Matt Nichols
	Address	1947 Center St, 3rd Flr, Berkeley, CA 94704
	Telephone Number	510-981-7068
	Fax Number	510-981-7060
	Email	mnichols@ci.berkeley.ca.us
Other Relevant Agencies	**Name**	City of Oakland
	Contact Person	Dan Lindheim
	Address	250 Frank Ogawa Plaza, Oakland, CA 94612-2033
	Telephone Number	510-238-6840
	Fax Number	510-238-4731
	Email	dlindheim@oaklandnet.com
Other Relevant Agencies	**Name**	City of San Leandro
	Contact Person	Keith Cooke
	Address	835 East 14th St, San Leandro, CA 94577
	Telephone Number	510-577-3439
	Fax Number	510-577-3294
	Email	kcooke@ci.san-leandro.ca.us
Other Relevant Agencies	**Name**	Alameda County
	Contact Person	Cindy Horvath
	Address	224 West Winton Avenue, Suite 111, Hayward, CA 94544
	Telephone Number	510-670-6511
	Fax Number	510-785-8793
	Email	cindy.horvath @ acgov.org
Other Relevant Agencies	**Name**	Alameda County Congestion Management Agency
	Contact Person	Dennis Fay
	Address	1333 Broadway, Suite 220, Oakland, CA, 94612
	Telephone Number	510-836-2560
	Fax Number	510-836-2185
	Email	dfay@accma.ca.gov
Other Relevant Agencies	**Name**	Alameda County Transportation Improvement Authority (ACTIA)
	Contact Person	Art Dao
	Address	1333 Broadway, Suite 300, Oakland, CA, 94612
	Telephone Number	510-893-3347
	Fax Number	510-893-6489
	Email	adao@actia2022.com

PROJECT DESCRIPTION TEMPLATE (Page 2)		
Project Definition	**Length (miles)**	16.9
	Mode/Technology	BRT
	Number of Stations	49
	List each station separately, including the number of park and ride spaces at each and whether structured or surface parking	See attachment for list of individual stations; no park and ride
	List each station with major transfer facilities to other modes	See attachment for list of individual stations and transfers; East Bay BRT provides connections to: BART, other AC Transit bus routes, UC Berkeley Bear Transit, and Emery Go Round (shuttle).
	Number of vehicles/rolling stock	31 peak vehicles, no increase over Baseline
Type of Alignment by Segment (Number of Miles)	**Above grade**	0
	Below grade	0
	At grade	16.9
	Exclusive	14.4
	Mixed Traffic	2.5
Status of Existing Right of Way	**Ownership – who owns the right of way?**	Cities of Berkeley, Oakland and San Leandro, Caltrans, and BART (public); and Bayfair Center (private)
	Current Use: active freight or passenger service?	No

PROJECT DESCRIPTION TEMPLATE (Page 3)

Project Planning Dates	**Base Year**	**Base Year/Opening Year**
		2015
Capital Cost Estimate	**2007 constant dollars**	$ 199
	Year of Expenditure	$ 235
Levels of Service	**Headways**	
	Weekday Peak	5 minutes
	Weekday Off-peak	5:00 AM-6:00 AM, 6 minutes 9:00 AM-3:00 PM, 5 minutes
	Weekday Evening	7 PM-Midnight: 10 minutes Midnight-5:00 AM: 60 minutes
	Weekend	Downtown Berkeley to Downtown Oakland: 5:00-6:00 AM, 15 minutes 6:00 AM-7:00 PM, 12 minutes 7:00 PM-Midnight, 15 minutes Midnight-5:00 AM, 60 minutes Dowtown Oakland to Bay Fair BART: 5:00-6:00 AM, 10 minutes 6:00 AM-7:00 PM, 8 minutes 7:00 PM-Midnight, 10 minutes Midnight-5:00 AM, 60 minutes
	Hours of Service	
	Weekday	5:00 AM to 4:59 AM
	Weekend	5:00 AM to 4:59 AM
Opening Year Travel Forecast		42,560
Fare Policy Assumptions Used in Travel Forecasts [footnote 1]		AC Transit - 1995 cash fare, $0.61 (1980 dollars) BART - 1995 cash fare (variable, station to station)

Project Planning and Development Schedule	***Project Schedule***	
	Insert anticipated or actual dates/durations	
	Planning Studies Initiated	1999
	Planning Studies Completed	2002
	LPA selected	Aug-01
	LPA included in the financially constrained long range plan	Feb-05
	Included in Financially Constrained TIP	n/a
	Initiation of DEIS	Jan-04
	Completion of DEIS	May-07
	Initiation of FEIS	Fall 2008
	Completion of FEIS	Spring 2010
	Public Referenda (where applicable)	n/a
	Preliminary Engineering (duration – dates of beginning and ending)	Fall 2008-Fall 2009
	Final Design (duration)	Spring 2010-Spring 2012
	FFGA- submit request to award (duration)	Spring 2012
	Construction (duration)	2012-2015 (2.5 yrs)
	Testing (duration)	1.5 months
	Revenue Operations	2015

Project Management		
Project Manager	**Name**	Jim Cunradi
	Address	1600 Franklin Street, Oakland, CA 94612
	Phone	510-891-4841
	Fax	510-891-4874
	Email	jcunradi@actransit.org
Agency CEO	**Name**	Rick Fernandez
	Address	1600 Franklin Street, Oakland, CA 94612
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	Fax	
	Email	rfernand@actransit.org
Key Agency Staff: Overall New Starts Criteria	**Name**	Jim Cunradi
	Address	1600 Franklin Street, Oakland, CA 94612
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	Email	jcunradi@actransit.org
Key Agency Staff: Ridership Forecasts	**Name**	Jim Cunradi
	Address	1600 Franklin Street, Oakland, CA 94612
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Key Agency Staff: Cost Estimates	**Name**	Jim Cunradi
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	Email	jcunradi@actransit.org

[1] Please summarize fare policy assumptions used for all regional transit services modeled in the forecast year. Attach this summary to the Project Description Template.

PROJECT DESCRIPTION TEMPLATE (Page 4)		
Project Management (continued)		
Key Agency Staff: Environmental Documentation	**Name**	Jim Cunradi
	Address	1600 Franklin Street, Oakland, CA 94612
	Phone	510-891-4841
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Key Agency Staff: Land Use Assessment	**Name**	Jim Cunradi
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Key Agency Staff: Financial Assessment	**Name**	Jim Cunradi
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Key Agency Staff: Project Maps	**Name**	Jim Cunradi
	Address	1600 Franklin Street, Oakland, CA 94612
	Phone	510-891-4841
	Fax	510-891-4874
	Email	jcunradi@actransit.org
Contractors		
Current Prime Contractor	**Name**	Cambridge Systematics, Inc.
	Address	555 12th Street, Suite 1600, Oakland, CA 94607
	Phone	510-873-8700
	Fax	510-873-8701
	Email	atang@camsys.com
Prime Contractor: Project Manager	**Name**	Andrew Tang
	Address	555 12th Street, Suite 1600, Oakland, CA 94607
	Phone	510-873-8700
	Fax	510-873-8701
	Email	atang@camsys.com
Contractor Responsible for Travel Forecasts	**Name**	Damian Stefanakis, Dowling Associates, Inc.
	Address	180 Grand Avenue, Suite 250, Oakland, CA 94612
	Phone	510-839-1742
	Fax	510-839-0871
	Email	damian@dowlinginc.com
Contractor Responsible for Capital Cost Estimates	**Name**	Conrad Franchi, Parsons Transportation Group
	Address	50 Fremont Street, Suite 1500, San Francisco, CA 94105
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	Fax	415-546-1602
	Email	conrad.franchi@parsons.com

AC Transit East Bay BRT
List of Stations - 24 March 2008
Below for 24 March 2008 definition of BRT project

Station Location	BRT Station	Distance from Previous BRT Station (miles)	Transfer to
Shattuck at Center	1		BART, UC Berkeley Bear Transit, other AC routes
Shattuck at Bancroft	1	0.22	
Bancroft/Durant at Telegraph	1	0.47	UC Berkeley Bear Transit, other AC routes
Telegraph at Haste	1	0.16	
Telegraph at Derby	1	0.32	
Telegraph at Webster	1	0.43	Other AC routes
Telegraph at Alcatraz	1	0.40	
Telegraph at 57th	1	0.44	
Telegraph at 49th	1	0.49	Other AC routes
Telegraph at 39th	1	0.51	BART, Emery Go Round, other AC routes
Telegraph at 34th	1	0.42	
Telegraph at 30th	1	0.21	
Telegraph at 24th	1	0.39	
20th at Broadway	1	0.35	BART, other AC routes
Broadway at 14th	1	0.41	Other AC routes
11/12th at Broadway	1	0.15	BART, other AC routes
11/12th at Harrison	1	0.19	
11/12th at Madison	1	0.22	BART, other AC routes
International at 2nd	1	0.42	Other AC routes
International at 5th	1	0.20	Other AC routes
International at 10th	1	0.33	
International at 15th	1	0.37	Other AC routes
International at 20th	1	0.35	
International at Munson	1	0.22	Other AC routes
International at 28th	1	0.46	
International at 31st	1	0.22	Other AC routes
International at 35th	1	0.27	BART, other AC routes
International at High	1	0.48	Other AC routes
International at 54th	1	0.58	
International at Seminary	1	0.43	Other AC routes
International at Havenscourt	1	0.38	
International at 72nd	1	0.30	Other AC routes
International at 78th	1	0.28	
International at 82nd	1	0.30	Other AC routes
International at 90th	1	0.44	Other AC routes
International at 98th	1	0.44	Other AC routes
International at 104th	1	0.36	Other AC routes
E 14th at Durant	1	0.32	
E 14th at Georgia	1	0.29	
E 14th at Begier/Lorraine	1	0.25	
E 14th at Estudillo	1	0.34	Other AC routes
E 14th at Dolores/Parrott	1	0.23	
E 14th at Estabrook	1	0.36	
E 14th at 136th	1	0.42	
E 14th at 143rd	1	0.34	
E 14th at 148th	1	0.32	
E 14th at 150th	1	0.31	Other AC routes
Bayfair Center	1	0.47	Other AC routes
Bay Fair BART	1	0.27	BART, other AC routes
TOTAL	**49**		

Number of Stations by Area	Number of Proposed BRT Stations
Downtown Berkeley (Univ Ave to Oxford)	2
Berkeley Southside (Oxford to Dwight)	2
North Telegraph - Berkeley (Dwight to border)	2
North Telegraph - Oakland (border to SR24)	2
Temescal (SR24 to Shattuck)	1
Telegraph/MacArthur (Shattuck to I-580)	1
South Telegraph - Oakland (I-580 to 20th)	3
Downtown Oakland (20th to 11/12th)	2
Chinatown/Jack London (11/12th to 1st)	3
International - Eastlake (1st to 14th)	3
International - San Antonio (14th to 30th)	4
Fruitvale (30th to 42nd)	2
International - Central East Oakland (42nd to 73	5
International - Elmhurst (73rd to border)	5
San Leandro North (border to Davis)	3
Downtown San Leandro (Davis to Blossom)	3
San Leandro South (Blossom to Bay Fair Mall A	4
Bay Fair	2
Berkeley	6
Oakland	31
San Leandro	12

2.0 Certification of Technical Methods and Planning Assumptions

2.0 Certification of Technical Methods and Planning Assumptions

The Certification of Technical Methods and Planning Assumptions Template provides certification by the AC Transit General Manager that, with one exception, the technical approaches and assumptions used for purposes of this submittal were in accordance with established Small Starts principles, as well as other FTA guidance and best professional practices. Dates also are provided in this template for the collection of data which support the travel forecasts.

The exception involves vehicle-loading standards (item number 6 of the Certification template), as explained below.

- **Use of consistent vehicle-loading standards for both the Baseline and Build alternatives** – We have assumed somewhat different vehicle-loading standards for the Baseline and Build alternatives; however, we believe our assumptions are reasonable and conservative. For the Baseline alternative, we have assumed a continuation of today's (2008) service levels, which results in a peak-period maximum load meeting AC Transit's loading standard. For the Build alternative, we have included just enough service to meet AC Transit's standard, but no more. This results in a somewhat higher peak-period maximum load for the Build alternative compared to the Baseline.

Certification of Technical Methods and Planning Assumptions

As Chief Executive Officer of AC Transit, I understand that FTA's Reporting Instructions for Section 5309 New Starts Criteria, dated July 2008, establish common conventions for the development of information on proposed New Starts projects that are crucial to the fair and evenhanded evaluation of projects. These conventions include:

1. The horizon year used for the travel forecasts is opening year of the project (2015), in accordance with Small Starts requirements.
2. The ridership forecasts are based on a single set of projections and policies consistent with the regional transportation plan and are held constant for the preparation of travel forecasts for the New Starts Baseline and New Starts Build alternatives, including:
    - land use, demographics, socio-economic characteristics, and travel patterns;
    - the highway network, except as modified for changes inherent to the Build alternative (such as the conversion of traffic lanes to transit-only rights-of-way);
    - transit service policies regarding geographic coverage, span of service, and headways, modified where necessary to integrate transit guideways into the bus system;
    - pricing policies (fares, highway tolls, and parking costs); and
    - transit capacity provided given projected transit volumes, productivity standards, and loading standards.
3. The travel models used to prepare the forecasts have been developed and tested with the best available data on current conditions in the urban area, including:
    - Highway speed data collected in the year 2003;
    - Transit travel-time data collected in 2003;
    - Home-interview/travel-diary data collected in 1991; and
    - Transit on-board survey data collected in 1992 (BART) and 1993 (AC Transit).
4. Except for the impacts of physical changes introduced by the alternatives themselves, the performance of the highway and transit systems is held constant between the New Starts Baseline and New Starts Build alternatives, including:
    - highway congestion levels;
    - transit operating speeds in mixed traffic; and
    - maximum access and egress distances to/from transit services, as well as representations of walking, waiting, and transfer times.
5. Transit-mode-specific constants describing the unmeasurable attributes of individual modes are either the same across all transit line-haul modes or are derived from ridership experience on existing transit modes in the metropolitan area, and have magnitudes that are within acceptable ranges as reviewed and approved by FTA.
6. Service levels in both the New Starts Baseline and New Starts Build alternatives have been adjusted to meet projected ridership levels using consistent vehicle-loading standards.
7. The forecasts of ridership and transportation benefits have been subjected to quality-assurance reviews designed to identify and correct large errors that would threaten the usefulness of the information in project evaluation.
8. The forecast of ridership using park/ride access to an individual transit stop/station does not exceed the capacity of the associated park/ride lot as reported in the current planning and/or environmental documents for the alternatives.

Certification of Technical Methods and Planning Assumptions (continued)

9. Opening-year forecasts for the New Starts Build alternative are based on the same methodology as the out-year forecasts and are presented without adjustment.
10. The definitions of the New Starts Baseline and New Starts Build alternatives are up-to-date, include all items known to be part of the proposed scopes, and specifically identify any remaining sources of uncertainty in the scope of the project.
11. The capital cost estimates for the New Starts Baseline and New Starts Build alternatives are up-to-date, are based on unit costs that apply to expected conditions during construction, and specifically identify remaining uncertainties in those unit costs.
12. Estimates of operating and maintenance costs for the New Starts Baseline and New Starts Build alternatives are based on current local experience, are adjusted for differences in vehicle and service characteristics, and for any transit modes new to the system, are consistent with experience in similar settings elsewhere. All cost components are variable, not fixed. Costs vary with changes in service levels.
13. Annualization factors used to convert daily ridership and operating/maintenance costs into yearly totals are consistent with local experience and are the same for the New Starts Baseline and New Starts Build alternatives.
14. The capital cost estimates are presented in 2008 base year dollars as well as YOE$.
15. The financial plan has been updated with information from the most recent budget cycle.
16. Any financing costs incurred because of the project have been included in the total project cost as required by FTA, regardless of whether the project sponsor is seeking reimbursement of the costs from New Starts funds.
17. The full cost of preliminary engineering and final design has been included in the total project cost as required by FTA.

Therefore, I hereby certify that AC Transit (agency) has followed FTA's *Reporting Instructions for Section 5309 New Starts Criteria* (July 2008) in general, and the above-listed conventions in particular, in the preparation of this submission except for item(s) #6 that AC Transit (agency) has discussed with FTA and that FTA has approved.

Chief Executive Officer

9/3/08
Date

3.0 Travel Demand Modeling and Summit Results

3.0 Travel Demand Forecasts and Summit Results

This section provides a brief overview of the modeling development and coordination process with FTA for the model used to generate ridership forecasts and user benefits for the East Bay BRT project. Summit reports and maps, as well as the travel forecasts template, also are provided.

3.1 Modeling Methodology

The travel demand model used to support the AC Transit East Bay BRT Project Small Starts application is a modified version of the Alameda County Congestion Management Agency (ACCMA) Countywide Travel Demand Model that was used for the project's Draft Environmental Impact Statement (DEIS). This model was selected over the new Alameda Countywide Model, released in 2006, because:

- The DEIS model has been used extensively in the BRT study area and has been calibrated and validated to recent roadway and transit counts in the BRT study area;
- The DEIS model was used to test numerous BRT alternatives for multiple horizon years, and it is expected that results for testing of any new preferred project options would come out in a similar range to the published DEIS/R; and
- The DEIS model was used in the development of the existing Regional Transportation Plan (RTP), adopted in February 2005.

A full description of the travel demand model and documentation on methodology is provided in the submittal CD, *03_TravelDemand and Summit\01_Methodology*.

AC Transit coordination with FTA regarding modeling for the East Bay BRT project dates back to 2003 with initial planning for the preparation of ridership forecasts for the DEIS/R. As AC Transit initiated the Small Starts process in the fall of 2007 to prepare a request to enter project development, coordination with FTA on modeling has continued, starting with a conference call with FTA on December 11, 2007, where model options and the baseline alternative were discussed. FTA and AC Transit have continued to meet via conference calls to discuss modeling issues such as model selection, calibration and validation, and results. Table 3.1 summarizes dates and purpose for each modeling coordination meeting that has been conducted to date. Memoranda and supporting documentation prepared by AC Transit for each meeting has been included on a CD as part of this submittal *(03_TravelDemand and Summit\02_Supporting Docs).*

Table 3.1 Modeling Coordination Meetings/Communication with FTA for East Bay BRT Project

Date	Communication Media	Topic of Discussion
November 14, 2007	Conference call	Kickoff meeting to officially initiate coordination process for East Bay BRT request to enter project development; brief discussion of modeling options
December 11, 2007	Face-to-face meeting (in FTA Region Office) and conference call	Modeling options (old versus new Alameda model) and baseline alternative
December 17, 2007	E-mail from AC Transit (Jim Cunradi)	Memorandum describing baseline alternative
January 8, 2008	Conference call	Adjustment of mode choice model coefficients in line with FTA recommended ranges and model validation plan
January 17, 2008	E-mail from FTA (Dwayne Weeks)	Baseline approval contingent on performance compared to build alternative
May 2, 2008	Conference call	Model validation
May 5, 2008	E-mail from AC Transit consultant team (Andrew Tang)	Use of updated passenger counts on model validation process
June 27, 2008	E-mails from AC Transit consultant team (Damian Stefanakis and Andrew Tang) and FTA (Nazrul Islam and Jim Ryan)	Question to FTA regarding preliminary Summit results, and FTA response on issues
July 2, 2008	Conference call	Ridership results and preliminary Summit results (for nonhome-based trips only)
July 5, 2008	E-mail from AC Transit consultant team (Andrew Tang)	Documentation on methodology for ridership adjustments

Table 3.1 Modeling Coordination Meetings/Communication with FTA for East Bay BRT Project (continued)

Date	Communication Media	Topic of Discussion
July 8, 2008	E-mails from AC Transit consultant team (Andrew Tang)	Technical memorandum on: • CW to NT reclassification issue; and • HB School and HB University methodology to estimate user benefits
July 8, 2008	E-mails from FTA (Jim Ryan)	Follow-up on procedures to address: • CW to NT reclassification issue; and • HB School and HB University methodology to estimate user benefits
August 12, 2008	E-mail from AC Transit consultant team (Andrew Tang)	Technical memorandum and user benefit results of 120 highway assignment iterations for home-based work trips
August 14, 2008	Conference call	Discussion of May and July 2008 Small Starts submittals. Ridership and Summit discussion focused on auto disbenefits resulting from the East Bay BRT implementation
August 15, 2008	E-mail from AC Transit consultant team (Andrew Tang)	Follow up e-mail to confirm reporting of the sum of auto and transit user benefits

3.2 Summit Reports and Maps

Summit reports and maps are provided electronically on CD as part of this submittal; hardcopies of the Summit maps also are provided at the end of this section.

- Maps: *03_TravelDemand and Summit\04_Maps;* and
- Summit Reports: *03_TravelDemand and Summit\05_Summit.*

■ 3.3 Travel Forecast Template

Ridership results for the East Bay BRT project are presented in the travel forecast template provided at the end of this section. An electronic version of the travel forecast template also has been provided in the submittal CD *(03_TravelDemand and Summit\03_Template).*

The information provided in the Travel Forecast template conforms with the instructions provided in it, with a few exceptions that have been discussed with FTA. These exceptions are:

- Line 4, Table 70: Table 41+42+44+45 is being reported rather than Table 70. The reason is two-fold. First, due to a travel model path building issue and the subsequent reclassifying of certain i-j interchanges by Summit from CW to NT,[1] only the user benefits for CW-CW, CW-MD, MD-CW, and MD-MD markets is being reported. The reported user benefit is reduced significantly because it excludes inaccurate user benefits calculated for NT-CW and CW-NT markets. Second, because the East Bay BRT produces auto user disbenefits, the sum of auto and transit benefits rather than just transit benefits is being reported.[2]

- Line 5, (Tables 44 + 47 + 48)/60: due to the same issue described above, line 5 is calculated as (Table 44)/60, eliminating NT-CW and NT-MD markets from the calculation. These two markets are not included in the user benefits reported in line 4.

- Home-based school and home-based university trip purposes: the data reported in lines 1 through 4 do not come from Summit.[3] Summit could not be used for home-based school and university trips because the travel model does not use a logit mode choice model for these purposes. Data for lines 1 through 3 were taken directly from the travel model. Data for line 4 were calculated by applying the change in in-vehicle and out-of-vehicle travel time between the Build and Baseline alternatives to the Baseline home-based school and university transit trip tables, with a weight applied to out-of-vehicle time.

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[1] This issue was discussed with FTA; documentation on and procedures to address the issue are documented in a memorandum dated July 8, 2008. The document has been provided in electronic format in the submittal CD, *03_TravelDemand and Summit\02_Supporting Docs\08_08-07-08 CW to NT Reclassification Issue.doc.*

[2] This issue was discussed with FTA (August 14, 2008), and confirmed via e-mail (August 15, 2008).

[3] This issue was discussed with FTA; documentation on and procedures to address the issue are documented in a memorandum dated July 7, 2008. The document has been provided in electronic format in the submittal CD, *03_TravelDemand and Summit\02_Supporting Docs\09_08-07-07 HB School and HB University Trips.doc.*

- Lines 7, 23, and 25: the travel model does not provide results for transit dependents. It was agreed that this data will not be provided, since benefits accruing to transit dependents is not a criteria for Small Starts projects.[4]

- Line 22 and 24, daily project trips and project passenger miles: the data reported in this line does not come directly from the model outputs, but reflects the postmodeling adjustments to project boardings.[5] These adjustments result in a lower reported value for daily project trips and project passenger miles.

■ 3.4 Annualization Factor

Based on AC Transit systemwide statistics reported to the National Transit Database (NTD), the annualization factor used in the calculation of annual measures for this New Starts submittal is 300. The annualization factor is computed as the ratio of annual unlinked trips to average weekday passenger loads over the 1997-2005 period. Supporting data on this calculation is presented in Table 3.2.

[4] E-mail from FTA (Stephanie McVey, July 2, 2008).

[5] The boarding adjustment issue has been discussed with FTA, and supporting documentation on methodology was submitted to FTA via e-mail on July 5, 2008.

Table 3.2 Derivation of Annualization Factor

	1997	1998	1999	2000	2001	2002	2003	2004	2005	1997-2005 Average
Annual Unlinked Trips	63,054,878	63,465,316	65,897,176	67,632,612	70,808,702	69,746,488	62,963,073	65,373,782	65,289,189	
Weekday Average Passenger Trips	215,459	208,970	221,849	225,465	237,171	229,546	209,412	217,832	212,802	
Ratio	292.7	303.7	297.0	300.0	298.6	303.8	300.7	300.1	306.8	**300**

Source: FTA National Transit Database.

AC Transit East Bay Bus Rapid Transit

Travel Demand Model Report

draft

report

prepared for

Alameda-Contra Costa Transit Agency District

prepared by

Cambridge Systematics, Inc.

with

Dowling Associates, Inc.

July 2008

www.camsys.com

draft report

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date

July 2008

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1.0 Introduction

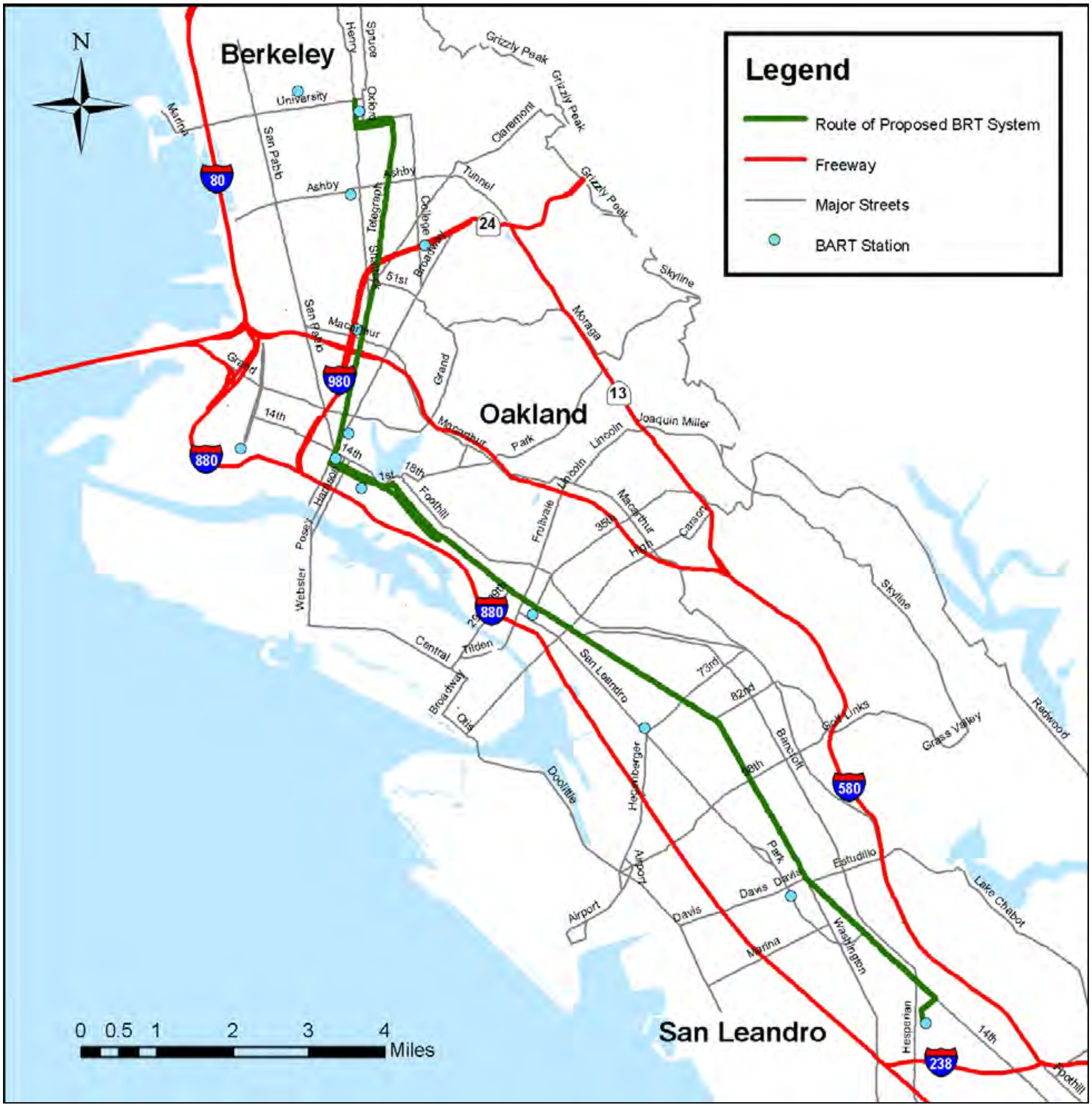
This report presents information on the travel demand model used to develop transit patronage and user benefit forecasts for Alameda-Contra Costa Transit District's (AC Transit) proposed East Bay Bus Rapid Transit (BRT) Project. AC Transit is currently preparing an application for Federal Transit Administration (FTA) Small Starts funding. This report was developed to support the preparation of that document.

The East Bay BRT Project envisions providing frequent, high-level, high-speed bus service along an approximately 17-mile-long alignment from Downtown Berkeley and the University of California at the northern end, through Downtown Oakland, to Downtown San Leandro and the Bay Fair Bay Area Rapid Transit (BART) station at the southern end. The service would operate largely on Telegraph Avenue in Berkeley and northern Oakland, on International Boulevard in eastern Oakland, and on East 14th Street in San Leandro (see Figure 1.1).

The East Bay BRT Project includes several features to enhance transit service:

- Dedicated bus lanes for 85 percent of its 17-mile alignment;
- Transit priority signal (TSP) treatments and coordination throughout the alignment;
- Frequent BRT service averaging five minutes between BRT buses during peak and midday travel periods;
- Wider station spacing for BRT service (approximately one-quarter to one-half mile between stations);
- Light-rail-like stations, including shelters, boarding platforms, benches, security features, fare machines, real-time bus arrival information, and other amenities;
- Prepaid ticketing and proof-of-payment fare verification; and
- Low-floor, multidoor, level-boarding, and low-emission BRT buses.

Figure 1.1 East Bay Bus Rapid Transit Alignment



2.0 Overview of the AC Transit Model

The travel model used to develop transit patronage and user benefit forecasts is a modified version of the Alameda Countywide Travel Demand Model (Alameda Model). This model is maintained by the Alameda County Congestion Management Agency (ACCMA). There are currently two versions of the Alameda Model available:

1. The version used to support the AC Transit East Bay BRT Draft Environmental Impact Statement/Report (DEIS/R model); and
2. A newer version released in 2006 (2006 model).

We chose to modify the DEIS/R model rather than use the 2006 model. While the 2006 model is consistent with the new regional Metropolitan Transportation Commission (MTC) BAYCAST model and has been calibrated to recent regional model survey data, AC Transit feels it may not be ready for use in the BRT study area. The 2006 model has not been extensively used in the study area and would require extensive effort to validate to study area roadway counts and transit ridership. In addition, though the 2006 model uses new land use data, this land use data has not had detailed allocation corrections made in the BRT study area. Furthermore, the differences between the land use data in the 2006 model and the DEIS/R model are likely not large enough to cause significant changes in transit ridership forecasts. For further discussion of the DEIS/R and 2006 models, see the November 14, 2007 AC Transit East Bay BRT, Alternative Approaches for Travel Demand Modeling memorandum to FTA.

Section 3.0 of this report provides information on the DEIS/R version of the Alameda Model. Section 4.0 describes refinements made to the Alameda Model to develop transit patronage forecasts in support of the AC Transit East Bay BRT DEIS/R. The DEIS/R was released May 2007. Section 5.0 describes further modifications made to the Alameda Model to make it consistent with FTA guidance regarding the usage of travel models to support Small Starts applications. The modeling of the year 2015 Baseline and Build Alternatives is discussed in Section 6.0. Finally, Section 7.0 describes adjustments made outside of the travel model to the transit boarding results. These adjustments *lower* the estimates for BRT boardings, and have no impact on the estimates for unlinked transit trips and transit mode share.

3.0 The Alameda Model

The May 2003 version of the Alameda Model was used as the starting point for developing forecasts of transit trips, transit boardings, and user benefits for year 2015 Baseline and Build Alternatives. The Alameda Model is a full four-step travel demand model able to forecast the extent to which travelers shift between travel modes (i.e., mode choice), and which transit routes and roadways travelers choose to use (i.e., trip assignment). The model uses land use data and a simplified representation of the highway and transit systems in Alameda County to derive estimates of transit volumes and roadway traffic volumes for the peak periods, midday period, and entire day.

The Alameda Model focuses on Alameda County, using 728 Traffic Analysis Zones (TAZs) to represent the County. To analyze travel to other areas, the Alameda Model includes a coarser representation of the other eight counties in the San Francisco Bay Area and other areas. Approximately 300 TAZs are used to represent these places.

The Alameda Model categorizes travel into six trip purposes: 1) home-based work, 2) home-based school, 3) home-based university, 4) home-based shop/ other, 5) home-based social/recreational, and 6) nonhome-based.

For home-based work trips, the Alameda Model uses a nested logit mode choice model structure. The highest nest includes drive alone, two-person high-occupancy vehicle (HOV), 3+ person HOV, and transit. The transit nest includes five transit modes: 1) walk to local bus, 2) walk to express bus, 3) walk to BART, 4) park-and-ride, and 5) kiss-and-ride. The express bus mode is used primarily to represent AC Transit's Transbay commute bus service over the San Francisco Bay Bridge to and from Downtown San Francisco. The park-and-ride and kiss-and-ride modes are primarily used in conjunction with BART, though there are some opportunities to connect with AC Transit and BART express buses.

For trips other than home-based work, the Alameda Model uses a simple logit mode choice model structure consisting of two modes: 1) auto, and 2) transit.

Further information on the model is provided in *Alameda Countywide Model Update, Model Development and Validation Final Report, June 1997*. A copy of this report can be found in the submittal CD, 03_TravelDemand and Summit\ 01_Methodology. This report includes information on the Alameda Model's structure, land use and socioeconomic inputs, transit and highway networks, trip generation, trip distribution, mode choice, assignment, and validation.

4.0 Model Refinements for DEIS/R

To support the development of transit patronage forecasts for the AC Transit DEIS/R, several refinements were made to the Alameda Model. These are described below.

4.1 Land Use Data

Land use data provide existing and projected future population and employment information by TAZ and are a key input to the Alameda Model. The Alameda Model uses the Association of Bay Area Governments' (ABAG) *Projections 2002* land use data. Several adjustments were made to the land use data to better reflect existing conditions and projected future growth in the East Bay BRT corridor. These adjustments were generally shifts of population and employment between adjacent TAZs. All adjustments to land use data were made with the approval of the city in question, and are consistent with the citywide and countywide totals for population and employment. For a detailed discussion of the land use data adjustments, see *AC Transit East Bay BRT Project Land Use Report, September 2005*.

4.2 Adjustments to Alameda Model Transportation Network

Several adjustments were made to the transportation network in the Alameda Model to add detail and better reflect existing roadway conditions:

- Adjust TAZ centroid connectors in Downtown Berkeley, Berkeley's Southside, and Oakland's Temescal neighborhood to better reflect the locations of trip-generating activity and access paths to the transportation network.
- Fix errors in the roadway network in the Temescal area.
- Add Bowditch Street in Berkeley's Southside. The proposed BRT system may cause many auto trips to divert from Telegraph Avenue to Bowditch Street. To incorporate this effect, Bowditch Street was added to the Alameda Model's roadway network.

4.3 REFINEMENTS TO ALAMEDA MODEL

Several refinements were made to the Alameda Model to improve its ability to evaluate the proposed BRT system's impacts on transit ridership. These include the following:

- Split several TAZs in the BRT corridor, increasing the number of TAZs used to represent Alameda County from 728 to 808. This allowed the model to develop more accurate forecasts of the traffic and transit ridership impacts of the proposed BRT system, as well as understand these impacts at a more detailed level.
- Add nonwork, nonschool trips made by people living in group quarters in the BRT corridor. The Alameda Model does not include nonwork, nonschool trips by people living in group quarters. A large number of students at the University of California at Berkeley (UC Berkeley) live in group quarters (i.e., dormitories) in the BRT corridor. Because they are frequent transit users, accounting for their nonwork, nonschool trips is necessary to develop an accurate forecast of the transit ridership impacts of the proposed BRT system.
- Add Berkeley City College. The Alameda Model does not include school trips to Berkeley City College. Because Berkeley City College is a major generator of travel in Downtown Berkeley and because students are frequent transit users, accounting for Berkeley City College school trips is necessary to develop an accurate forecast of the transit ridership impacts of the proposed BRT system.
- Allocate auto trips to UC Berkeley to TAZs in proportion to parking capacity. The Alameda Model assumes all auto trips to UC Berkeley go to TAZ 22, the central campus. In reality, UC Berkeley auto trips go to several parking facilities, several of which are not in TAZ 22. Because the proposed BRT system may significantly impact transit ridership and auto travel patterns in the vicinity of UC Berkeley, it is important to have an accurate representation of auto trips to UC Berkeley. Thus, trips to UC Berkeley were allocated to those TAZs with UC Berkeley parking facilities in proportion to the number of parking spaces in those facilities.
- Add off-peak auto assignment. The Alameda Model only produces peak-period VMT, because it performs auto assignment for peak periods only. In order to evaluate the impact of the proposed BRT system on daily VMT and on daily emissions, an off-peak auto assignment module was added to the model.

Further modifications were made to the Alameda Model for the Small Starts analysis. These are described in Section 5.0.

4.4 DEIS/R Model Validation

To validate the refined model, year 2000 model results were compared with observed data for 34 major intersections in the BRT corridor as well as for all major bus routes currently operating along the BRT alignment.

Table 4.1 compares year 2000 results from the refined model with observed data for 34 major intersections in the BRT corridor. For all intersections, the model's predicted values for total approach volume are within 35 percent of the observed values, demonstrating reasonable model validation. The predicted values for approach volumes on individual legs are generally within 50 percent of the observed values. The larger percent differences tend to be on approach legs with relatively small traffic volumes. To achieve these results, it was necessary to adjust the model's characterization of several roadways in the BRT corridor. The model tends to somewhat underestimate traffic volumes in the northern portion of the corridor between Downtown Berkeley and Downtown Oakland, and overestimate volumes in the southern portion between Downtown Oakland and Bay Fair BART.

Table 4.2 compares year 2000 transit boardings from the refined model with observed data for all of the major bus routes currently operating on the proposed BRT alignment (Routes 40/40L, 43, and 82/82L). Table 4.3 compares year 2000 transit travel time from the refined model with observed data. Both the ridership and travel time predicted by the model were within 20 percent of observed values for all of these routes. In addition, AC Transit systemwide ridership from the model was compared with observed data (Table 4.2). The model result was within 15 percent of the observed value.

Further transit boardings and travel time validation work was done for the Small Starts analysis. These are described in Section 5.3.

Table 4.1 Intersection Volumes – Observed Versus Refined Alameda Model Results
PM Peak Hour

Intersection		Observed					Model					Percent Difference				
E-W Roadway	N-S Roadway	NB	SB	EB	WB	Total	NB	SB	EB	WB	Total	NB	SB	EB	WB	Total
University	Shattuck	1,338	793	912	455	3,498	1,470	1,005	874	507	3,856	10%	27%	-4%	11%	10%
Bancroft	Shattuck	1,240	991	40	476	2,747	864	873	47	516	2,300	-30%	-12%	18%	8%	-16%
Bancroft	Fulton	185	1,204	0	1,374	2,763	22	1,123	0	1,058	2,203	-88%	-7%	0%	-23%	-20%
Bancroft	Telegraph	430	0	0	387	817	395	0	0	577	972	-8%	0%	0%	49%	19%
Durant	Shattuck	1,432	1,263	138	0	2,833	774	969	160	0	1,903	-46%	-23%	16%	0%	-33%
Durant	Fulton	0	1,287	389	0	1,676	0	1,218	401	0	1,619	0%	-5%	3%	0%	-3%
Durant	Telegraph	419	0	614	0	1,033	202	0	804	0	1,006	-52%	0%	31%	0%	-3%
Haste	Telegraph	608	0	0	437	1,045	490	0	0	602	1,092	-19%	0%	0%	38%	4%
Dwight	Telegraph	653	0	1,524	0	2,177	559	0	1,581	0	2,140	-14%	0%	4%	0%	-2%
Ashby	Shattuck	640	862	629	762	2,893	721	742	1,234	709	3,406	13%	-14%	96%	-7%	18%
Ashby	Telegraph	980	1,164	799	908	3,851	607	1,475	1,014	586	3,682	-38%	27%	27%	-35%	-4%
Ashby	College	445	506	801	639	2,391	381	565	668	525	2,139	-14%	12%	-17%	-18%	-11%
Alcatraz	Telegraph	1,293	1,386	642	505	3,826	993	1,737	406	241	3,377	-23%	25%	-37%	-52%	-12%
SR 24 EB Off-Ramp	Telegraph	854	1,414	18	446	2,732	665	1,534	67	570	2,836	-22%	8%	272%	28%	4%
SR 24 WB On-Ramp	Telegraph	1,138	1,627	280	0	3,045	1,344	1,717	384	0	3,445	18%	6%	37%	0%	13%
52nd	MLK	1,830	1,890	190	412	4,322	1,441	2,299	168	57	3,965	-21%	22%	-12%	-86%	-8%
Claremont/52nd	Telegraph	1,165	1,314	32	301	2,812	946	1,035	0	162	2,143	-19%	-21%	-100%	-46%	-24%
51st	Telegraph	853	898	1,177	805	3,733	405	671	1,134	632	2,842	-53%	-25%	-4%	-21%	-24%
40th	Telegraph	1,004	903	1,035	430	3,372	367	573	1,021	448	2,409	-63%	-37%	-1%	4%	-29%
27th	Telegraph	639	874	663	589	2,765	418	884	658	951	2,911	-35%	1%	-1%	61%	5%
Fruitvale	International	719	930	579	548	2,776	611	927	521	318	2,377	-15%	0%	-10%	-42%	-14%

Table 4.1 Intersection Volumes – Observed Versus Refined Alameda Model Results *PM Peak Hour* (continued)

Intersection		Observed					Model					Percent Difference				
42nd	International	1,035	1,255	590	548	3,428	1,134	1,269	1,253	106	3,762	10%	1%	112%	-81%	10%
High	International	1,026	1,030	783	537	3,376	989	1,574	1,127	705	4,395	-4%	53%	44%	31%	30%
High	Foothill	560	563	665	535	2,323	297	413	522	490	1,722	-47%	-27%	-22%	-8%	-26%
Seminary	International	984	991	383	292	2,650	629	1,095	205	190	2,119	-36%	10%	-46%	-35%	-20%
Hegenberger	International	1,071	900	1,594	1,000	4,565	686	801	2,451	969	4,907	-36%	-11%	54%	-3%	7%
98th	International	870	906	1,019	744	3,539	896	757	1,343	469	3,465	3%	-16%	32%	-37%	-2%
Durant	E 14th	726	967	0	192	1,885	648	1,006	0	382	2,036	-11%	4%	0%	99%	8%
Davis	San Leandro	893	1,104	1,030	872	3,899	619	540	1,609	1,102	3,870	-31%	-51%	56%	26%	-1%
Davis/Callan	E 14th	802	767	941	470	2,980	452	881	1,298	565	3,196	-44%	15%	38%	20%	7%
Callan	Bancroft	656	591	450	27	1,724	807	674	805	0	2,286	23%	14%	79%	-100%	33%
San Leandro	E 14th	828	606	507	0	1,941	754	665	1,104	0	2,523	-9%	10%	118%	0%	30%
Hesperian/Bancroft	E 14th	881	1,267	471	311	2,930	910	1,585	699	753	3,947	3%	25%	48%	142%	35%
150th	E 14th	810	1,171	393	717	3,091	819	1,521	501	627	3,468	1%	30%	27%	-13%	12%

Table 4.2 Transit Boardings – Observed Versus Refined Alameda Model Results, Weekday

	Observed	Model	Percent Difference
AC Transit Systemwide[a]	223,681	255,681	14%
40/40L	11,063	13,171	19%
43	10,240	11,521	13%
82	12,270	10,168	-17%
82L	11,194	13,006	16%

[a]Including Transbay services.

Table 4.3 Transit Travel Time – Observed Versus Refined Alameda Model Results, Minutes
Downtown Berkeley BART to Bay Fair BART[a]

	Observed	Model	Percent Difference
Peak	92	82	-11%
Midday	90	80	-10%

[a]40/40L in north and 82L in south.

5.0 Model Modifications for FTA Small Starts

Several further modifications were made to the Alameda Model to support the development of transit patronage and user benefits forecasts for AC Transit's application for FTA Small Starts funding. The purposes of the modifications were twofold: 1) achieve consistency with FTA guidance for mode choice models, and 2) validate model results relative to observed data.

5.1 Adjustments to Mode Choice Model Coefficients

We made adjustments to the Alameda Model's mode choice coefficients for nonwork trips to be consistent with FTA's guidance. Table 5.1 shows the mode choice model coefficients before and after adjustments as well as FTA guidance for each coefficient. Blue highlighting indicates where adjustments were made. Yellow highlighting indicates coefficients outside of FTA's recommended range. Almost all coefficients for the adjusted model are consistent with FTA guidance. Only one is slightly inconsistent – the home-based work nesting coefficient for Nest 2. The inconsistency is quite small; therefore we feel for all practical purposes, this coefficient is consistent with FTA guidance.

5.2 Other Model Adjustments

Several other adjustments were made to the travel model to validate the model against observed information.

1. The itineraries for several transit routes operating along the BRT alignment and nearby were adjusted to better match year 2005 schedules.
2. The model's coding of bus 63 was adjusted to match the actual routing.
3. The dwell time at bus stops were adjusted for buses operating along the BRT alignment and nearby. In particular, dwell times at stops in dense urban areas (e.g., downtown Oakland) were made larger than dwells in other areas.
4. Transit mode shares for home-based (HB) College trips to UC Berkeley were increased so that the model's estimated boardings near UC Berkeley better match observed counts. To estimate HB College transit trips, the Alameda Model applies fixed transit mode shares based on survey data by i-j interchange to the trip table. Since the survey was taken, UC Berkeley has implemented a pass system allowing students to ride AC Transit without paying a fare. This system has caused boardings in the vicinity of UC Berkeley to increase.

Table 5.1 Mode Choice Model Coefficients and FTA Guidance

	FTA Guidance	Unadjusted Model	Adjusted Model
Home-Based Work (HBW)			
In-Vehicle Time (Civt)	-0.030 < Civt < -0.020	-0.02545[a]	-0.02545[a]
Out-Vehicle Time (Covt)	Covt = 2 to 3 x Civt	-0.05854 = 2.3 x Civt	-0.05854 = 2.3 x Civt
Nesting Coefficient (Logsum)	0.7 < Logsum < 1.0	Nest 1 = 0.7 Nest 2 = 0.6835	Nest 1 = 0.7 Nest 2 = 0.6835
Home-Based Shop/Other			
In-Vehicle Time (Civt)	0.1 to 0.5 x Civt for HBW	-0.01768 = 0.7 x Civt for HBW	-0.012725 = 0.5 x Civt for HBW
Out-Vehicle Time (Covt)	Covt = 2 to 3 x Civt	-.01768 = 1.0 x Civt	-.031176 = 2.45 x Civt
Nesting Coefficient (Logsum)	0.7 < Logsum < 1.0	None – binomial logit model	None – binomial logit model
Home-Based Social/Recreational			
In-Vehicle Time (Civt)	0.1 to 0.5 x Civt for HBW	-0.004352 = 0.17 x Civt for HBW	-0.004352 = 0.17 x Civt for HBW
Out-Vehicle Time (Covt)	Covt = 2 to 3 x Civt	-0.004352 = 1.0 x Civt	-0.01066 = 2.45 x Civt
Nesting Coefficient (Logsum)	0.7 < Logsum < 1.0	None – binomial logit model	None – binomial logit model
Non-Home-Based			
In-Vehicle Time (Civt)	-0.030 < Civt < -0.020	-0.01024	-0.02
Out-Vehicle Time (Covt)	Covt = 2 to 3 x Civt	-0.01024 = 1.0 x Civt	-0.049 = 2.45 x Civt
Nesting Coefficient (Logsum)	0.7 < Logsum < 1.0	None – binomial logit model	None – binomial logit model

[a] Adjusted for nesting structure.

5.3 SMALL STARTS MODEL VALIDATION

Table 5.2 shows year 2005 systemwide boardings for AC Transit and BART. The values in the table compare results from the adjusted model for an average weekday versus observed data.

The year 2005 average weekday systemwide boardings for AC Transit estimated by the model are 5 percent higher than observed. For BART, the model's result is 8 percent lower than observed.

Table 5.3 shows route-level boardings for AC Transit bus routes that operated in 2005 along the proposed East Bay BRT alignment, as well as major parallel routes within one mile.[1]

[1] In June 2007, AC Transit made several modifications to its bus services, both in the proposed BRT corridor and elsewhere in its system. Reliable post-modifications ridership data were not available. Thus, model validation was done using pre-June 2007 conditions.

Table 5.2 Average Weekday Transit Boardings

	Observed	Model			Model Versus Observed
		HBW	Non-HBW	Total	
AC Transit[a]	209,744	82,602	137,247	219,849	+5%
BART	309,205	171,823	111,655	283,478	-8%

[a] Systemwide, including Transbay service.

Table 5.3 Average Weekday Transit Boardings

Route	Observed	Model			Model Versus Observed
		HBW	Non-HBW	Total	
40/40L	10,408	3,620	5,997	9,617	-8%
43	8,419	2,949	4,813	7,762	-8%
82/82L	16,559	6,845	9,909	16,754	+1%
15	4,667	1,358	2,212	3,570	-24%
51	17,134	7,525	7,061	14,586	-15%

For the three routes that operated along the proposed East Bay BRT alignment (i.e., 40/40L, 43, 82/82L), the model's estimated average weekday boardings are within 8 percent of observed. The model's result for Route 15 is 24 percent less than observed. However, ridership on this route is relatively low, so the error in absolute terms is relatively small. The model's result for Route 51 is 15 percent less than observed.

Figure 5.1 and Table 5.4 show the route segments used to validate route segment-level boardings for AC Transit bus routes that operated along the alignment of the proposed BRT. All the route segments are roughly 1.5 to 3.5 miles long.

Tables 5.5 through 5.7 show year 2005 route segment-level boardings for the three AC Transit bus routes that operated along the proposed East Bay BRT alignment.

Figure 5.1 East Bay Bus Rapid Transit Route Segments

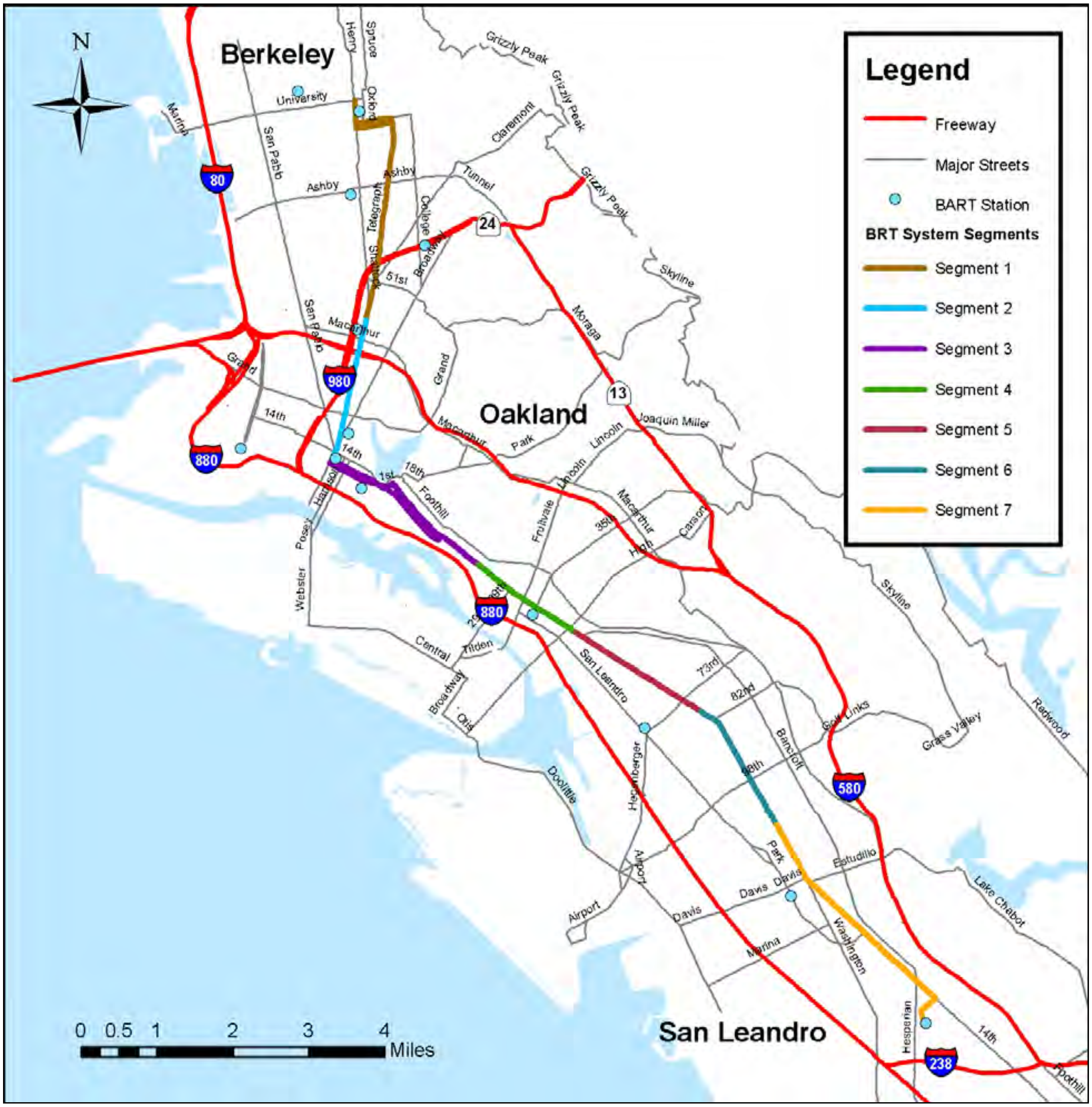


Table 5.4 East Bay Bus Rapid Transit Route Segments

Segment
1: Shattuck/Center to Telegraph/42nd
2: Telegraph/40th to Broadway/11th
3: 11th/Jefferson to International/21st
4: International/23rd to International/High
5: International/46th to International/78th
6: International/80th to East 14th/Bristol
7: East 14th/Durant to Bay Fair BART

Table 5.5 Average Weekday Transit Boardings
Route 40/40L

Segment	Observed	Model	Model Versus Observed
1: Shattuck/Center to Telegraph/42nd	4,768	4,360	-9%
2: Telegraph/40th to Broadway/11th	3,239	3,629	+12%

Table 5.6 Average Weekday Transit Boardings
Route 43

Segment	Observed	Model	Model Versus Observed
2: Telegraph/40th to Broadway/11th	2,906	3,195	+10%

Table 5.7 Average Weekday Transit Boardings
Route 82/82L

Segment	Observed	Model	Model Versus Observed
3: 11th/Jefferson to International/21st	7,492	8,113	+8%
4: International/23rd to International/High	5,925	7,056	+19%
5: International/46th to International/78th	4,650	5,218	+12%
6: International/80th to East 14th/Bristol	4,760	5,658	+19%
7: East 14th/Durant to Bay Fair BART	5,517	5,094	-8%

As Tables 5.5 through 5.7 show, the model's estimated year 2005 average weekday boardings are within 19 percent of observed for all segments.

Table 5.8 compares the model's estimate with observed information for transit travel time between the northern and southern termini of the BRT alignment. As the table shows, the model represents observed conditions accurately – within 4 percent of observed travel times.

Table 5.8 Transit Travel Time, Minutes
Downtown Berkeley BART to Bay Fair BART[a]

	Observed[a]	Model	Model Versus Observed
Peak	92	88	-4%
Midday	90	87	-3%

[a] 40/40L in north and 82L in south.

6.0 Modeling Year 2015 Baseline and Build Alternatives

To reflect year 2015 Baseline and Build conditions, the transit network in the adjusted Alameda Model was modified to incorporate the changes to AC Transit bus routes, stops, and frequencies associated with the Baseline and Build Alternatives.

6.1 BASELINE ALTERNATIVE

In a January 17, 2008 e-mail to AC Transit, the FTA conditionally agreed to designate the year 2015 No-Build scenario as the Baseline Alternative, pending review of the performance of the Baseline Alternative relative to the Build Alternative.

The main transit services in the East Bay BRT corridor under the Baseline Alternative are Routes 1 and 1R. These routes replaced 40/40L, 43, and 82/82L service in the corridor in June of 2007. Both of these routes operate for the most part on the same alignment proposed for the East Bay BRT – along Telegraph Avenue from Downtown Berkeley and UC Berkeley to Downtown Oakland; and International Boulevard/East 14th Street from Downtown Oakland to Downtown San Leandro to Bay Fair BART. Route 1 is a local bus, with stops every few blocks. Route 1R is a Rapid Bus service with more widely spaced stops (approximately one-half mile average stop spacing), transit signal priority, and improvements to selected bus stops (benches, shelters, maps/signs, and bus arrival information). Service frequencies for the Route 1 and 1R are shown in Table 6.1.

The base year 2005 weekday travel time by bus from Downtown Berkeley at the northern end of the BRT alignment to Bay Fair BART at the southern end was 92 minutes during peak periods and 90 minutes midday (see Table 6.2). Since no AC Transit bus operated the length of the alignment, these times and speeds reflect a combination of the times for Route 40/40L between Downtown Berkeley and Downtown Oakland, and Route 82L between Downtown Oakland and Bay Fair BART.

Table 6.1 Baseline and BRT Operating Frequencies

Route	Weekday Headway (Minutes) Peak	Weekday Headway (Minutes) Midday
Baseline		
1	15.0	20.0
1R	12.0	12.0
1 + 1R	6.7	7.5
BRT		
East Bay BRT	5.0[a]	5.0
Other Routes	No change from Baseline	

[a] The peak period frequency for the East Bay BRT has been adjusted from 3.6 minutes (shown in December 17, 2007 memorandum to FTA) to 5.0 minutes. This adjustment was made as a result of a maximum load matching analysis, and because 5.0 minutes is a more "natural" frequency than 3.6 minutes.

Table 6.2 Bus Travel Times (in Minutes) *Downtown Berkeley to Bay Fair BART*

	Base Year 2005	Year 2015 Baseline		Year 2015 Build	
Time Period	Travel Time[a]	Travel Time[b]	Change from Existing	Travel Time	Change from Baseline
Peak	92	80	-13%	66	-18%
Midday	90	80	-11%	63	-21%

Source: *AC Transit East Bay BRT EIR/EIS Operating Plan and Cost Analysis*, November 2005; 1R APC Travel Time Data, January to March 2008.

[a] 40/40L in north and 82L in south.

[b] Travel time for 1R service.

End-to-end bus travel time improved under Baseline conditions due to the implementation of 1R Rapid Bus service. Compared to year 2005 conditions, peak-period bus travel time reduced by 13 percent, and midday by 11 percent. To reflect the improvement in bus speed, the travel model's bus-to-auto speed ratio[2] was adjusted for route 1R until the desired travel time improvements shown in Table 6.2 were achieved.

In the travel model, both Route 1 and Route 1R are modeled using the local bus mode.

[2] One of the methods used by the Alameda Model to represent bus speeds is to apply a bus-to-auto speed ratio to calculated auto speeds. This method assumes buses travel at a speed in proportion to auto speed.

6.2 BUILD ALTERNATIVE

The Build Alternative would replace both the Route 1 and Route 1R with East Bay BRT service. To compensate for the loss of local Route 1 service, the East Bay BRT would have somewhat closer station spacing than Route 1R. The average distance between stations would be approximately one-third of a mile. The East Bay BRT would also include dedicated bus lanes for approximately 85 percent of the alignment between Downtown Berkeley and Bay Fair BART; rail-like stations with near level platform boarding; ticket machines and proof-of-payment ticketing; and distinctive branding. Service frequencies for the East Bay BRT are shown in Table 6.1.

Bus travel time is expected to be further improved by the implementation of BRT. Weekday travel time from Downtown Berkeley to Bay Fair BART is reduced from 80 minutes under Baseline conditions to 66 minutes during the peak periods, and from 80 minutes to 63 minutes during the midday.

For most bus services, the Alameda Model assumes bus speeds are proportional to auto speeds (i.e., buses travel in the same traffic stream as autos). Because the proposed BRT service would operate in a dedicated lane, this assumption was modified to have BRT speed proportional to the posted speed limit, reflecting the relative independence of BRT operations from auto traffic. To reflect the improvement in bus speed due to the East Bay BRT Project, the BRT speed to posted speed limit ratio was adjusted until the desired travel time improvements shown in Table 6.2 were achieved.

In the travel model, the East Bay BRT is modeled using the local bus mode. No adjustment was made to the modal constant to account for the other enhanced features of the East Bay BRT. We believe this results in a conservative ridership forecast for the Build Alternative.

7.0 Post-Model Transit Boarding Adjustments

The travel model predicted an unrealistically large increase in boardings along the proposed East Bay BRT alignment. We made adjustments to reduce the number of alignment boardings, as well as adjust systemwide boardings on AC Transit and BART. Note that these adjustments only affect the boardings results, which come from the assignment module of the travel model. The adjustments do not affect results for the number of linked transit trips or transit market share, which come from the mode choice module of the travel model.

7.1 Small Starts Boarding Adjustments

The results reported for AC Transit's application for FTA Small Starts funding for boardings along the BRT alignment as well as AC Transit and BART systemwide have been adjusted. As was the case for results for boardings developed for the DEIS/R, boardings along the BRT alignment were found to be too high because the travel model would shift an unreasonably large number of boardings from parallel AC Transit routes and BART to the BRT. Model results for boardings along the BRT alignment were factored down to develop a reasonable result. Corresponding factors were applied to AC Transit and BART systemwide boardings, resulting in AC Transit boardings being factored down and BART boardings factored up.

The factors used for Small Starts analysis are based on those developed for the DEIS/R analysis. The specific steps taken were:

1. Find the DEIS/R travel model result for the change in BRT alignment boardings between the Build and No-Build alternatives.
2. Find the Small Starts travel model results for the change in BRT alignment boardings between the Build and Baseline alternatives.
3. Find the final DEIS/R reported result for the change in BRT alignment boardings between the Build and No-Build alternatives. This result is factored down from the original DEIS/R travel model result using the procedure described in Section 7.2.
4. Calculate the percent change between (1) and (3) and apply it to (2).
5. Add the result from (4) to the Small Starts Baseline alignment boardings. This is the adjusted result for Small Starts Build alignment boardings.

AC Transit and BART system boardings were adjusted using the same methodology.

7.2 DEIS/R Boarding Adjustments

During analysis for the East Bay BRT DEIS/R, the refined Alameda Model indicated an unreasonably large change in boardings along the BRT alignment when going from year 2025 No-Build to year 2025 Build conditions. Under No-Build conditions, the model estimated 17,310 weekday boardings. This increased by 270 percent to 64,640 under BRT Build conditions.

A detailed analysis of the model results was conducted and compared with observed ridership information to assess whether this result was reasonable, and if not, what parts of the model results were reasonable and what other elements were less reasonable.

The first analysis was to compare the model's results for the change in total transit trips to the change in boardings along the BRT alignment. In the year 2025, the Alameda Model forecasted an increase in total transit trips of 5,320 going from No-Build to BRT conditions. The resulting ratio of new transit trips to the change in alignment boardings was 8.9 (i.e., [64,640 - 17,310]/5,320). In other words, for every rider switching to riding an AC Transit bus in the BRT alignment from an auto mode (driver or passenger) with the introduction of BRT, the model estimated 7.9 other riders switched from some other transit mode, generally an AC transit bus route parallel to the alignment or BART. This ratio is larger than what might typically be expected.

Two improvements in service performance are made in going from No-Build to BRT conditions: 1) the average speed of bus service is improved, and 2) the frequency of bus service is improved, from 12- to 5-minute peak-period headway.

The second analysis was to determine how much of the change in model alignment boardings is due to each of these improvements. To do this, an intermediate alternative, called BRT-12, was constructed, which had the same average speed as BRT, but the same service frequency as under No-Build conditions. Comparing Alameda Model results for No-Build and BRT-12 conditions showed that the model estimated an increase in boardings along the BRT alignment of 8,560 or 50 percent (from 17,310 to 25,870) due to the improvement in bus average speed. This magnitude of boarding increase is consistent with what might be expected from a significant improvement in bus speed. Comparing results for BRT-12 and BRT conditions showed that the model estimated an increase in alignment boardings of 38,770 or 150 percent (from 25,870 to 64,640) due to the improvement in bus service frequency. This result is larger than might be expected.

The third analysis was to determine the source of the increase in model boardings along the BRT alignment when going from BRT-12 to BRT conditions. This was done by comparing ridership changes for all transit routes crossing a series of selected screenlines up and down the corridor. For example, a screenline was selected in Berkeley just north of Ashby Avenue – running from

Claremont Avenue to I-80. AC Transit bus routes cross this screenline along 10 different roadways. BART also crosses this screenline.

The Ashby Avenue screenline showed some counterintuitive results. For example, bus ridership on San Pablo Avenue was 2.2 percent lower under BRT conditions than under BRT-12 conditions, even though San Pablo Avenue is about 1.5 miles away from the BRT alignment at this point. This indicated that BRT was drawing riders from farther afield than would have been logically anticipated.

In total, 12 screenlines were selected up and down the corridor at key locations (see Figure 7.1). These locations were at:

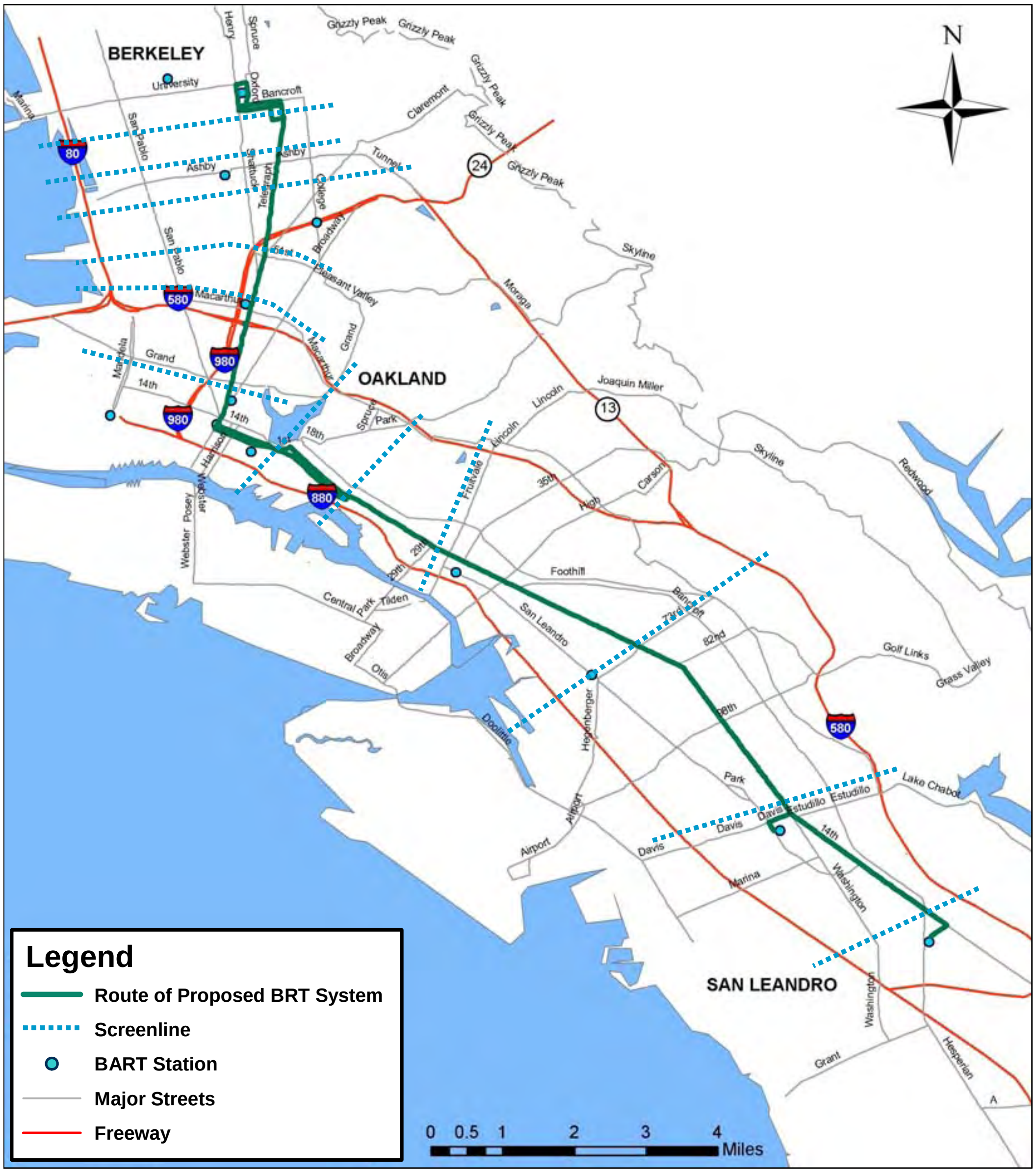
1. Dwight Way (Piedmont Avenue to I-80);
2. Ashby Avenue (Claremont Avenue to I-80);
3. Alcatraz Avenue (Tunnel Road to I-80);
4. $51^{st}/52^{nd}$ Streets (Broadway to I-80);
5. MacArthur Boulevard (Harrison Street to I-80);
6. Grand Avenue (Harrison Street to I-880);
7. Lake Merritt Dam (Santa Clara Avenue, Oakland to I-880);
8. 14^{th} Avenue (MacArthur Boulevard to I-880);
9. Fruitvale Avenue (MacArthur Boulevard to Santa Clara Avenue, City of Alameda);
10. 73^{rd} Avenue (I-580 to Ron Cowan Parkway);
11. Estudillo Avenue (I-580 to I-880); and
12. 150^{th} Avenue/Halycon Drive (I-580/Foothill Boulevard to Doolittle Drive).

For two reasons, the Alameda Model is too coarse a tool to accurately estimate route choice in a corridor with multiple transit service options, such as the one served by the proposed East Bay BRT Project.

First, the Alameda Model, like most other travel demand models, uses an "all-or-nothing" transit assignment process. The all-or-nothing process assumes that all transit riders from one TAZ to another will take the fastest possible route, and that no riders will use any other route. This coarse assumption does not adequately represent the distribution of riders over all available options, particularly in a transit-rich corridor.

Second, the TAZs in the Alameda Model are relatively large. Suppose a TAZ is served by two parallel transit routes, A and B. In reality, transit riders in one-half of the TAZ might find Route A faster and ride it, while riders in the other one-half find Route B faster and ride it. However, the all-or-nothing process is unable to make this distinction and assigns *all* riders to one of the two routes.

Figure 7.1 Screenlines Used for Transit Boardings Adjustment



In particular, the screenline route analysis showed two model results that seemed unreasonable, given that the only difference between the BRT and BRT-12 conditions was a change in headways. First, several routes that are far removed from the BRT route showed ridership reductions. Second, adjacent parallel bus routes showed ridership reductions that were very large.

To compensate, a **Parallel Routes Boarding Adjustment** was made to the model's estimates for BRT alignment boardings. This adjustment consisted of two parts. First, ridership on far removed parallel AC Transit routes was reset to be equal to BRT-12 conditions. Second, the ridership changes on the next adjacent parallel AC Transit route on each side of the BRT route was reduced by

25 percent to better reflect the differences between the model TAZs and real-life conditions.

In addition, an **AC Transit-BART Boarding Adjustment** was made to the model's estimates for AC Transit, BART, and alignment boardings. This adjustment required two steps. First, the decrease in BART park-and-ride work trips due to BRT implementation was reset to zero. Given the strong latent demand for parking at BART East Bay stations, it is illogical for park-and-ride trips to BART stations to decrease due to the implementation of BRT, as this would result in parking spaces going unused. However, it was also assumed that one-half of the decrease in BART park-and-ride work trips would be backfilled from BART kiss-and-ride users. This assumption was predicated on the idea that some kiss-and-ride BART users would switch to drive alone to BART lots, given newly available spaces. The net result was the reduction in overall BART work trips caused by BRT implementation was halved from the raw model results.

Second, the change in BART nonwork trips was set proportional to the change in BART work trips. The Alameda Model estimated a three times greater change in nonwork BART trips compared to work trips. This is not a logical result since nonwork trips are typically less sensitive to travel time improvements than work trips, and are thus less likely to be affected by the improved travel times provided by the new BRT service. This illogical model result is likely due to the Alameda Model's use of a much simpler and less accurate method for allocating transit trips between BART and AC Transit for nonwork trips.

The parallel routes and AC Transit-BART boarding adjustments to ridership were then applied to individual BRT stations. To do this, groups of BRT stations were assigned to each of the 12 screenlines. The change in BRT station boardings and alightings between the BRT and BRT-12 conditions was changed by the same percentage as the nearest screenline location. In order for the change in boardings and the change in alightings to be equal, alightings were normalized to boardings.

7.3 Effect of Adjustments

The net effects of the transit boarding adjustments are shown in Table 7.1. The first column in Table 7.1 shows results taken directly from the travel model. The second column shows the size of the two transit boarding adjustments. The third column shows results after the adjustments are made.

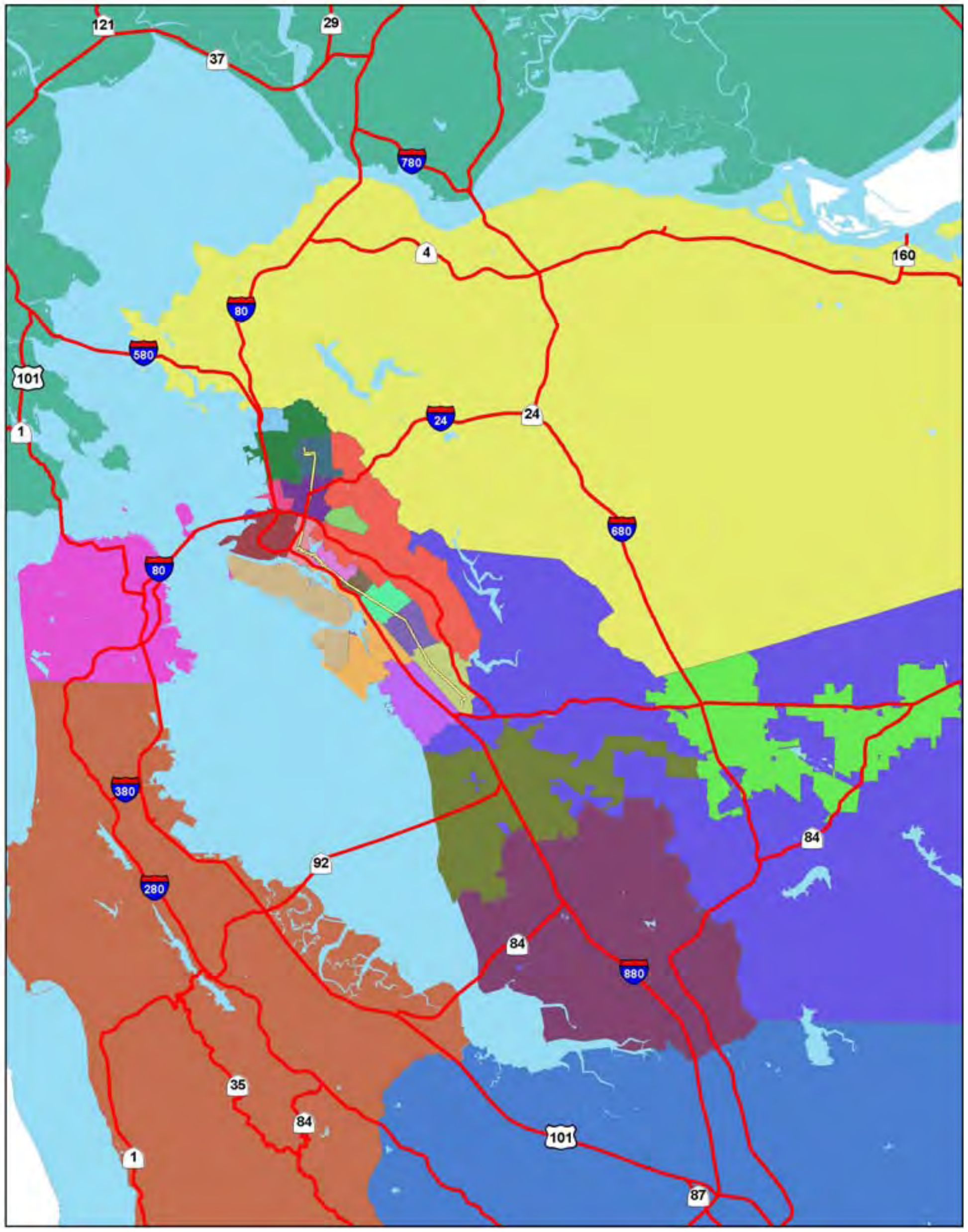
Table 7.1 Year 2015 Average Weekday Transit Boardings
Effect of Adjustments

	Result from Travel Model	Adjustments	Result after Adjustments
Baseline			
Boardings Along BRT Alignment	24,400	0	24,400
AC Transit Systemwide[a]	262,400	0	262,400
BART Systemwide	322,600	0	322,600
Build			
Boardings Along BRT Alignment	67,300	-24,800	42,600
AC Transit Systemwide[a]	285,300	-9,900	275,400
BART Systemwide	313,800	+4,800	318,600
Change (Build less Baseline)			
Boardings Along BRT Alignment	43,000	-24,800	18,200
AC Transit Systemwide[a]	22,900	-9,900	13,000
BART Systemwide	-8,800	+4,800	-4,000

[a]Including Transbay services.

Summit District Maps

Map 1. East Bay BRT Summit Districts
Region



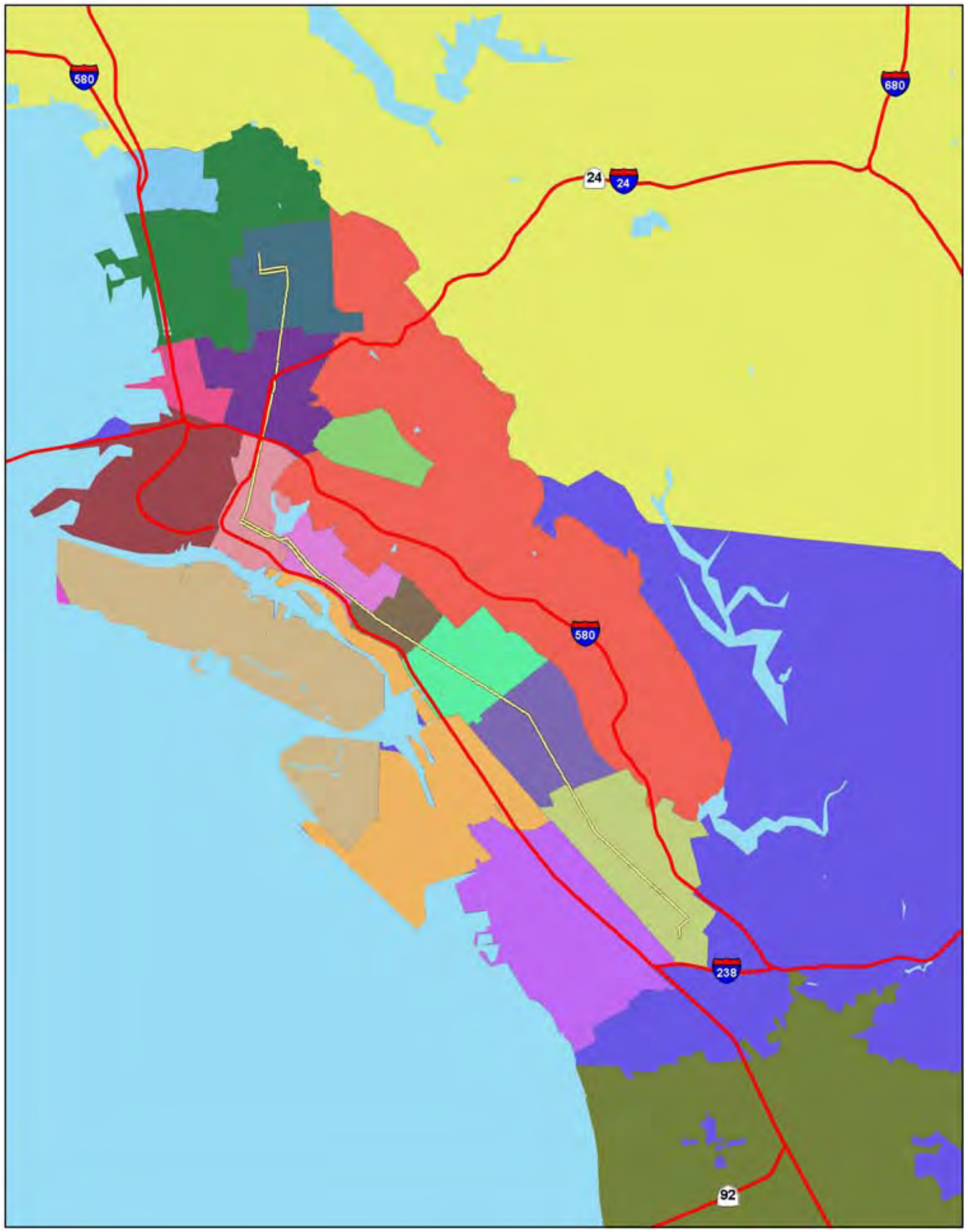
Legend

Freeways
Proposed BRT Route
Water

Summit Districts

1. North Bay
2. San Francisco
3. San Mateo County
4. Santa Clara County
5. Contra Costa County
6. South Alameda County
7. East Alameda County
8. Hayward
9. Unincorporated Alameda County
10. Albany
11. Emeryville
12. Piedmont
13. Alameda
14. Berkeley Downtown and South
15. Berkeley North and West
16. North Oakland
17. Oakland Downtown
18. San Antonio
19. Fruitvale
20. Central East Oakland
21. Elmhurst
22. Oakland Airport and Shore
23. West Oakland
24. Oakland Hills
25. San Leandron Downtown and East
26. San Leandro West

Map 2. **East Bay BRT Summit Districts**
Corridor



Legend

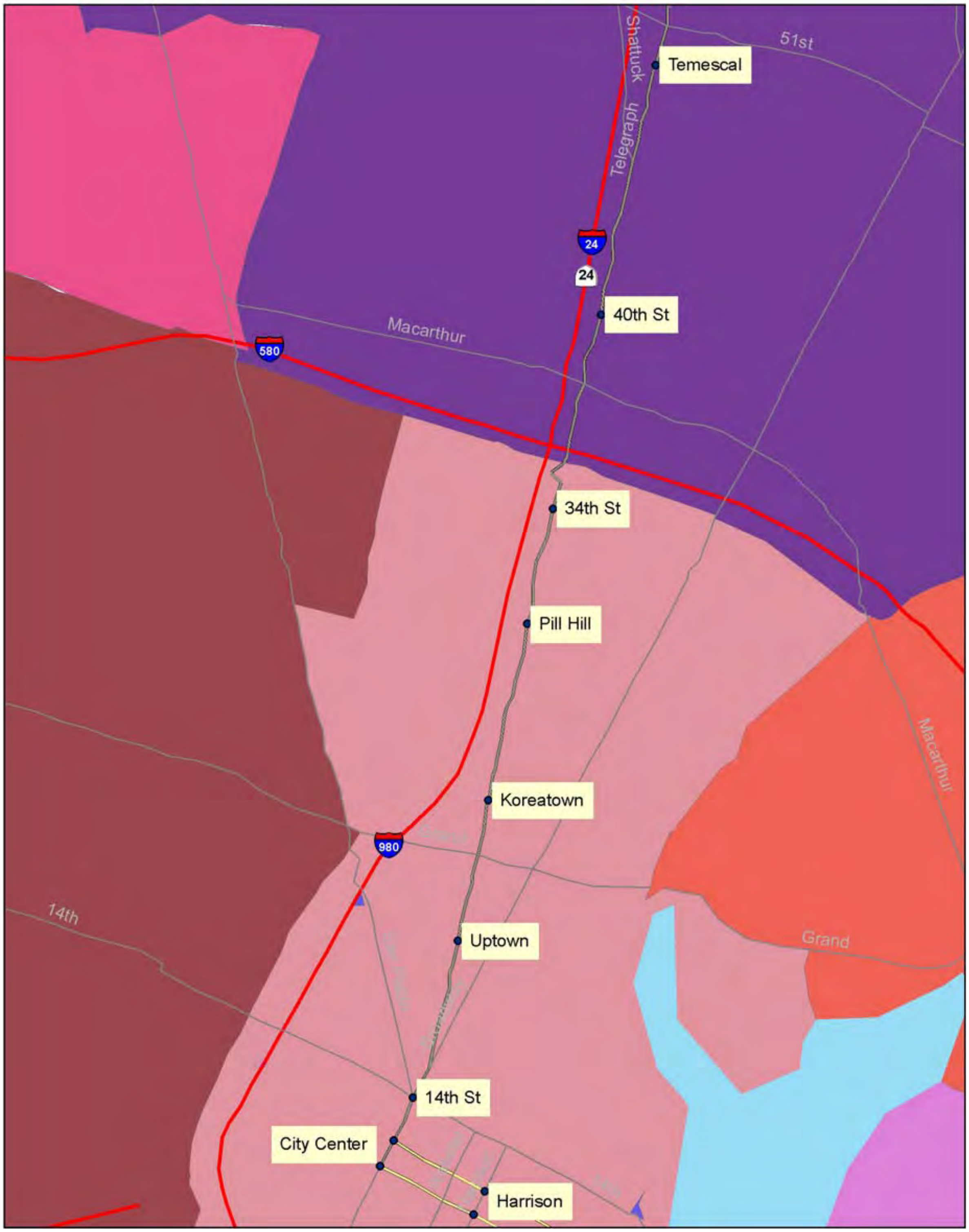
Freeways — Proposed BRT Route — Water

Summit Districts

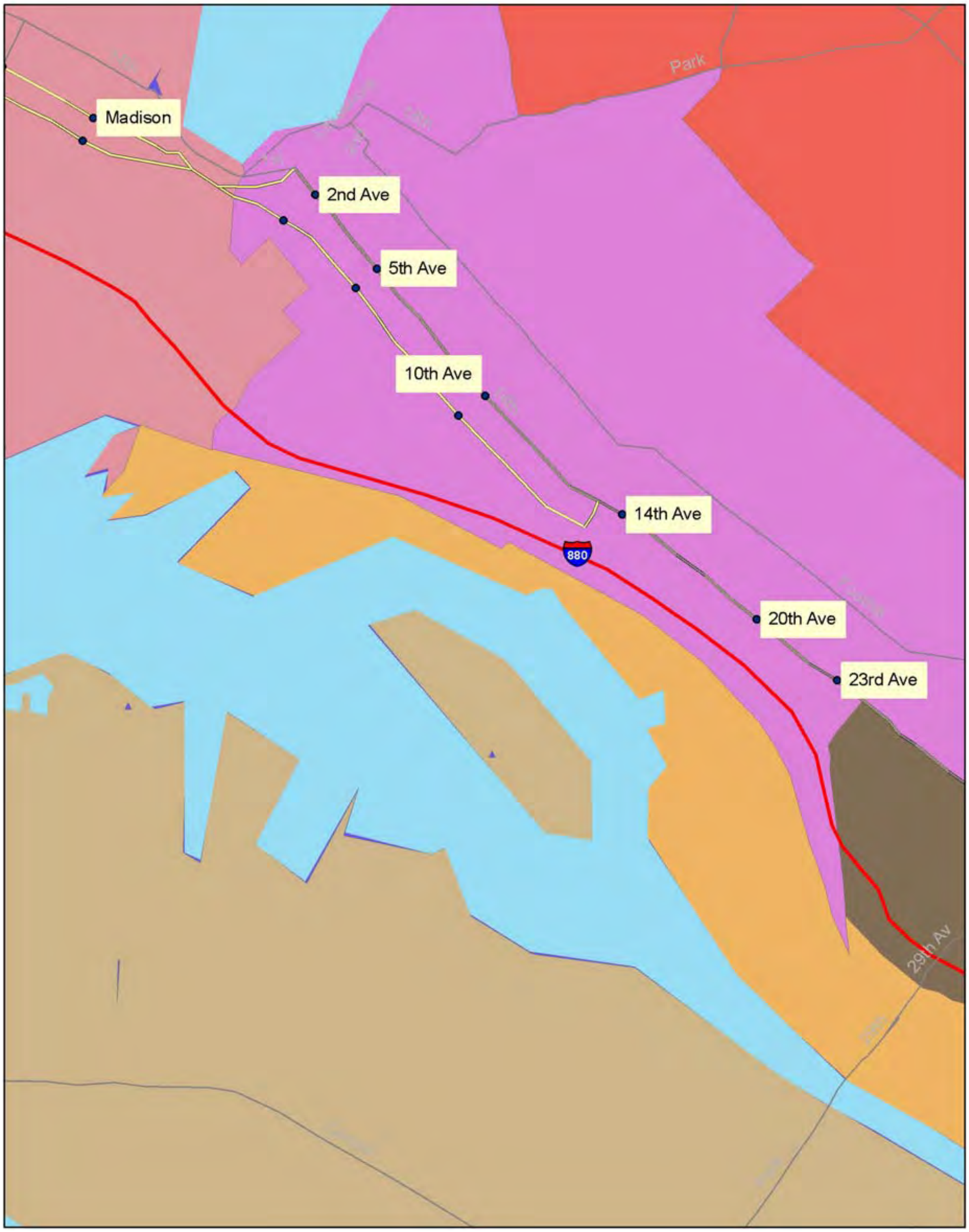
1. North Bay
2. San Francisco
3. San Mateo County
4. Santa Clara County
5. Contra Costa County
6. South Alameda County
7. East Alameda County
8. Hayward
9. Unincorporated Alameda County
10. Albany
11. Emeryville
12. Piedmont
13. Alameda
14. Berkeley Downtown and South
15. Berkeley North and West
16. North Oakland
17. Oakland Downtown
18. San Antonio
19. Fruitvale
20. Central East Oakland
21. Elmhurst
22. Oakland Airport and Shore
23. West Oakland
24. Oakland Hills
25. San Leandron Downtown and East
26. San Leandro West

Map 3. East Bay BRT Stations
Downtown Berkeley to Temescal

Map 4. **East Bay BRT Stations**
Temescal to Harrison

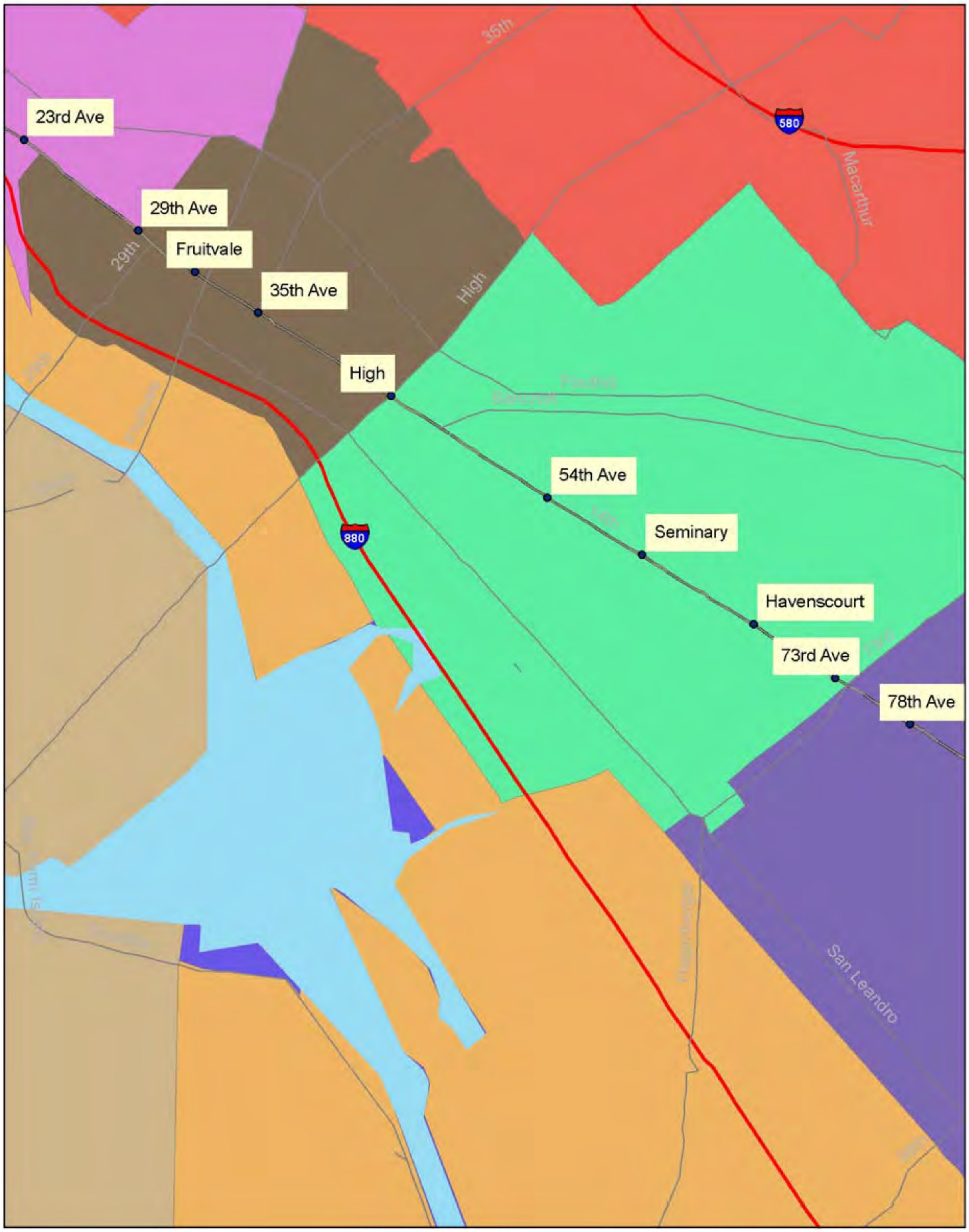


Map 5. East Bay BRT Stations
Madison to 23rd Avenue

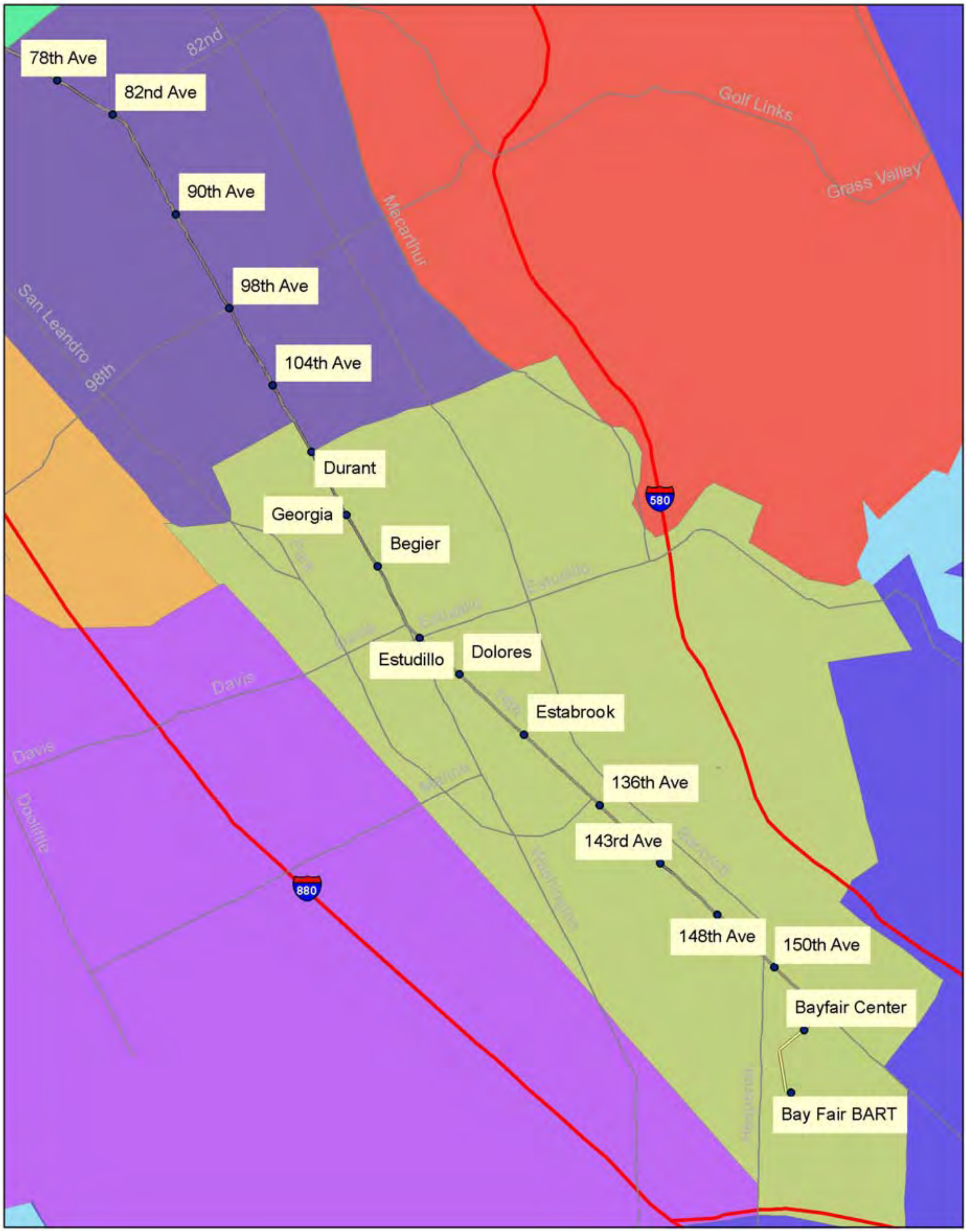


Map 6. East Bay BRT Stations

23rd Avenue to 78th Avenue

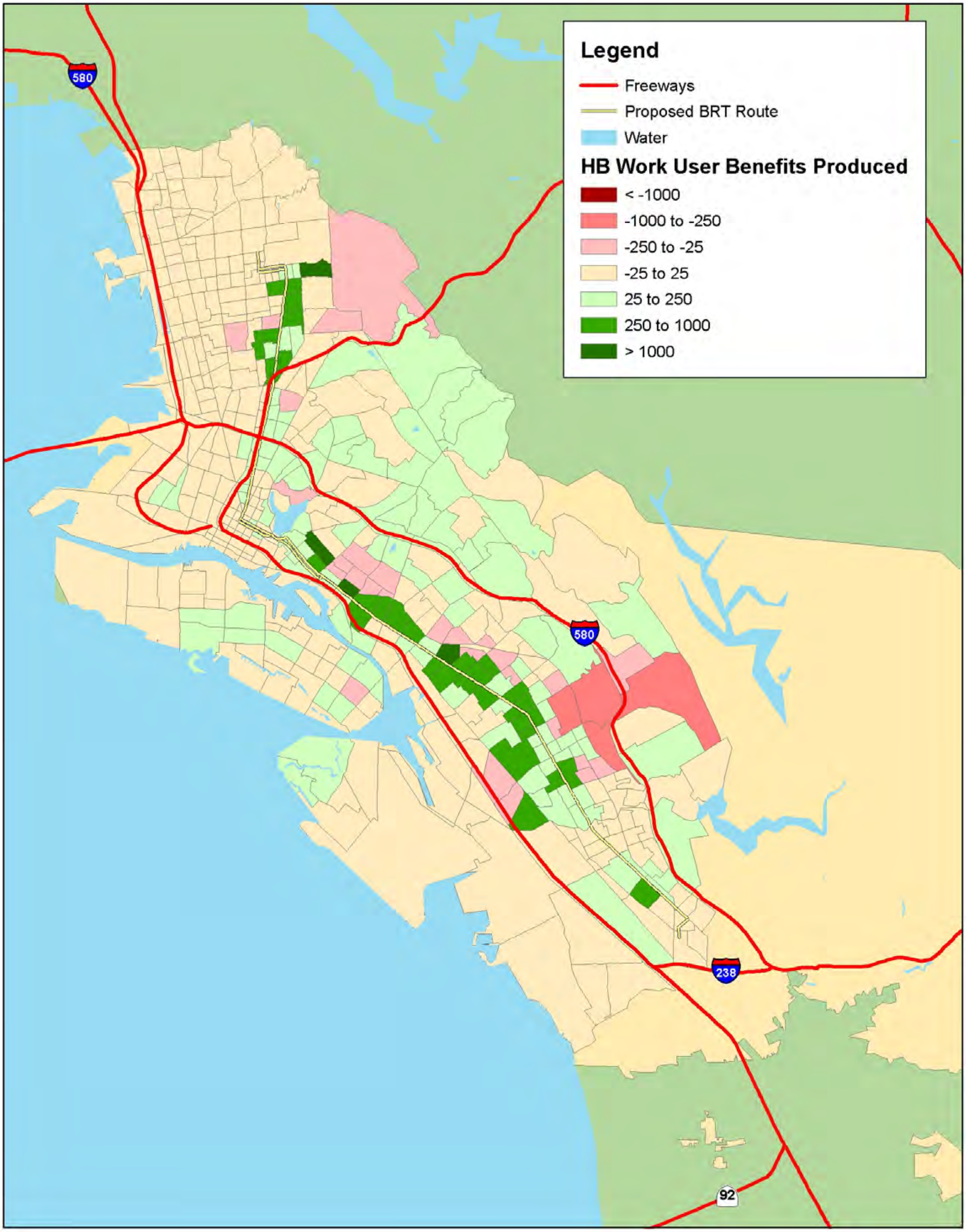


Map 7. **East Bay BRT Stations**
78th Avenue to Bay Fair BART



User Benefits Maps

Home-Based Work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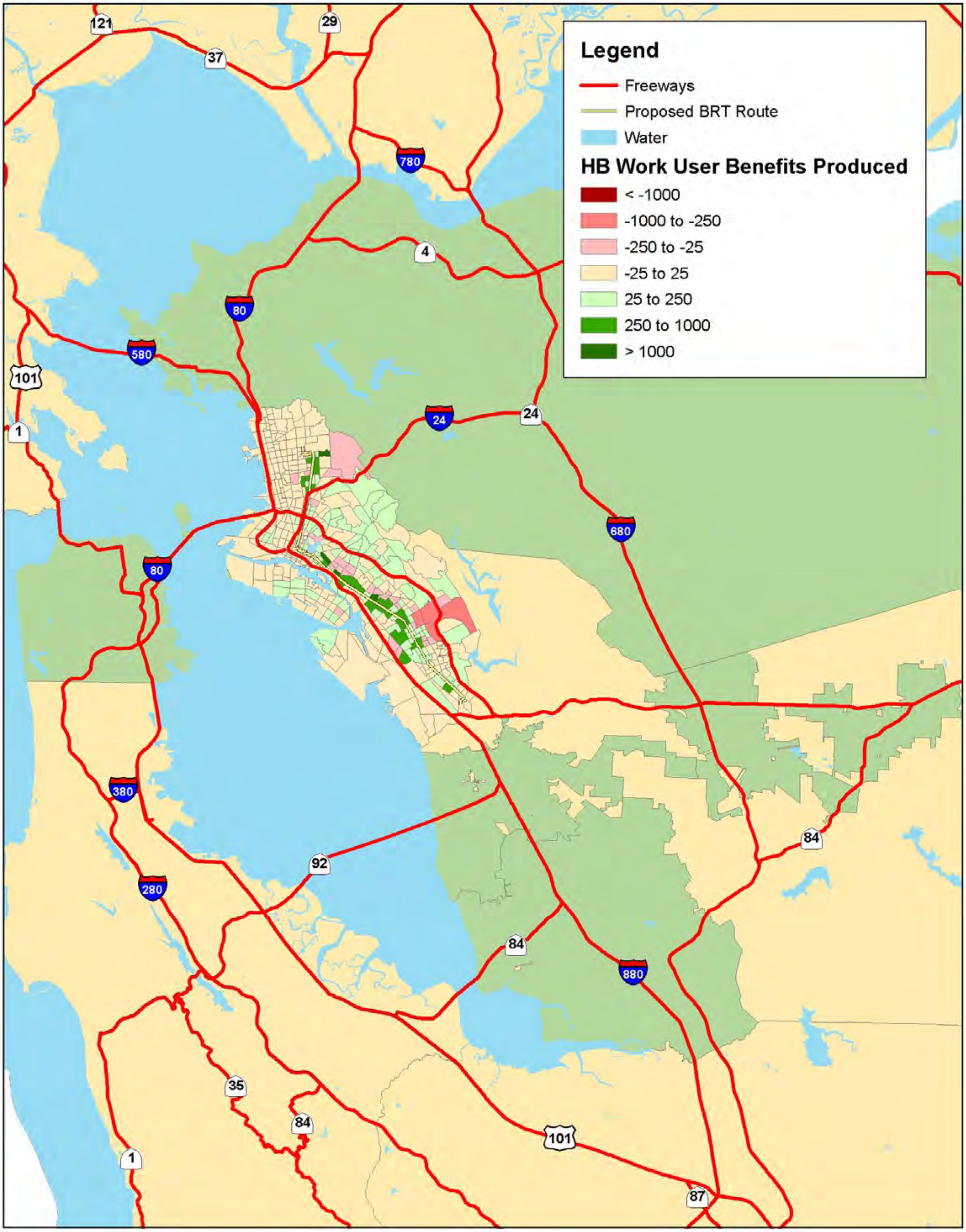
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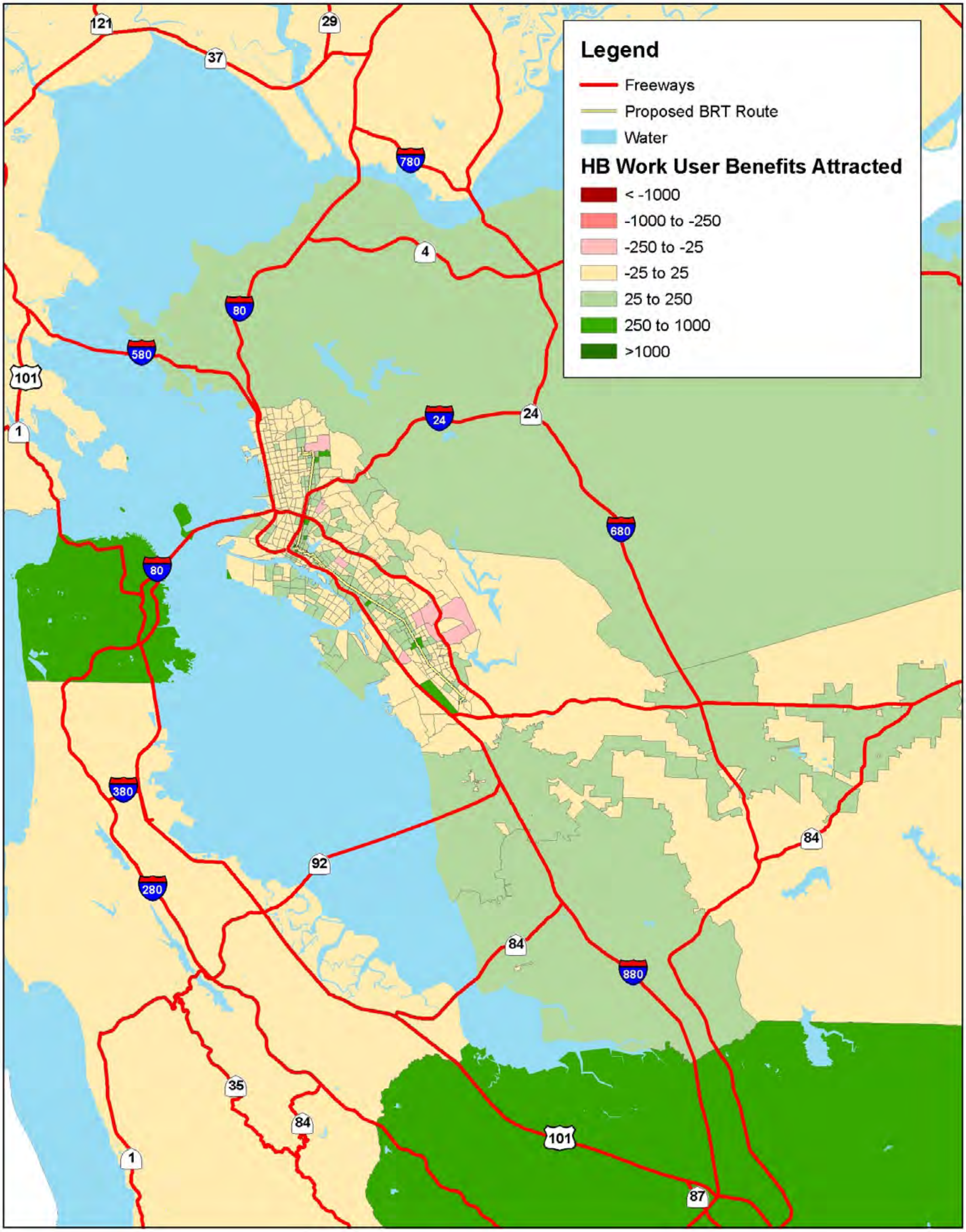
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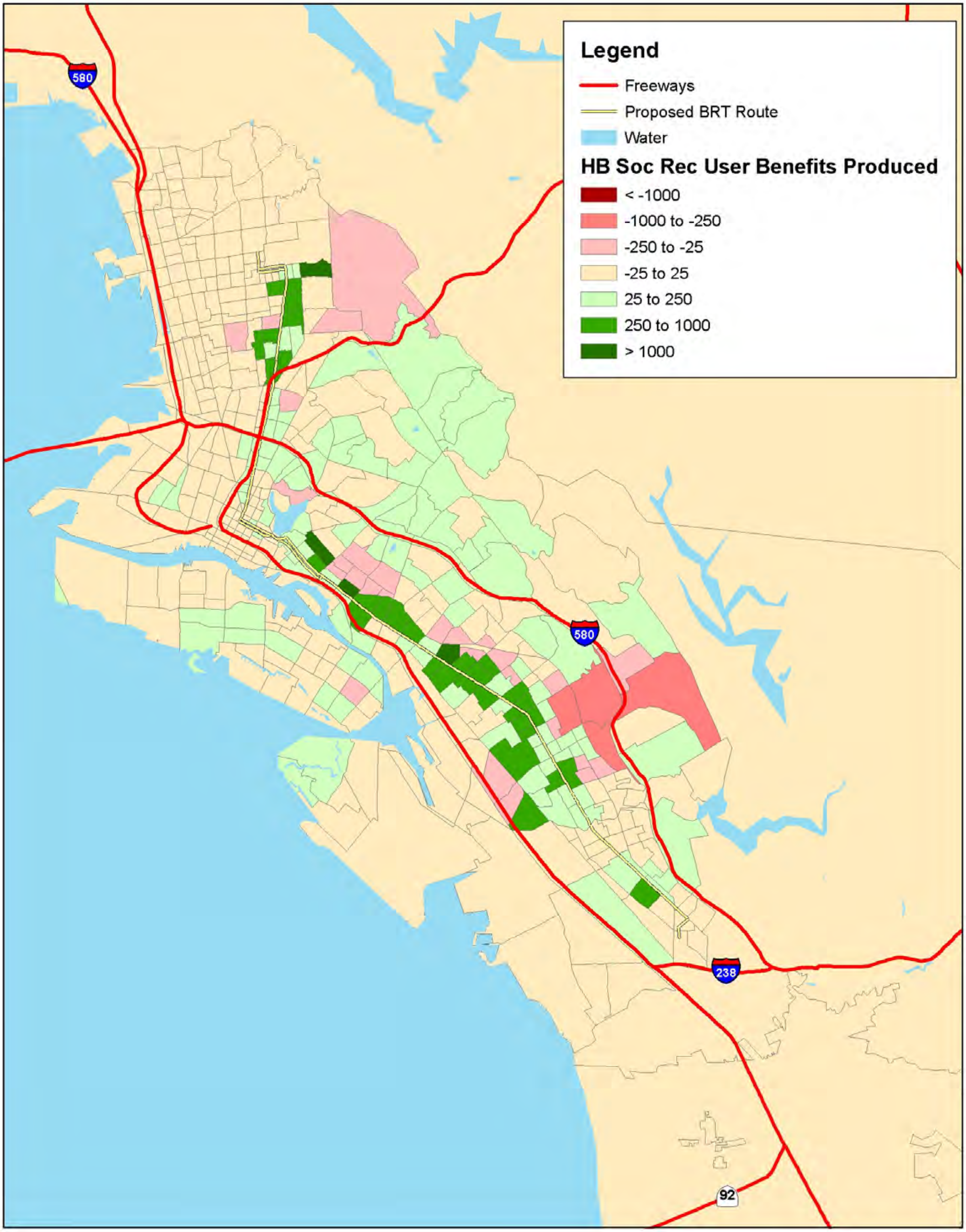
Home-Based Social/Recreational



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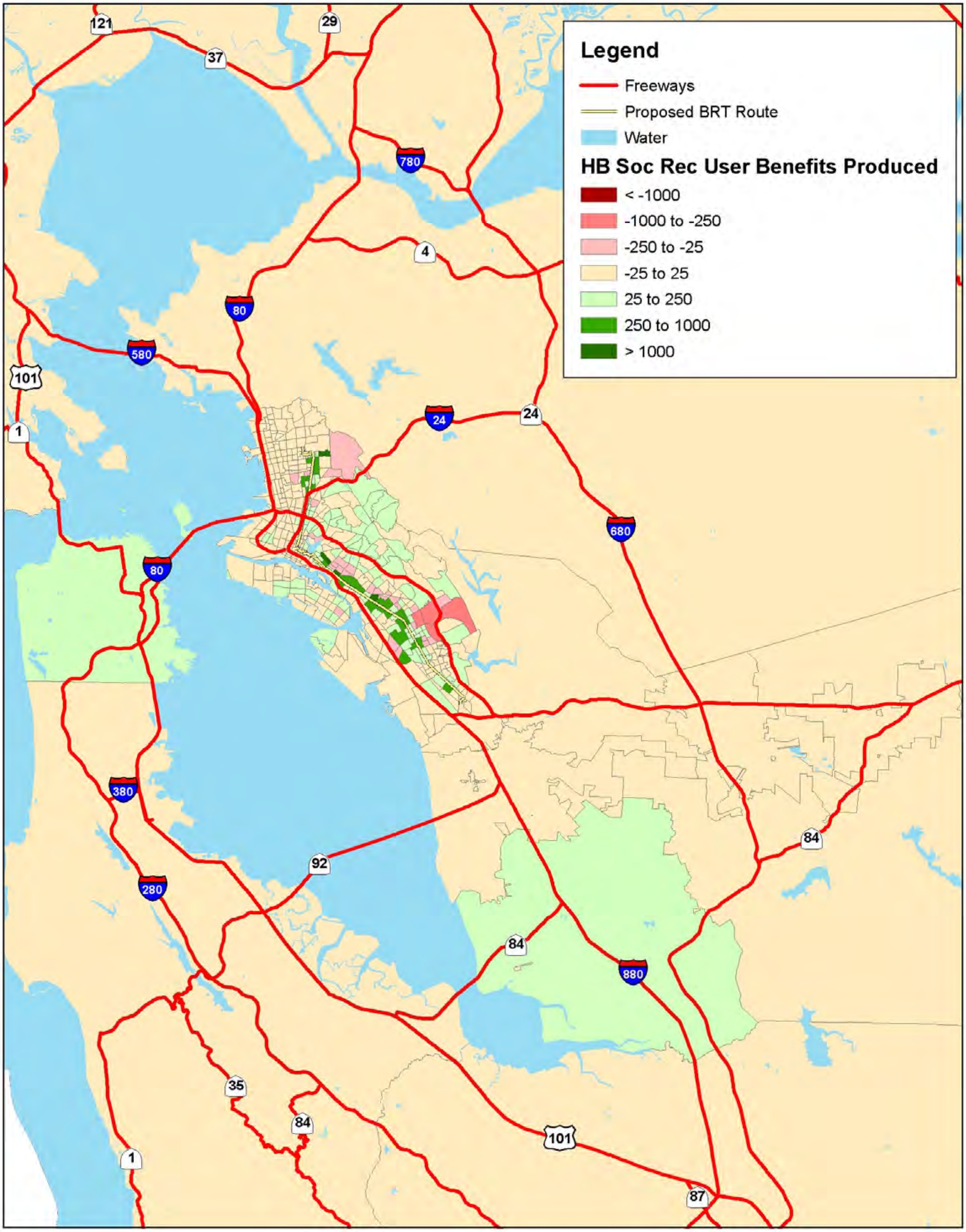

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Legend
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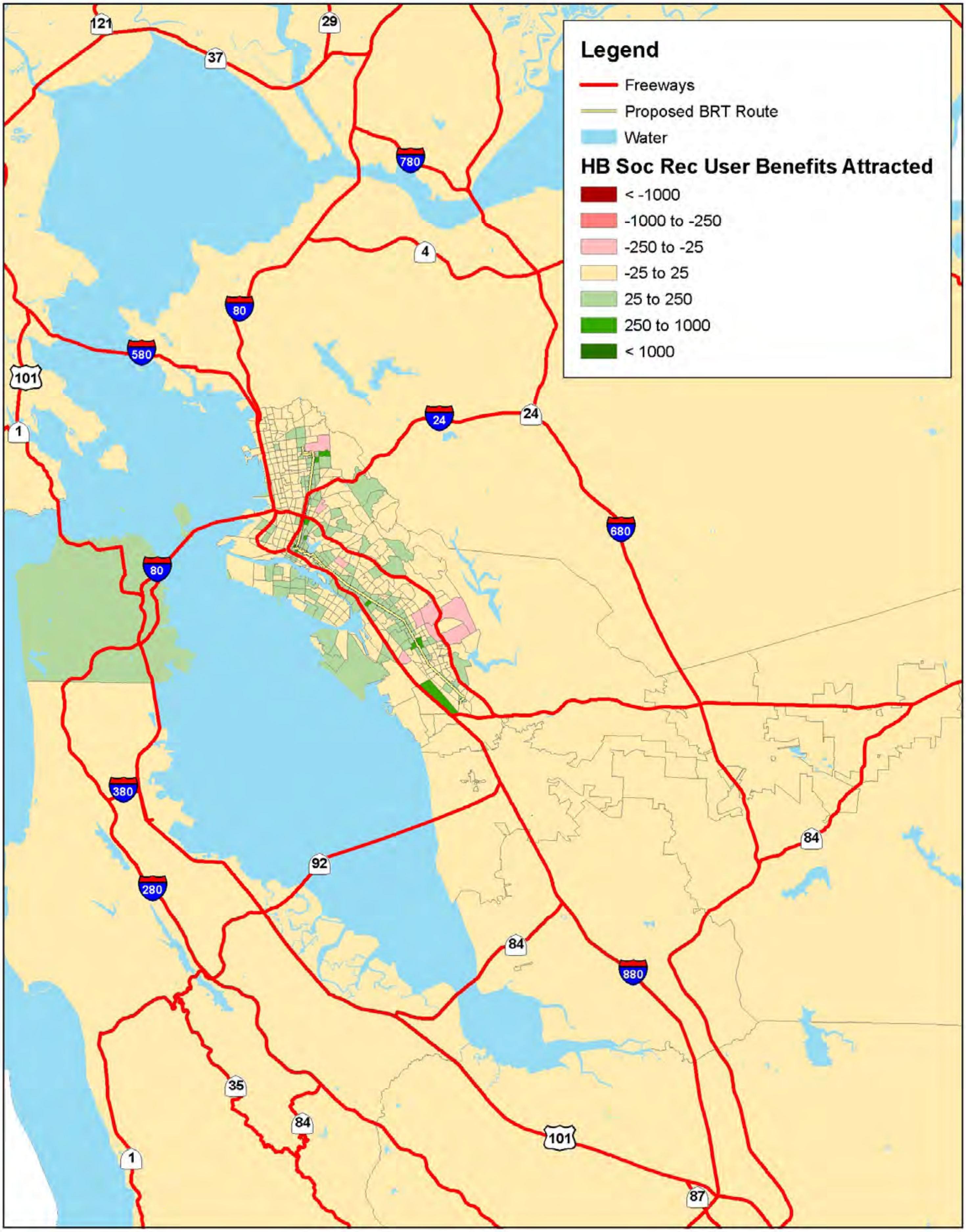

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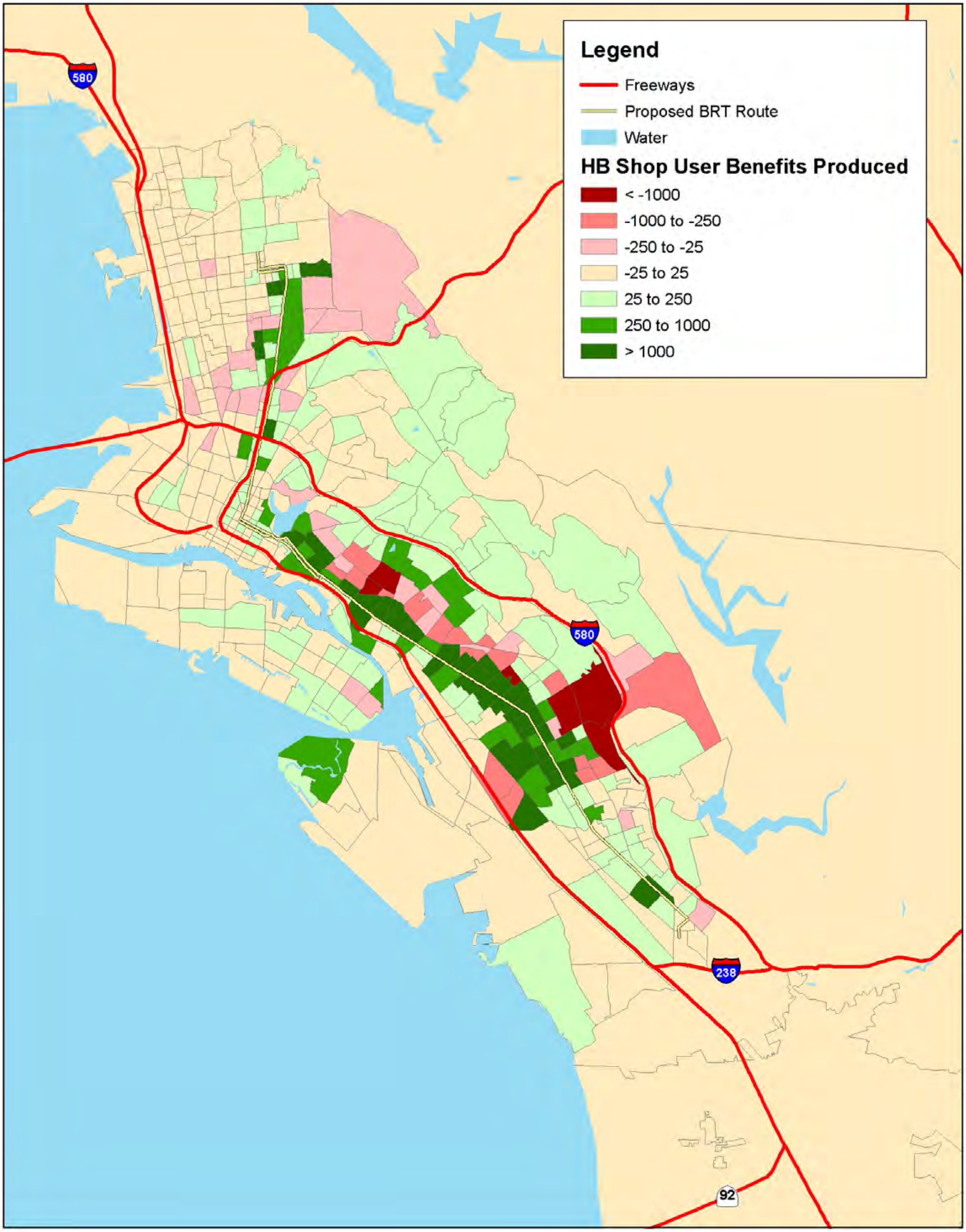
Home-Based Shopping/Other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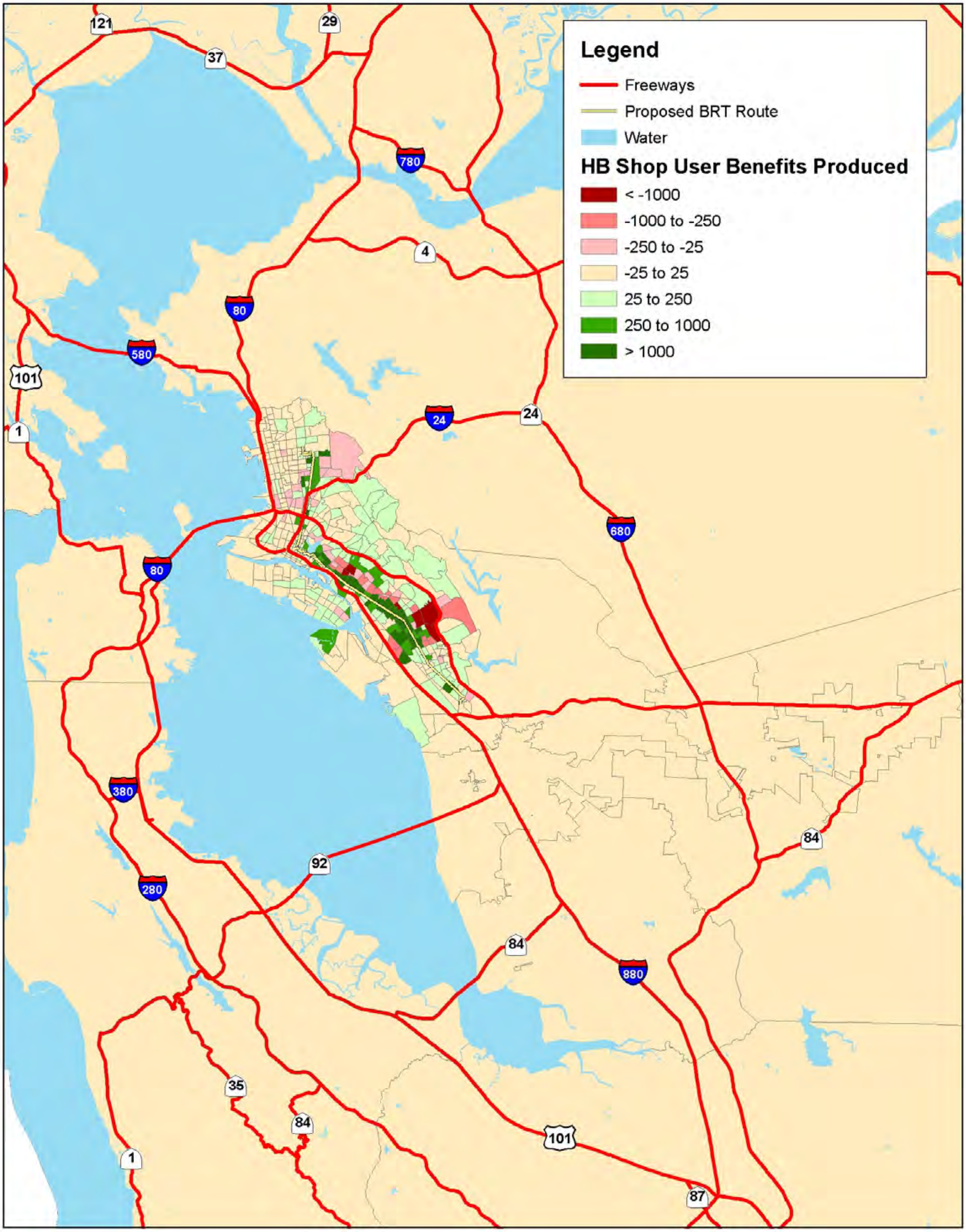
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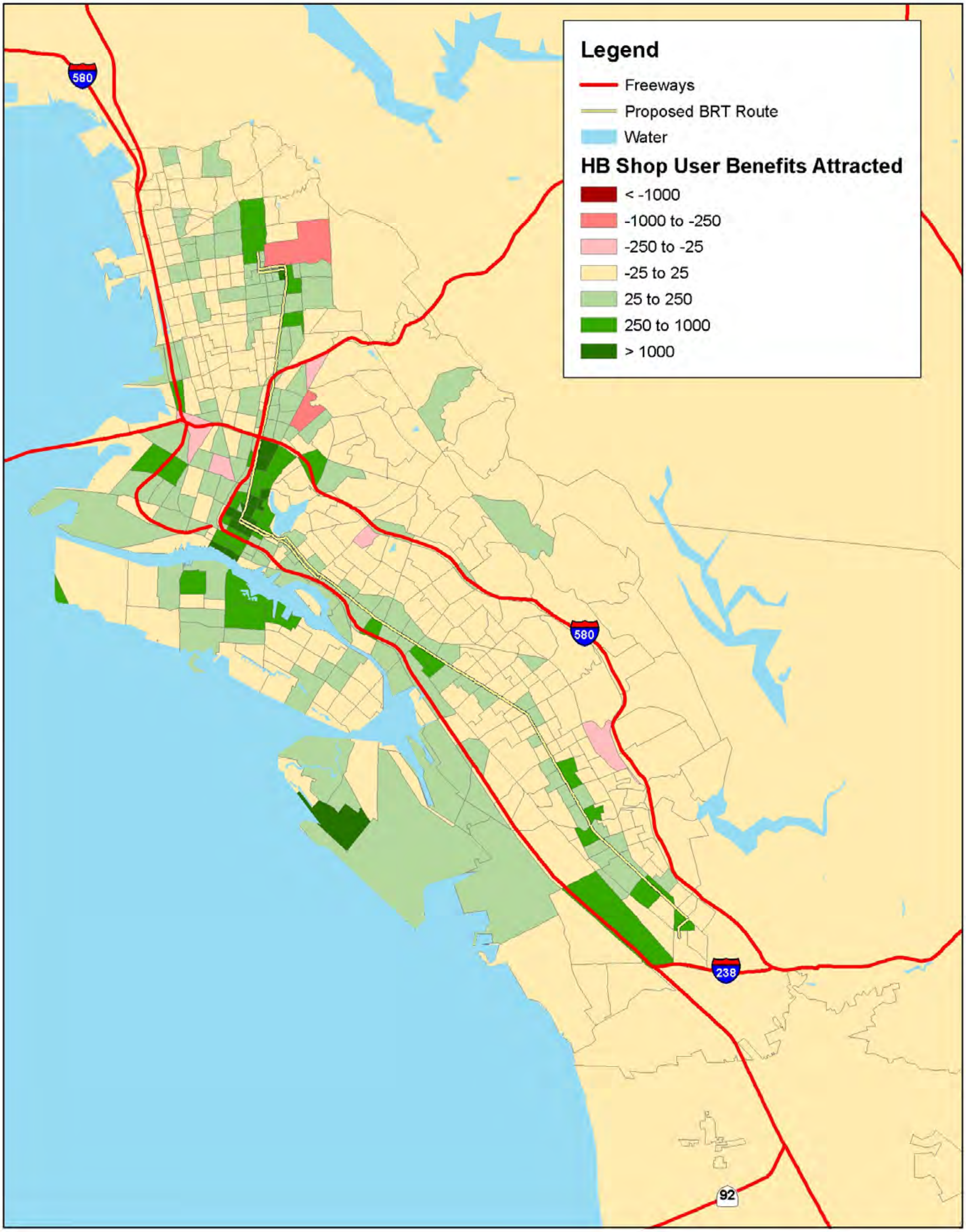
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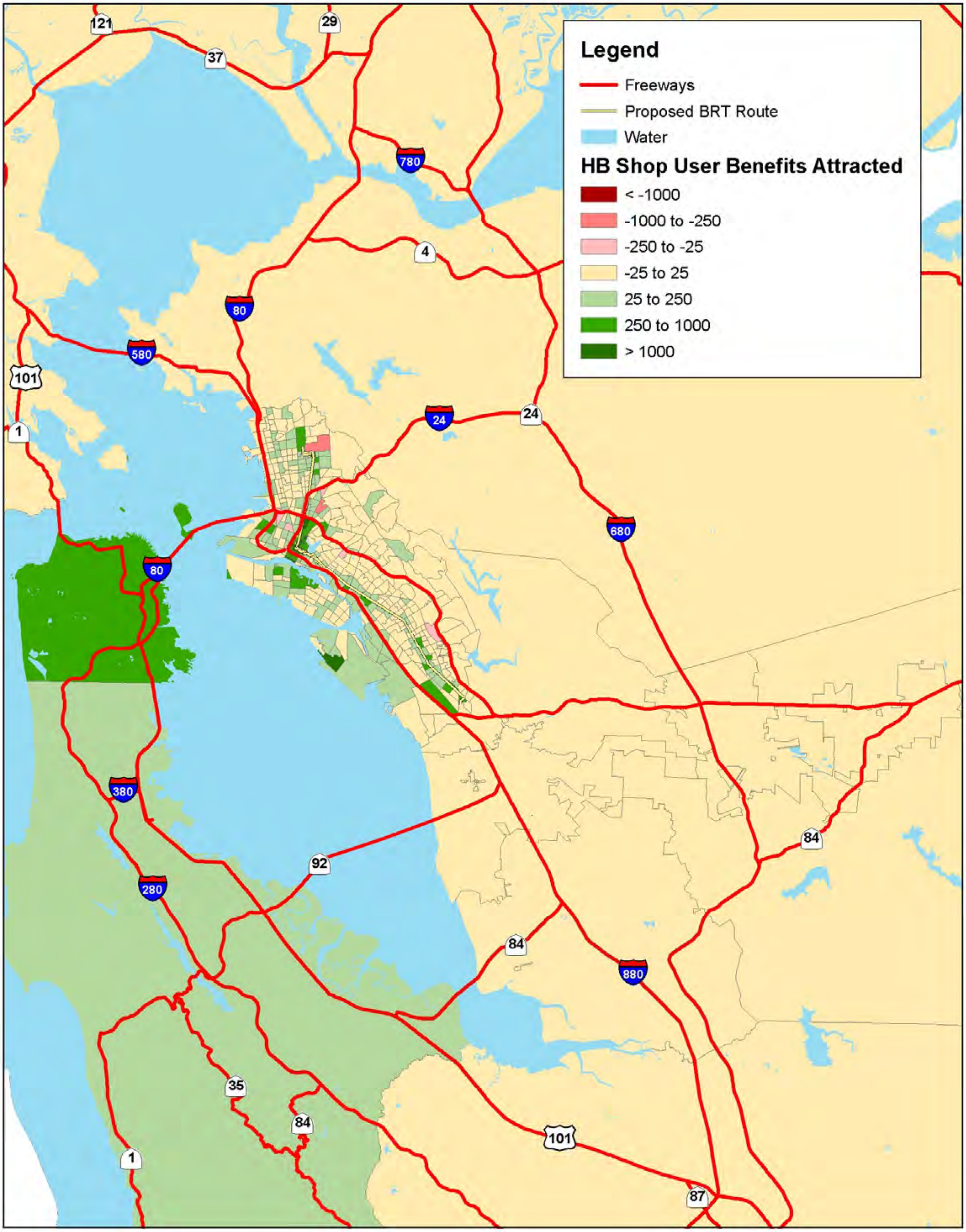

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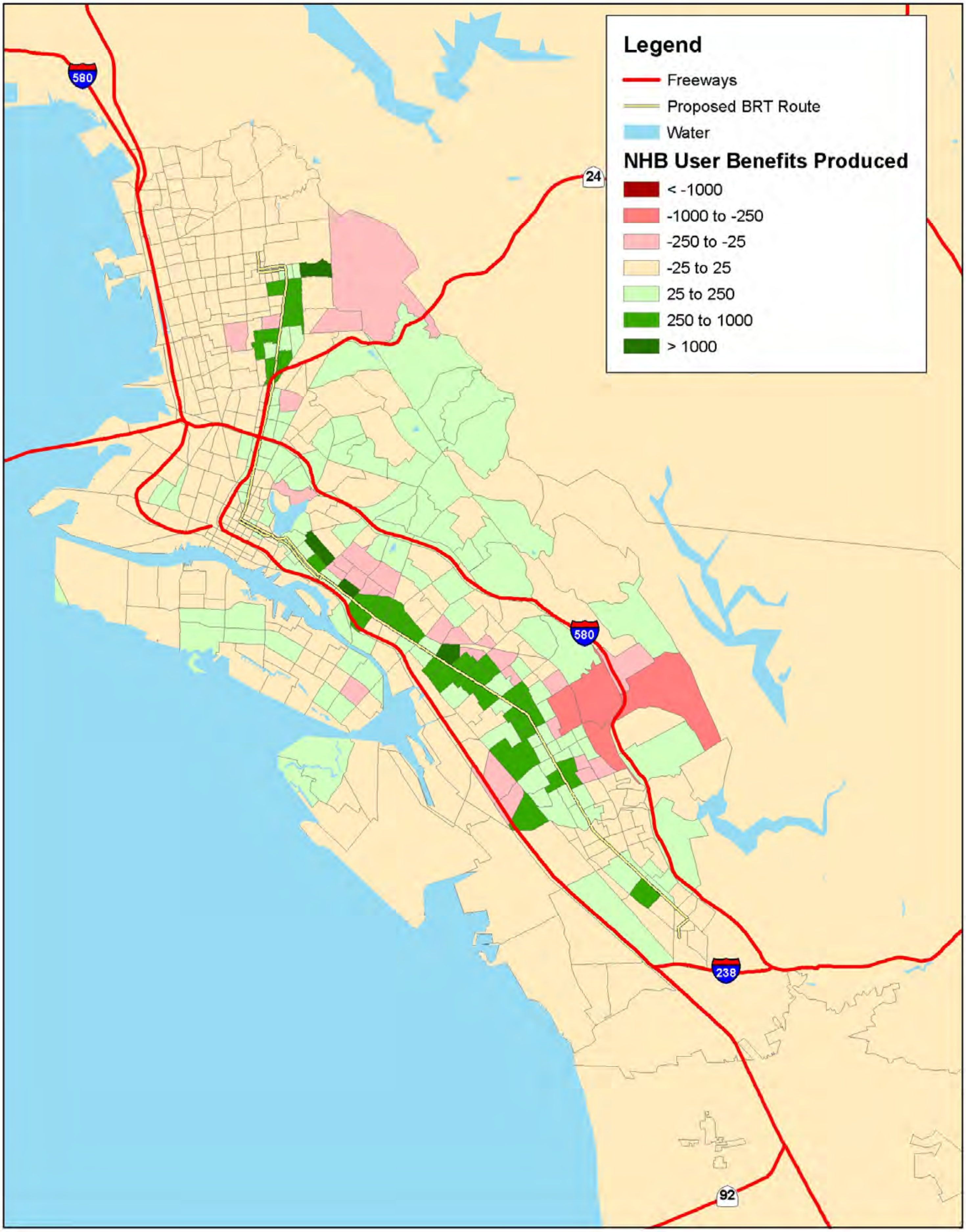
Non Home-Based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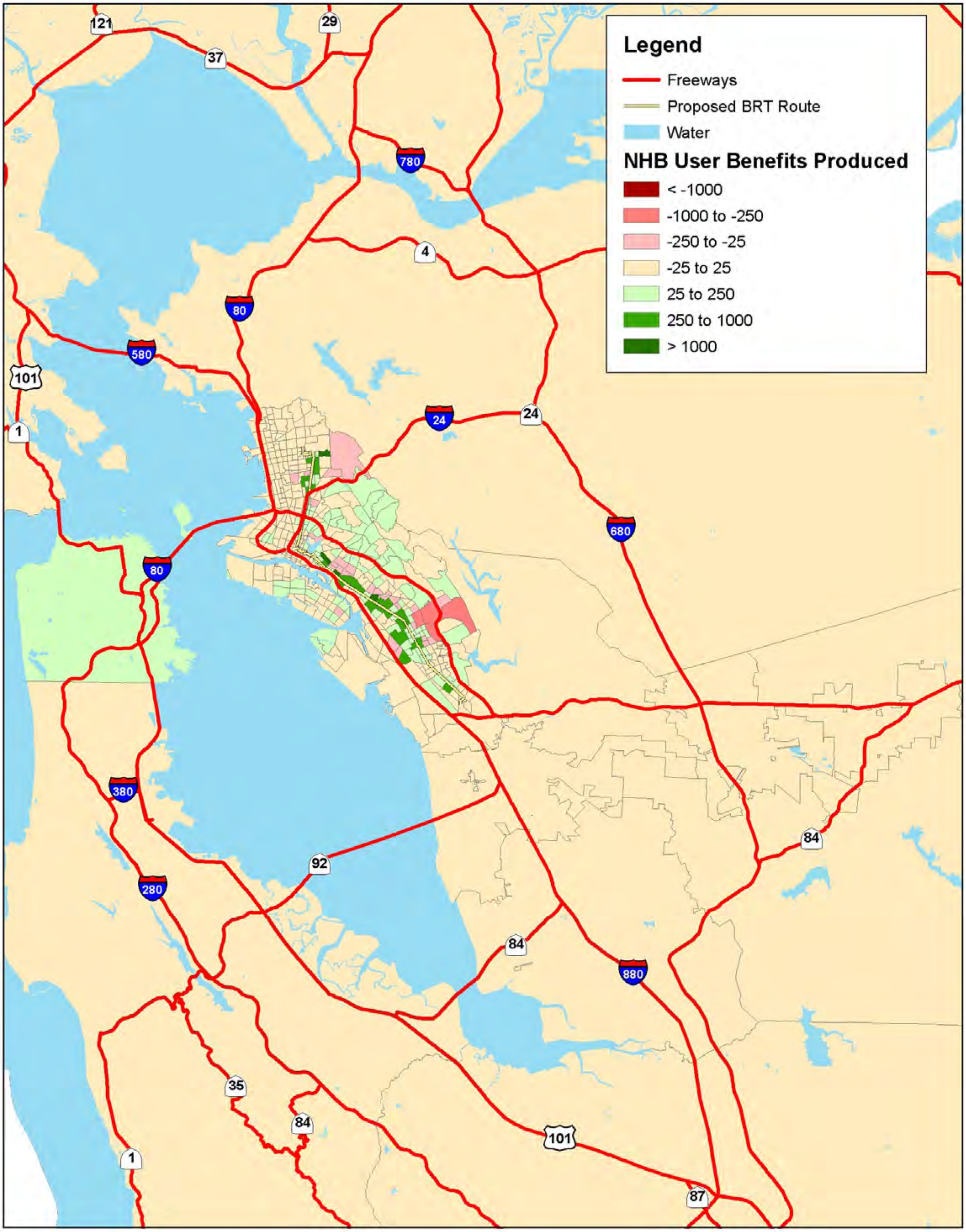
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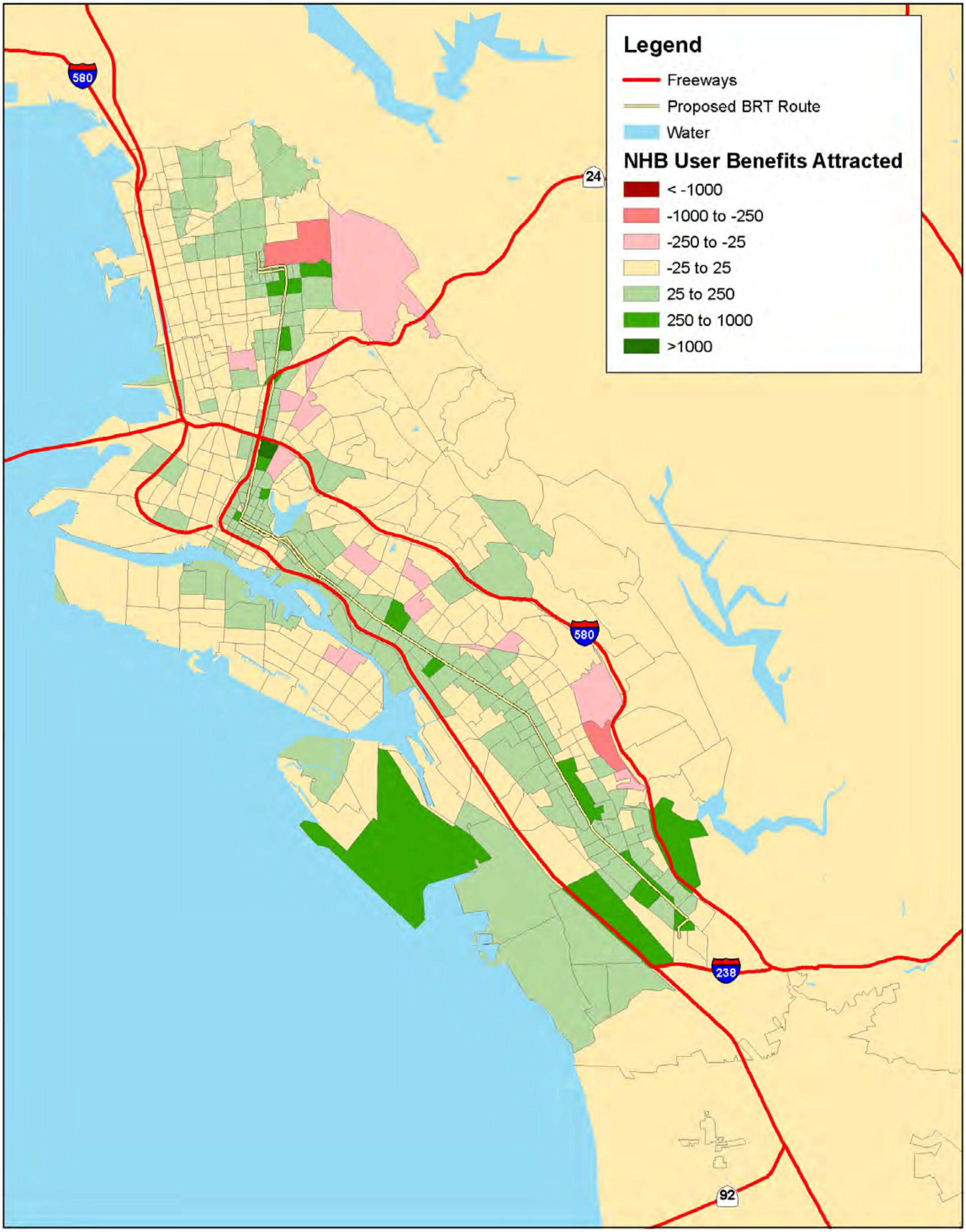
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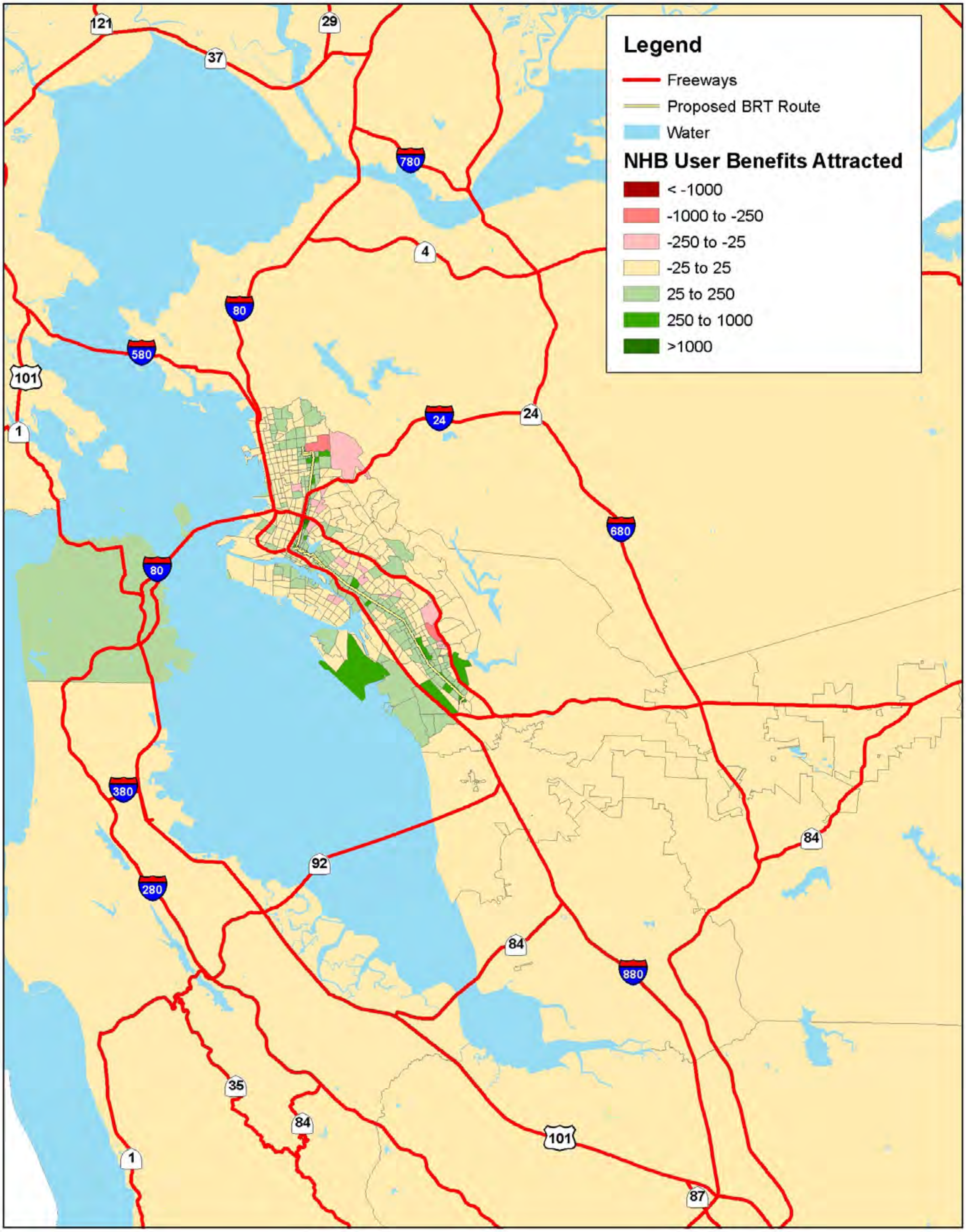

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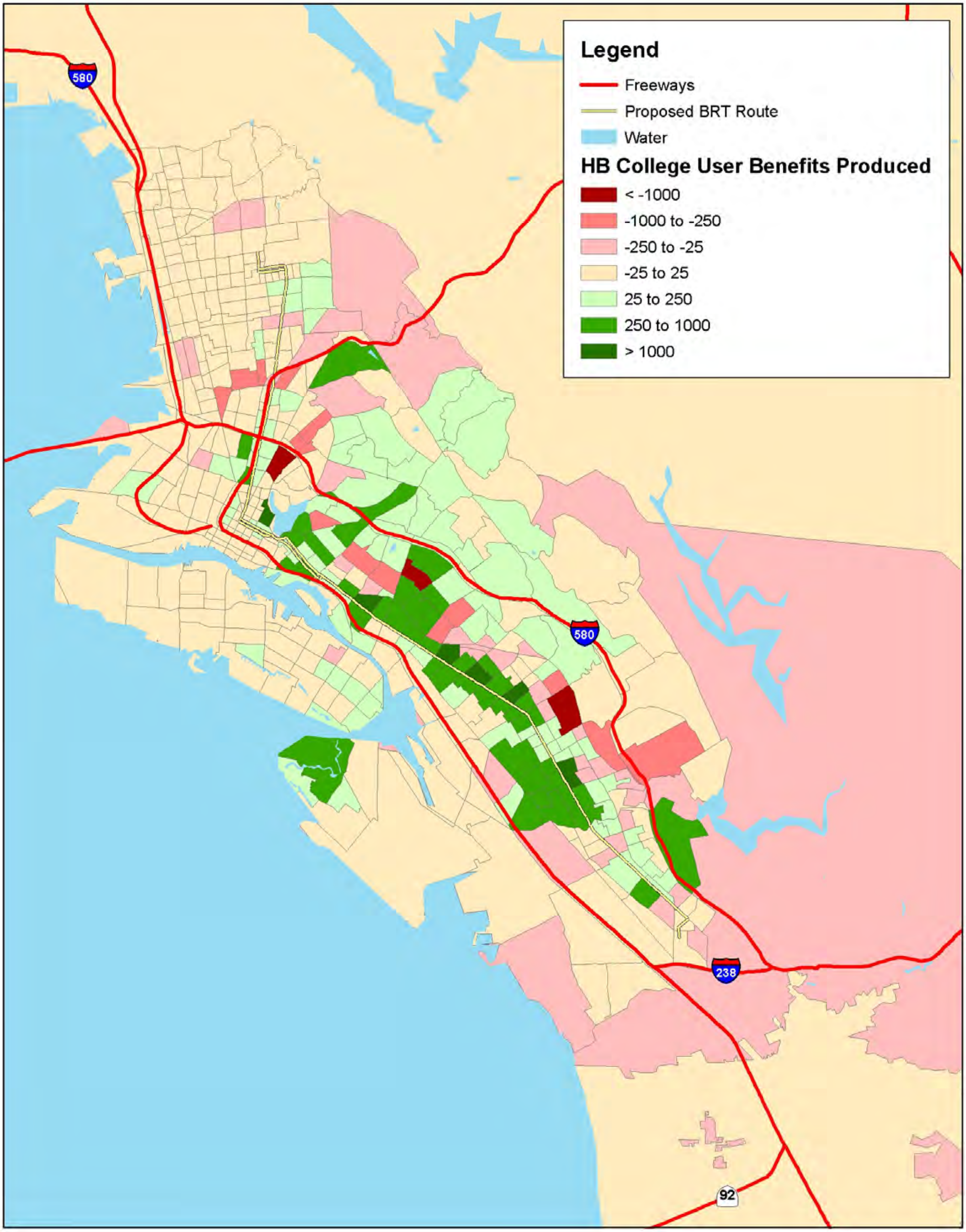
Home-Based College



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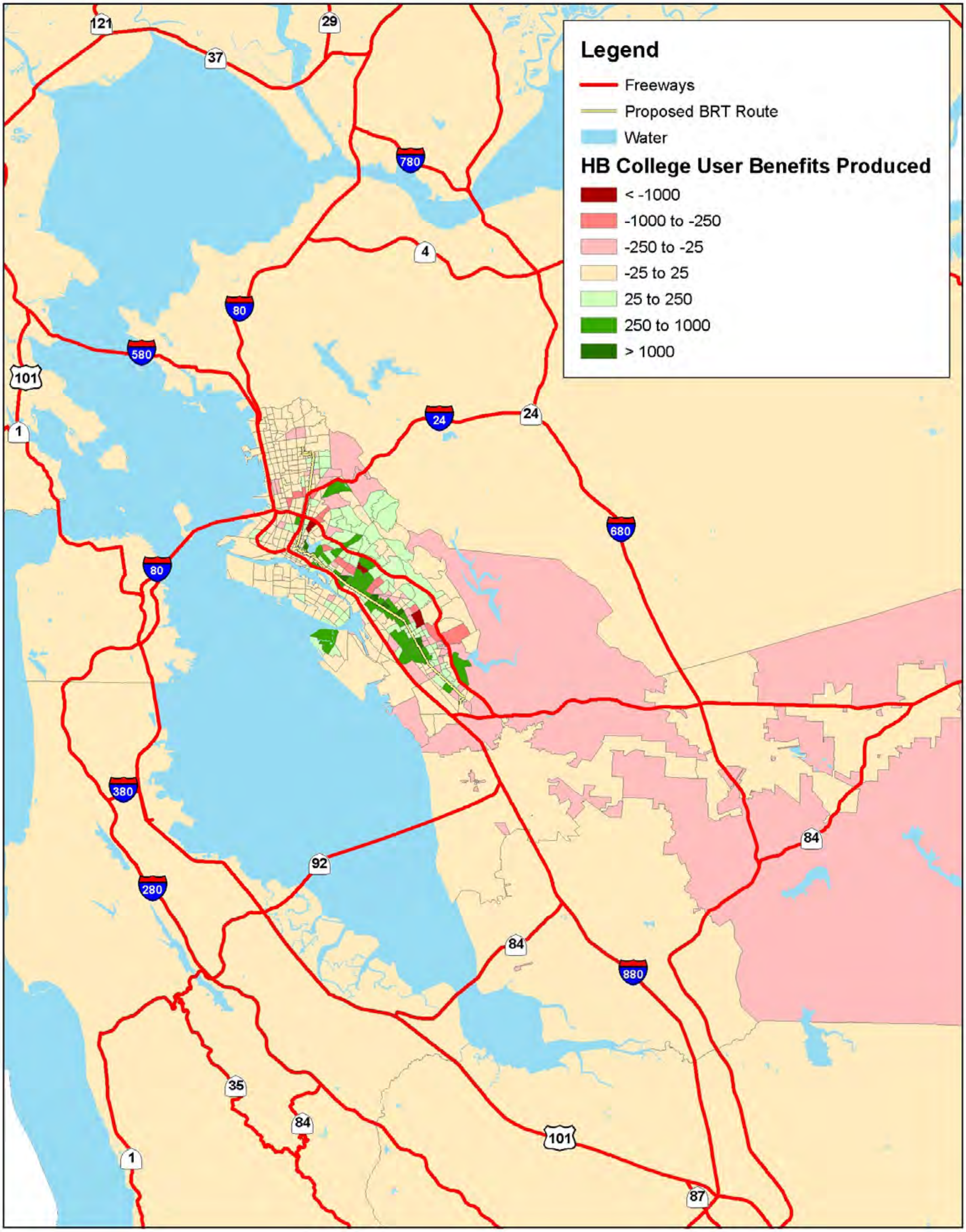
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Legend
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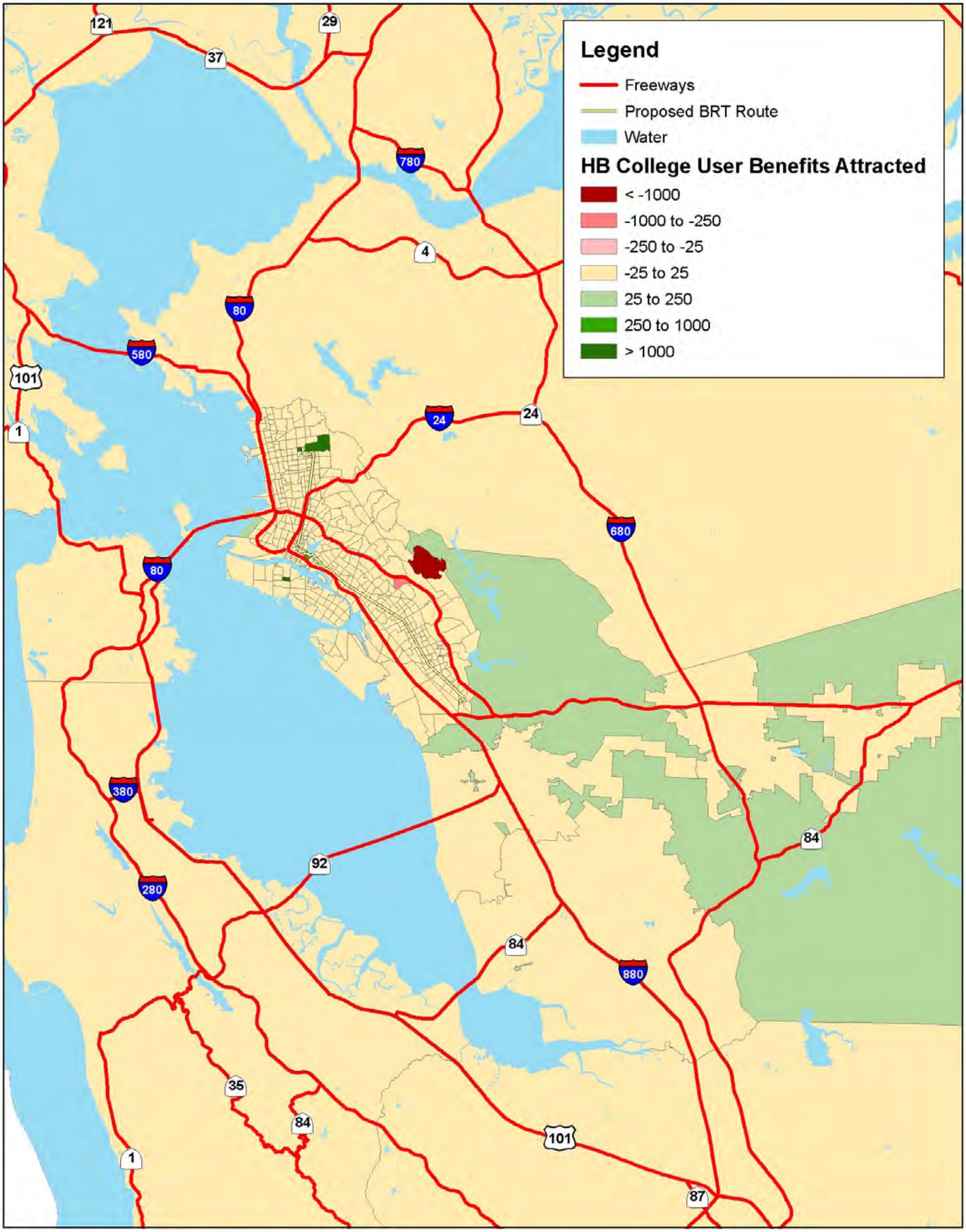
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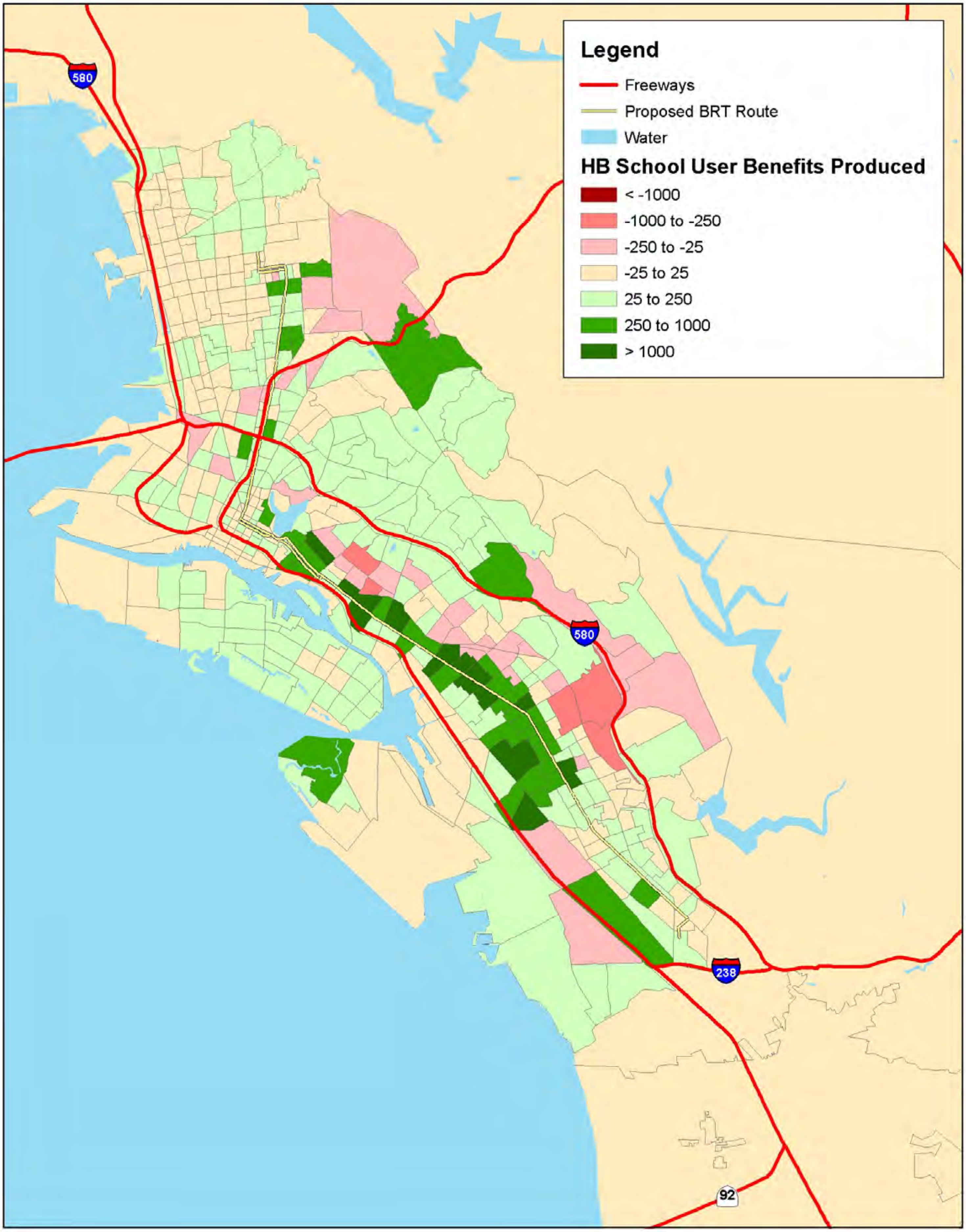
Home-Based School



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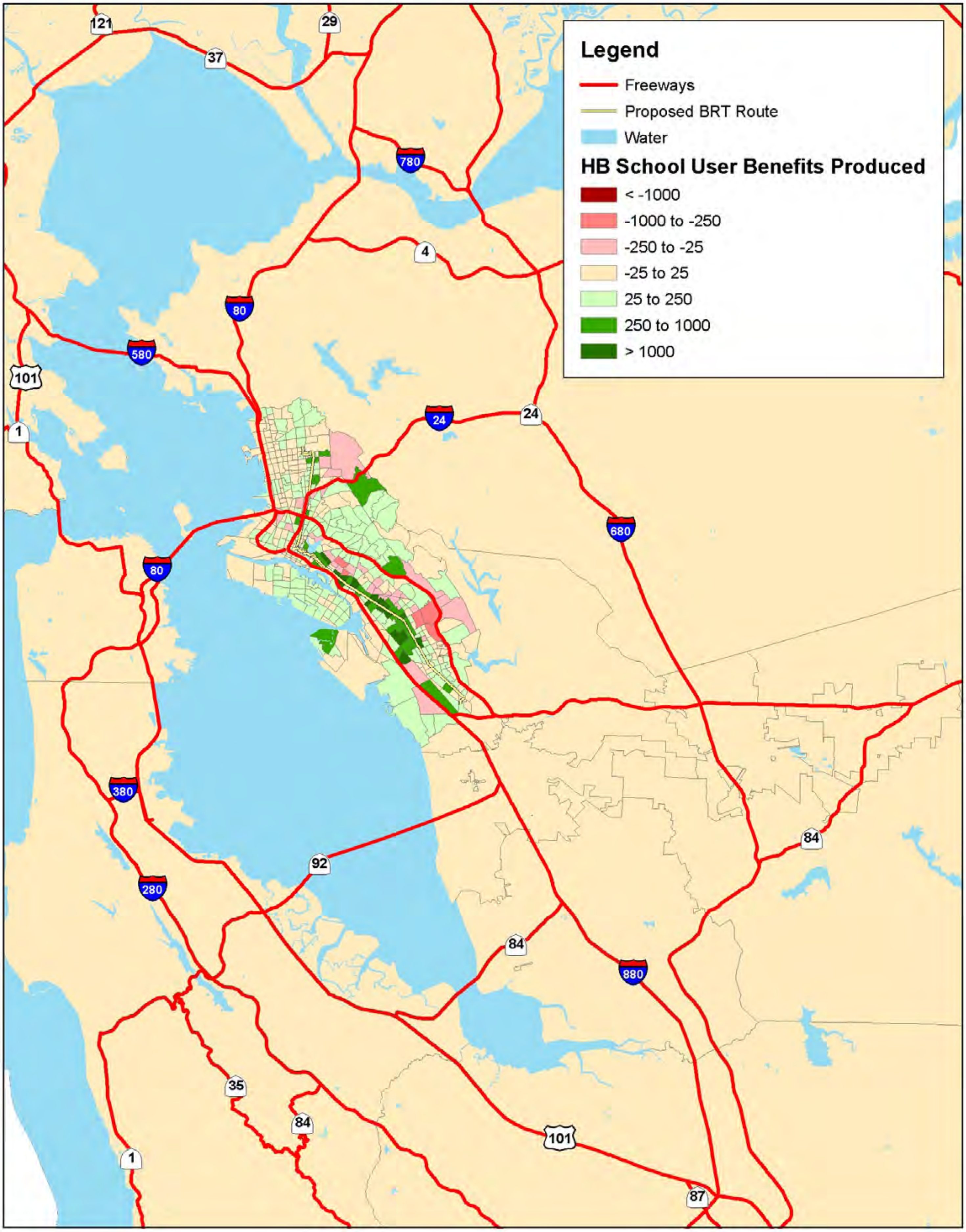

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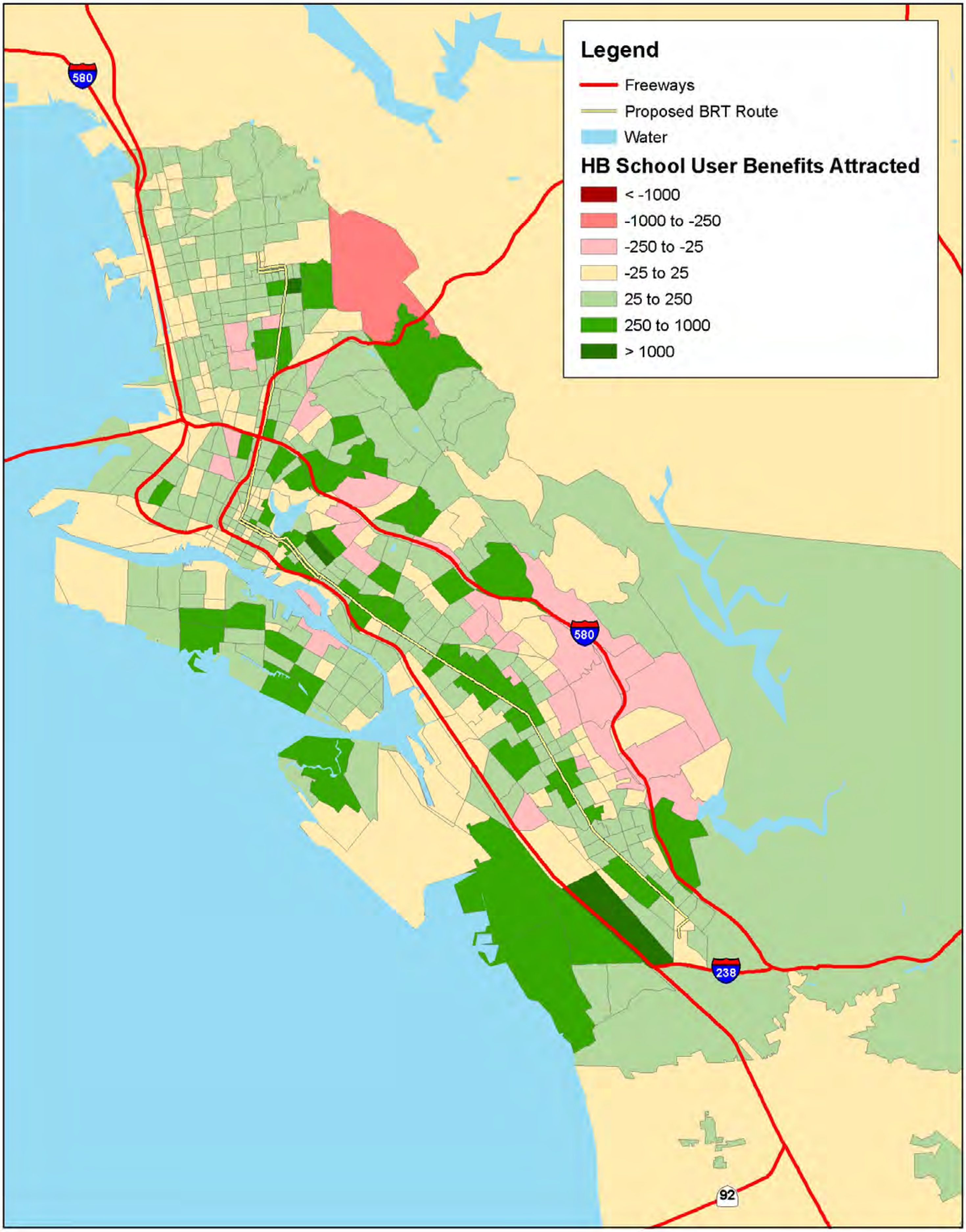

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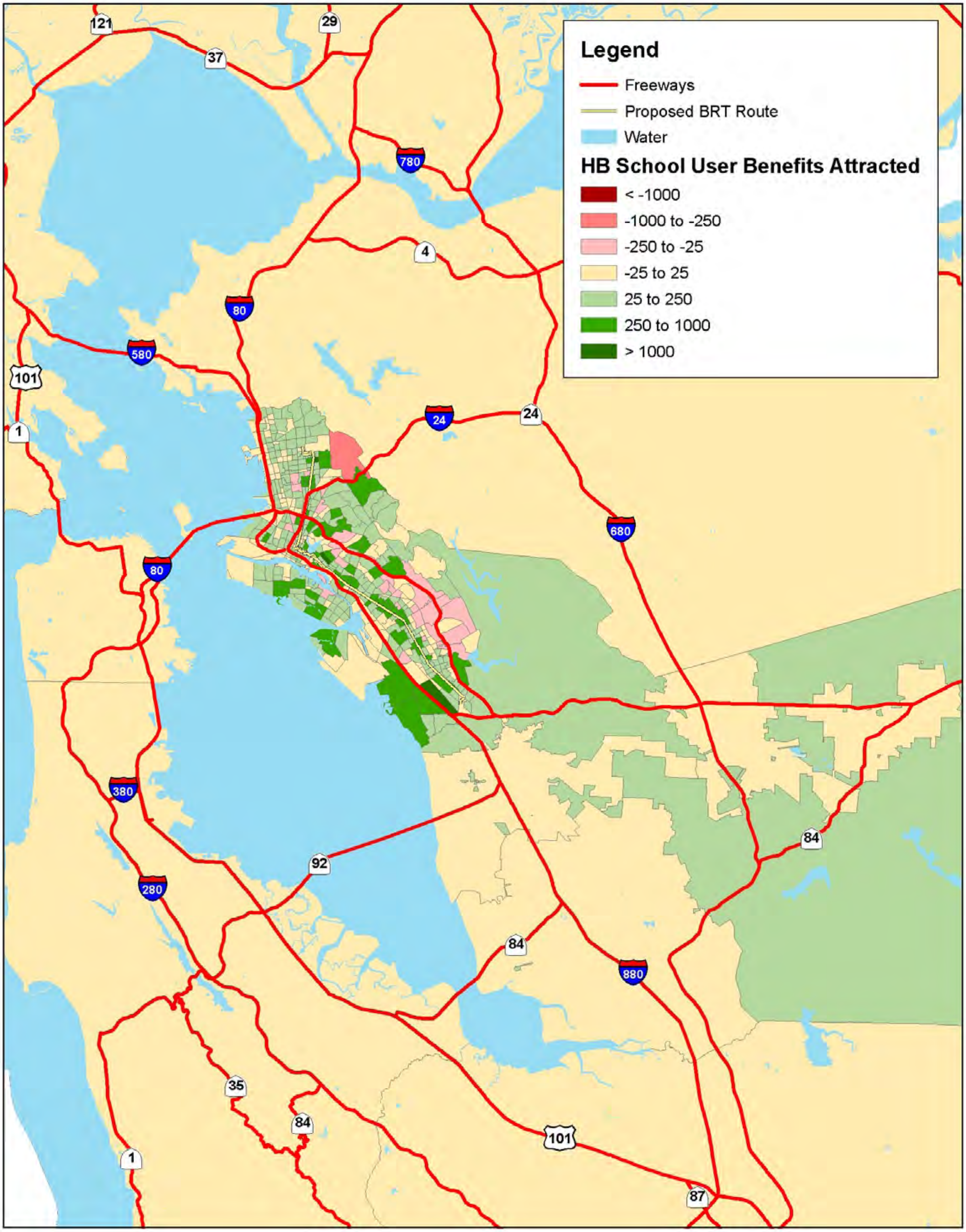
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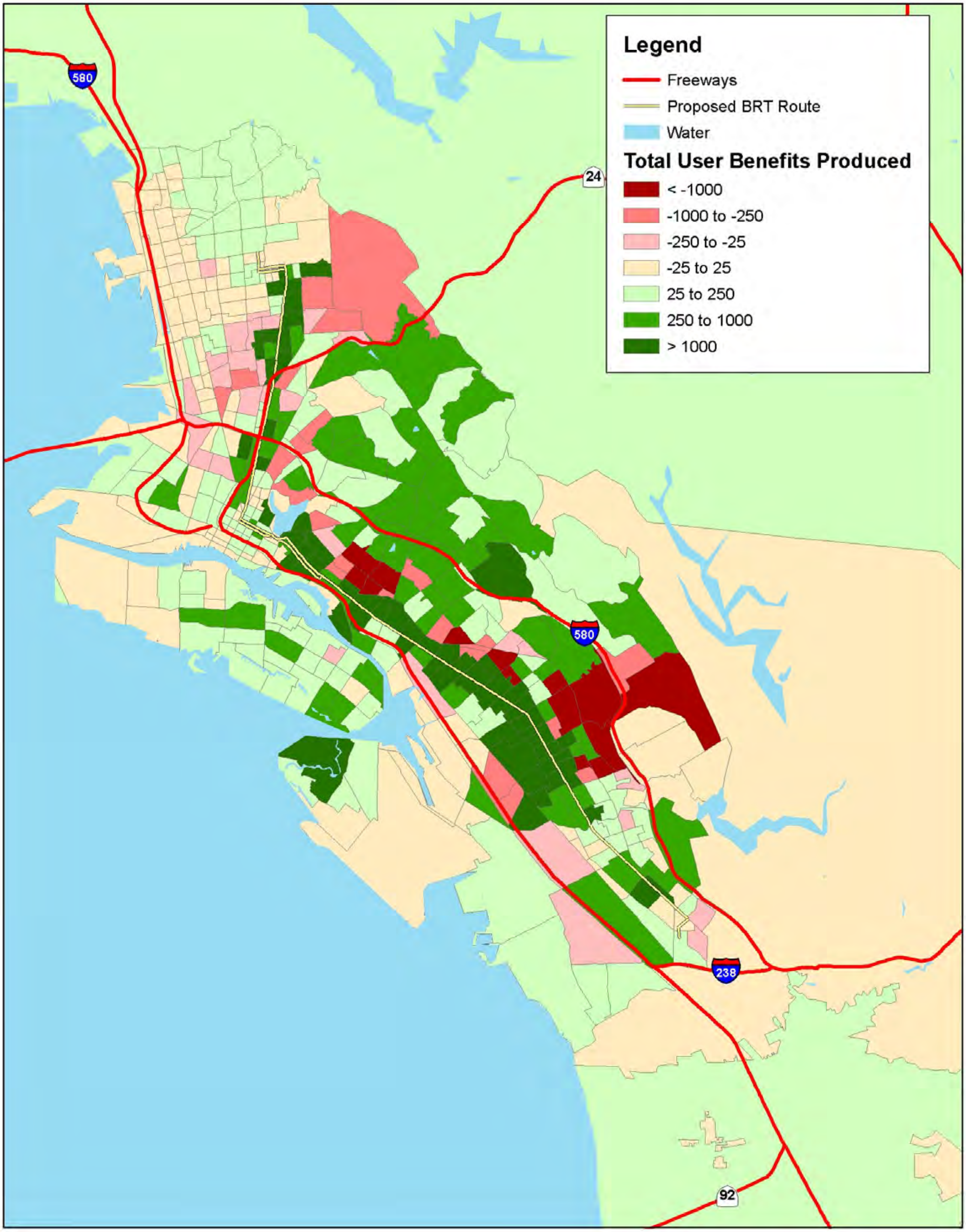
Total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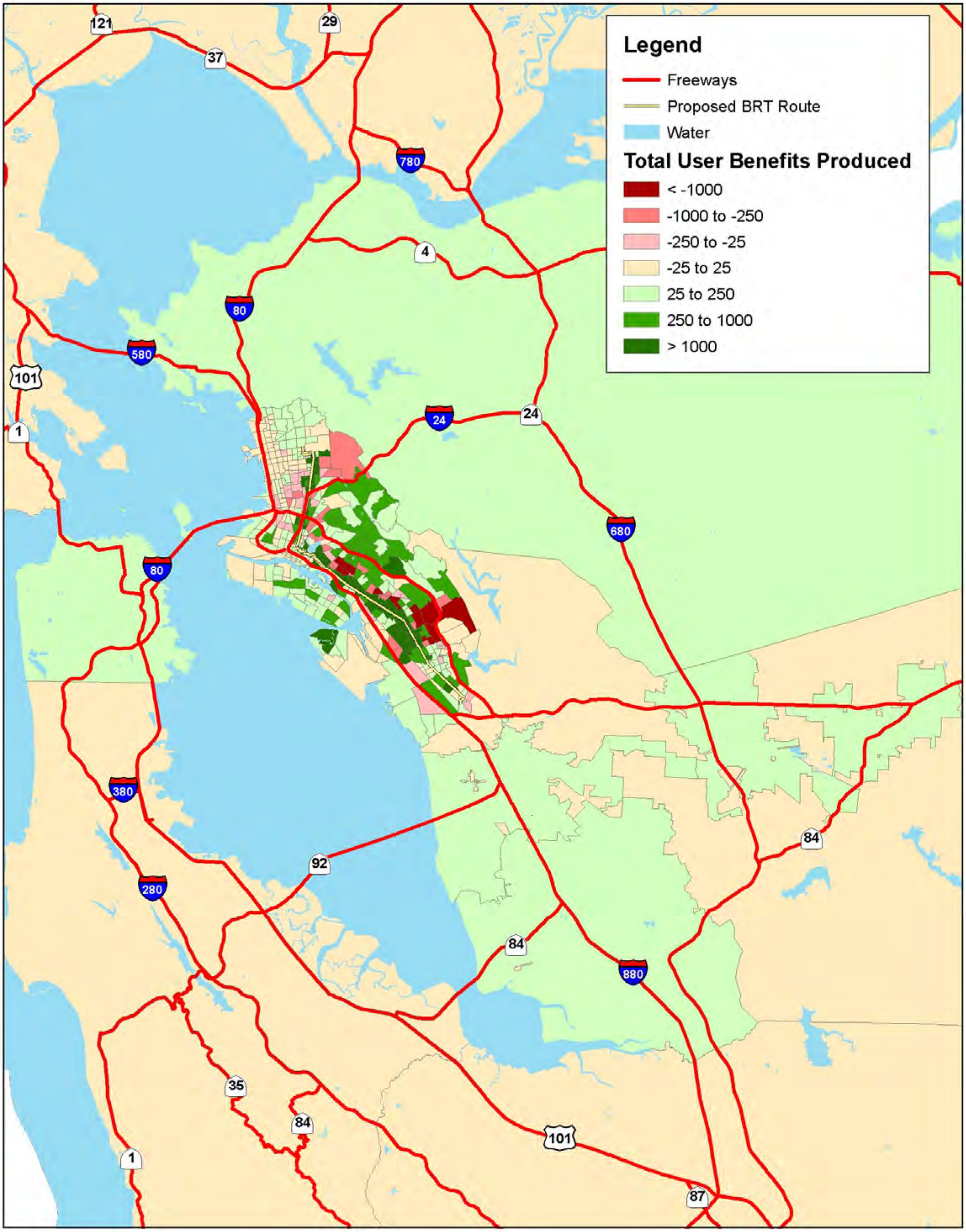

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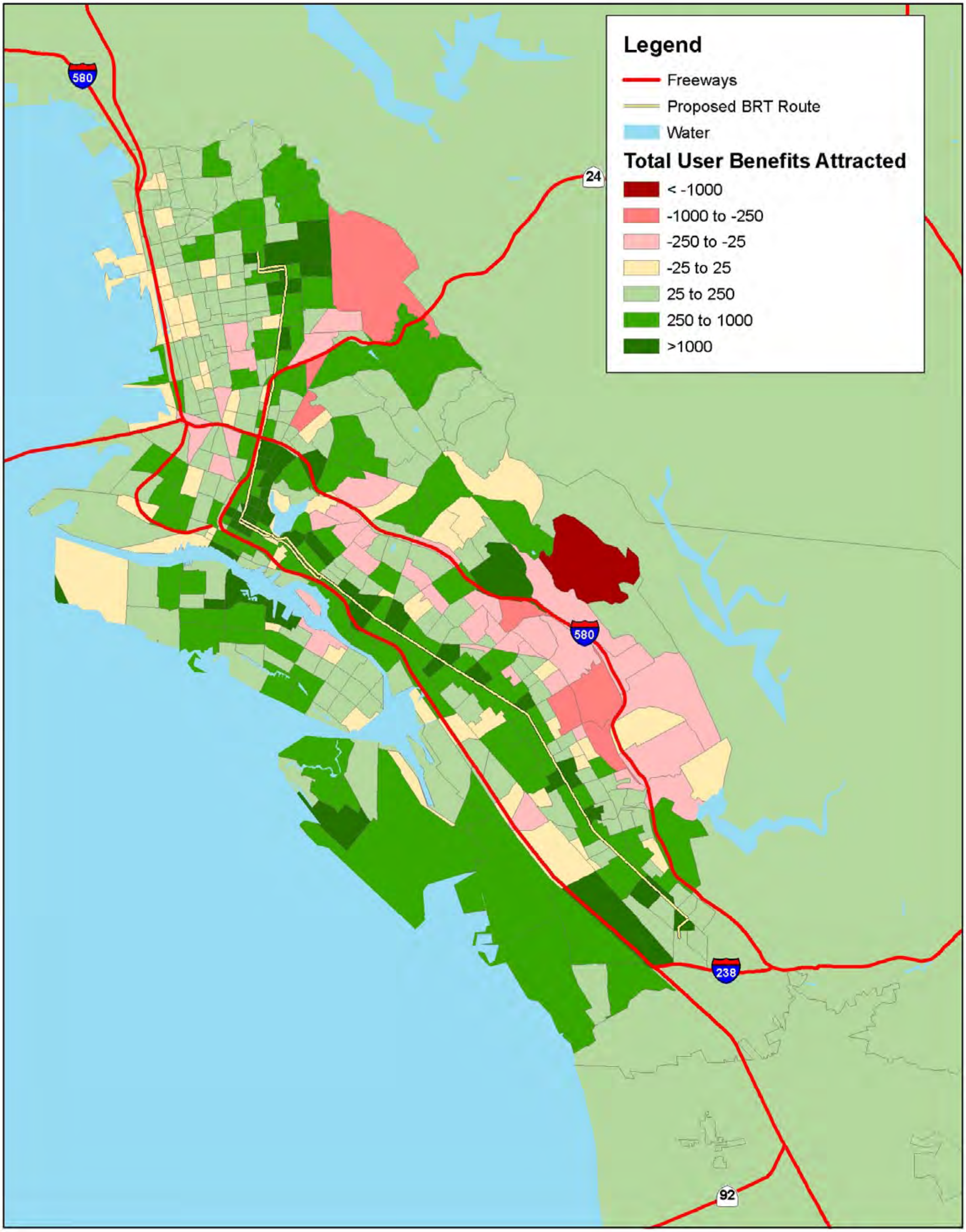
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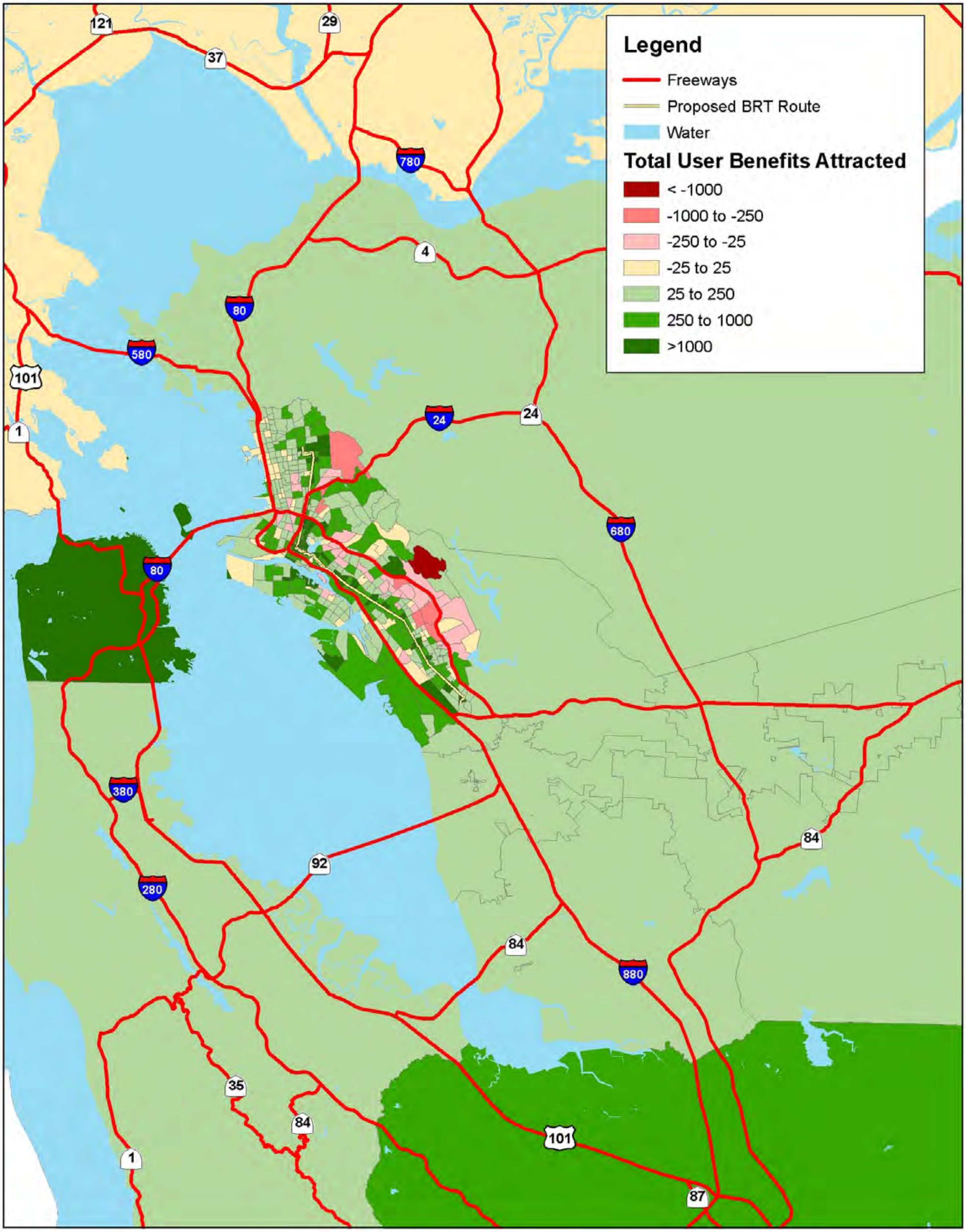
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Travel Demand Template

TRAVEL FORECASTS TEMPLATE (OPENING YEAR)

PROJECT NAME: East Bay Bus Rapid Transit

Line	Trip-Purpose-Specific Information	Source	HB Work	HB Social Rec	HB Shop Other	Non HB	HB School	HB College	Purpose 7	Purpose 8	DAILY TOTAL
1	Daily transit trips, Baseline Alternative	Summit: table 30	257,085	30,789	71,959	37,422	38,276	31,350			466,881
2	Daily transit trips, Build Alternative	Summit: table 40	259,531	31,099	73,907	38,621	39,155	31,384			473,697
3	Daily person trips, Build Alternative	Summit: table 20	1,586,545	823,219	1,448,167	1,580,617	591,502	74,396			6,104,446
4	Daily hours of user benefits (UB)	Summit: table 70 / 60	2,365	526	1,795	653	1,018	432			6,788
5	Positive UB hours from coverage changes	Summit: (tables 44+47+48) / 60	0	0	0	0					0
6	Daily hours of UBs changed by capping	Summit: capping impact / 60	-34	-5	-21	-5					-64
7	Daily hours of UBs for transit dependents	Summit: standard report									0
	Trip-Purpose-Specific Quality-Control Measures										
8	Daily new transit trips		2,446	310	1,948	1,199	879	34	0	0	6,816
9	Daily new transit trips -- distribution (%)		36%	5%	29%	18%	13%	0%	0%	0%	100%
10	Daily user benefits -- distribution (%)		35%	8%	26%	10%	15%	6%	0%	0%	100%
11	Daily transit trips, Baseline Alternative -- distribution (%)		55%	7%	15%	8%	8%	7%	0%	0%	100%
12	Percent of user benefits lost to capping		-1%	-1%	-1%	-1%	0%	0%	0%	0%	-1%
13	Percent of user benefits accruing to transit dependents		0%	0%	0%	0%	0%	0%	0%	0%	0%

Line	Special-Markets Information	Source	Market 1	Market 2	Market 3	Market 4	Market 5	Market 6	Market 7	Market 8	ANNUAL TOTAL
14	Special-market project trips per event-day	Special-market forecasts									0
15	Special-market UB hours per event-day	Special-market forecasts									0
16	Special-market pass-miles per event-day	Special-market forecasts									0
17	Annualization factor (event-days / year)	Special-market forecasts									---
	Special-Markets Quality-Control Measures										
18	Annual new transit trips, special markets only -- distribution (%)		0%	0%	0%	0%	0%	0%	0%	0%	0%
19	Annual user benefits, special markets only -- distribution (%)		0%	0%	0%	0%	0%	0%	0%	0%	0%
20	Minutes of user benefits per project trip, special markets only		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Line	General Information	Source	Entry	General Information	Source	Entry
21	Annualization factor (days/year)	Current/similar guideway	300			
22	Daily project trips, no special mkts	Travel forecasts	42,560			
23	Daily project trips, transit dependents	Travel forecasts		Station-area employees (within 1/2 mile)	Linked from Land Use Template	179,400
24	Daily project pass-miles, no special mkts	Travel forecasts	153,149	Station-area residents (within 1/2 mile)	Linked from Land Use Template	261,100
25	Daily project pass-miles, trn dependents	Travel forecasts		Project length (miles)	Linked from Project Descrip Template	16.9

Line	General Quality Control Measures (Excluding Special Markets)	Value	General Quality Control Measures (Excluding Special Markets)	Value
26	Minutes of user benefits per daily project trip (before capping)	9.7	Daily project trips per station area employee	0.24
27	Minutes of user benefits per daily project trip (after capping)	9.6	Daily project trips per station area resident	0.16
28	Percent of user benefits that are coverage related	0%	Daily minutes of user benefits per station area employee	2.27
29	Percent of user benefits that are off-model	0%	Daily minutes of user benefits per station area resident	1.56
30	Percent of project trips that are new transit trips	16%		
31	Project average trip distance / project length	21%		

4.0 Capital Cost

4.0 Capital Costs

This section provides a summary of the assumptions used to develop capital cost estimates for the East Bay BRT project.

■ 4.1 Capital Costing Approach

Capital costs for the East Bay BRT project were prepared and are reported in the Standard Cost Category (SCC) worksheet.

The costing elements were defined in a manner that conforms to the FTA Standard Cost Categories. Unit costs for civil construction were developed from RS Means 2007 Site and Work Landscape Costs data and compared to Caltrans data. As needed, information from peer projects or industry experience was utilized to supplement unit costs, for items such as station amenities.

The allocated contingency for construction costs used in this estimate is 56 percent of base-year costs. When including right-of-way, vehicles, and professional services, the allocated contingency is estimated at 54 percent of base-year costs, as shown on the "BUILD Main" tab of the SCC. An additional 4 percent unallocated contingency also was incorporated into the cost estimate. This contingency is conservative based on the current level of design.

More detail on the Capital Cost estimate basis for the East Bay BRT project is provided at the end of this section.

■ 4.2 Standard Cost Categories Worksheet

Capital costs for the East Bay BRT project are reported in the Standard Cost Categories (SCC) worksheet. The East Bay BRT project cost is estimated at $234.6 million (year of expenditure dollars). The SCC worksheet containing the breakdown by cost category is provided at the end of this section and electronically on the enclosed CD. Separate backup for the cost estimates also is provided in electronic format. Note that the electronic version of the SCC worksheet is linked to other cost data spreadsheets. When opening the SCC worksheet, the user is prompted to update the data links. The user should select the "don't update" option to avoid spreadsheet errors.

The East Bay BRT will serve 49 stops, two of which currently are in operation. The Uptown Transit Center (20^{th} Street and Broadway in downtown Oakland) was completed in 2008 and serves several AC Transit local and transbay routes. The existing BayFair BART intermodal transit center in San Leandro is the proposed southern terminus of the East Bay BRT alignment. The remaining 47 stations are new, and include two platforms each to accommodate buses and passengers traveling southbound and northbound. Among the 47 stations is the northern terminus of the East Bay BRT alignment in downtown Berkeley, which proposes one platform on the east leg (for northbound buses) and one platform of the west leg (for southbound buses) of Shattuck Avenue north of Center Street. The capital cost estimates were developed to account only for the 47 new stations, as described here.

MAIN WORKSHEET-BUILD ALTERNATIVE

(Rev.11a, June 4, 2008)

Alameda Contra Costa Transit District — Today's Date: 7/3/08

East Bay Bus Rapid Transit Project Alameda County, CA — Yr of Base Year $: 2008

Current Phase: Selection of Preferred Alternative — Yr of Revenue Ops: 2015

	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	YOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	**16.91**	12,521	7,034	**19,556**	**$ 1,157**	**14%**	**10%**	**23,233**
10.01 Guideway: At-grade exclusive right-of-way				0				0
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	16.91	12,521	7,034	19,556	$ 1,157			23,233
10.03 Guideway: At-grade in mixed traffic				0				0
10.04 Guideway: Aerial structure				0				0
10.05 Guideway: Built-up fill				0				0
10.06 Guideway: Underground cut & cover				0				0
10.07 Guideway: Underground tunnel				0				0
10.08 Guideway: Retained cut or fill				0				0
10.09 Track: Direct fixation				0				0
10.10 Track: Embedded				0				0
10.11 Track: Ballasted				0				0
10.12 Track: Special (switches, turnouts)				0				0
10.13 Track: Vibration and noise dampening				0				0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	**47**	24,401	13,709	**38,110**	**$ 811**	**28%**	**19%**	**45,276**
20.01 At-grade station, stop, shelter, mall, terminal, platform	47	24,401	13,709	38,110	$ 811			45,276
20.02 Aerial station, stop, shelter, mall, terminal, platform				0				0
20.03 Underground station, stop, shelter, mall, terminal, platform				0				0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.				0				0
20.05 Joint development				0				0
20.06 Automobile parking multi-story structure				0				0
20.07 Elevators, escalators				0				0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	16.91	0	0	**0**	**$ -**	**0%**	**0%**	**0**
30.01 Administration Building: Office, sales, storage, revenue counting				0				#DIV/0!
30.02 Light Maintenance Facility				0				#DIV/0!
30.03 Heavy Maintenance Facility				0				#DIV/0!
30.04 Storage or Maintenance of Way Building				0				#DIV/0!
30.05 Yard and Yard Track				0				#DIV/0!
40 SITEWORK & SPECIAL CONDITIONS	16.91	27,054	15,199	**42,253**	**$ 2,499**	**31%**	**21%**	**50,198**
40.01 Demolition, Clearing, Earthwork		3,913	2,198	6,111				7,260
40.02 Site Utilities, Utility Relocation		4,732	2,658	7,390				8,780
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments				0				0
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks		2,898	1,628	4,526				5,377
40.05 Site structures including retaining walls, sound walls				0				0
40.06 Pedestrian / bike access and accommodation, landscaping		7,911	4,445	12,356				14,680
40.07 Automobile, bus, van accessways including roads, parking lots		7,600	4,270	11,870				14,102
40.08 Temporary Facilities and other indirect costs during construction				0				0
50 SYSTEMS	16.91	23,567	13,240	**36,806**	**$ 2,177**	**27%**	**18%**	**44,637**
50.01 Train control and signals				0				0
50.02 Traffic signals and crossing protection		7,049	3,960	11,009				13,351
50.03 Traction power supply: substations				0				0
50.04 Traction power distribution: catenary and third rail				0				0
50.05 Communications		8,652	4,861	13,512				16,387
50.06 Fare collection system and equipment		5,796	3,256	9,052				10,978
50.07 Central Control		2,070	1,163	3,233				3,921
Construction Subtotal (10 - 50)	16.91	87,543	49,182	**136,725**	**$ 8,086**	**100%**	**69%**	**163,344**
60 ROW, LAND, EXISTING IMPROVEMENTS	16.91	9,444	2,833	**12,278**	**$ 726**		**6%**	**14,089**
60.01 Purchase or lease of real estate		7,297	2,189	9,486				10,885
60.02 Relocation of existing households and businesses		2,148	644	2,792				3,204
70 VEHICLES (number)	**0**	0	0	**0**			**0%**	**0**
70.01 Light Rail				0				#DIV/0!
70.02 Heavy Rail				0				#DIV/0!
70.03 Commuter Rail				0				#DIV/0!
70.04 Bus				0				#DIV/0!
70.05 Other				0				#DIV/0!
70.06 Non-revenue vehicles				0				#DIV/0!
70.07 Spare parts				0				#DIV/0!
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	16.91	27,302	15,066	**42,368**	**$ 2,506**	**31%**	**21%**	**48,065**
80.01 Preliminary Engineering		2,721	1,504	4,225				4,793
80.02 Final Design		9,321	5,088	14,409				16,347
80.03 Project Management for Design and Construction		3,596	1,996	5,592				6,344
80.04 Construction Administration & Management		8,754	4,918	13,672				15,511
80.05 Professional Liability and other Non-Construction Insurance				0				0
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.		1,159	577	1,736				1,969
80.07 Surveys, Testing, Investigation, Inspection				0				0
80.08 Start up		1,751	984	2,734				3,102
Subtotal (10 - 80)	16.91	124,289	67,081	**191,370**	**$ 11,318**		**96%**	**225,498**
90 UNALLOCATED CONTINGENCY				**7,655**			**4%**	**9,055**
Subtotal (10 - 90)	16.91			**199,025**	**$ 11,771**		**100%**	**234,553**
100 FINANCE CHARGES				**0**			**0%**	**0**
Total Project Cost (10 - 100)	16.91			**199,025**	**$ 11,771**		**100%**	**234,553**

Allocated Contingency as % of Base Yr Dollars w/o Contingency	53.97%	
Unallocated Contingency as % of Base Yr Dollars w/o Contingency	6.16%	
Total Contingency as % of Base Yr Dollars w/o Contingency	60.13%	
Unallocated Contingency as % of Subtotal (10 - 80)	4.00%	
YOE Construction Cost per Mile (X000)		$9,661
YOE Total Project Cost per Mile Not Including Vehicles (X000)		$13,872
YOE Total Project Cost per Mile (X000)		$13,872

INFLATION WORKSHEET

(Rev.11a, June 4, 2008)

Alameda Contra Costa Transit District — Today's Date **7/3/08**

East Bay Bus Rapid Transit Project Alameda County, CA — Yr of Base Year $ 2008

Current Phase: Selection of Preferred Alternative — Yr of Revenue Ops 2015

Insert comments, notes, etc.

BASE YEAR DOLLARS (X$000)	Base Yr Dollars	Double-Check Total	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
10 GUIDEWAY & TRACK ELEMENTS (route miles)	19,556	19,556	0	0	0	0	0	0	0	0	0	0	0	0	4,889
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	38,110	38,110	0	0	0	0	0	0	0	0	0	0	0	0	9,527
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40 SITEWORK & SPECIAL CONDITIONS	42,253	42,253	0	0	0	0	0	0	0	0	0	0	0	0	10,563
50 SYSTEMS	36,806	36,806	0	0	0	0	0	0	0	0	0	0	0	0	3,681
60 ROW, LAND, EXISTING IMPROVEMENTS	12,278	12,278	0	0	0	0	0	0	0	0	0	0	0	0	12,278
70 VEHICLES (number)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	42,368	42,368	0	0	0	0	0	0	0	0	0	4,237	4,237	11,439	11,439
90 UNALLOCATED CONTINGENCY	7,655	7,655	0	0	0	0	0	0	0	0	0	306	612	612	765
100 FINANCE CHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Cost (10 - 100)	199,025	199,025	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4,543**	**4,849**	**12,052**	**53,143**
Inflation Rate			0.03000	0.03000	0.03000	0.03000	0.03000	0.03000	0.03250	0.03250	0.03500	0.03500	0.03500	0.03500	0.03500
Compounded Inflation Factor			1.27293	1.23585	1.19986	1.16491	1.13098	1.09804	1.06606	1.03250	1.00000	1.03500	1.07123	1.10872	1.14752
YEAR OF EXPENDITURE DOLLARS (X$000)	YOE Dollars		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
10 GUIDEWAY & TRACK ELEMENTS (route miles)	23,233		0	0	0	0	0	0	0	0	0	0	0	0	5,610
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	45,276		0	0	0	0	0	0	0	0	0	0	0	0	10,933
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	0		0	0	0	0	0	0	0	0	0	0	0	0	0
40 SITEWORK & SPECIAL CONDITIONS	50,198		0	0	0	0	0	0	0	0	0	0	0	0	12,122
50 SYSTEMS	44,637		0	0	0	0	0	0	0	0	0	0	0	0	4,224
60 ROW, LAND, EXISTING IMPROVEMENTS	14,089		0	0	0	0	0	0	0	0	0	0	0	0	14,089
70 VEHICLES (number)	0		0	0	0	0	0	0	0	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	48,065										0	4,385	4,539	12,683	13,127
90 UNALLOCATED CONTINGENCY	9,055		0	0	0	0	0	0	0		0	317	656	679	878
100 FINANCE CHARGES	0		0	0	0	0	0	0	0	0					
Total Project Cost (10 - 100)	234,553		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4,702**	**5,195**	**13,362**	**60,982**

BASE YEAR DOLLARS (X$000)	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
10 GUIDEWAY & TRACK ELEMENTS (route miles)	9,778	4,889	0	0	0	0	0	0	0	0	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	19,055	9,527	0	0	0	0	0	0	0	0	0	0	0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	0	0	0	0	0	0	0	0	0	0	0	0	0
40 SITEWORK & SPECIAL CONDITIONS	21,126	10,563	0	0	0	0	0	0	0	0	0	0	0
50 SYSTEMS	7,361	25,764	0	0	0	0	0	0	0	0	0	0	0
60 ROW, LAND, EXISTING IMPROVEMENTS	0	0	0	0	0	0	0	0	0	0	0	0	0
70 VEHICLES (number)	0	0	0	0	0	0	0	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	6,355	3,389	1,271	0	0	0	0	0	0	0	0	0	0
90 UNALLOCATED CONTINGENCY	2,296	2,296	765	0	0	0	0	0	0	0	0	0	0
100 FINANCE CHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Cost (10 - 100)	**65,972**	**56,430**	**2,037**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Inflation Rate	0.03500	0.03500	0.03500	0.03500	0.03500	0.03500	0.03500	0.03500	0.03500	0.03500	0.03500	0.03500	0.03500
Compounded Inflation Factor	1.18769	1.22926	1.27228	1.31681	1.36290	1.41060	1.45997	1.51107	1.56396	1.61869	1.67535	1.73399	1.79468
YEAR OF EXPENDITURE DOLLARS (X$000)	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
10 GUIDEWAY & TRACK ELEMENTS (route miles)	11,613	6,010	0	0	0	0	0	0	0	0	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	22,631	11,712	0	0	0	0	0	0	0	0	0	0	0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	0	0	0	0	0	0	0	0	0	0	0	0	0
40 SITEWORK & SPECIAL CONDITIONS	25,092	12,985	0	0	0	0	0	0	0	0	0	0	0
50 SYSTEMS	8,743	31,671	0	0	0	0	0	0	0	0	0	0	0
60 ROW, LAND, EXISTING IMPROVEMENTS	0	0	0	0	0	0	0	0	0	0	0	0	0
70 VEHICLES (number)	0	0	0	0	0	0	0	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	7,548	4,166	1,617	0	0	0	0	0	0	0	0	0	0
90 UNALLOCATED CONTINGENCY	2,727	2,823	974	0	0	0	0	0	0	0	0	0	0
100 FINANCE CHARGES	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Cost (10 - 100)	**78,354**	**69,367**	**2,591**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

PROJECT DESCRIPTION - BUILD ALTERNATIVE

(Rev.11a, June 4, 2008)

Alameda Contra Costa Transit District — Today's Date **7/3/08**

East Bay Bus Rapid Transit Project Alameda County, CA

Current Phase: Selection of Preferred Alternative

Describe the project elements to explain the unit costs shown on the Main Worksheet. Example: A 20-mile new light rail project has its guideway entirely on grade except for a one-eighth mile bridge over a river. The bridge or aerial structure may have a relatively high unit cost because there is little economy of scale.

Mention precedents and reference points used in the development of costs for this project. Mention other aspects of this project that were important considerations in estimating costs. These could include the physical context, site constraints; design parameters; institutional, contracting and procurement conditions; project schedule, etc.

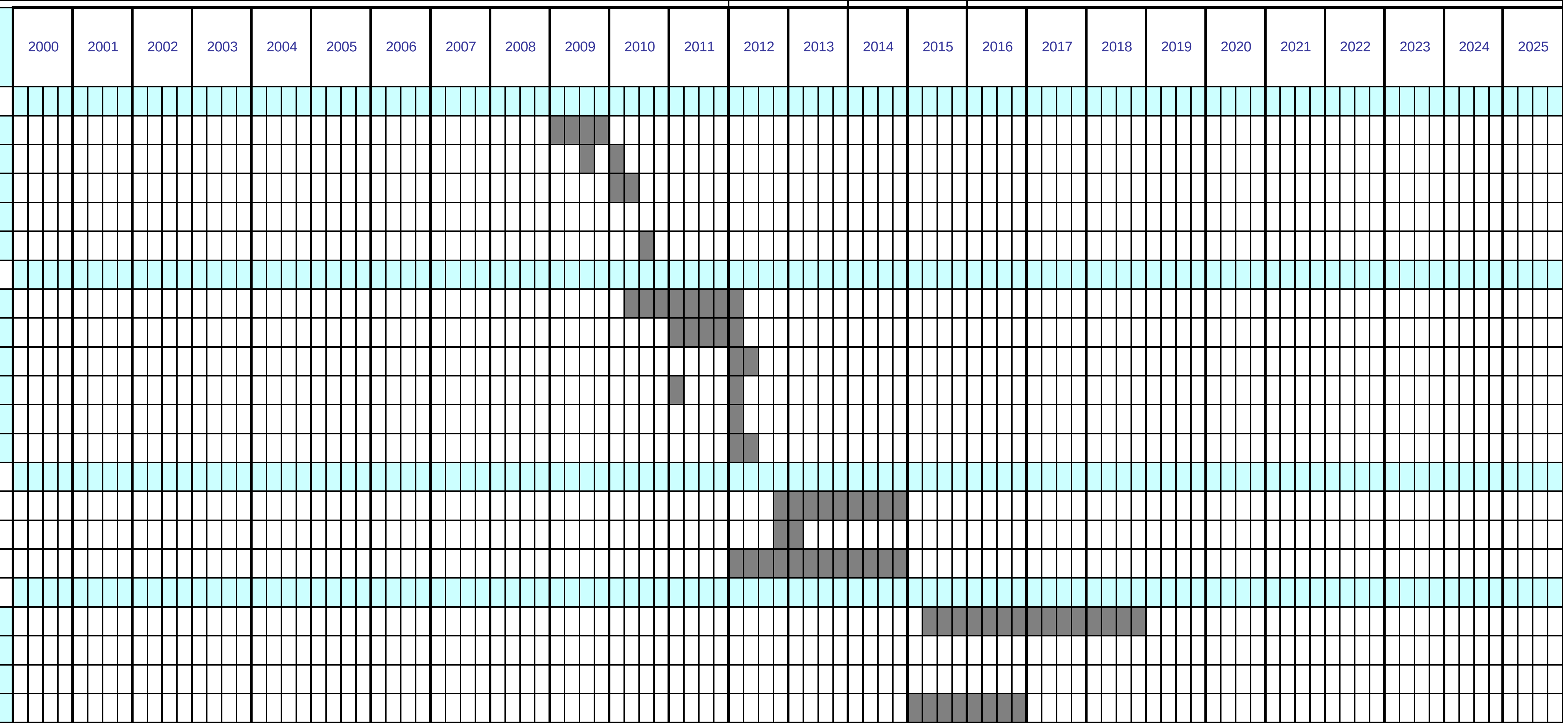
10 GUIDEWAY & TRACK ELEMENTS (route miles)	
10.01 Guideway: At-grade exclusive right-of-way	
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	Converts existing median traffic lanes to exclusive bus lanes. Landscaped median provided in some portions.
10.03 Guideway: At-grade in mixed traffic	
10.04 Guideway: Aerial structure	
10.05 Guideway: Built-up fill	
10.06 Guideway: Underground cut & cover	
10.07 Guideway: Underground tunnel	
10.08 Guideway: Retained cut or fill	
10.09 Track: Direct fixation	
10.10 Track: Embedded	
10.11 Track: Ballasted	
10.12 Track: Special (switches, turnouts)	
10.13 Track: Vibration and noise dampening	
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	
20.01 At-grade station, stop, shelter, mall, terminal, platform	49 stations with platforms typically located on far side of intersection (2 already constructed)
20.02 Aerial station, stop, shelter, mall, terminal, platform	
20.03 Underground station, stop, shelter, mall, terminal, platform	
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	
20.05 Joint development	
20.06 Automobile parking multi-story structure	
20.07 Elevators, escalators	
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	
30.01 Administration Building: Office, sales, storage, revenue counting	BRT facility will use existing infrastructure
30.02 Light Maintenance Facility	
30.03 Heavy Maintenance Facility	
30.04 Storage or Maintenance of Way Building	
30.05 Yard and Yard Track	
40 SITEWORK & SPECIAL CONDITIONS	
40.01 Demolition, Clearing, Earthwork	
40.02 Site Utilities, Utility Relocation	Minor utility impacts anticipated
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments	
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks	Mitigation will include intersection traffic operations, loss of parking and replacement landscaping
40.05 Site structures including retaining walls, sound walls	
40.06 Pedestrian / bike access and accommodation, landscaping	BRT project will incorporate pedestrian- and bicyle-friendly design features.
40.07 Automobile, bus, van accessways including roads, parking lots	Project may fund replacement parking in surface lots or structures
40.08 Temporary Facilities and other indirect costs during construction	
50 SYSTEMS	
50.01 Train control and signals	
50.02 Traffic signals and crossing protection	23 new traffic signals and optimization with transit priority throughout corridor
50.03 Traction power supply: substations	
50.04 Traction power distribution: catenary and third rail	
50.05 Communications	Project will incorporate fiber optic communications constructed under Rapid project.
50.06 Fare collection system and equipment	Ticket Vending Machines provided on each platform
50.07 Central Control	Existing control center to be expanded
Construction Subtotal (10 - 50)	
60 ROW, LAND, EXISTING IMPROVEMENTS	
60.01 Purchase or lease of real estate	Estimate includes nominal allowance for potential property acquisitions.
60.02 Relocation of existing households and businesses	No relocations anticipated: however, nominal allowance included
70 VEHICLES (number)	
70.01 Light Rail	
70.02 Heavy Rail	
70.03 Commuter Rail	
70.04 Bus	
70.05 Other	
70.06 Non-revenue vehicles	
70.07 Spare parts	
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	
80.01 Preliminary Engineering	
80.02 Final Design	
80.03 Project Management for Design and Construction	
80.04 Construction Administration & Management	
80.05 Professional Liability and other Non-Construction Insurance	
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.	
80.07 Surveys, Testing, Investigation, Inspection	
80.08 Start up	
Subtotal (10 - 80)	
90 UNALLOCATED CONTINGENCY	
Subtotal (10 - 90)	
100 FINANCE CHARGES	
Total Project Cost (10 - 100)	

SCHEDULE

(Rev.11a, June 4, 2008)

Alameda Contra Costa Transit District	Today's Date	**7/3/08**
East Bay Bus Rapid Transit Project Alameda County,	Yr of Base Year $	2008
Current Phase: Selection of Preferred Alternative	Yr of Revenue Ops	2015

Insert comments, notes, etc.	Start Date	End Date
Preliminary Engineering	01/01/09	01/01/10
Design of the Build and Baseline Alternatives		
Develop cost estimate, schedule, ridership forecast		
Conduct reviews		
Develop FEIS, receive Record of Decision		
Submit request / receive FTA approval to enter Final Design		
Final Design	03/02/10	03/01/12
Develop the contract documents for the Build Alternative		
Develop cost estimate, schedule		
Acquisition of real estate, relocation of households and businesses		
Conduct reviews		
Submit request / receive FTA approval for FFGA		
Issue requests for bids, make awards of construction contracts		
Construction	06/29/12	12/16/14
Construct fixed infrastructure	06/29/12	12/16/14
Finalize real estate acquisitions and relocations	06/29/12	12/26/12
Acquire and test vehicles	01/01/12	12/16/14
Revenue Ops / Closeout of Project	03/16/15	06/14/15
Revenue Operations		
Before and After Study: Two years post Rev Ops		
Fulfillment of the New Starts funding commitment		
Completion of project close-out, resolution of claims		



Distribution of Future Costs	Duration		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Professional Services																												
Preliminary Engineering	1.0	100%									0%	100%	0%															
Final Design	2.0	100%									0%	0%	50%	50%														
Project Management for Design and Construction	6.5	100%									0%	10%	15%	15%	15%	15%	15%	15%										
Construction Administration & Management	2.5	100%									0%			0%	20%	40%	40%											
Insurance		0%																										
Legal; Permits; Review Fees by other agencies, cities, etc.		100%									0%	5%	10%	20%	20%	20%	15%	10%										
Surveys, Testing, Investigation, Inspection		0%									0%	0%																
Start up	0.25	100%											0%	0%	100%													
		0%																										
Construction	2.5	0%																										
10 GUIDEWAY & TRACK ELEMENTS		100%											0%	0%	25%	50%	25%	0%	0%									
20 STATIONS, STOPS, TERMINALS, INTERMODAL		100%											0%	0%	25%	50%	25%	0%	0%									
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS		100%											0%	0%	0%	50%	50%	0%	0%									
40 SITEWORK & SPECIAL CONDITIONS		100%											0%	0%	25%	50%	25%	0%	0%									
50 SYSTEMS		100%											0%	0%	10%	20%	70%	0%	0%									
60 ROW, LAND, EXISTING IMPROVEMENTS		100%											0%	0%	100%	0%	0%	0%	0%									
70 VEHICLES		100%											0%	0%	10%	40%	50%	0%	0%									
80 PROFESSIONAL SERVICES		100%										10%	10%	27%	27%	15%	8%	3%	0%									
90 UNALLOCATED CONTINGENCY		100%										4%	8%	8%	10%	30%	30%	10%	0%									
100 FINANCE CHARGES		100%										4%	8%	8%	10%	30%	30%	10%	0%									

Item

Design Contingencies (% of Estimated Items Subtotal) :	Construction	Vehicles	ROW
Unknown Quantities	20%		
Increases in quantities	3%	10%	5%
Changes in standards	1%		
Changes in market conditions	5%	10%	25%
Changes in scope & Environmental mitigation	4%		
Maintenance of Traffic	2%		
General Conditions	1%	1%	
Demolition & Hazmat	1%		
Total	**37%**	**21%**	**30%**

Construction Contingencies (% of Estimated Construction + Design Contingency) :		
	Construction	Vehicles
Contractor Mobilization	10.00%	0%
Changed Site conditions	2.00%	
Construction change orders & Force Account Work	1.00%	1%
Construction Claims	1.00%	1%
Total	**14%**	**2%**

Combined Allocated Contingencies	56%	23%	30%

Project Implementation Costs

SCC No.	(% of Total Estimated Construction Cost) :	Construction	Vehicles	ROW
	Conceptual Engineering & Planning			
	Environmental Documentation			
80.01	Preliminary Engineering	3%	1%	1%
80.02	Final Design	10%	2%	6%
80.03	Project Management for Design and Construction	4%	1%	1%
80.04	Construction Administration & Management	8%	2%	
80.05	Insurance	2%		
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	1%		3%
80.07	Surveys, Testing, Investigation, Inspection	1%		1%
80.08	Start up	2%	2%	
	Total	**31%**	**8%**	**12%**

Project Reserve (Unallocated Contingency)

Percent of Total Project Costs including allocated contingencies and Professional Services 4%

ANNUALIZED COST-BUILD ALTERNATIVE (Rev.11a, June 4, 2008)

Alameda Contra Costa Transit District — Today's Date **7/3/08**

East Bay Bus Rapid Transit Project Alameda County, CA — Yr of Base Year $ 2008

Current Phase: Selection of Preferred Alternative — Yr of Revenue Ops 2015

	Quantity	Total Base Year Dollars (X000)	Cat. 80 Prof. Svc. spread proportionally over Cats. 10 - 50 (X000)	Spread Cat. 90 Unalloc. Cont. according to perceived risks (X000)	Revised Total Base Year Dollars (X000)	Years of Useful Life	Annualization Factor (based on 7% rate) [.07/1 - (1.07)^-no. yrs]	**Annualized Cost (X000)**
10 GUIDEWAY & TRACK ELEMENTS (route miles)	**16.91**	**19,556**	**6,060**	**1,005**	**26,620**			**2,145**
10.01 Guideway: At-grade exclusive right-of-way	0.00	0	0		0	125	0.0700	0
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	16.91	19,556	6,060	1,005	26,620	30	0.0806	2,145
10.03 Guideway: At-grade in mixed traffic	0.00	0	0		0	20	0.0944	0
10.04 Guideway: Aerial structure	0.00	0	0		0	80	0.0703	0
10.05 Guideway: Built-up fill	0.00	0	0		0	80	0.0703	0
10.06 Guideway: Underground cut & cover	0.00	0	0		0	125	0.0700	0
10.07 Guideway: Underground tunnel	0.00	0	0		0	125	0.0700	0
10.08 Guideway: Retained cut or fill	0.00	0	0		0	125	0.0700	0
10.09 Track: Direct fixation		0	0		0	30	0.0806	0
10.10 Track: Embedded		0	0		0	20	0.0944	0
10.11 Track: Ballasted		0	0		0	35	0.0772	0
10.12 Track: Special (switches, turnouts)		0	0		0	30	0.0806	0
10.13 Track: Vibration and noise dampening		0	0		0	30	0.0806	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	**47**	**38,110**	**11,809**	**1,958**	**51,877**			**3,664**
20.01 At-grade station, stop, shelter, mall, terminal, platform	47	38,110	11,809	1,958	51,877	70	0.0706	3,664
20.02 Aerial station, stop, shelter, mall, terminal, platform	0	0	0		0	70	0.0706	0
20.03 Underground station, stop, shelter, mall, terminal, platform	0	0	0		0	125	0.0700	0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	0	0	0		0	70	0.0706	0
20.05 Joint development		0	0		0	70	0.0706	0
20.06 Automobile parking multi-story structure		0	0		0	50	0.0725	0
20.07 Elevators, escalators		0	0		0	30	0.0806	0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS		**0**	**0**	**0**	**0**			**0**
30.01 Administration Building: Office, sales, storage, revenue counting		0	0		0	50	0.0725	0
30.02 Light Maintenance Facility		0	0		0	50	0.0725	0
30.03 Heavy Maintenance Facility		0	0		0	50	0.0725	0
30.04 Storage or Maintenance of Way Building		0	0		0	50	0.0725	0
30.05 Yard and Yard Track		0	0		0	80	0.0703	0
40 SITEWORK & SPECIAL CONDITIONS		**42,253**	**13,093**	**2,171**	**57,517**			**4,831**
40.01 Demolition, Clearing, Earthwork		6,111	1,894	314	8,318	125	0.0700	582
40.02 Site Utilities, Utility Relocation		7,390	2,290	380	10,060	125	0.0700	704
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments		0	0		0	125	0.0700	0
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks		4,526	1,403	233	6,161	125	0.0700	431
40.05 Site structures including retaining walls, sound walls		0	0		0	80	0.0703	0
40.06 Pedestrian / bike access and accommodation, landscaping		12,356	3,829	635	16,820	20	0.0944	1,588
40.07 Automobile, bus, van accessways including roads, parking lots		11,870	3,678	610	16,158	20	0.0944	1,525
40.08 Temporary Facilities and other indirect costs during construction		0	0		0	100	0.0701	0
50 SYSTEMS		**36,806**	**11,405**	**1,891**	**50,103**			**4,356**
50.01 Train control and signals		0	0		0	30	0.0806	0
50.02 Traffic signals and crossing protection		11,009	3,411	566	14,986	30	0.0806	1,208
50.03 Traction power supply: substations		0	0		0	50	0.0725	0
50.04 Traction power distribution: catenary and third rail		0	0		0	30	0.0806	0
50.05 Communications		13,512	4,187	694	18,394	20	0.0944	1,736
50.06 Fare collection system and equipment		9,052	2,805	465	12,322	25	0.0858	1,057
50.07 Central Control		3,233	1,002	166	4,401	30	0.0806	355
Construction Subtotal (10 - 50)		**136,725**	**42,368**	**7,024**	**186,116**			**14,996**
60 ROW, LAND, EXISTING IMPROVEMENTS		**12,278**		**631**	**12,908**			**904**
60.01 Purchase or lease of real estate		9,486		487	9,973	125	0.0700	698
60.02 Relocation of existing households and businesses		2,792		143	2,935	125	0.0700	206
70 VEHICLES (number)	**0**	**0**		**0**	**0**			**0**
70.01 Light Rail		0			0	25	0.0858	0
70.02 Heavy Rail	0	0			0	25	0.0858	0
70.03 Commuter Rail	0	0			0	25	0.0858	0
70.04 Bus	0	0			0	12	0.1259	0
70.05 Other	0	0			0	12	0.1259	0
70.06 Non-revenue vehicles	0	0			0	12	0.1259	0
70.07 Spare parts	0	0			0	12	0.1259	0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)		**42,368**						
80.01 Preliminary Engineering		4,225						
80.02 Final Design		14,409						
80.03 Project Management for Design and Construction		5,592						
80.04 Construction Administration & Management		13,672						
80.05 Professional Liability and other Non-Construction Insurance		0						
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.		1,736						
80.07 Surveys, Testing, Investigation, Inspection		0						
80.08 Start up		2,734						
Subtotal (10 - 80)		**191,370**						
90 UNALLOCATED CONTINGENCY		**7,655**						
Subtotal (10 - 90)		**199,025**	42,368	7,655	**199,025**			**15,899**

FUNDING SOURCES BY CATEGORY

(Rev.11a, June 4, 2008)

Alameda Contra Costa Transit District

Today's Date **7/3/08**

East Bay Bus Rapid Transit Project Alameda County, CA

Current Phase: Selection of Preferred Alternative

	Cost		Funding Summary			40%	60%	80%	20%	80%	20%		
	YOE Cost (X000)	Double-check Total	Federal 5309 New Starts Funds	Federal Other Funds	Local Funds	Federal 5309 New Starts	Local	Federal CMAQ	Local	Federal Other	Local	Federal Other	Local
10 GUIDEWAY & TRACK ELEMENTS (route miles)	23,233	23,233	7,429	4,583	11,221	7,429	10,075	4,583	1,146				
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	45,276	45,276	14,477	8,931	21,868	14,477	19,635	8,931	2,233				
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	0	0	0	0	0	0	0	0	0				
40 SITEWORK & SPECIAL CONDITIONS	50,198	50,198	16,051	9,902	24,245	16,051	21,769	9,902	2,475				
50 SYSTEMS	44,637	44,637	14,273	8,805	21,559	14,273	19,358	8,805	2,201				
60 ROW, LAND, EXISTING IMPROVEMENTS	14,089	14,089	4,505	2,779	6,805	4,505	6,110	2,779	695				
70 VEHICLES (number)	0	0	0	0	0	0	0						
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	48,065	48,065	15,369	2,090	30,606	15,369	30,083			2,090	523		
90 UNALLOCATED CONTINGENCY	9,055	9,055	2,895	0	6,159	2,895	6,159						
100 FINANCE CHARGES	0	0	0	0	0	0	0						
Total Project Cost (10 - 100)	234,553	234,553	75,000	37,090	122,463	75,000	113,190	35,000	8,750	2,090	523	0	0
Percentage of Total Project Cost	100%		32.0%	15.8%	52.2%	32.0%	48.3%	14.9%	3.7%	0.9%	0.2%	0.0%	0.0%
			32.0%	68.0%									
			100.00%										

FUNDING SOURCES BY YEAR

(Rev.11a, June 4, 2008)

Alameda Contra Costa Transit District — Today's Date **7/3/08**

East Bay Bus Rapid Transit Project Alameda County, CA

Current Phase: Selection of Preferred Alternative

			2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total Project Cost In YOE Dollars Below insert funding sources and amounts for each year.	234,553	double check	0	0	0	0	0	0	0	0	0	4,702	5,195	13,362	60,982	78,354	69,367	2,591	0	0	0	0	0	0	0	0	0	0
Federal 5309 New Starts	75,000	75,000									2,450	2,500	2,500	2,500	20,000	20,000	20,000	5,050										
Local	122,463	112,463									41,684	5,000	5,000	5,000	5,000	10,779	30,000	10,000										
Federal Other	37,090	37,090									2,090							25,000	10,000									
Total Project Cost (10 - 100)	234,553	224,553	0	0	0	0	0	0	0	0	46,224	7,500	7,500	7,500	25,000	30,779	50,000	40,050	10,000	0	0	0	0	0	0	0	0	0

Alameda – Contra Costa Transit District

East Bay Bus Rapid Transit (BRT) Project

Capital Cost Estimate Basis

July 2008

Prepared by

Parsons Transportation Group

For

Cambridge Systematics, Inc.

Introduction

This document describes the procedures, assumptions, and other input parameters that form the basis for the capital cost estimate for the AC Transit East Bay BRT project. The project consists primarily of exclusive bus transit lanes extending from University Avenue in Berkeley through Oakland to the Bay Fair BART station in San Leandro. The estimate is based on implementing Combined BRT and Local Service to Bay Fair BART, (essentially Alternative 3 in the DEIS/R, circulated in May 2007, and as subsequently refined). Project development currently is in the process of selecting the Preferred Alternative and preparing an application for Federal Transit Administration (FTA) Small Starts funding.

Progressing from north to south, the project begins on Shattuck Avenue at University Avenue in Berkeley with exclusive BRT lanes in the median of Shattuck Avenue as far as Bancroft Avenue. A couplet of one-way BRT lanes continues on Bancroft and Durant Avenue as far as Telegraph Avenue. The two-lane BRT then proceeds south in the median of Telegraph Avenue as far as 20th Street in Oakland. The bus route uses the recently reconstructed platforms in 20th Street, then turns south on Broadway in mixed traffic as far as 11th and 12th Streets. A one-way couplet of exclusive bus lanes on 11th and 12th continues to Lake Merritt, where the buses continue in mixed flow to East 12th Street and International Boulevard. Another couplet of exclusive one-way bus lanes continues on East 12th Street and International Boulevard as far as 14th Avenue. From this location, the BRT continues as two lanes in the median of International Boulevard to the San Leandro City Line. From this point on, the street name is East 14th Street. The two-way exclusive BRT continues for about one-quarter mile on East 14th Street to Sunnyside Drive, where the buses continue in mixed flow for about one and one-third miles to Blossom Way. The exclusive BRT lanes continue in the median of East 14th Street from Blossom Way to Lillian Avenue, where the southbound exclusive BRT lane ends. The northbound exclusive BRT lane continues to Bayfair Drive. Buses continue through Bayfair Center on a combination of mixed flow and existing exclusive bus lanes, terminating at the Bay Fair BART Station. The project location is shown in Figure 1.

The length of the project is approximately 16.9 miles. The bus lanes are generally at grade in the medians of streets, with bus stations spaced at an average of one-third mile. There are 49 BRT stations, including 47 new stations, with platforms generally split on either side of the intersections. There also are improvements at Bay Fair BART and some additional amenities at the 20th Street Station. Bus platforms are elevated 13 inches above pavement to allow for near-level boarding of low floor vehicles. Mountable concrete curbs on both edges of the bus transitway separate the guideway from the adjacent traffic lanes are included in the estimate.

The project includes rehabilitation of existing pavement for the busway lanes and full reconstruction with Portland cement concrete (PCC) pavement adjacent to and approaching the stations.

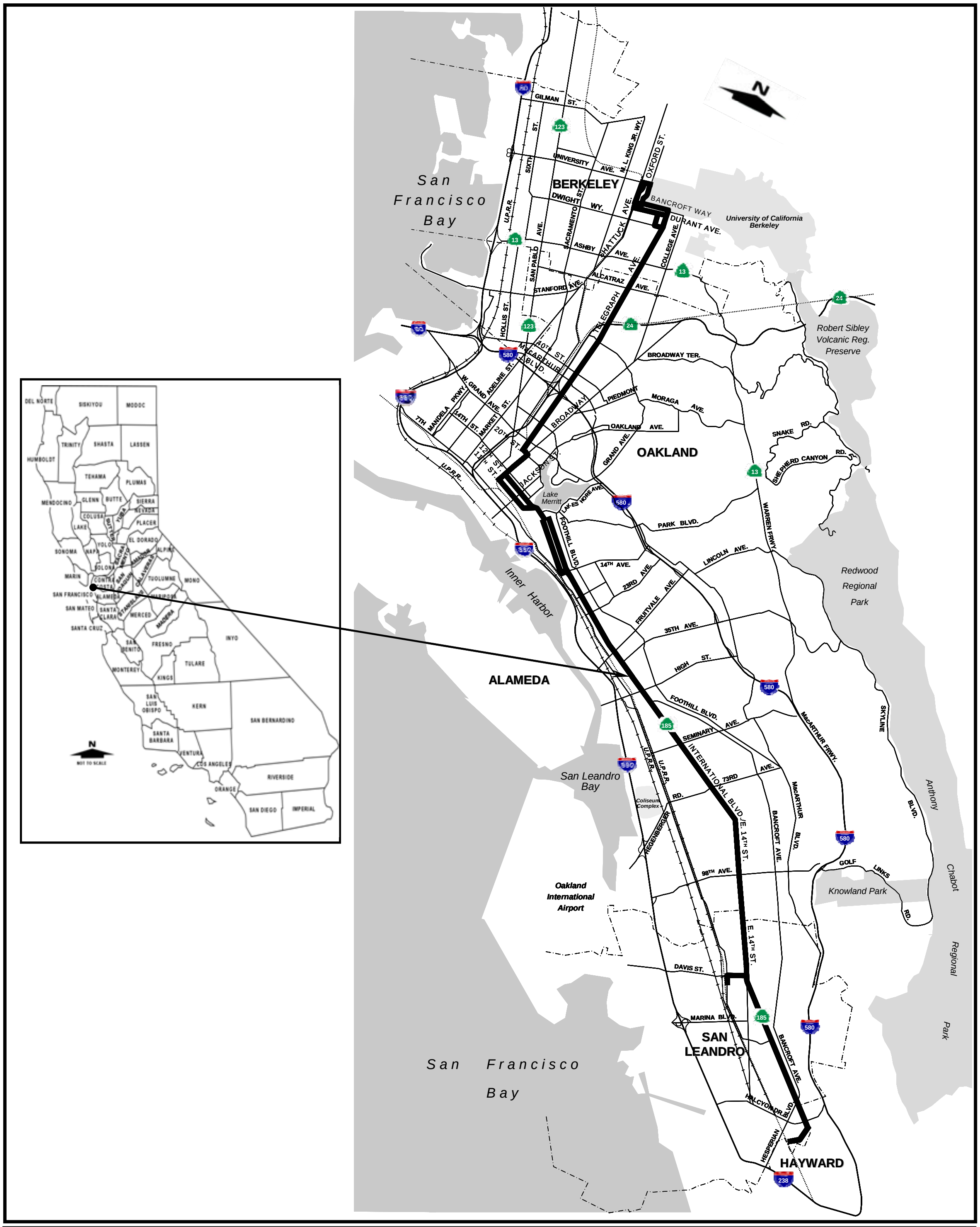


Figure 1: Project Location

Cost Estimate Format and Categories

The cost estimate had been formatted in accordance with FTA guidelines, using FTA's Standard Cost Categories (SCC) for Capital Projects. The main categories are:

10	Guideway and Track Elements
20	Stations, Stops, Terminals, Intermodal
30	Support Facilities: Yards, Shops, Administrative Buildings
40	Sitework and Special Conditions
50	Systems
60	ROW, Land, Existing Improvements
70	Vehicles
80	Professional Services
90	Unallocated Contingency
100	Finance Charges

The base cost estimate is in 2008 dollars.[1] Costs were escalated to Year of Expenditure (YOE) dollars following FTA guidelines based on a project schedule for the completion of design and construction. The schedule is shown in the FTA cost spreadsheet file described below.

There are no Category 30 or Category 70 items in the estimate as no additional buses are needed for the project, due to improved bus operations in the corridor. This is discussed in more detail in the Operations and Maintenance Report.[2] In addition, finance charges have not yet been identified or included in the estimate.

The estimate consists of three linked Excel spreadsheets.

- Quantities are tabulated in a file labeled "AC Transit Cost Estimate Full Project July08.xls." This file also contains a breakdown of station costs in accordance with the FTA SCCs.
- The quantities from the previous spreadsheet were linked to a file labeled "Revised Cost Estimate Full Project July08.xls." This worksheet tabulates the individual items into the SCC subcategories and by political jurisdiction in the project area: Berkeley, Oakland, unincorporated Alameda County, and San Leandro. This spreadsheet also contains unit costs for the estimate, and is set up to calculate the unit costs of different pavement types.
- Costs from the preceding spreadsheet are tabulated into the FTA format by importing them into the file labeled "EBBRT FTA Format V11a Full Project July08.xls." This file contains a worksheet that tabulates professional services and contingency percentages in categories that roughly correspond to FTA's guidelines. Costs are escalated in this file to YOE dollars based on a cost allocation in the "Schedule" worksheet.

[1] The estimate was developed based on 2007 unit costs, but these were escalated by 3.5% to represent the 2008 current year.

[2] AC Transit East Bay BRT Project, *Operations and Maintenance Cost Estimating Methodology and Results Report*, prepared by Kimley Horn and Parsons Corporation, May 2008. This document was submitted to FTA as part of a preliminary submittal on May 16, 2008.

Quantities

Quantities were measured from the 1"=100' scale drawings on aerial photograph backgrounds that were used to develop the engineering concepts for the projects. In most cases, the quantities were measured from the CADD files directly, with some manual takeoff. The items that were measured are shown in the table below.

FTA Category No.	Item	Note
10	BRT Guideway	• Area of busway by width (one- or two-lane) and location (at or adjacent to station or away from stations) • Intersection treatment
20	Stations	• Separate takeoff by length, width and configuration of platform • Separate takeoff for ramps
40	Roadways	• Roadway repaving, curb construction, sidewalk reconstruction and pavement marking at stations • Other roadway reconstruction, including pavement marking • Utility relocation required at station platforms plus an allowance based on a cost per mile
	Landscaping	• Areas and lengths of median landscaped areas • Length of new curb for landscaped areas
	Mitigation	Specific roadway and traffic mitigation items have been individually quantified and costed. Items include: • Parking space replacement and parking meters for existing spaces • Pedestrian/bicycle access and accommodation, landscaping • Automobile, bus, van accessways, including roads, parking lots • Mitigation of traffic impacts under the Build Alternative
50	Systems	• Traffic signals at individual intersections requiring new or modified signals; signals to be removed • Variable message signs, information kiosks and ticket vending machines at stations • A fiber optic communications line running the length of the guideway
60	Right-of-Way	• No specific ROW acquisition was identified. An allowance was calculated based on an assumed number of impacted parcels.

Quantities were tabulated by individual layout sheet and totaled for each of the political jurisdictions in the project area. The cost of expanding AC Transit's current operations control center capabilities to include monitoring this project was not allocated to any city. This was considered a systemwide cost.

Quantities for stations were developed from the prototypical platform designs. Up to 37 quantities ranging from signs to shelters and windscreens were quantified. The items include ticket vending machines (TVM), information kiosks, emergency telephones, and closed-circuit televisions (CCTV), which are system costs. In addition to the platform amenities, civil construction items such as excavation, the platform slab, and aesthetic treatments were quantified.

For existing platforms at Bay Fair BART and 20th Street in Oakland, the cost estimate includes the addition of system costs that are associated with new platforms.

Quantities for utility relocation have been incorporated into the estimate based on identified conflicts. An allowance of $200,000 per mile has been added to the quantified costs. See the section entitled "Assumptions" for a description of the basis for estimating utility relocation costs.

Unit Costs

Unit costs for civil construction were developed from RS Means 2007 Site Work and Landscape Costs data. Reductions in production rates were incorporated into the installation costs to allow for work in confined areas and restricted time windows. The calculated unit costs were compared to California Department of Transportation (Caltrans) 2007 Contract Cost Data book and bid prices from comparable road reconstruction projects to establish their reasonableness. Unit costs for pavement work were converted to square foot basis for use in comparing alternative pavement sections for the bus transitway.

Unit costs for specialty pavement reconstruction in place are based on information obtained informally from specialty pavement recycling contractors and from historic bid data.

Unit costs for station amenities were developed from historic data on light rail transit and bus stop designs for other projects, updated for the East Bay BRT Project, and factored to current year dollars. Additional input for systems costs was provided by AC Transit staff.

Unit costs of right-of-way were developed based on the judgment of the design engineers.

Pavement Type

The cost estimate worksheets were formatted to compare the costs of alternative bus transitway pavement sections, including removal and replacement of the existing roadway pavement with various asphalt concrete (AC) or Portland cement concrete (PCC) structural sections; or rehabilitation through reconstruction of the existing pavement in place. Pending detailed materials investigations in a subsequent project development phase, rehabilitation of the existing roadway pavement was the preliminary choice of pavement type selected for the bus transitway. This consists of milling the existing AC pavement, full-depth reclamation of the underlying base course and replacement pavement consisting of six inches of AC.

Pavement for both the bus transitway and adjacent traffic lanes will be removed and replaced with PCC pavement adjacent to station platforms and for an approach distance of 60 feet. This PCC section is assumed to be 10 inches of PCC over 8 inches of aggregate base.

Add-On Costs

Total project capital costs include the quantifiable costs described above plus other costs that cannot be specifically identified due to the preliminary nature of the design. These are known as contingencies and reserves. In addition, the project needs to include what are sometimes called “soft” costs or project implementation costs. FTA calls these costs Professional Services, and are the costs of design and management needed to construct the project. Furthermore, the project budget must include allowances for escalation of costs to the year of expenditure.

All these indirect costs, sometimes called “add-on” costs, are estimated as percentages of known construction costs developed from engineering designs. Add-on costs include unknown but predictable costs associated with planning and design and construction. Financing costs and escalation also are part of project implementation. The individual add-on items are discussed below.

Contingencies

Contingencies represent an allowance for unknowns and items that cannot be estimated. At this conceptual level of the project, there are many unknowns and items that can increase the project’s cost. There are two groups of contingencies:

1. Planning and Design contingencies, which include:
    - General contract conditions;
    - Maintenance of traffic;
    - Demolition and hazardous materials handling;
    - Unknown items or items that cannot be specially quantified at the current level of design;
    - Increases in quantities;
    - Changes in standards;
    - Changes in market conditions; and
    - Changes in scope and environmental mitigation.
2. Construction contingencies, which are allowances for additional costs after a contract is awarded, and include:
    - Changed site conditions;
    - Construction change orders and force account work;
    - Contractor claims; and
    - Contractor mobilization.

Planning and design contingencies have been estimated as percentages of total estimated construction, vehicles, and right-of-way. The tabulation of the percentages is shown in the

"Add-Ons" worksheet of the FTA cost estimate format spreadsheet. Total planning and design contingencies are:

Design contingency for Construction	37%
Design contingency for Vehicles	21%
Design contingency for Right-of-Way	30%

Construction contingencies, which are to cover changes encountered in the construction phase once underway, have been calculated as a percentage of the total estimated construction cost plus planning and design contingencies for construction and vehicles. The tabulation of the percentage is shown in the FTA cost estimate spreadsheet. Contractor mobilization has been included in this category. The total construction contingency is 14 percent for construction and 2 percent for vehicles.

The Planning and Design and Construction contingencies are considered "allocated contingency." Taken in combination, the total allocated contingencies are:

Total allocated contingency for Construction	56%
Total allocated contingency for Vehicles	23%
Total allocated contingency for Right-of-Way	30%

Project Implementation Costs

Project implementation costs are costs in addition to construction and right-of-way acquisition. Along with contingencies they are sometimes referred to as "soft" costs (as opposed to the "hard" costs of actual construction); they are nonetheless required to get the project built. These costs could include:

- Planning and environmental studies and conceptual engineering;
- Preliminary engineering;
- Detail design;
- Program management;
- Construction management and inspection;
- Design services during construction;
- Administration, insurance, legal and permits; and
- Startup and testing.

For the East Bay BRT project, no costs have been included for planning and environmental studies or for conceptual engineering as these costs already are contracted and largely incurred. Project implementation costs are estimated as percentages of construction (including the respective design and construction contingencies), vehicles (including design contingencies), and right-of-way (including design contingencies). The tabulation of the percentages is shown in the FTA cost estimate spreadsheet. Total percentage allowances for implementation costs of construction, vehicles, and right-of-way are:

Project Implementation for Construction	31%
Project Implementation for Vehicles	8%
Project Implementation for Right-of-Way	12%

Reserve

Project reserve is sometimes referred to as “unallocated contingency.” Reserve is calculated as a percentage of the total of estimated costs, contingencies, and project implementation costs. A value of four percent has been used.

Finance charges

Finance charges represent interest on bonds or other borrowing instruments needed by the owner to implement the project. No finance charges have been included for this project at this time. The sum of the previous totals and the finance charges represents the total unescalated project cost in current dollars.

Escalation

Escalation approximates the actual project costs in the year of expenditure. Escalation is calculated at the rate of 3.5 percent per year from the current year (2008) estimate to the approximate year of expenditure. The escalation rate is based on the five-year rolling average Construction Cost Index for the San Francisco Bay Area (Engineering News and Record, April 2008). This index was selected over Consumer Price Index (CPI) and Producer Price Index (PPI) data compiled by the U.S. Department of Labor as being more representative of near-term local trends.

The sum of the unescalated budget cost and the escalation represents the total project cost at completion (i.e., in future dollars).

Cost Multipliers

The application of all the add-on factors yields total project costs that are a factor of 2.77 greater than the base year construction cost subtotal.

Assumptions

Utilities

Costs were estimated for relocation of specific utilities identified as conflicting with the proposed improvements. In addition to these, an allowance of $200,000 per mile has been added to account for anticipated utility relocation that cannot be identified at this stage of the project.

It is assumed that parallel underground utilities within the limits of the BRT transitway will not be relocated. Manholes, vault openings and other surface access facilities such as valve boxes will remain in place. When access to the utilities in the transitway is required, it is assumed that buses will be diverted to the parallel roadway or the bus transitway in the opposite direction.

Crossing or transverse underground utilities will not be relocated, nor will sleeves be constructed around the carrier pipes except under station platforms and the adjacent BRT transitway. In the absence of specific information on utility routing, the cost of these elements will be included in contingencies.

Utilities will be relocated where surface penetrations fall within the limits of platforms and access paths to the platforms from crosswalks. Facilities in this context include manholes, pullboxes, vaults, valves, and similar items where maintenance operations could interfere with passenger access or bus operations. This also applies to facilities located in the bus transitway adjacent to the platforms. Other utility relocations could be required to install traffic and BRT signals, and BRT communications ducts and cabinets.

Right-of-Way

An allowance has been calculated for right-of-way acquisition for anticipated street widening at some intersections. Three types of property impacts have been identified:

- Full acquisition of a parcel (FTA Category 60.01)
- Relocation of households or businesses (FTA Category 60.02)
- Severance Damages for partial parcel acquisitions (Added to Category 60.02)

The numbers of parcels affected were estimated by the design engineers based on their judgment. The number of relocations was assumed to be the same as the number of parcels fully acquired.

Unit costs associated with each of the three types of acquisitions were developed as follows:

- Parcel acquisition: $650,000 to $750,000 each, depending on the location
- Relocation: $100,000 based roughly on Caltrans practice
- Severance: $50,000 to $75,000 per impacted parcel

5.0 Operations and Maintenance (O&M) Cost

5.0 O&M Costs

This section summarizes the assumptions and methodology used to develop operating and maintenance (O&M) cost for the East Bay BRT project.

An O&M model was developed to forecast baseline/no-build and the East Bay BRT project O&M costs, based on AC Transit's 2008 budget. The model is a four-variable cost allocation model based on cost by line item for AC Transit operations. A report describing the structure of the model, the operating plan for the baseline and build alternatives, the projected O&M costs of the no-build alternative, and the application of the model to forecast O&M costs for the East Bay BRT project is attached to this section.

The O&M model consists of a simple four variable formulation. The cost drivers selected for use in the O&M model include vehicle miles, vehicle hours, peak buses, and stations. The unit costs for the first three cost drivers were derived using AC Transit's budgeted 2008 O&M expenses. The stations unit cost is introduced in the estimate of East Bay BRT O&M costs to capture the special costs of BRT O&M, such as systems and communications expenses, station and transitway maintenance, and fare collection. The stations unit cost is expected to consist primarily of labor with some ongoing materials costs. The unit cost was developed based on the additional staffing that will likely be required to maintain the BRT facilities, monitor operations, and collect fares. Labor costs for these positions were derived from AC Transit's 2008 budget information for comparable labor types.

Compared to the no-build alternative, the incremental cost of implementing the East Bay BRT project is estimated at approximately $3.95 million per year (2008 dollars).

AC TRANSIT
EAST BAY BUS RAPID TRANSIT PROJECT

OPERATIONS AND MAINTENANCE COST ESTIMATING METHODOLOGY AND RESULTS REPORT

Prepared for:

Alameda-Contra Costa Transit District

Prepared by:

Kimley-Horn and Associates *and* Parsons Corporation

August 2008 (Rev.1.0)

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Purpose of this Document

This report documents the estimated costs associated with operating and maintaining the AC Transit East Bay Bus Rapid Transit (BRT) Project and the methodology used to generate these costs. Operations and maintenance (O&M) estimates reflect the direct and indirect staffing requirements – or labor costs – and materials and supplies costs that can reasonably be allocated to providing revenue service in the proposed project corridor. An important objective in developing O&M costs is to determine the additional resources that will be required by AC Transit to operate full BRT service, which will replace Route 1R Rapid and complementary Route 1 local service when capital improvements are completed sometime around 2015. Using this information, AC Transit can determine the long-term financial implications of the East Bay BRT Project on its operating budget.

Understanding the implementation and operations costs also allows FTA to assess the cost-effectiveness of the East Bay BRT Project. Annual O&M costs for the project – the Build Alternative – along with annualized capital costs are compared to the Baseline/No-Build Alternative. A project should achieve a cost-effectiveness threshold in order to be eligible for Section 5309 Small Starts funding, which AC Transit assumes will provide approximately 30 percent of the East Bay BRT capital costs.

Estimated O&M costs for the East Bay BRT Project are reported for the first **full** year of revenue operation of the complete project, assumed to be 2015. Some segments of the corridor could open before that year, but 2015 is year when full BRT service is expected to be operational; it also represents the forecast year for ridership. O&M costs are estimated in constant 2008 dollars and do not include escalation.

The content of the report is as follows:

Chapter 1: Introduction, including a brief description of the project.

Chapter 2: Operating Plans, for both the Baseline/No Project Alternative and the East Bay BRT Project.

Chapter 3: O&M Cost Estimating Methodology, which explains the derivation of the O&M model and basic assumptions incorporated into the model parameters.

Chapter 4: O&M Costs, for both the East Bay BRT Project and Baseline/No Project.

Chapter 5: Conclusion.

Appendices, including background data used to develop the O&M cost allocation model.

1.2 Project Description

The East Bay BRT Project will provide express bus service along an approximately 17-mile-long corridor extending from downtown Berkeley and the University of California at Berkeley at the northern end, through downtown Oakland, to San Leandro at the southern end. This corridor has characteristics that are highly conducive to transit use and particularly well-suited to BRT. The corridor is home to 260,000 residents and contains some of the highest employment and residential densities in the East Bay.

The project corridor is centered on downtown Oakland, the East Bay's largest city, which provides work for 71,000 people. The northern end of the corridor is anchored by the University of California at Berkeley (UC Berkeley), host to almost 35,000 students and over 15,000 employees. An additional 14,000 employees work in downtown Berkeley. South of downtown Oakland, a third of the corridor passes through some of the San Francisco Bay Area's densest residential neighborhoods, averaging 13,440 persons per square mile (21 persons per acre). The southern end of the corridor is anchored by the Bay Area Rapid Transit (BART) BayFair Station, a major transfer station for three BART lines and seven local bus routes. The station also serves the Bayfair Center, a regional shopping mall that currently is under expansion.

The corridor, especially the East Oakland segment along International Boulevard, includes substantial concentrations of low-income, ethnic minority, and transit-dependent populations. AC Transit buses in this corridor currently carry approximately 21,200 riders a day, approximately 10 percent of AC Transit's systemwide ridership.

The proposed alignment for East Bay BRT service is shown in Figure 1-1. The alignment is predominantly bidirectional along arterial streets but includes three segments where the alignment is split into one-way couplets. North to south, it would follow:

Two-Way BRT:

- Shattuck Avenue, from Addison/Center Streets to Bancroft Way/Durant Avenue.

One-Way Couplet:

- Bancroft Way (northbound service only) and Durant Avenue (southbound service only) to Telegraph Avenue.

Two-Way BRT:

- Telegraph Avenue, to 20th Street in downtown Oakland;
- 20th Street to Broadway; and
- Broadway to 12th and 11th Streets.

One-Way Couplet:

- 12th Street (northbound service) and 11th Street (southbound service) to 12th Street merge at Lake Merritt.

Two-Way BRT:

- 12th Street to 1st Avenue.

One-Way Couplet:

- East 12th Street to 14th Avenue; 14th Avenue to International Boulevard (southbound service); and
- 1st Avenue and International Boulevard to 14th Avenue (northbound service).

Two-Way BRT:

- International Boulevard (Oakland) and East 14th Street (San Leandro) to Bayfair Drive at Bayfair Center; and
- Bayfair Drive and BayFair BART Station access road to terminus at BayFair BART Transit Center.

Specific design elements of the East Bay BRT project include:

Dedicated transit lanes, formed by converting existing traffic lanes to BRT-only. Lanes are primarily in the roadway median (e.g., Shattuck Avenue, Telegraph Avenue, International Boulevard, East 14th Street) although in limited segments they are located in or next to the curb lane. For several blocks in downtown Oakland, central and downtown San Leandro, and near Bayfair Center and the southern terminus of BayFair BART, BRT buses would operate in mixed-flow lanes. Figure 1-2 shows schematically the segments of the project alignment where median-running, side-running, or mixed flow operations are proposed.

- Light-rail like stations, of which there are 49, including the line termini and the existing Uptown station on 20th Street. The general station locations are shown in Figure 1-1, with representative designs for side and median stations shown in Figure 1-3. Planned stations features are:

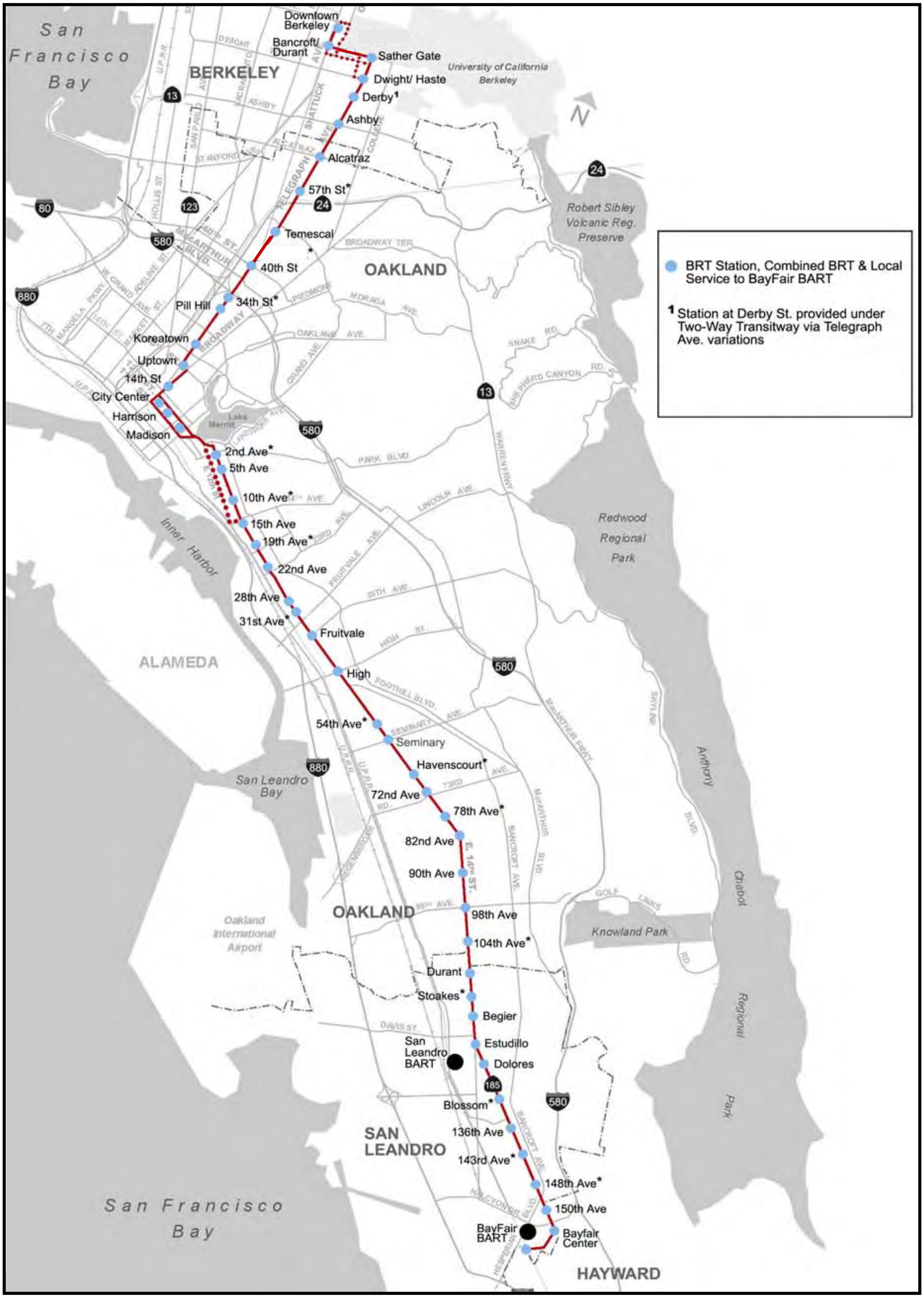


Figure 1-1: East Bay BRT Project Alignment

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    - Raised platforms (approximately 13 inches above top of pavement);
    - Canopies and passenger amenities (seating, message signs, information kiosks, emergency telephone and closed circuit camera monitoring of platforms);
    - ADA-compliant routes of access; tactile warning bands (approximately 24 inches wide) incorporated into the platform edge; and
    - Ticket vending machines for off-board fare collection.
- Advanced transit signal priority (TSP), which reduces stopped delay at intersections.

BRT buses will be low-floor articulated, approximately 60 feet in length and 8.5 feet wide, with a full load capacity of 90 passengers.

BRT service will be frequent, operating initially on approximately 5-minute headways (time between consecutive buses) each direction during peak periods, 5 minutes midday, and 10 minutes evenings. Owl or all-night service, continuing from midnight to 5 a.m., also will be provided. Over time, service headways would become more frequent as demand warrants.

The proposed BRT project would achieve the following needed service and efficiency improvements:

- **High frequency, high capacity bus service** during both peak commute periods and midday to improve service capacity and reduce passenger wait times.
- **Faster, more reliable service** using dedicated transit lanes and transit signal priority to avoid competition with other vehicles and obtain faster and more reliable travel times. More widely spaced station stops, prepaid ticketing and low-floor boarding will decrease the time spent on stops and starts and on the boarding process.
- **Increased operational efficiency and reduced per rider costs** by improving transit reliability and increasing bus speeds. Reducing stops and starts will decrease transit vehicle wear and tear and reduce maintenance and fuel costs.

Improved safety and security, convenience, and comfort. BRT stations will offer fare machines, real-time arrival information, shelters, benches, security features, boarding platforms, and other amenities.

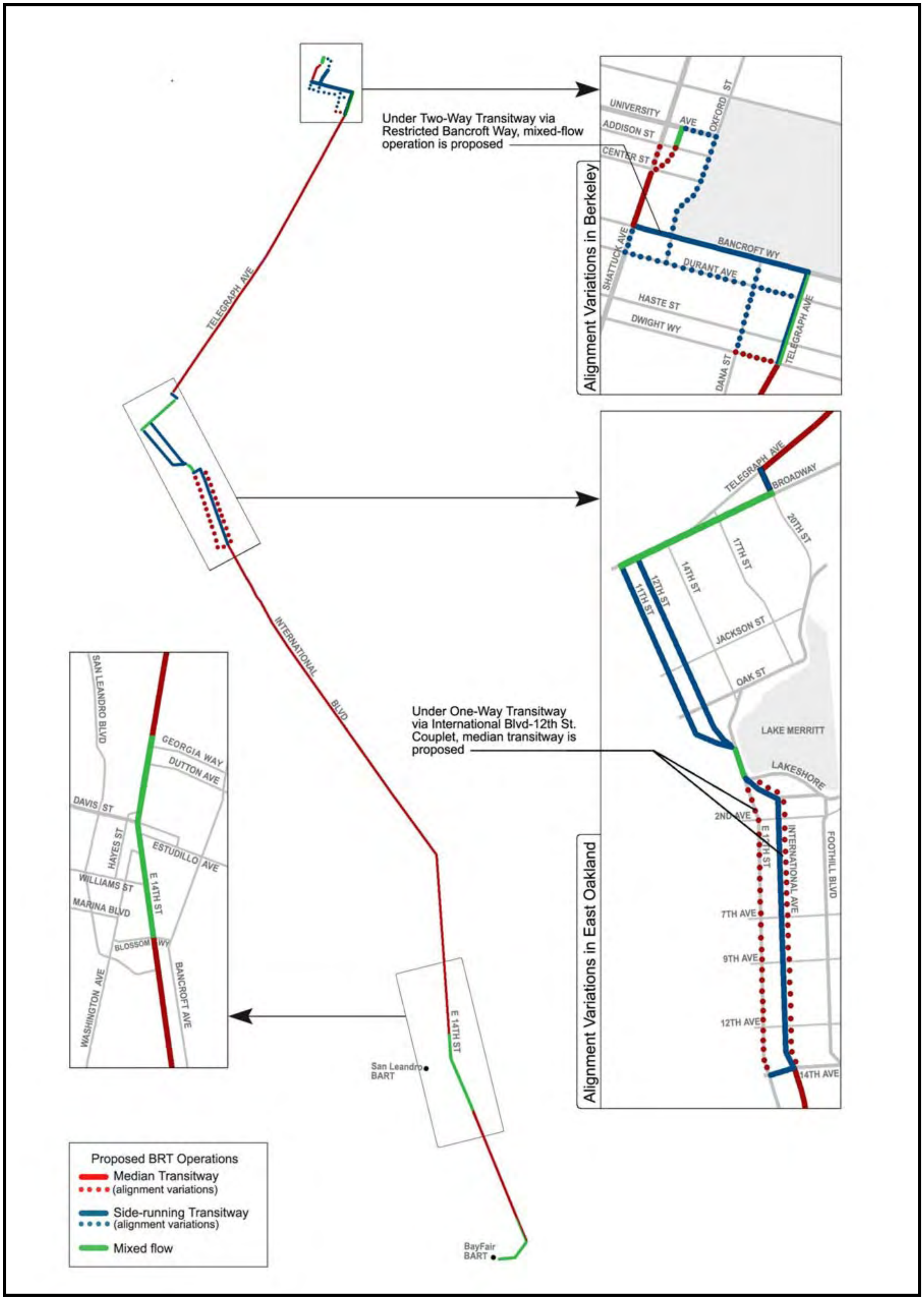


Figure 1-2: BRT Operations and Configuration of Transitway

DOWNTOWN OAKLAND - LAKE MERRIT - OAKLAND - PROPOSED - LOOKING NORTHWEST

TELEGRAPH AVE @ 24TH STREET - OAKLAND - PROPOSED - LOOKING SOUTH

Figure 1-3: Representative Side and Median BRT Stations

2.0 OPERATING PLANS

For comparison, the operating plan for the Baseline/No Project Alternative is described first. The changes to the Baseline/No Project proposed under the East Bay BRT Project are described next.

2.1 Baseline/No-Build Alternative

The Baseline/No-Build Alternative includes all currently planned and programmed projects in the study area and recently implemented transit service improvements. [Readers are referred to the East Bay BRT Draft Environmental Impact Study/Draft Environmental Impact Report (DEIS/DEIR) for additional detail on projects and transit services that form the Baseline/No-Build condition. A copy of the East Bay BRT DEIS/DEIR is provided in the supporting documentation CD provided as part of the preliminary Small Starts submittal sent to FTA in May 2008.]

Currently, AC Transit operates several local and limited stop bus services within the transportation corridors connecting downtown Berkeley, downtown Oakland and southern San Leandro. The services between downtown Berkeley and downtown Oakland include Route 51 in the College Avenue-Broadway corridor, Route 18 along the Shattuck Avenue corridor from downtown Berkeley to MacArthur BART, and Route 15 in the Martin Luther King Junior Way corridor. Within the immediate corridor proposed for BRT improvements, centered on Telegraph Avenue, Route 1R Rapid and Route 1 Local service is provided. These services were initiated in summer 2007, replacing Route 40/40L and Route 43 along the Telegraph Avenue segment between Shattuck Avenue and 20th Street/Broadway. Route 1R is express service that includes transit signal priority through intersections and stop spacing of roughly one-half mile.

The main services from downtown between Oakland and southern San Leandro include Route 40/40L in the Foothill Boulevard-Bancroft Avenue corridor and Route 1R Rapid and Route 1 Local service in the International Boulevard/East 14th Street corridor. Route 1R Rapid and Route 1 Local services are a continuation of service operated between Berkeley and Oakland. As noted previously, East Bay BRT service will replace Route 1R Rapid and Route 1 Local service. Table 2-1 summarizes the basic parameters that characterize Route 1R Rapid and Route 1 Local service.

Route 1R Rapid and Route 1 local service are the defining elements of the Baseline/ No-Build Alternative. In 2015, the services are assumed to be very similar to the express and local services operated currently, with a few moderate changes. These changes are shown in Table 2-1 alongside existing service parameters. One important change is owl service is assumed to be part of Route 1 service. In fact, owl service is provided

Table 2-1 Existing AC Service in Project Corridor and Baseline/No-Build Alternative Enhancements (2015)										
			Weekday Headway in Minutes[1]				Weekend Headway in Minutes[1]			
Segment	Route	Stops	Peak	Midday	Evening	Owl	Peak	Midday	Evening	Owl
Downtown Berkeley/ Shattuck Avenue to Telegraph Avenue	1R (Rapid)	7	12	12						
	1 (Local)	24-27	15	20	20	*[60]*[2]	20	20	20	*[60]*[2]
	800	24-27				60[3]				60[3]
Telegraph Avenue to Downtown Oakland	1R (Rapid)	5	12	12						
	1 (Local)	16	15	20	20	*[60]*[2]	20	20	20	*[60]*[2]
	800	16				60[3]				60[3]
Downtown Oakland to Downtown San Leandro	1R (Rapid)	19	12	12			15	15		
	1 (Local	53	15	20	20	*[60]*[2]	20	20	20	*[60]*[2]
	801	53				60[3]				60[3]
Downtown San Leandro to BayFair BART Station	1R (Rapid)	5	12	12			15	15		
	1 (Local)	15-16	15	20	20	*[60]*[2]	20	20	20	*[60]*[2]
	801	15-16				60[3]				60[3]

Source: *AC Transit Route Schedules, Winter 2008.*

Notes:

[1] Typical headway during the period cited. For O&M cost estimates, including estimates of hours and miles of service, actual route schedules, and AC Transit route performance statistics were used.

[2] There currently is no owl service but Route 1 is assigned owl service operating on late night routes 800 and 801 in 2015 Baseline scenario

[3] Owl service operates from approximately 12 midnight to 5:00 a.m. and, therefore, provides for 24-hour service coverage in the corridor.

Table 2-2 East Bay BRT Service along Project Corridor (2015)										
			Weekday Headway in Minutes[1]				Weekend Headway in Minutes[1]			
Segment	**Route**	**Stops**	**Peak**	**Midday**	**Evening**	**Owl**[2]	**Peak**	**Midday**	**Evening**	**Owl**[2]
Downtown Berkeley/ Shattuck Avenue to Telegraph Avenue and Oakland City Limit	East Bay BRT	6	5	5	10	60	12	12	15	60
Telegraph Avenue from City Limit to Downtown Oakland (Broadway @ 14th Street)	East Bay BRT	9	5	5	10	60	12	12	15	60
Downtown Oakland to San Leandro City Limit (Durant Avenue)	East Bay BRT	22	5	5	10	60	8	8	10	60
San Leandro from City Limit to BayFair BART Station	East Bay BRT	12	5	5	10	60	8	8	10	60

Source: *AC Transit and Kimley-Horn and Associates, Inc.*

Notes:
[1] Typical headway during the period cited. For O&M cost estimates, including estimates of hours and miles of service, service frequencies are assumed to transition (i.e., progressively increase or decrease) into the subsequent period.
[2] Owl service operates from approximately 12 midnight to 5:00 a.m. and, therefore, provides for 24-hour service coverage in the corridor.

Table 2-3 Operating Resources Required for Existing, Baseline/No-Build, and East Bay BRT Service in Project Corridor

Operating Parameter	2008 Existing[1]	Alternative			
		Baseline/No-Build (Route 1R and 1 Local)		East Bay BRT Project (Combined BRT and Local)	
		2015	Percent Increase over Existing	2015	Percent Increase over Baseline/ No-Build
Annual Platform Hours[2]	62,221 Rapid 82,227 Local 144,448 Total	62,434 Rapid 93,649 Local 156,083 Total	8%	165,517	6%
Annual Vehicle Miles[3]	765,134 Rapid 899,450 Local 1,664,584 Total	765,134 Rapid 962,577 Local 1,727,711 Total	4%	2,251,148	30%
Peak Vehicles	15 Rapid 16 Local 31 Total	15 Rapid 16 Local 31 Total	0%	31	0%
Stops/Stations[4]	36 Rapid 110 Local 110 Total[5]	36 Rapid 110 Local 110 Total[5]	0%	49	-55%[5] [+36%]

Source: *AC Transit route performance statistics, Winter/Spring 2008; Kimley-Horn and Associates, Inc*.

Notes:

[1] Estimates from the calibrated O&M model; therefore, the figures differ slightly from AC Transit published statistics. However, use of model estimates ensures consistency in comparisons with future Baseline/No-Build and East Bay BRT alternatives.

[2] Platform hours include all hours a bus is in revenue service, laying over at the end of the line, and proceeding to/from the operating division. This is equivalent to the elapsed time from when the bus leaves the operating division until it returns.

[3] Total miles operated, including while the bus is in revenue service and going to/from the operating division.

[4] Bus stops served by Routes 1R and 1 and BRT stations served by East Bay BRT.

[5] Rapid and Local stops share the same location although there are fewer designated Rapid stops. The number of BRT stations is compared to total number of Route 1 and 1R stop locations. The percent change in express service stops (BRT relative to Route 1R) is provided in parentheses.

currently in both the Telegraph Avenue and International Boulevard/East 14th Street corridors by Route 840 (north) and Route 801 (south). Assigning the service to Route 1 in 2015 allows for an easier comparison of service changes – and associated costs – resulting from implementation of East Bay BRT service, which also is to include owl service. Proposed East Bay BRT service in 2015 is shown for comparison in Table 2-2. The differences in corridor service are clear and not distorted by omitting service along the project alignment simply because it was provided under a different route name.

Table 2-3 shows service level characteristics, including the estimated miles, hours, and peak buses required to operate existing and 2015 Baseline/No-Build service.

Existing Service

In winter/spring 2008, Route 1R Rapid service was provided from downtown Berkeley to BayFair BART in South San Leandro on 12-minute peak and 12-minute midday headways, each direction. The span of service was approximately from 5:53 a.m. (first trip departure) to 7:00 p.m. (last trip departure), or 13 hours. There was no evening service. Weekend/holiday service frequencies were lower, with 15-minute headways all day between the hours of 7:33 a.m. and 6:06 p.m. (i.e., no evening service). However, Route 1R operated only between downtown Oakland and BayFair BART. No express service was provided weekends in the Telegraph Avenue corridor as demand in the north segment of the corridor is less than in the south, and was accommodated with local service only.

Route 1 Local service was provided from Berkeley to BayFair BART on weekdays on the same alignment as Route 1R, with peak headways of 15 minutes and midday and evening headways of 20 minutes. The span of service extended from 5:12 a.m. to 11:50 p.m. On weekends, Route 1 Local operated on 20-minute headways the entire service day between downtown Berkeley and BayFair BART (5:02 a.m. to 11:50 p.m.).

The combined service plans for routes 1R Rapid and 1 Local resulted in peak hour headways of 6.7 minutes throughout the corridor, required 31 peak buses, and consumed 1.7 million vehicle miles and 144 thousand platform hours annually.

2015 Baseline/No-Build Alternative

Baseline/No-Build service in 2015 is assumed to be similar to existing service levels in the corridor but with the addition of owl service on Route 1 Local. AC Transit does not foresee demand increasing sufficiently, given current ridership trends and service constraints that tend to limit opportunities to capture more of the corridor travel market, to justify major service enhancements. The combined service headways would remain the same, offering 6.7-minute average frequencies during both peak periods and 7.5-

minute average frequencies midday. The peak vehicle requirement for routes 1R Rapid and 1 Local is assumed to remain constant at 31 buses as for 2008 calibrated conditions. Annual platform hours and total vehicle miles will increase by about 8 percent and 3 percent, respectively, due to the assignment of owl service to Route 1 and adjustments in run times (i.e., vehicle trip times). Operational problems have been experienced on existing Route 1R and Route 1 services, requiring adjustments to the scheduled trip and recovery times. The 2015 service scenario anticipates that run times will not improve but deteriorate some relative to the current published schedule, based on growth in traffic congestion and observed trends in corridor transit travel times.

The derivation of peak buses, platform hours, and vehicle miles for both Route 1R Rapid and Route 1 Local service in 2015 is shown in Appendix A, Tables A-1 and A-2.

2.2 East Bay BRT Project

The operating plan for East Bay BRT service in 2015 assumes an increase in both vehicle miles and hours of service in the corridor. Higher weekday peak frequencies of 5 minutes and base frequencies of 5 minutes are proposed throughout the corridor. Five-minute peak headways are necessary to accommodate estimated peak hour, peak direction demand at the maximum load points along the alignment. Weekend/holiday service also will increase relative to combined Route 1R and Route 1 service. A split weekend schedule is proposed to reflect the differing levels of demand in the north and south segments of the corridor (demand tends to be relatively higher on weekends in the south). A split schedule would reflect what currently is operated and proposed to continue on Route 1R and Route 1. Between Berkeley and downtown Oakland, East Bay BRT buses would operate on 12-minute frequencies during the day, 15 minutes in the evening and 60 minutes for owl service; between downtown Oakland and BayFair BART in San Leandro, buses would operate on 8-minute frequencies during the day, every 10 minutes in the evening and 60 minutes for owl service.

Overall, higher frequency weekday and weekend service results in an increase in platform hours of approximately 6 percent and total vehicle miles of 30 percent relative to the Baseline/No-Build Alternative. Miles increase more than hours due to the faster average travel time of BRT buses compared to both Route 1R and Route 1 buses, and the fact that more one-way and round trips through the corridor would be possible during a given time period. The weekday peak vehicle requirement remains at 31 buses also for this reason. Shorter round trip times, including layover, allow more productive use of the bus fleet. For example, each peak bus assigned to East Bay BRT service can make 0.37 round trips per hour during the peak; on Route 1 and 1R, each peak bus can make on average just 0.29 round trips per hour.

The hours estimate for East Bay BRT is based on the conservative assumption that travel-time savings will only be from faster run times, with layover at the terminals remaining unchanged compared to the baseline due to collective bargaining unit agreements in place that guarantee drivers adequate break periods. There may be an opportunity to decrease the planned recovery time portion of the layover because of improved reliability of the BRT service and the reduced need for additional time to cover runtime perturbations. However, layover on Route 1 R cannot be reduced due to contractual obligations, observed run time unreliability, and the resulting need to include schedule recovery as part of the end of line turnback time. The derivation of peak buses, platform hours, and vehicle miles for 2015 East Bay BRT service is shown in Appendix A, Table A-3.

3.0 O&M Cost Estimating Methodology

3.1 Existing AC Transit Cost Allocation Factors

AC Transit currently estimates O&M costs of service changes using cost allocation models. Referred to as unit cost models, the models are developed by basically assigning operating costs, derived from the agency operating budget or from cost experience, to factors such as:

- Scheduled/actual vehicle miles;
- Scheduled/actual vehicle or operator hours;
- Number of (peak) buses required for weekday service;
- Number of major facilities (e.g., garages); and/or
- Other factors.

These factors represent the resources that are consumed in delivering transit service. When assigned a cost, for example $/mile or $/hour, they can be used to estimate the cost of a service change based on the change in resources consumed. (For additional detail on the assumptions and logic of unit cost models as well as approaches to developing a model, see *Transit Cost Analysis*, E. Beimborn, University of Wisconsin, Milwaukee or *Fully Allocated Cost Analysis, Guidelines for Public Transit Providers*, by Price Waterhouse, November 1986.)

AC Transit's unit cost model is based on two factors: platform hours and vehicle miles, to which direct, overhead, and total (direct plus overhead) costs are assigned. The O&M model is not an integrated two-factor model where certain costs are assigned to one variable and certain costs to the other variable. All costs are assigned to either hours or miles, and a single unit operating cost per hour and a single unit operating cost per mile are calculated. Service changes can be evaluated from either perspective: the change in hours or the change in miles of bus operation, which translates into a change in operating costs. Service changes can be analyzed for the marginal (or incremental) change in operating costs by using either of the **direct** unit cost factors. Alternatively, the total change in operating costs can be estimated using either of the total (direct **plus** overhead) unit cost factors.

Table 3-1 lists the service factors that were the basis of AC Transit's FY 2007-2008 O&M cost allocation model. Table 3-2 indicates the unit costs, either cost per platform hour or cost per vehicle mile, that are multiplied by the change in either platform hours or vehicle miles resulting from a service adjustment to estimate the effect on systemwide O&M costs.

Table 3-1 AC Transit Cost Allocation

FY 2007-2008 Service Parameters for Cost Allocation Calibration

Factor	Weekday	Saturday	Sunday/Holiday	Annual
Platform Hours[1]	1,639,830	170,040	197,100	1,993,793
Vehicle Miles[2]	21,482,941	2,019,836	2,346,060	25,572,073
Peak Vehicles[3]	524			524
Rapid Stations/Stops[4]	36	24	24	36

Source: AC Transit District statistics (TR238, Spring 2007 and FY 2007-2008 Budget.

Notes:

[1] Total hours operated, from pull-out of the operating division to pull-in, including revenue service, layover/turnback, pull-out and pull-in time.

[2] Total bus miles operated, division pull-out to division pull-in

[3] Maximum buses required during either a.m. or p.m. peak to operate scheduled service; weighted average of school weekday and non-school weekday assignments.

[4] Rapid stops, which are not included in AC Transit cost allocation.

Table 3-2 AC Transit Unit Costs for Estimating Effects of Service Changes

Platform Hours and Vehicle Miles: Direct and Total Unit Costs, FY 2007-2008 Budget

	Platform Hours	Vehicle Miles	Peak Buses
Budgeted Service Levels[1]	1,993,793	25,572,073	532/503
Direct Cost of Service (per unit of service)[2]	$113.05	$8.81	NA
Overhead Cost (per unit of service)[3]	$29.73	$2.32	NA
Total Cost (Direct plus Overhead per unit of service)	**$142.79**	**$11.13**	**NA**

Source: AC Transit Finance Department; FY 2007-2008 Budget

Notes:

[1] Hours and miles assumed in FY 2007-2008 budget; peak buses from spring 2007, with school day and school holiday requirements listed. Peak buses are not included in AC Transit O&M cost allocations.

[2] Direct costs ($225 million in FY 2007-2008) include operator and maintenance worker wages and benefits; maintenance materials and supplies (fuel, tires, parts, etc.) and direct management, supervision, and clerical in the Transportation and Maintenance departments.

[3] Overhead costs ($59.3 million in FY 2007-2008) include general administrative salaries and fringes; utilities, insurance, leases and rentals, interest expense, and other nonoperational services and supplies.

As previously noted, one factor or the other is applied to estimate either the incremental or the total change in O&M costs. Peak buses and bus stops (or stations) are not part of the O&M cost allocation but shown for comparison with the more detailed cost allocation model developed to estimate costs of the East Bay BRT Project relative to the Baseline/No-Build Alternative.

The AC Transit cost allocation model would estimate the costs of a 1,000 platform hours and 12,845 vehicle miles (the latter based on the system average speed of 12.83 miles per platform hour) service change as follows:

1,000 hours x $142.79/hour= $142,790 annual increase in O&M costs; and

12,845 mile x $11.13/mile= $142,965 annual increase in O&M costs.

The estimates are very similar because an average system speed was used to derive vehicle miles. The estimates could diverge if the ratio of platform hours to vehicles miles differed significantly from the system average. An express service would show higher miles than hour costs, for instance. But, the two factors allow the analyst to use two different approaches to estimating costs of service changes.

3.2 Four-Factor Cost Allocation Model for Estimating O&M Impacts of East Bay BRT Project

A more detailed cost allocation model was developed for estimating the costs associated with the East Bay BRT Project and for comparing project costs to the Baseline/No-Build condition. Cost estimates need to reflect the substantially different operating environment for BRT, a new method of fare collection, and the additional requirements of maintaining new facilities and systems, such as BRT stations, the transitway, communications and safety/security monitoring systems, and transit signals. The fact BRT buses will operate at a significantly higher average speed than other local and East Bay express services needs to be reflected by differentiating hourly from mileage costs. The maintenance of new facilities and systems, and enforcement of self-service fare collection will necessitate AC Transit hiring additional personnel and possibly contract for additional services.

Upon consideration of these circumstances, a determination was made that an expanded cost allocation model would be developed, based also on AC Transit's FY 2007-2008 budget, and incorporating additional factors for overhead and new costs generated by the East Bay BRT Project. Four resource factors were designated to represent the various types of O&M costs:

1. Platform Hours – for direct operating costs that vary with hours of service, which are primarily operator wages and fringes, and related transportation division services and expenses (e.g., field supervisory labor, operator payroll taxes).
2. Vehicle Miles – for direct operating costs that vary with bus miles driven, which are primarily maintenance worker wages and fringes, and related maintenance division

supervisory and clerical support; fuel, oil, tires, and other parts and supplies for maintaining bus operations.

3. Peak Vehicles – which represent overhead and other fixed costs for operating bus service, such as management labor and fringes (i.e., above the supervisory level); facilities and other infrastructure maintenance labor and fringes and also facilities utilities, materials and supplies costs; security services; office supplies and services; insurance; and taxes other than operator and maintenance worker payroll taxes. Most expenses outside of the transportation and maintenance divisions are allocated to peak vehicles. Executive management labor and fringe costs in the transportation and maintenance divisions also are allocated to peak vehicles.

4. BRT Stations – a resource factor that captures the special costs of BRT system O&M, such as systems and communications expenses, station and transitway maintenance, and fare collection. Normally fare collection expenses are allocated to peak vehicles (as buses have on-board fareboxes), but for the East Bay BRT, passenger fares will be collected at station ticket vending machines and fare enforcement will be by roving inspections. Therefore, the number or scale of both fare collection and enforcement is directly related to the size of the BRT system, which is represented by the number of stations.[1]

The first two factors represent the highly variable costs of BRT operations while the last two factors represent fixed costs, that is, those that do not change frequently. Buses required for revenue service will only change every three to four months, if that, assuming there is a significant service change. Fleet size determines the required number and size of facilities, such as yards and garages. The level of administration in an agency also is directly related to the scale of operations, best reflected by the number of revenue vehicles. BRT stations offer a similar measure for the special costs that an agency like AC Transit will incur as a consequence of undertaking a major new investment in rapid transit facilities.

Costs in the AC Transit FY 2007-2008 operating budget were assigned to the first three of these resource factors based on the rationale described and following recommendations of the literature. Appendix B, Table B-1, shows this allocation by major budget line item, or cost category, as well as the total annual expense in that cost category. Dividing the total expenses assigned to each factor by the budgeted service parameter, from Table 3-1, above, yielded the unit costs. For costs related to vehicle miles, one further adjustment was made to the calculated unit cost. Because East Bay BRT service will be provided entirely by 60-foot articulated buses, a unit cost per vehicle

[1] Length of BRT alignment would be an alternative measure for this “fixed” cost.

mile based upon essentially FY 2007-2008 maintenance costs averaged over the entire AC Transit fleet (which is mainly 40-foot buses) will underestimate the actual cost per mile of a 60-foot bus with more tires, more doors or other equipment, and slightly lower fuel economy. Therefore, the unit cost per vehicle mile was increased by 20 percent from the calculated value to reflect the increased maintenance costs of articulated buses. Unit cost per hour is not affected as these buses require only one operator. The 20 percent upwards adjustment in per vehicle mile cost is based upon information reviewed with AC Transit maintenance staff and the fact articulated buses have eight as opposed to six tires, four as opposed to 3 doors, and about 17 percent lower fuel economy than the fleet average, which largely is comprised of standard 40-foot buses.[2]

Costs assigned to BRT stations are outside of the AC Transit budget and were derived independently. The costs will be primarily labor with some ongoing materials costs. Table 3-3 lists the additional staffing that will likely be required to maintain the BRT facilities, monitor operations, and collect fares. The position costs are derived from AC Transit FY 2007/2008 budget information for comparable labor types. The estimate reflects incremental positions only in an effort to avoid double counting. For instance, a higher number of fare inspectors will likely be required during peak travel periods to cover the full 49-station BRT line. And, more than three controllers will be necessary to monitor service 24 hours a day seven days a week. Similarly, more than two maintenance workers might be required for system upkeep. However, AC Transit already has staff, if not in similar positions at least in transferable positions, on Route 1R Rapid, Route 1 Local, and on other District services that can be assigned to East Bay BRT service to: 1) fill gaps in coverage; and/or 2) augment peak needs.

The incremental labor costs assigned to stations total $1.6 million. A materials and supplies allowance for annual maintenance of stations, the BRT transitway, and special equipment (ticket vending machines, signals and communications equipment, etc.) would increase the total costs assigned to BRT stations to approximately $1.9 million. Here are 49 proposed BRT stations, resulting in a unit cost per station of $39,000. The data used to estimate the unit cost per BRT station are shown in Table 3-4 along with the data and any adjustments that were made to estimate the unit costs per platform hour, bus mile and peak bus used in the model. The final equation for the four-factor O&M cost model also

[2] The AC Transit fleet average fuel economy is 3.85 miles per gallon (mpg). The fuel economy of Van Hool articulated buses, according to AC Transit maintenance staff, varies from 2.95 mpg to 3.54 mpg, or a simple average of 3.21 mpg. This is approximately 17 percent lower than the fleet average. BRT buses should achieve fuel economy on the high end of the range as stops and starts are more limited (with the exception of Transbay and some express routes, including Route 1R) and travel speeds are more uniform (compared to Route 1R). However, the 20 percent per mile unit cost adjustment for articulated buses also provides an allowance for higher fuel prices, which are increasing the shares of maintenance and total agency operating budgets going towards fuel, and the differential impact lower fuel economy buses would have on those costs.

is shown. Note that costs are additive. Total annual costs are the sum of all hours, vehicle miles, vehicle, and BRT station costs.

The four factor model also is appropriate for estimating annual costs of the Baseline/No-Build Alternative. The adjusted per mile cost is relevant as most buses assigned to Route 1R Rapid and Route 1 are 60-foot articulated buses. Because there will be no transitway and very limited station costs, the BRT station unit cost is not significant. (Route 1R and Route 1 use the Uptown Station on 20th Street, between Telegraph Avenue and Broadway; also, the Route 1R stops have more amenities than normal bus stops). Thus, it is reasonable to assign some level of "stations" costs to the Baseline/No-Build Alternative. For purposes of cost comparisons with East Bay BRT service, which has 49 stations, Baseline/No-Build service is assigned costs equivalent to just one station. (See Section 4.0.) Basically, three factors – miles, hours and peak buses – can be used to estimate Baseline/No-Build O&M costs with a minor adjustment for bus stop and station maintenance costs.

Table 3-3 Incremental O&M Costs Assigned to BRT Stations
Staffing for Station, Transitway and Systems Equipment Maintenance

Position/Function	Labor and Fringe per Position	Positions	Annual Cost
Technicians (Signals/Communications, Fare, Other)	$ 148,000	3	$ 444,000
Systems Supervisor	$ 158,000	1.5	$ 237,000
Station and Transitway Maintenance	$ 94,000	2	$ 188,000
Fare Inspectors	$ 92,000	5	$ 460,000
Control Center Operator	$ 94,000	3	$ 282,000
Total Labor		**14.5**	**$ 1,611,000**
Materials and Supplies Allowance			$ 300,000
Total Labor and Materials and Supplies			**$ 1,911,000**

Source: Kimley-Horn & Associates, Inc. based on AC Transit FY 2007-2008 Position Budgets
Positions are additional staff required besides those in base budget and indirectly allocated to BRT.

Table 3-4 Revised AC Transit O&M Cost Model Four Factor Cost Model Based on FY 2007-2008 Budget and Service Levels				
	Platform Hours[1]	Bus Miles[2]	Peak Buses[3]	BRT Stations[4]
Allocated Operating Expense	$121,463,830	$61,054,321	$101,203,701	$1,911,000
Service Level	1,993,793	25,572,073	524	49
Unit Cost	$60.92	$ 2.39	$193,137	$39,000
Cost Adjustments		$ 0.48 (+20%)		
Final Unit Cost	$ 60.92	$ 2.87	$ 193,137	$ 39,000
Annual O&M Cost =	Hours x $60.92 + Miles x $2.87 + Buses x $193,137 + Stations x $39,000			
Source: AC Transit District statistics (TR238, Spring 2007and FY 2007-2008 Budget)				

Notes:

[1] Hours operating expense is from Appendix B, Table B-1. Total hours operated (Service Level) is based on FY 2007/2008 budget and includes vehicle time from pull-out of the operating division to pull-in (pull-out, revenue service, layover/turnback, and pull-in time).

[2] Miles operating expense is from Appendix B, Table B-1. Total bus miles operated (Service Level) is from division pull-out to division pull-in. Unit cost is adjusted for added fuel costs and maintenance requirements of articulated buses.

[3] Peak Buses operating expense is from Appendix B, Table B-1. The factor represents the maximum buses required during either the a.m. or p.m. peak to operate scheduled service (Service Level) and is the weighted average of school days and non-school days. The Service Level is based on spring/summer 2007 conditions, which were the basis of the 2007/2008 budget.

[4] BRT Stations expense is from Table 3-3. Service Level is the current planning and design assumption for the 17-mile East Bay BRT corridor.

Average versus Direct or Marginal Costs

The model presented in Table 3-4 assumes unit cost factors based on average system costs (direct **plus** overhead) are appropriate for estimating future costs of East Bay BRT and Baseline/No-Build service. No derivation of unit costs based upon AC Transit's breakdown of direct versus indirect overhead costs has been made. Average costs per hour, mile, and peak vehicle of service are assumed to better indicate the ongoing, long-term costs of the two services on AC Transit's operating budget. East Bay BRT, and Route 1R Rapid and Route 1 Local represent major elements of total system operation. Use of marginal unit costs would only be appropriate for a minor service change that would not affect the allocation of overhead resources at the District. The application of average unit costs also gives the most conservative estimate of O&M impacts for East Bay BRT service.

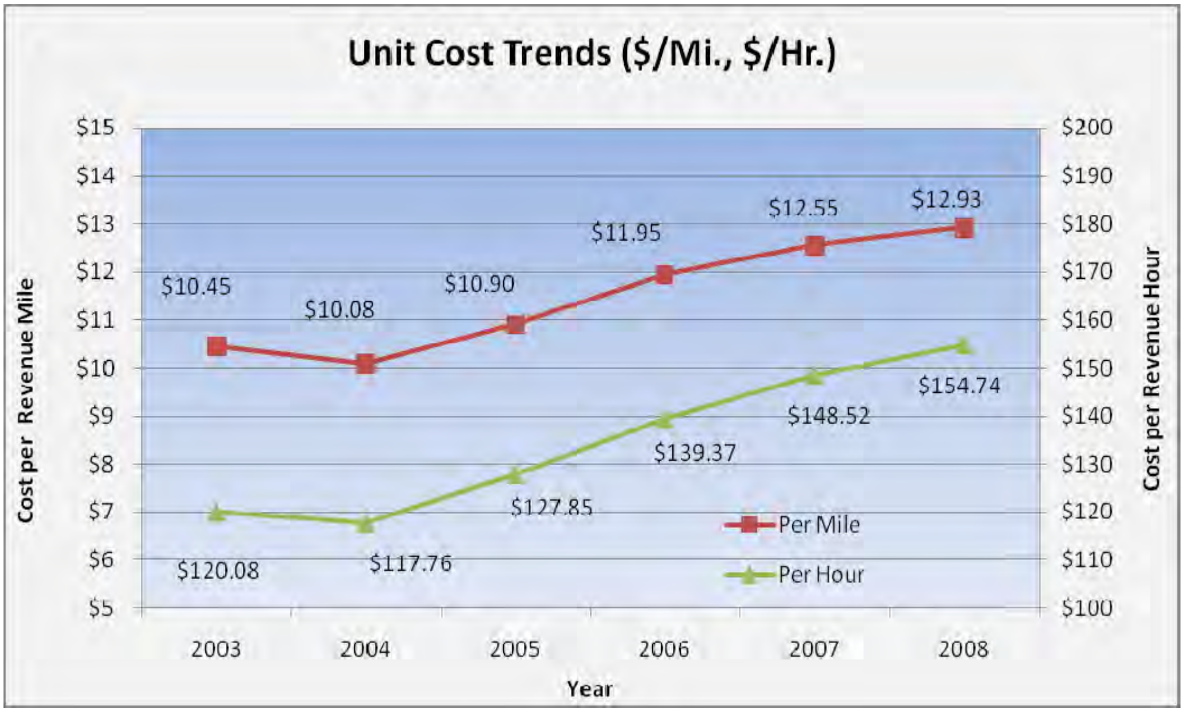
Reasonableness Check on Unit Costs, Budgeted versus Actual

Unit cost factors derived from budgeted as opposed to actual performance have the potential to understate/overstate unit cost relationships if either the financial data or resource factor assumptions (projected annual miles and hours of service) are inaccurate or out of line with historic trends. (FY 2007-2008 budget information was used to develop the cost model in order to obtain as current as possible cost of service information and to avoid having to escalate historic data to represent current conditions, among other challenges.) Various reasonableness checks were made to ensure that the budget information was not out of line with historic relationships. AC Transit reports on scheduled service levels in 2007 and 2008 were compared to the annual service hours and miles that were the basis of the FY 2007-2008 budgets. Also, historic trends in operating expenses, service miles, and services hours were analyzed.

Appendix C, Table C-1, summarizes such data for the period 2004 through 2007, with the budgeted 2007-2008 data shown under year 2008. Figure 3-1, below, graphically portrays the trends in the cost per revenue hour and revenue mile of service. Revenue miles and service are what is reported in annual reports to FTA. Total miles, as used in O&M cost modeling, tend to be about 17 percent higher and total hours about 9 percent higher.

FY 2007-2008 data appear to in line with historic trends. It is possible that budgeted costs are somewhat lower than will be actual fiscal year-end costs due to higher inflation and fuel costs than were assumed when developing the budget. If the derived unit cost factors in the O&M model are somewhat optimistic as a result, the same “bias” would affect both the BRT and the Baseline/No-Build cost because the same factors are used to estimate both. At this point, there is no strong evidence the unit cost model misrepresents the actual costs of AC Transit service.

Figure 3-1 AC Transit Cost of Service Trends, 2003-2007 Actual; 2008 Budgeted



Source: AC Transit National Transit Database reports; FY 2007-2008 Budget.

Note:
Unit costs are the average cost of each revenue mile or revenue hour of service provided (total operating expense/revenue mile; total operating expense/revenue hour).

4.0 O&M COSTS, EAST BAY BRT AND BASELINE/ NO-BUILD ALTERNATIVES

This section summarizes estimated costs for 2015 East Bay BRT service for comparison with the 2015 Baseline/No-Build Alternative. Costs were derived by inputting the resource factor inputs described in Sections 2.1 and 2.2, summarized in Table 2-3, into the four-factor O&M model derived in Section 3.2 and shown in Table 3-4. To facilitate the comparison of costs between alternatives, estimated O&M costs for the Baseline/No-Build are presented first, followed by estimated costs for East Bay BRT services, which because of the increased levels of service proposed, are greater than the Baseline/No-Build costs.

4.1 Baseline/No-Build O&M Costs for 2015 Service Levels

Table 4-1 shows both the resource factor inputs into the O&M model and the resulting annual costs. The largest cost item is "Hours" (i.e.: costs attributable to mainly operator labor and fringes) at approximately $9.5 million annually. Costs associates with "Vehicle Miles" and "Peak Vehicles" are similar, estimated to be $4.9 million and $6.0 million, respectively. Total annual O&M costs for 2015 service under the Baseline/No-Build Alternative are approximately $20.5 million.

Table 4-1 Annual O&M Costs (2015)
East Bay BRT and Baseline/No-Build Alternative Compared

	Baseline/No-Build		East Bay BRT		Difference (BRT less Baseline)		Percent Change in Cost
Factor	**Input Value**	**Annual Cost**	**Input Value**	**Annual Cost**	**Input Value**	**Annual Cost**	
Platform Hours	156,083	$9,508,730	165,517	$10,083,458	9,434	$574,729	6%
Vehicle Miles	1,727,711	$4,949,973	2,251,148	$6,449,644	523,437	$1,499,671	30%
Peak Vehicles	31	$5,987,242	31	$5,987,242	–	$0	0%
BRT Stations	1[1]	$39,000	49[2]	$1,911,000	48	$1,872,000	NA
Total Costs		**$20,484,945**		**$24,431,345**		**$3,946,400**	**19%**

Source: Kimley-Horn & Associates, 2008
Notes:
[1] One major station is served by Routes 1R and 1, the Uptown Center at 20th and Broadway. Other stops are enhanced sidewalk bus stops and generate no significant additional facilities maintenance costs.
[2] Includes all major BRT stations along alignment, including Uptown Center. The BRT stations variable also is a proxy for other facilities maintenance costs that would be incurred in operating the BRT transitway and maintaining systems equipment.

4.2 East Bay BRT O&M Costs for 2015 Service Levels

Table 4-1 also shows the resource factor inputs into the O&M model and the resulting annual costs for East Bay BRT service. The largest cost item is “Hours” costs, followed by “Miles” costs and then “Vehicles” costs. “BRT Station” costs are the lowest cost element of East Bay BRT service. The total annual operating cost for 2015 service levels is $24.4 million, which is 19 percent greater than the annual cost for Baseline/No-Build service.

The cost factor showing the largest cost increase over the Baseline/No-Build is “Miles,” excluding BRT station costs, which are a special cost element. Miles costs increase substantially more (by 30 percent) than hours costs (which increase by 6 percent). This reflects the fact that more service is proposed under the East Bay BRT project and buses will operate at a significantly higher average speed – yielding more vehicle miles per platform hour. There is no change in “Peak Vehicles” costs because the peak bus assignment does not increase. Costs associated with BRT stations, just under $2 million, represent a major area of cost increase for East Bay BRT service relative to the Baseline/No-Build Alternative. This is understandable as AC Transit will need to maintain a number of new facilities and equipment, and enforce the self-service, proof-of-payment fare collection system.

As noted previously, the analysis is intended to be conservative in assumptions about the changes that would occur – and be possible – under East Bay BRT service. Because East Bay BRT buses will operate in dedicated lanes over most of the route, service should be highly reliable. A highly reliable service has operational advantages. Turnback time for bus layover probably can be reduced compared to what AC Transit must allow today for schedule recovery on Route 1R, which has highly variable run times. In deriving the costs of Table 4-1, it was nonetheless assumed that layover would be the same for both East Bay BRT and Route 1R service. Reducing layover by a few minutes would reduce the peak bus requirement and, therefore, peak bus costs assigned to the East Bay BRT Project. This is a cost savings opportunity to be evaluated further should the project be approved for implementation.

5.0 CONCLUSION

A four-factor cost allocation model was developed to estimate the annual costs of East Bay BRT service and Baseline/No-Build Alternative service for projected 2015 service levels. The unit cost per vehicle mile, and vehicle hour of weekday and weekend service – both variable costs – and the unit cost per peak bus assigned to weekday service – representing fixed or overhead costs – were derived from the AC Transit FY 2007-2008 adopted budget. The reasonableness of unit cost factors was checked using historic actual costs for service provided by the District. The fourth variable in the cost model-BRT stations-captures the estimated annual costs for maintaining new facilities (transitway, stations, and equipment) and implementing new fare collection methods on East Bay BRT service. These costs are relatively minor for the Baseline/No-Build Alternative.

The cost model has the following form:

Total Annual O&M Cost = $60.92 x Platform Hours + $2.87 x Vehicle Miles +

$193,137 x Peak Buses + $39,000 x BRT Stations

Inputting calculated hours, miles, and peak buses and stations for Baseline/No-Build service in 2015 yields an annual O&M cost of approximately $20.5 million. Doing the same for East Bay BRT service yields an annual O&M cost of approximately $24.4 million. All cost estimates are in constant 2008 dollars. The higher cost for East Bay BRT service reflects the fact that a 30 percent increase in vehicle miles and 6 percent increase in vehicle hours of operation are proposed relative to the Baseline/No-Build. The disproportionate increase in miles compared to hours of BRT service reflects the fact BRT buses will operate at a higher average speed than the combined average for Route 1R and Route 1 service. This is possible due to the provision of dedicated transit lanes and a higher level of transit signal priority for East Bay BRT service. More vehicle miles (and, therefore, more bus trips) can be operated per platform hour.

The higher level of service for East Bay BRT service is necessary to carry the forecast higher level of demand compared to the Baseline/No-Build. Increased ridership will generate increased fare revenue. Costs net of fares have not been estimated at this time and will be an important element when evaluating the overall costs and **benefits** of the proposed project.

Appendix A

Operating Plans:

Service Level and Hours/Miles/Bus Calculations

Table A-1

AC TRANSIT EAST BAY BRT: FLEET SIZE, VEHICLE HOURS AND MILES file=

CONCEPT OPERATING PLAN 1RAPID: 12 MIN. PEAK HEADWAYS, 12.0 MIN. BASE; NO SERVICE AFTER 7 P.M.

YEAR 2015 Service to BayFair BART; 15% Spares)

Sundays 52 Saturdays 52 Holidays 8 Weekdays 253

1R RAPID SERVICE PLAN (APPROXIMATES 2008 EXISTING

System Characteristics	Weekdays	Assumptions:				
Days per Year:	253					
Stations:	1					
One-Way Distance (Miles):	17.2					
Distance to Yard (Mi):	8					
Time to Yard (Min.)	24					
Turnback Time (Sec):	600					
Peak Hour, Peak Dir. Pass:	400	% of Peak:	100%	62%	100%	52%
Maximum Vehicle Load:	90	By period:	85	60	85	60
		Transition Time (min):	0	0	0	0
Average Dwell (Sec):			0	0	0	0
One-Way Travel Time (Sec):			4380	4500	4800	4380
One-Way w/ Turnback (Min.):			83.0	85.0	90.0	83.0

		Operating Period	**AM Base**	**AM Peak**	**Midday/Base**	**PM Peak**	**PM Base**	**Owl**	**TOTAL DAILY**	**TOTAL ANNUAL**	
				5:58-9:22 a.m	9:22 am-2:22 pm	2:22-5:46 pm	5:46-7:10 pm	0	6:22 am-7:10 pm		
	Input	**Minutes**		**204**	**300**	**204**	**84**	**0**	**792**	**200,376**	
	Calc.	Hours		3.4	5	3.4	1.4	0	13.2	3,340	
	Calc.	PPHPD		400	248	400	208	0			
	Calc.	Veh./Hr.		4.7	4.1	4.7	3.5	0.0			
	Input	**Vehicles**		**1**	**1**	**1**	**1**	**1**			
	Calc.	Bus Capacity		85	60	85	60	60			
	Calc.	Buses Per Hour		5.0	5.0	5.0	4.0	0.0			
	Calc.	Headways (Min.)		12.00	12.00	12.00	15.00	0.00			
	Input	**Headways (Min.)**		**12.00**	**12.00**	**12.00**	**12.00**	**0.00**			
	Calc. Adj.	Buses Per Hour		5.0	5.0	5.0	5.0	0.0			
	Calc. Adj.	PPHPD		425	300	425	300	-			
	Calc.	Revenue Buses		14	15	15	14	0			
	Calc.	Revenue Vehicles		14	15	15	14	0			
	Input	Standby Buses		0	0	0	0	0			
	Calc.	Standby Vehicles		0	0	0	0	0			
	Calc.	Total Revenue Fleet		14	15	15	14	0			
	Calc.	Total Fleet w/15%		17		18					
One-Way Bus Trips				34	50	34	16	0	134	33,902	
Revenue Vehicle Miles				583.1	857.5	583.1	274.4	0.0	2,298	581,419	
Revenue Vehicle Hrs				47.6	75.0	51.0	22.4	0.0	196	49,588	
Vehicle Pull Outs				14	1	0	0	0	15	3,795	
Vehicle Pull Ins				0	0	0	1	14	15	3,795	
Non-Revenue Vehicle Miles				114.1	8.2	0.0	8.2	114.1	245	61,859	
Non-Revenue Vehicle Hrs				5.7	0.4	0.0	0.4	5.7	12	3,083	
Total Vehicle Miles				697	866	583	283	114	2,543	643,278	Miles
Total Vehicle Hrs				53.3	75.4	51.0	22.8	5.7	208	52,671	Hrs

Table A-1
AC TRANSIT EAST BAY BRT: FLEET SIZE, VEHICLE HOURS AND MILES--Weekends file=
CONCEPT OPERATING PLAN 1RAPID: 15 MIN. HEADWAYS ALL DAY SAT, SUN, HOL, 7:30 A.M. TO 6 P.M.
YEAR 2015 Service to BayFair BART; 15% Spares)

Sundays 52 Saturdays 52 Holidays 8 Weekdays 253

1R RAPID SERVICE PLAN (APPROXIMATES 2008 EXISTING

System Characteristics	Weekends	Assumptions:				
Days per Year:	112					
Stations:	0					
One-Way Distance (Miles):	12.0					
Distance to Yard (Mi):	7					
Time to Yard (Min.)	19					
Turnback Time (Sec):	420					
Peak Hour, Peak Dir. Pass:	200	% of Peak:	100%	62%	100%	52%
Maximum Vehicle Load:	90	By period:	60	60	60	60
		Transition Time (min):	30	0	0	30
Average Dwell (Sec):			0	0	0	0
One-Way Travel Time (Sec):			2880	3180	3180	3000
One-Way w/ Turnback (Min.):			55.0	60.0	60.0	57.0

		Operating Period	**AM Base**	**AM**	**Midday**	**PM**	**Eve**	**Owl**	**TOTAL DAILY**	**TOTAL ANNUAL**
				7:33-8:34 a.m	8:34 am-4:34 pm	4:34-5:36 pm	5:36-6:06 pm	0	7:33 am-6:06 pm	
	Input	**Minutes**		**60**	**480**	**60**	**30**	**0**	**630**	**70,560**
	Calc.	Hours		1	8	1	0.5	0	10.5	1,176
	Calc.	PPHPD		200	124	200	104	0		
	Calc.	Veh./Hr.		3.3	2.1	3.3	1.7	0.0		
	Input	**Vehicles**		**1**	**1**	**1**	**1**	**1**		
	Calc.	Bus Capacity		60	60	60	60	60		
	Calc.	Buses Per Hour		4.0	3.0	4.0	2.0	0.0		
	Calc.	Headways (Min.)		15.00	20.00	15.00	30.00	0.00		
	Input	**Headways (Min.)**		**15.00**	**15.00**	**15.00**	**15.00**	**0.00**		
	Calc. Adj.	Buses Per Hour		4.0	4.0	4.0	4.0	0.0		
	Calc. Adj.	PPHPD		240	240	240	240	-		
	Calc.	Revenue Buses		8	8	8	8	0		
	Calc.	Revenue Vehicles		8	8	8	8	0		
	Input	Standby Buses		0	0	0	0	0		
	Calc.	Standby Vehicles		0	0	0	0	0		
	Calc.	Total Revenue Fleet		8	8	8	8	0		
	Calc.	Total Fleet w/15%		10		10				
One-Way Bus Trips				6	64	8	4	0	82	9,184
Revenue Vehicle Miles				72.0	768.0	96.0	48.0	0.0	984	110,208
Revenue Vehicle Hrs				6.0	64.0	8.0	4.0	0.0	82	9,184
Vehicle Pull Outs				8	0	0	0	0	8	896
Vehicle Pull Ins				0	0	0	0	8	8	896
Non-Revenue Vehicle Miles				52.0	0.0	0.0	0.0	52.0	104	11,648
Non-Revenue Vehicle Hrs				2.6	0.0	0.0	0.0	2.6	5	579
Total Vehicle Miles				124	768	96	48	52	1,088	121,856
Total Vehicle Hrs				8.6	64.0	8.0	4.0	2.6	87	9,763

Table A-2

AC TRANSIT EAST BAY BRT: FLEET SIZE, VEHICLE HOURS AND MILES file=

CONCEPT OPERATING PLAN ROUTE 1 LOCAL: 20 MIN WEEKEND HEADWAYS; OWL SERVICE ADDED

YEAR 2015 Service to BayFair BART; 15% Spares)

Sundays 52 Saturdays 52 Holidays 8 Weekdays 253

ROUTE 1 SERVICE PLAN (APPROXIMATES 2015 BASELINE

Assumptions:

Same Vehicle Capacity as New Line 1 Expansion Vehicles

System Characteristics	Weekdays		AM Peak	Midday/Base	PM Peak	PM Base	Owl
Days per Year:	253						
Stations:	0						
One-Way Distance (Miles):	17.9						
Distance to Yard (Mi):	8						
Time to Yard (Min.)	23						
Turnback Time (Sec):	900						
Peak Hour, Peak Dir. Pass:	300	% of Peak:	100%	50%	100%	50%	25%
Maximum Vehicle Load:	90	By period:	85	60	85	60	60
		Transition Time (min):	15	0	0	0	0
Average Dwell (Sec):			0	0	0	0	0
One-Way Travel Time (Sec):			5520	6000	5580	5100	4920
One-Way w/ Turnback (Min.):			107.0	115.0	108.0	100.0	97.0

		Operating Period	**AM Base**	**AM Peak**	**Midday/Base**	**PM Peak**	**PM Base**	**Owl**	**TOTAL DAILY**	**TOTAL ANNUAL**	
				5:15-8:30 AM	8:30 am-2 pm	2-6 pm	6 pm-12 am	12:00-5:15 A.M.			
	Input	Minutes		195	330	240	360	315	1440	364,320	
	Calc.	Hours		3.25	5.5	4	6	5.25	24	6,072	
	Calc.	PPHPD		300	150	300	150	75			
	Calc.	Veh./Hr.		3.5	2.5	3.5	2.5	1.3			
	Input	Vehicles		1	1	1	1	1			
	Calc.	Bus Capacity		85	60	85	60	60			
	Calc.	Buses Per Hour		4.0	3.0	4.0	3.0	2.0			
	Calc.	Headways (Min.)		15.00	20.00	15.00	20.00	30.00			
	Input	Headways (Min.)		15.00	20.00	15.00	20.00	60.00			
	Calc. Adj.	Buses Per Hour		4.0	3.0	4.0	3.0	1.0			
	Calc. Adj.	PPHPD		340	180	340	180	60			
	Calc.	Revenue Buses		15	12	15	10	4			
	Calc.	Revenue Vehicles		15	12	15	10	4			
	Input	Standby Buses		0	0	0	0	0			
	Calc.	Standby Vehicles		0	0	0	0	0			
	Calc.	Total Revenue Fleet		15	12	15	10	4			
	Calc.	Total Fleet w/15%		18		18					
One-Way Bus Trips				25	33	32	36	12	138	34,788	
Revenue Vehicle Miles				448.3	591.7	573.8	645.5	206.2	2,465	623,740	
Revenue Vehicle Hrs				46.9	66.0	60.0	60.0	23.0	256	64,736	
Vehicle Pull Outs				15	0	3	0	0	18	4,554	
Vehicle Pull Ins				0	3	0	5	10	18	4,554	
Non-Revenue Vehicle Miles				113.9	22.8	22.8	38.0	75.9	273	69,130	
Non-Revenue Vehicle Hrs				5.6	1.1	1.1	1.9	3.8	14	3,416	
Total Vehicle Miles				562	614	597	683	282	2,739	692,870	Miles
Total Vehicle Hrs				52.5	67.1	61.1	61.9	26.8	269	68,152	Hrs

Table A-2

AC TRANSIT EAST BAY BRT: FLEET SIZE, VEHICLE HOURS AND MILES--Weekends file=

CONCEPT OPERATING PLAN ROUTE 1 LOCAL: 20 MIN WEEKEND HEADWAYS; OWL SERVICE ADDED

YEAR 2015 Service to BayFair BART; 15% Spares)

Sundays 52 Saturdays 52 Holidays 8 Weekdays 253

ROUTE 1 SERVICE PLAN (APPROXIMATES 2015 BASELINE

System Characteristics	Weekends						
Days per Year:	112	Assumptions: Same Vehicle Capacity as New Line 1 Expansion Vehicles					
Stations:	0						
One-Way Distance (Miles):	18.1						
Distance to Yard (Mi):	8						
Time to Yard (Min.)	21						
Turnback Time (Sec):	600						
Peak Hour, Peak Dir. Pass:	150	% of Peak:	100%	50%	100%	50%	25%
Maximum Vehicle Load:	90	By period:	85	60	85	60	60
		Transition Time (min):	0	0	0	0	0
Average Dwell (Sec):			0	0	0	0	0
One-Way Travel Time (Sec):			5100	5610	5790	5100	4920
One-Way w/ Turnback (Min.):			95.0	103.5	106.5	95.0	92.0

		Operating Period	**AM Base**	**AM**	**AM**	**PM Peak**	**PM Base**	**Owl**	**TOTAL DAILY**	**TOTAL ANNUAL**	
				5:00-8:40 AM	8:40-10 am	10 am-6:40 pm	6:40 -12 mid	12 mid-5:00 am	5:00 am-12 midnight		
	Input	Minutes		220	80	520	320	300	1440	161,280	
	Calc.	Hours		3.7	1.3	8.7	5.3	5.0	24.00	2,688	
	Calc.	PPHPD		150	75	150	75	38			
	Calc.	Veh./Hr.		1.8	1.3	1.8	1.3	0.6			
	Input	Vehicles		1	1	1	1	1			
	Calc.	Bus Capacity		85	60	85	60	60			
	Calc.	Buses Per Hour		2.0	2.0	2.0	2.0	1.0			
	Calc.	Headways (Min.)		30.00	30.00	30.00	30.00	60.00			
	Input	Headways (Min.)		20.00	20.00	20.00	20.00	60.00			
	Calc. Adj.	Buses Per Hour		3.0	3.0	3.0	3.0	1.0			
	Calc. Adj.	PPHPD		255	180	255	180	60			
	Calc.	Revenue Buses		10	11	11	10	4			
	Calc.	Revenue Vehicles		10	11	11	10	4			
	Input	Standby Buses		0	0	0	0	0			
	Calc.	Standby Vehicles		0	0	0	0	0			
	Calc.	Total Revenue Fleet		10	11	11	10	4			
	Calc.	Total Fleet w/15%		12		13					
One-Way Bus Trips				22	8	52	32	10	124	13,888	
Revenue Vehicle Miles				397.5	144.6	939.6	578.2	180.7	2,241	250,956	
Revenue Vehicle Hrs				36.7	14.7	95.3	53.3	20.0	220	24,640	
Vehicle Pull Outs				10	1	0	0	0	11	1,232	
Vehicle Pull Ins				0	0	0	1	10	11	1,232	
Non-Revenue Vehicle Miles				76.1	7.6	0.0	7.6	76.1	167	18,751	
Non-Revenue Vehicle Hrs				3.5	0.3	0.0	0.3	3.5	7.6	857	
Total Vehicle Miles				474	152	940	586	257	2,408	269,707	Miles
Total Vehicle Hrs				40.1	15.0	95.3	53.7	23.5	228	25,497	Hrs

Table A-3

AC TRANSIT EAST BAY BRT: FLEET SIZE, VEHICLE HOURS AND MILES file=

CONCEPT OPERATING PLAN: EAST BAY BRT: 5.0 MIN. PEAK HEADWAYS, 5.0 MIN. MIDDAY; 6.0 BASE; 10 MIN. EVE; 60 MIN OWL

YEAR 2015 Service to BayFair BART; 15% Spares)

Sundays 52 Saturdays 52 Holidays 8 Weekdays 253

EAST BAY BRT (COMBINED BRT & LOCAL)

Assumptions:

Same Vehicle Capacity as New Line 1 Expansion Vehicles

System Characteristics	Weekdays							
Days per Year:	253							
Stations:	49							
One-Way Distance (Miles):	17.0							
Distance to Yard (Mi):	8							
Time to Yard (Min.)	24							
Turnback Time (Sec):	600							
Peak Hour, Peak Dir. Pass:	1,000	% of Peak:	50%	100%	67%	100%	50%	10%
Maximum Vehicle Load:	90	By period:	60	85	60	85	60	60
		Transition Time (min):	30	30	0	30	60	0
Average Dwell (Sec):			20	25	25	25	25	15
One-Way Travel Time (Sec):		0	3498	3984	3828	3984	3498	3498
One-Way w/ Turnback (Min.):		10.0	68.3	76.4	73.8	76.4	68.3	68.3

		Operating Period	**AM Base**	**AM Peak**	**Midday/Base**	**PM Peak**	**PM Base**	**Owl**	**TOTAL DAILY**	**TOTAL ANNUAL**	
			5-6 am	6-9am	9 am-2:30 pm	2:30-7 pm	7 pm mid	mid-5 am			
	Input	Minutes	60	180	330	270	300	300	1440	364,320	
	Calc.	Hours	1	3	5.5	4.5	5	5	24	6,072	
EAST BAY BRT (COMBINED	Calc.	PPHPD	500	1,000	670	1,000	500	100			
EAST BAY BRT (COMBINED	Calc.	Veh./Hr.	8.3	11.8	11.2	11.8	8.3	1.7			
	Input	Vehicles	1	1	1	1	1	1	5	5.625	
	Calc.	Bus Capacity	60	85	60	85	60	60			
	Calc.	Buses Per Hour	9.0	12.0	12.0	12.0	9.0	2.0			
	Calc.	Headways (Min.)	6.67	5.00	5.00	5.00	6.67	30.00			
	Input	Headways (Min.)	6.00	5.00	5.00	5.00	10.00	60.00			
	Calc. Adj.	Buses Per Hour	10.0	12.0	12.0	12.0	6.0	1.0			
	Calc. Adj.	PPHPD	600	1,020	720	1,020	360	60			
	Calc.	Revenue Buses	23	31	30	31	14	3			
	Calc.	Revenue Vehicles	23	31	30	31	14	3			
	Input	Standby Buses	0	0	0	0	0	0			
	Calc.	Standby Vehicles	0	0	0	0	0	0			
	Calc.	Total Revenue Fleet	23	31	30	31	14	3			
	Calc.	Total Fleet w/15%		36		36					
One-Way Bus Trips			15	66	132	102	54	10	379	95,887	
Revenue Vehicle Miles			255.0	1,122.0	2,244.0	1,734.0	918.0	170.0	6,443	1,630,079	
Revenue Vehicle Hrs			17.3	85.3	165.0	131.8	63.0	15.0	477	120,744	
Vehicle Pull Outs			23	8	0	1	0	0	32	8,096	
Vehicle Pull Ins			0	0	1	0	17	14	32	8,096	
Non-Revenue Vehicle Miles			187.5	65.2	8.2	8.2	138.6	114.1	522	131,965	
Non-Revenue Vehicle Hrs			9.3	3.2	0.4	0.4	6.9	5.7	26	6,577	
Total Vehicle Miles			442	1,187	2,252	1,742	1,057	284	6,965	1,762,044	Miles
Total Vehicle Hrs			26.6	88.5	165.4	132.2	69.9	20.7	503	127,321	Hrs

Table A-3 Split Weekend Service Scenario (Oakland-San Leandro)

AC TRANSIT EAST BAY BRT: FLEET SIZE, VEHICLE HOURS AND MILES file=

CONCEPT OPERATING PLAN: EAST BAY BRT: 8.0 MIN. BASE; 10 MIN. EVE; 60 MIN OWL

YEAR 2015 Service, Downtown Oakland to BayFair BART; 15% Spares)

Sundays 52 Saturdays 52 Holidays 8 Weekdays 253

EAST BAY BRT (COMBINED BRT & LOCAL)

System Characteristics	Weekends		Assumptions:								
Days per Year:	112			Same Vehicle Capacity as New Line 1 Expansion Vehicles							
Stations:	34										
One-Way Distance (Miles):	12.0		71%	71%	71%	71%	71%	71%	% of Total Line Travel Time		
Distance to Yard (Mi):	8										
Time to Yard (Min.)	24										
Turnback Time (Sec):	360										
Peak Hour, Peak Dir. Pass:	500	% of Peak:	50%	100%	67%	100%	50%	10%			
Maximum Vehicle Load:	90	By period:	60	85	60	85	60	60			
		Transition Time (min):	30	30	0	30	60	0			
Average Dwell (Sec):			20	25	25	25	25	15			
One-Way Travel Time (Sec):		0	2484	2829	2718	2829	2484	2484			
One-Way w/ Turnback (Min.):		6.0	47.4	53.1	51.3	53.1	47.4	47.4			
									TOTAL	**TOTAL**	
		Operating Period	**AM Base**	**AM Peak**	**Midday/Base**	**PM Peak**	**PM Base**	**Owl**	**DAILY**	**ANNUAL**	
			5-6 am	6-9am	9 am-3 pm	3-7 pm	7 pm mid	mid-5 am			
	Input	Minutes	60	180	360	240	300	300	1440	161,280	
	Calc.	Hours	1	3	6	4	5	5	24	2,688	
	Calc.	PPHPD	250	500	335	500	250	50			
	Calc.	Veh./Hr.	4.2	5.9	5.6	5.9	4.2	0.8			
	Input	Vehicles	1	1	1	1	1	1			
	Calc.	Bus Capacity	60	85	60	85	60	60			
	Calc.	Buses Per Hour	5.0	6.0	6.0	6.0	5.0	1.0			
	Calc.	Headways (Min.)	12.00	10.00	10.00	10.00	12.00	60.00			
	Input	Headways (Min.)	10.00	8.00	8.00	8.00	10.00	60.00			
	Calc. Adj.	Buses Per Hour	6.0	7.5	7.5	7.5	6.0	1.0			
	Calc. Adj.	PPHPD	360	638	450	638	360	60			
	Calc.	Revenue Buses	10	14	13	14	10	2			
	Calc.	Revenue Vehicles	10	14	13	14	10	2			
	Input	Standby Buses	0	0	0	0	0	0			
	Calc.	Standby Vehicles	0	0	0	0	0	0			
	Calc.	Total Revenue Fleet	10	14	13	14	10	2			
	Calc.	Total Fleet w/15%		17		17					
One-Way Bus Trips			9	41	90	56	54	10	261	29,176	
Revenue Vehicle Miles			108.0	495.0	1,080.0	675.0	648.0	120.0	3,126	350,112	
Revenue Vehicle Hrs			7.5	38.5	78.0	52.5	45.0	10.0	232	25,928	
Vehicle Pull Outs			10	4	0	1	0	0	15	1,680	
Vehicle Pull Ins			0	0	1	0	4	10	15	1,680	
Non-Revenue Vehicle Miles			81.5	32.6	8.2	8.2	32.6	81.5	245	27,384	
Non-Revenue Vehicle Hrs			4.1	1.6	0.4	0.4	1.6	4.1	12	1,365	
Total Vehicle Miles			190	528	1,088	683	681	202	3,371	377,496	Miles
Total Vehicle Hrs			11.6	40.1	78.4	52.9	46.6	14.1	244	27,293	Hrs

Table A-3 Split Weekend Service Scenario (Berkeley-Oakland)

AC TRANSIT EAST BAY BRT: FLEET SIZE, VEHICLE HOURS AND MILES file=

CONCEPT OPERATING PLAN: EAST BAY BRT: 8.0 MIN. BASE; 10 MIN. EVE; 60 MIN OWL

YEAR 2015 Service Downtown Berkeley to Downtown Oakland; 15% Spares)

Sundays 52 Saturdays 52 Holidays 8 Weekdays 253

EAST BAY BRT (COMBINED BRT & LOCAL)

System Characteristics	Weekends		Assumptions:								
Days per Year:	112			Same Vehicle Capacity as New Line 1 Expansion Vehicles							
Stations:	15										
One-Way Distance (Miles):	5.0		29%	29%	29%	29%	29%	29%	% of Total Line Travel Time		
Distance to Yard (Mi):	8										
Time to Yard (Min.)	24										
Turnback Time (Sec):	360										
Peak Hour, Peak Dir. Pass:	500	% of Peak:	50%	100%	67%	100%	50%	10%			
Maximum Vehicle Load:	90	By period:	60	85	60	85	60	60			
		Transition Time (min):	0	30	0	30	0	0			
Average Dwell (Sec):			20	25	25	25	25	15			
One-Way Travel Time (Sec):		0	1014	1155	1110	1155	1014	1014			
One-Way w/ Turnback (Min.):		6.0	22.9	25.3	24.5	25.3	22.9	22.9			
									TOTAL	**TOTAL**	
		Operating Period	**AM Base**	**AM Peak**	**Midday/Base**	**PM Peak**	**PM Base**	**Owl**	**DAILY**	**ANNUAL**	
			5-6 am	6-9am	9 am-3 pm	3-7 pm	7 pm mid	mid-5 am			
	Input	Minutes	60	180	360	240	300	300	1440	161,280	
	Calc.	Hours	1	3	6	4	5	5	24	2,688	
	Calc.	PPHPD	250	500	335	500	250	50			
	Calc.	Veh./Hr.	4.2	5.9	5.6	5.9	4.2	0.8			
	Input	Vehicles	1	1	1	1	1	1			
	Calc.	Bus Capacity	60	85	60	85	60	60			
	Calc.	Buses Per Hour	5.0	6.0	6.0	6.0	5.0	1.0			
	Calc.	Headways (Min.)	12.00	10.00	10.00	10.00	12.00	60.00			
	Input	Headways (Min.)	15.00	12.00	12.00	12.00	15.00	60.00			
	Calc. Adj.	Buses Per Hour	4.0	5.0	5.0	5.0	4.0	1.0			
	Calc. Adj.	PPHPD	240	425	300	425	240	60			
	Calc.	Revenue Buses	4	5	5	5	4	1			
	Calc.	Revenue Vehicles	4	5	5	5	4	1			
	Input	Standby Buses	0	0	0	0	0	0			
	Calc.	Standby Vehicles	0	0	0	0	0	0			
	Calc.	Total Revenue Fleet	4	5	5	5	4	1			
	Calc.	Total Fleet w/15%		6		6					
One-Way Bus Trips			8	28	60	38	40	10	183	20,496	
Revenue Vehicle Miles			40.0	137.5	300.0	187.5	200.0	50.0	915	102,480	
Revenue Vehicle Hrs			4.0	13.8	30.0	18.8	20.0	5.0	92	10,248	
Vehicle Pull Outs			4	1	0	0	0	0	5	560	
Vehicle Pull Ins			0	0	0	0	1	4	5	560	
Non-Revenue Vehicle Miles			32.6	8.2	0.0	0.0	8.2	32.6	82	9,128	
Non-Revenue Vehicle Hrs			1.6	0.4	0.0	0.0	0.4	1.6	4	455	
Total Vehicle Miles			73	146	300	188	208	83	997	111,608	Miles
Total Vehicle Hrs			5.6	14.2	30.0	18.8	20.4	6.6	96	10,703	Hrs

Appendix B

Cost Allocation (Three Factors) of FY 2007-2008 AC Transit Operating Budget

Table B-1 East Bay BRT Operating and Maintenance Cost Allocation for O&M Model

Based on Adoped Fiscal Year 2007-08 Operating Budget (July 1, 2007-June 30, 2008)

EXPENSE OBJECT	HOURS	VARIABLE MILES	VEHICLES	ANNUAL EXPENSE
TRANSPORTATION (Revenue and non-Revenue Vehicle Operations)				
LABOR COSTS				
Admin			$ 9,486,801	$ 9,486,801
Operators	$ 61,055,709			$ 61,055,709
Fringe Benefits - Admin			$ 9,212,608	$ 9,179,489
Fringe Benefits - Operators	$ 59,291,043			$ 59,324,161
TOTAL LABOR COSTS	$ 120,346,752	$ -	$ 18,699,409	$ 139,046,160
NON-LABOR COSTS				
Professional & Technical Services			$ 78,300	$ 78,300
Security Services			$ 10,065,673	$ 10,065,673
Leases & Rentals			$ 221,320	$ 221,320
Office Supplies			$ 308,525	$ 308,525
Physicals	$ 74,625			$ 74,625
Mentors & Monitors			$ 300,000	$ 300,000
Other Activities & Programs			$ 228,007	$ 228,007
TOTAL NON-LABOR COSTS	$ 74,625	$ -	$ 11,201,825	$ 11,276,450
TOTAL OPERATING BUDGET	$ 120,421,377	$ -	$ 29,901,234	**$ 150,322,610**
MAINTENANCE (Vehicle and Facilities Maintenance)				
LABOR COSTS				
Admin			$ 5,290,498	$ 5,290,498
Maintenance		$ 18,200,411		$ 18,200,411
Fringe Benefits - Admin			$ 4,420,344	$ 4,416,180
Fringe Benefits - Maintenance		$ 15,207,072		$ 15,211,286
TOTAL LABOR COSTS	$ -	$ 33,407,483	$ 9,710,842	$ 43,118,375
NON-LABOR COSTS				
Bus Parts/Supplies		$ 7,039,173		$ 7,039,173
Fuel/Lubricants		$ 15,380,225		$ 15,380,225
Infrastructure Maint. Materials			$ 1,316,692	$ 1,316,692
3rd party Contracted Maint. Serv.		$ 1,333,210		$ 1,333,210
Other Materials			$ 532,586	$ 532,586
Environmental Costs			$ 425,030	$ 425,030
Professional Services (Waste Disposal, Cleanup)		$ 356,761		$ 356,761
Leases/Taxes & other Services/Costs			$ 637,464	$ 637,464
TOTAL NON-LABOR COSTS	$ -	$ 24,109,369	$ 2,911,772	$ 27,021,141
TOTAL OPERATING BUDGET	$ -	$ 57,516,852	$ 12,622,614	**$ 70,139,516**
GENERAL MANAGER (GM and Office Support)				
LABOR COSTS				
Admin			$ 472,381.00	$ 472,381.00
Fringe Benefits - Admin			$ 282,801.00	$ 282,801.00
TOTAL LABOR COSTS	$ -	$ -	$ 755,182.00	$ 755,182.00
NON-LABOR COSTS				
Professional Services			$ 964,147.00	$ 964,147.00
Other Services			$ 180,000.00	$ 180,000.00
Office Furniture/Equipment			$ 250,000.00	$ 250,000.00
Travel & Other Activities/Programs			$ 290,585.00	$ 290,585.00
TOTAL NON-LABOR COSTS	$ -	$ -	$ 1,684,732.00	$ 1,684,732.00
TOTAL OPERATING BUDGET	$ -	$ -	$ 2,439,914.00	**$ 2,439,914.00**

EXPENSE OBJECT	HOURS	MILES	VEHICLES	ANNUAL EXPENSE
FINANCE **(Financial Accounting, Budgeting, Cash Management, Payroll, Fare Revenue)**				
LABOR COSTS				
Admin			$ 2,649,634.00	$ 2,649,634.00
Maintenance (Fare/Electronic Technicians)			$ 905,703.00	$ 905,703.00
Fringe Benefits - Admin			$ 2,017,784.80	$ 2,017,784.80
Fringe Benefits - Maintenance			$ 690,651.18	$ 690,651.18
TOTAL LABOR COSTS	$ -	$ -	$ 6,263,773	$ 6,263,773
NON-LABOR COSTS				
Professional & Technical Services			$ 1,005,576	$ 1,005,576
Audit Fees			$ 250,000	$ 250,000
Farebox			$ 120,000	$ 120,000
Translink			$ 212,400	$ 212,400
Office Supplies			$ 102,773	$ 102,773
Transfers/Tickets/Passes			$ 200,000	$ 200,000
Dues & Subscriptions			$ 19,875	$ 19,875
Bank Charges			$ 125,000	$ 125,000
Other Activities & Programs			$ 152,923	$ 152,923
TOTAL NON-LABOR COSTS	$ -	$ -	$ 2,188,547	$ 2,188,547
TOTAL OPERATING BUDGET	$ -	$ -	$ 8,452,320	**$ 8,452,320**
DISTRICT OVERHEAD **(Administrative Expenses Not Program or Department Specific, e.g., Utilities, Taxes, Interest)**				
LABOR COSTS				
Admin			$ 242,935	$ 242,935
Maintenance		$ 628,412		$ 628,412
Operators	$ 1,656,323			$ 1,656,323
Fringe Benefits - Admin			$ (102,099)	$ (102,099)
Fringe Benefits - Maintenance		$ (264,105)		$ (264,105)
Fringe Benefits - Operators	$ (696,110)			$ (696,110)
TOTAL LABOR COSTS	$ 960,213	$ 364,307	$ 140,836	$ 1,465,355
NON-LABOR COSTS				
Management			$ 585,000	$ 585,000
Utilities			$ 2,116,000	$ 2,116,000
Net Credit Remanufactured Inventory			$ (500,000)	$ (500,000)
Taxes			$ 2,104,010	$ 2,104,010
Interest Expense			$ 1,703,000	$ 1,703,000
Other Activities and Programs			$ 286,250	$ 286,250
TOTAL NON-LABOR COSTS			$ 6,294,260	$ 6,294,260
TOTAL OPERATING BUDGET	$ 960,213	$ 364,307	$ 6,435,096	**$ 7,759,615**
DEPUTY GENERAL MANAGER **(DGM, Internal Audit, External Affairs, Admin of Human Resources, Marketing/Customer Service, Grants)**				
LABOR COSTS				
Admin			$ 1,215,107	$ 1,215,107
Fringe Benefits			$ 828,769	$ 828,769
TOTAL LABOR COSTS	$ -	$ -	$ 2,043,876	$ 2,043,876
NON-LABOR COSTS				
Management			$ 227,000	$ 227,000
Professional & Technical Services			$ 60,000	$ 60,000
Claims Administrations			$ -	$ -
Physicals			$ -	$ -
Maintenance Contracts			$ 3,600	$ 3,600
Printing/Ad Promo Media/Other Serv.			$ 79,865	$ 79,865
Payroll Tax for Workers' Comp. Insur.			$ -	$ -
Other Activities and Programs			$ 112,435	$ 112,435
TOTAL NON-LABOR COSTS	$ -	$ -	$ 482,900	$ 482,900
TOTAL OPERATING BUDGET	-	-	2,526,776	**2,526,776**

EXPENSE OBJECT	HOURS	MILES	VEHICLES	ANNUAL EXPENSE
HUMAN RESOURCES **(Staffing and Records, Employee/Labor Relations, Affirmative Action, Staff Development, Benefits)**				
LABOR COSTS				
Admin			$ 2,669,136	$ 2,669,136
Fringe Benefits			$ 2,256,815	$ 2,256,815
TOTAL LABOR COSTS	$ -	$ -	$ 4,925,951	$ 4,925,951
NON-LABOR COSTS				
Management			$ 16,250	$ 16,250
Professional & Technical Services			$ 579,501	$ 579,501
Claims Administrations			$ 1,271,027	$ 1,271,027
Physicals			$ 35,600	$ 35,600
Ads/Supplies/Subscriptions			$ 116,985	$ 116,985
Employee Incentives			$ 113,000	$ 113,000
Payroll Tax for Workers' Comp. Insur.	$ 82,240	$ 39,030	$ 28,730	$ 150,000
Other Activities and Programs			$ 212,200	$ 212,200
TOTAL NON-LABOR COSTS	$ 82,240	$ 39,030	$ 2,373,293	$ 2,494,563
TOTAL OPERATING BUDGET	$ 82,240	$ 39,030	$ 7,299,244	**$ 7,420,514**
MARKETING **(Marketing and Community Relations, Customer Service)**				
LABOR COSTS				
Admin			$ 2,652,777	$ 2,652,777
Fringe Benefits			$ 2,163,436	$ 2,163,436
TOTAL LABOR COSTS	$ -	$ -	$ 4,816,213	$ 4,816,213
NON-LABOR COSTS				
Professional & Technical Services			$ 276,171	$ 276,171
Maintenance Contracts (Web site)			$ 118,900	$ 118,900
Printing/Supplies/Ads/Other Services			$ 490,400	$ 490,400
EDP Materials			$ 6,500	$ 6,500
Other Activities and Programs			$ 120,805	$ 120,805
TOTAL NON-LABOR COSTS	$ -	$ -	$ 1,012,776	$ 1,012,776
TOTAL OPERATING BUDGET	$ -	$ -	$ 5,828,989	**$ 5,828,989**
BOARD OF DIRECTORS **(Developing and Monitoring District Policies; Budget and Capital and Operating Program Approvals)**				
LABOR COSTS				
Admin			$ 63,000	$ 63,000
Fringe Benefits			$ 34,655	$ 34,655
TOTAL LABOR COSTS	$ -	$ -	$ 97,655	$ 97,655
NON-LABOR COSTS				
Supplies/Subscriptions/Printing			$ 9,503	$ 9,503
Travel & Meetings			$ 82,000	$ 82,000
TOTAL NON-LABOR COSTS	$ -	$ -	$ 91,503	$ 91,503
TOTAL OPERATING BUDGET	$ -	$ -	$ 189,158	**$ 189,158**
DISTRICT SECRETARY **(Maintains Official Records; District Elections; Administrative Support to Board)**				
LABOR COSTS				
Admin			$ 199,353	$ 199,353
Fringe Benefits			$ 149,752	$ 149,752
TOTAL LABOR COSTS	$ -	$ -	$ 349,105	$ 349,105
NON-LABOR COSTS				
Printing/Supplies/Other Activities			$ 14,396	$ 14,396
TOTAL NON-LABOR COSTS	$ -	$ -	$ 14,396	$ 14,396
TOTAL OPERATiNG BUDGET	$ -	$ -	$ 363,501	**$ 363,501**

EXPENSE OBJECT	HOURS	MILES	VEHICLES	ANNUAL EXPENSE
TOTAL GENERAL COUNSEL **(Legal Counsel and Litigation Services to Board and Internal Departments; Admin of Claims, Procurement)**				
LABOR COSTS				
Admin			$ 2,922,790	$ 2,922,790
Maintenance (Parts and Inventory Control Clerks)		$ 1,762,148		$ 1,762,148
Fringe Benefits - Admin			$ 2,275,646	$ 2,275,646
Fringe Benefits - Maintenance		$ 1,371,985		$ 1,371,985
TOTAL LABOR COSTS	$ -	$ 3,134,133	$ 5,198,436	$ 8,332,569
NON-LABOR COSTS				
Professional & Technical Services			$ 160,000	$ 160,000
Outside Attorney Fees			$ 450,000	$ 450,000
Supplies/Services/Leases/Program			$ 688,520	$ 688,520
Casualty/Liability			$ 6,250,000	$ 6,250,000
Expense Transfers			$ (607,912)	$ (607,912)
TOTAL NON-LABOR COSTS	$ -	$ -	$ 6,940,608	$ 6,940,608
TOTAL OPERATING BUDGET	$ -	$ 3,134,133	$ 12,139,044	**$ 15,273,177**
DEPUTY GENERAL MANAGER **(Service Development, Including Planning and Scheduing; Accessible Transit; Capital Programs)**				
LABOR COSTS				
Admin			$ 2,565,899	$ 2,565,899
Fringe Benefits			$ 1,980,919	$ 1,980,919
TOTAL LABOR COSTS	$ -	$ -	$ 4,546,818	$ 4,546,818
NON-LABOR COSTS				
ADA Consortium Program (Accessible/Paratransit Services)*				$ 19,096,663
Printing/Materials/Misc. Expenses			$ 1,454,695	$ 1,454,695
TOTAL NON-LABOR COSTS	$ -	$ -	$ 1,454,695	$ 20,551,358
TOTAL OPERATING BUDGET*	$ -	$ -	$ 6,001,513	**$ 25,098,176**
TOTAL OPERATING BUDGET W/OUT PARATRANSIT				**$ 6,001,513**
INFORMATION SERVICES **(Communications and Computer Systems, Including Hardware, Networks and Software)**				
LABOR COSTS				
Admin			$ 2,267,462	$ 2,267,462
Fringe Benefits			$ 1,673,802	$ 1,673,802
TOTAL LABOR COSTS	$ -	$ -	$ 3,941,264	$ 3,941,264
NON-LABOR COSTS				
Professional & Technical Services			$ 436,650	$ 436,650
Hardware/Software/Upgrades/Parts			$ 1,471,885	$ 1,471,885
Telecommunications			$ 854,000	$ 854,000
Materials/Supplies/Activities/Programs			$ 300,500	$ 300,500
TOTAL NON-LABOR COSTS	$ -	$ -	$ 3,063,035	$ 3,063,035
TOTAL OPERATING BUDGET	$ -	$ -	$ 7,004,299	**$ 7,004,299**
OTHER				$ 950,434
Dumbarton Bridge Express Bus-Contract Service				
*ADA Consortium (Paratransit Service--See DGM Service Development)				$ 19,096,663
GRAND TOTAL WITH DUMBARTON SERVICE AND ADA CONSORTIUM				**$ 322,865,662**
GRAND TOTAL WITHOUT DUMBARTON & ADA CONSORTIUM	**$ 121,463,830**	**$ 61,054,321**	**$ 101,203,701**	**$ 283,721,902**

Source: Alameda-Contra Cost Transit District, Adopted Biennial Budget, Fiscal Years 2007-08 and 2008-09, September 19, 2007. Information in table is based on FY 2007-08.

Appendix C

AC Transit Historic Operating Expense and Unit Costs of Revenue Service

Table C-1 AC Transit Operating Expense and Unit Cost of Service Trends

	Year					
	2003	2004	2005	2006	2007	2008*
Operating Expense	$245,967,835	$225,462,554	$230,137,000	$253,303,404	$270,648,000	$283,721,902
Percent Change	NA	-8.3%	2.1%	10.1%	6.8%	4.8%
Vehicle Revenue Miles	23,532,658	22,364,203	21,110,055	21,198,605	21,562,605	21,948,393
Cost per Revenue Mile	$10.45	$10.08	$10.90	$11.95	$12.55	$12.93
Percent Change	NA	-3.5%	8.1%	9.6%	5.0%	3.0%
Vehicle Revenue Hours	2,048,358	1,914,548	1,800,085	1,817,463	1,822,247	1,833,541
Cost per Revenue Hour	$120.08	$117.76	$127.85	$139.37	$148.52	$154.74
Percent Change	NA	-1.9%	8.6%	9.0%	6.6%	4.2%

* Adopted budget. Revenue miles and hours estimated from total (platform) vehicle miles and hours. Other year data is actual as reported in NTD or, for 2007, AC Transit internal reports.

6.0 Cost-Effectiveness

6.0 Cost Effectiveness

This section provides East Bay BRT's cost effectiveness results. Inputs for cost effectiveness calculation are obtained from the travel demand forecasts (see Section 3.0) and from the SCC and O&M cost model (see Sections 4.0 and 5.0).

6.1 Cost Effectiveness

Cost effectiveness for the East Bay BRT project was calculated and reported as the incremental cost per hour of transportation system user benefits. The result is reported in the Cost Effectiveness for Small Starts Template using data from the Travel Forecasts Template and input data on Baseline and Build capital and O&M costs.

The cost effectiveness for the East Bay BRT project is estimated at $9.74 per hour.

COST-EFFECTIVENESS FOR SMALL STARTS TEMPLATE

PROJECT NAME:	East Bay Bus Rapid Transit

Cost Effectiveness

Line	Item	Alternative: New Starts Baseline	Alternative: New Starts Build	Difference	Value	Source/Calculation
21	**Annualized capital cost (millions of constant 2007 dollars)**	$ -	$ 15.899	$ 15.899	---	Source: SSC Worksheets
22	**Total systemwide annual operating and maintenance cost (millions of constant 2007 dollars)**	$ 20.485	$ 24.431	$ 3.946	---	Source: O&M cost models (attach documentation).
23	**Total annualized cost in forecast year (millions of constant 2007 dollars)**	$ 20.485	$ 40.331	$ 19.846	---	Sum of lines 21 and 22
24	**Annual user benefits total (hours)**	---	---	2,036,530	---	Line 6
25	**Cost-Effectiveness: incremental annualized cost / annualized user benefits ($/hour)**	---	---	---	$9.74	Line 23 divided by line 24
26	**Total transit ridership**	140,064,300	142,109,100	2,044,800		Linked from Travel Forecasts template
27	**Cost Per New Transit Trip: incremental annualized cost / incremental annual transit trips ($/new trip)**				$9.71	Line 23 divided by line 26

7.0 Existing Land Use, Transit Supportive Land Use Policies, and Future Patterns

7.0 Transit Supportive Existing Land Use and Future Patterns

This criterion addresses the existing and future land use in the East Bay BRT project area. The Supplemental Land Use Information (Qualitative) Template provided in this section addresses each of the three primary rating categories for transit-supportive land use. The Quantitative Land Use Information Template provides quantitative land use information for the metropolitan area, central business district (CBD), and station areas for the base-year (2000).

7.1 Supporting Documentation

The qualitative template was developed using the supporting documentation listed below. The supporting documentation available in electronic is been provided to FTA's on the enclosed CD, as noted below.

Technical Studies

- AC Transit East Bay BRT Draft Environmental Impact Statement/Environmental Impact Report, Cambridge Systematics, Inc., 2007 (provided on CD).
- AC Transit East Bay BRT Project Land Use Report, Hausrath Economics Group, September 2005 (provided on CD).
- AC Transit East Bay Bus Rapid Transit Project Parking Conditions and Project Impacts Evaluation, Parsons Transportation Group, April 2007 (provided on CD).
- AC Transit East Bay Bus Rapid Transit Traffic Analysis Report, Cambridge Systematics, Inc., April 2007 (provided on CD).
- AC Transit East Bay Bus Rapid Transit, Transit Patronage and Forecasting Methodology Report, Cambridge Systematics, Inc., April 2007 (provided in CD).
- Community Impact Assessment Alameda-Contra Costa Transit East Bay Bus Rapid Transit (BRT) Project, Parsons Transportation Group, August 2005 (provided in CD).

Other Documents and References

- Association of Bay Area Governments, Projections 2005. Forecasts for the San Francisco Bay Area to the Year 2030, 2004.
- City of Berkeley. Berkeley General Plan, as adopted April 2002, available on-line at http://www.ci.berkeley.ca.us/contentdisplay.aspx?id=488, last accessed on May 7, 2008 (provided on CD).
- City of San Leandro. San Leandro General Plan Update, as adopted May 2002, available on-line at http://www.ci.san-leandro.ca.us/CDGenPlanDoc.asp, last accessed on May 7, 2008 (provided on CD).
- Community and Economic Development Agency, City of Oakland. Envision Oakland: City of Oakland General Plan, Land Use and Transportation Element, as adopted March 1998, available on-line at http://www.oaklandnet.com/government/ceda/revised/planningzoning/StrategicPlanningSection/CWPolicies.html, accessed last on May 7, 2008 (provided on CD).
- County of Alameda, Community Development Agency. Planning Department web site: http://www.acgov.org/cda/planning, last accessed on May 7, 2008.
- Metropolitan Transportation Commission, Transportation 2030 Plan for the San Francisco Bay Area, February 2005, available on-line at http://www.mtc.ca.gov/planning/2030_plan/index.htm, last accessed on May 7, 2008 (provided on CD).
- Metropolitan Transportation Commission, MTC Resolution 3434 Transit-Oriented Development (TOD) Policy for Regional Transit Expansion Projects. Adopted July 27, 2005 (provided on CD).
- Metropolitan Transportation Commission, FOCUS: Focusing Our Vision – A Development and Conservation Strategy for the San Francisco Bay Area, web site: http://www.bayareavision.org, last accessed on May 7, 2008 (various documents provided on CD):
  - FOCUS: Focusing our Vision, a Development and Conservation Strategy for the San Francisco Bay Area. Brochure.
  - List of Adopted Priority Development Areas (PDA).
  - Priority Development Area (PDA) maps for Berkeley, Oakland, and San Leandro.
  - San Francisco Bay Area: State Goals, Regional Vision, Local Action. Case Studies. Association of Bay Area Governments, March 2007.
  - East 14th Street/International Boulevard. Association of Bay Area Governments, September 2007.
  - San Francisco Bay Area: State Goals, Regional Vision, Local Action. Moving Towards a Common Agenda on State Highways. Association of Bay Area Governments, June 2007.
- United States Census Bureau, web site: http://www.census.gov, last accessed May 7, 2008.

7.2 Supplemental Land Use Information – Qualitative Template

7.2.1 Existing Land Use

General Character of Land Use

The AC Transit East Bay Bus Rapid Transit (BRT) corridor is located in a densely developed, highly urbanized area located at the center of the larger San Francisco Bay Area region. The 17-mile-long, 1-mile-wide corridor is centered on Oakland, the East Bay's largest city, which provides work for 71,000 people in its downtown core. Forty-seven percent of the corridor population lives in areas with densities greater than 30 persons per acre, and over three quarters of the corridor population live in areas with densities greater than 20 persons per acre. This is comparable to the citywide population density of San Francisco of 25 persons per acre and is greater than the population densities in Bay Area suburbs which are below 10 persons per acre. Employment density also is higher in the corridor than in other portions of the Bay Area, with densities ranging from 38 jobs per acre in downtown Berkeley to 74 jobs per acre in downtown Oakland. Bay Area suburbs have employment densities under 10 jobs per acre. Major centers of activity within the corridor are characterized by concentrated amounts of population and employment and a mixed-use, higher-density development pattern that is pedestrian-friendly and supportive of transit use. Buildings are generally built to the sidewalk, with few locations that have parking lots that separate buildings from the street. Building heights range from high-rises in downtown Oakland, to two- to four-storey mixed-use developments outside of major activity centers. Major activity centers include the downtown central business districts of Berkeley, Oakland, and San Leandro, the three cities served by the proposed BRT service, as well as the large campuses of the University of California at Berkeley (UC Berkeley) in Berkeley and Laney College in Oakland. In addition to these major centers, several smaller but notable activity nodes are located throughout the corridor, including such destinations as major hospital complexes, shopping districts, community colleges, high school and junior high school campuses, churches, civic centers, and entertainment/ recreation facilities.

Downtown Oakland's central business district (CBD), at the center of the corridor, is the largest center of employment activity. Of the jobs that are located in the corridor, 43 percent are in downtown Oakland. In fact, downtown Oakland, at the heart of the corridor, has the largest concentration of business activity and employment in the Bay Area region, outside of downtown San Francisco. Downtown Oakland includes employment in both private sector and government office activities; in entertainment, retail, restaurant, and hotel activities; in educational and cultural uses; and in service and light industrial uses.[1]

A large amount of residential development also exists throughout the corridor, in higher-density, mixed-use areas along the major arterial and commercial streets as well as in lower-density residential neighborhoods surrounding the major streets and activity centers. Compared to commercial activity, which is focused in major centers, residential development is generally more evenly distributed throughout the corridor.

Major Trip Generators

There are activity centers located throughout the BRT corridor that are not reflected in the reported quantitative population and employment data. These range from major activity centers such as university campuses to smaller but still important activity nodes such as hospital clusters.

The University of California campus in Berkeley is a key trip generator located at the far northern end of the corridor. Together with the central business district of Berkeley adjacent to the campus, this is a major center that includes a mix of activities and employment in business, educational, and medical uses and in entertainment, retail, and cultural uses. In addition to the relatively high density of employment in these areas, the large student population at the University of California (35,000 enrollment) contributes substantially to the overall concentration of people and activity in this part of the corridor. The campus has a daily population of 45,000 with just over 7,000 parking spaces available for use. Limited parking and congested city streets are reasons for the high use of alternative modes of transportation for campus trips. According to the Parking and Transportation Department at UC Berkeley, 49 percent of campus employees and 89 percent of students commute by transportation mode other than a single occupant vehicle. The University offers transit passes for students and staff that allows for unlimited rides on AC Transit services.

Another institution of higher learning is Laney College in downtown Oakland. In addition, there are 6 other colleges and technical/vocational schools, 10 high schools, and 10 junior high/middle schools in the corridor. Average weekday enrollment at schools and colleges in the corridor is very large, totaling about 67,000 students.

[1] Concentration measured in terms of total amount and density of employment within a definable area.

Figure 7.1 Corridor Overview

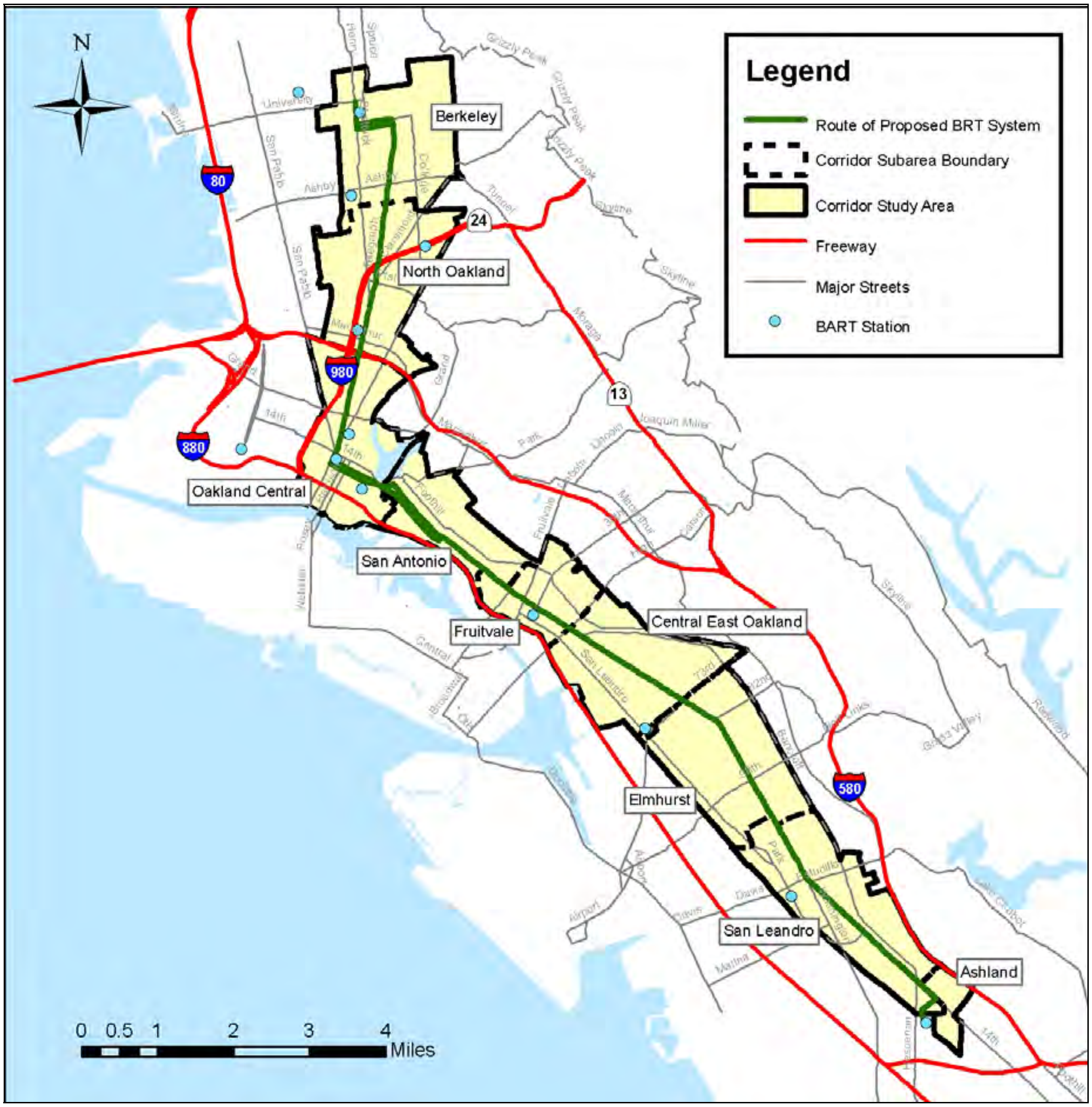


Figure 7.2 Employment Density in the Corridor and Vicinity
2005

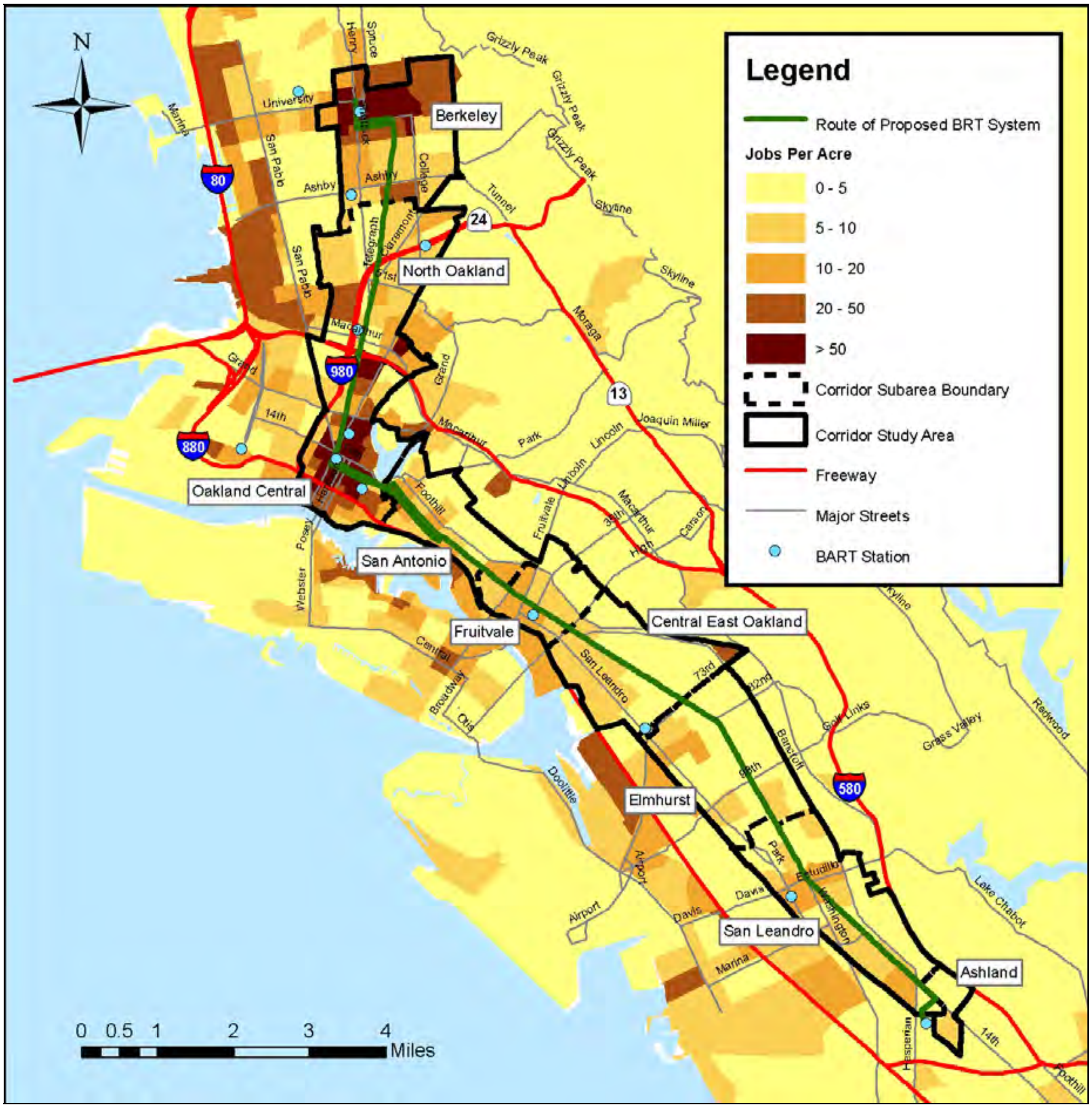
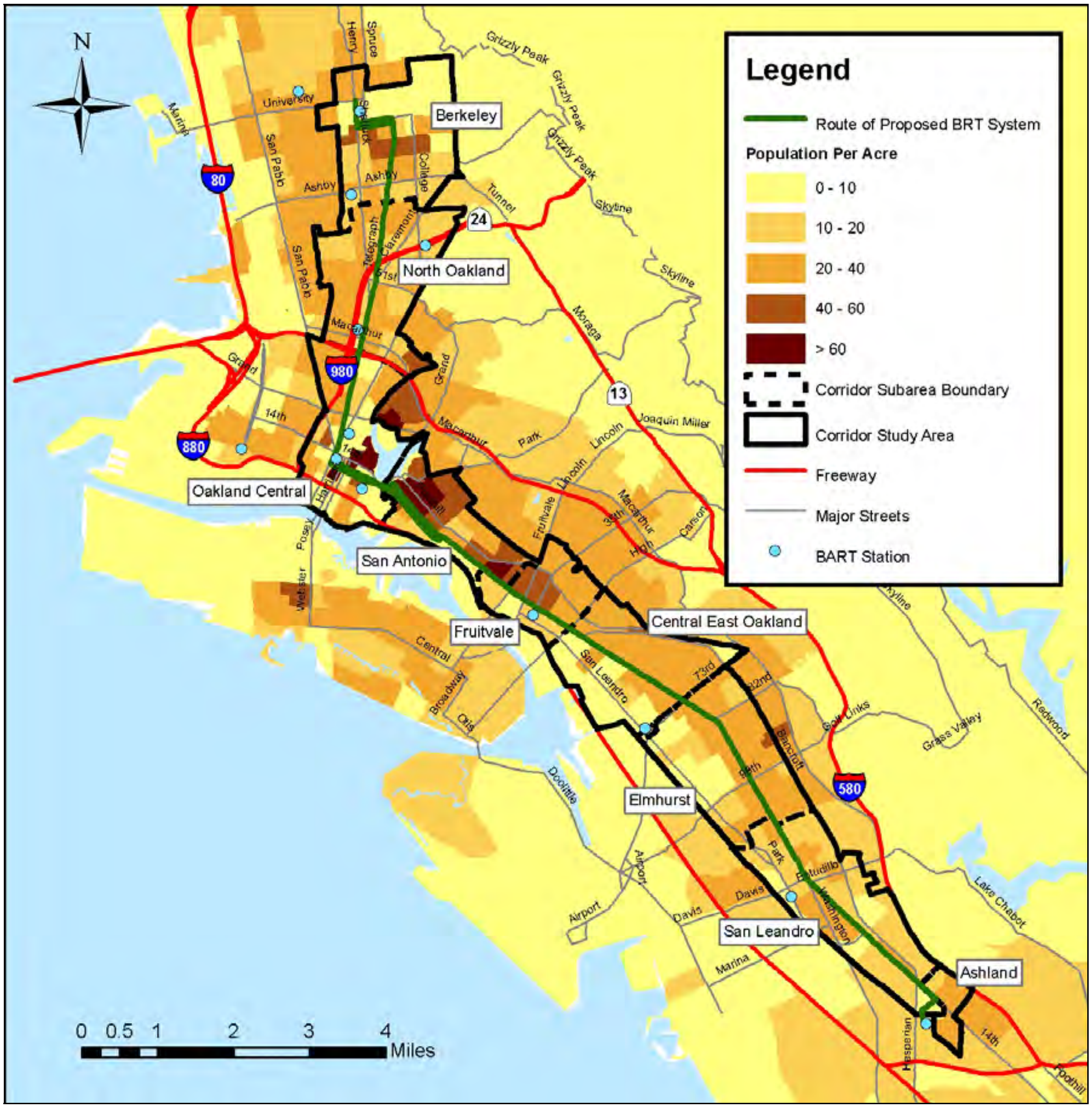


Figure 7.3 Population Density in the Corridor and Vicinity
2005



There is a prevalence of commercial areas and medical centers in the northern corridor between downtown Oakland and downtown Berkeley/University of California. Approximately 15 million square feet of Class A and B office space is located in downtown Oakland.[2] Downtown Berkeley is home to approximately 4 million square feet of

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[2] The *Office Development Handbook* published by the Urban Land Institute defines Class A office space as buildings that have excellent location and access, attract high-quality tenants, and are managed professionally. Building materials are of high quality. Class B buildings have good locations and have very little functional obsolescence and deterioration.

commercial space. There are commercial activities along nearly the entire length of Broadway and College Avenue, including the Summit Medical/South Auto Row major center, Kaiser Hospital and nearby Piedmont Avenue area, North Auto Row, 51st and Broadway, Rockridge, and the Elmwood District. There are commercial and medical uses along much of Telegraph Avenue, including the Temescal (51st and Telegraph) area, the nearby Children's Hospital, the area around Alta Bates Medical Center, and the shops and offices that extend along Telegraph from Ashby Avenue to the University of California at Berkeley campus.

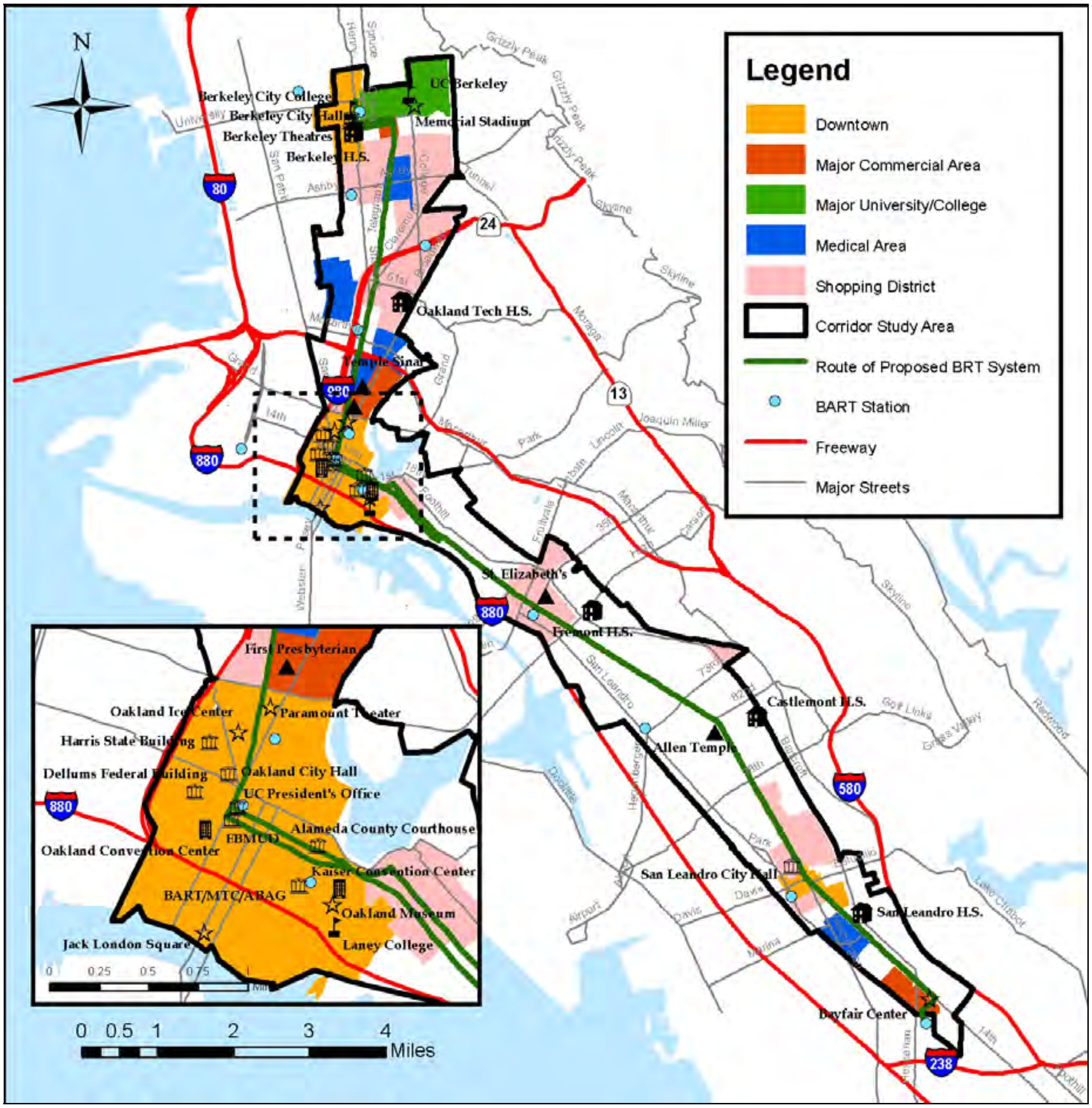
Commercial areas and medical centers in the southern portion of the corridor are located primarily along International Boulevard/East 14th Street. The notable activity centers include the Fruitvale District, Eastlake District, and Durant Square area in Oakland, downtown San Leandro and commercial areas at the northern and southern ends of downtown San Leandro, San Leandro Hospital, and Bayfair Center.

In addition to the employment centers, shopping districts, medical centers, and schools/colleges in the corridor, there also are a large number of other destinations that attract visitors/patrons and generate travel in the corridor. These include various entertainment, recreational, and cultural destinations such as theaters for the performing arts, museums, movie theater complexes, nightclubs, ice skating arenas, and convention center facilities. This includes the 3,000 seat Paramount Theatre, the Oakland Convention Center with 64,000 square feet of meeting space, and the Henry J. Kaiser Convention Center with over 30,000 square feet of meeting space. The City Halls of all three cities are located in the corridor, as well as the Alameda County Courthouse, the Dellums Federal Building, and the Harris State Building (all three located in downtown Oakland). There also are several large churches and synagogues in the corridor along with many other smaller places of worship. Many of these destinations are located within the major centers of activity in the corridor, particularly in downtown Oakland, downtown Berkeley, and on the University of California at Berkeley campus.

Typical Parking Costs and Supply

Existing parking characteristics in the project corridor has been inventoried. Curb parking supply was determined for roadways that form the possible BRT alignment as well as for cross streets in major commercial areas where parking supply along BRT roadways was determined to be potentially constrained. On-street parking is almost entirely available to the public, either as metered or unmetered spaces. Parking meter zones typically require fee payment except during nonbusiness hours or on Sundays and holidays. Nonmetered zones can be unrestricted or restricted by limiting times when parking is allowed, the type of vehicles allowed, or by requiring vehicles to have permits.

Figure 7.4 Activity Centers and Major Destinations in the Corridor
2008



Curb parking not available to the general public includes space restricted for commercial vehicles (commercial parking spaces), government vehicles, disabled persons, and other special uses. In addition, there are residential parking permit programs in the project corridor under which residents are given long-term parking privileges.

The total number of curb spaces surveyed to establish supply in the project corridor was 7,056. Approximately 23 percent of the spaces are metered.

Off-street parking in the Berkeley campus area is limited. University-owned parking spaces are virtually reserved for students and staff who pay $30 to $128 per month for parking privileges. The limited spaces for public parking are available for up to $18 per day. The City of Berkeley operates four parking lots in the downtown Berkeley area with daily parking available at $15 to $20 per day and limited monthly parking passes at the rate of $150 per month. Monthly parking in downtown Oakland is available in some lots at $200 per month or $10 to $15 per day.

New residential development in Oakland along the corridor alignment requires one parking space per unit. In areas with development with high-densities, there may be no parking requirements, and existing spaces must be used. In lower density areas, parking spaces are required for any development over 3,000 square feet in gross floor area along the corridor alignment.

Downtown Berkeley has a parking requirement of one and half spaces per each 1,000 square feet of gross floor area of nonresidential area, and one space for each dwelling unit. Telegraph Avenue immediately south of the UC Berkeley campus has no requirement for parking spaces. A Transportation Services Fee is charged for newly constructed commercial gross floor area along Telegraph Avenue and in downtown Berkeley. Outside of these major commercial areas, the parking requirement is two spaces for every 1,000 square feet of gross floor area and one per dwelling unit.

In downtown San Leandro, where development densities are not as high as in Oakland or Berkeley, parking requirements are higher. The requirement for mixed-use and multifamily housing is 1.5 to 2.0 spaces per unit, including 0.5 to 1.0 spaces for guest parking. Offices, businesses, and professional uses require 3.33 spaces per 1,000 square feet of gross floor area.

7.2.2 Transit Supportive Plans and Policies

Transit-Supportive Policies and Typical Zoning Densities

Local land use policies support growth and development and the intensification of activity within the corridor. Land use and zoning policies in Berkeley, Oakland, and San Leandro promote higher-density, transit-oriented development in the downtown areas and along major arterial streets and transit corridors. In fact, much of the opportunity for growth and change in these already developed cities exists in the downtown areas and along the major corridors, as these areas have underutilized property and substantial opportunities for higher-density, infill development. As a result, there are similarities in the land use policies in all three cities.

Regional land use policies support “Smart Growth” objectives to increase densities and the amount of development already in the developed areas of the region, focusing substantially more growth in existing cities and along transit corridors in the central parts of the region. Smart Growth policies call for infill development, intensification of land uses in urban areas, and the utilization of existing infrastructure. The policies place an emphasis on building substantial new housing in higher-density activity centers in downtowns and along major transportation corridors in order to relieve pressures on housing prices, provide opportunities for people to live near their workplace, and promote a better balance between jobs and housing. In addition, Smart Growth promotes the mutually supportive relationship between higher-density land use patterns and quality public transit as a means toward relieving regional traffic.

To increase the use of public transit, transit-oriented development objectives call for the development of higher-density, mixed-use activity nodes around rapid transit stations and along major transit corridors in the region. Transit-oriented development is consistent with the Smart Growth policies discussed above, and may be thought of as a subset of the Smart Growth planning framework. Transit has the potential to allow higher density development than would be possible if development was designed around access by the private car.

The Metropolitan Transportation Commission (MTC) has adopted a transit-oriented development policy that would be applied to transit extension projects throughout the Bay Area. The Association of Bay Area Governments (ABAG) has studied the potential for transit-oriented development along major transit corridors in the region. In addition, the Strategic Plan adopted by BART in 1999, which provides the overall framework for the Agency's planning efforts, includes the goals for transit-oriented development around its stations.

Regional agencies and local governments in the Bay Area have collaborated in the FOCUS program to encourage future growth in areas near transit and within the communities that surround San Francisco Bay. As part of the FOCUS process, local governments applied for regional designation of an area within their community as a Priority Development Area (PDA). PDAs are infill development opportunities within existing communities. An area would eligible for a PDA designation provided that the area is within an existing community, near existing or planned fixed guideway transit or served by comparable bus service, and planned for more housing. "Planned" PDAs in the AC Transit BRT Corridor include downtown Berkeley and the East 14th Street and downtown districts in San Leandro. "Planned" PDAs have both an adopted land use plan and a resolution of support from the city council or county board and in turn are eligible for capital infrastructure funds, planning grants, and technical assistance. Virtually all remaining portions of the AC Transit BRT Corridor fall under a "Potential" PDA designation, which are eligible for planning grants and technical assistance, and will not receive capital infrastructure funds until "Planned" status is achieved with an adopted land use plan and a resolution of support.

Growth and development in the corridor currently meet many of the regional Smart Growth objectives for land use and transit-oriented development.

Financial, Regulatory, or Other Tools and Incentives

In 1998, MTC launched the Transportation for Livable Communities (TLC) program. Since then, MTC has awarded over $80 million dollars to more than 80 local projects that support multimodal travel, more livable neighborhoods and the development of jobs and housing in existing town centers. Successful projects improve walking and bicycle access to public transit hubs and stations, major activity centers, and neighborhood commercial districts as a way of fostering community vitality. The program provides technical assistance and capital grants to help cities, neighborhoods, transit agencies, and nonprofit agencies develop transportation-related projects fitting the TLC profile.

In November of 2000, the TLC program was expanded to include a Housing Incentive Program (HIP). HIP rewards local governments that build housing near transit hubs by offering grants to cities based on project density, project size, and the number of affordable units. HIP funds are intended to be used for transportation capital projects that support TLC goals. Typical capital projects include pedestrian and bicycle facilities that connect the housing project to adjacent land uses and transit; improved sidewalks and crosswalks linking the housing to a nearby community facility such as a school or a public park; or streetscape improvements that support increased pedestrian, bicycle, and transit activities and safety. The dollar amount of HIP funds that may be requested is determined by the density of the qualifying housing development and the number of affordable and market rate bedrooms that will be provided. The maximum grant amount per jurisdiction is $3 million.

The $11.8 billion Regional Transit Expansion Program (RTEP) that MTC adopted as Resolution 3434 in 2001 was accompanied by a strong directive to develop a policy that would condition the allocation of regional discretionary funds for transit expansion projects on supportive local land use plans and policies. In December 2003, MTC adopted a five-point Transportation/Land Use Platform that reconfirmed the Commission's commitment to conditioning Resolution 3434 funds on supportive land use in order to generate new transit riders and make the region's transit investments more cost-effective. Among the objectives of the RTEP is to help fund station area plans for jobs and housing, station access, design standards, parking, and other amenities based on unique circumstances and community character.

7.2.3 Performance and Impacts of Land Use Policies

Examples of Recent or Proposed Transit-Supportive Development

Existing infrastructure already is in place to support growth within the corridor, as it already is a developed urban area. There are differences among the cities, however, in terms of capacity and opportunities to accommodate growth and development and in the extent of public support for growth.

Within Berkeley, there is capacity for growth and intensification of land use at the northern end of the corridor, primarily in the downtown and along the larger commercial corridors. This latent capacity for growth can be accommodated in several ways, including increasing activity in existing buildings by converting to new, more intensive uses and occupying formerly vacant spaces (occurring in downtown Berkeley) and by building new development on underutilized sites. There also have been public efforts to further the revitalization of downtown Berkeley. Berkeley has taken the lead in the creation of a downtown arts district that includes theaters, restaurants, studios, and educational facilities. There also has been public investment in the seismic retrofitting and expansion of the main library and City Hall.

The largest potential capacity to grow and intensify within the corridor exists in Oakland. As the largest city in the East Bay, Oakland has the highest densities, and it has a large downtown and several large-scale commercial areas, all with substantial opportunities for growth and development. Much of the corridor in Oakland falls within the boundaries of one of the city's Redevelopment Project Areas (RPA), including the Central District RPA in downtown Oakland, the Broadway/MacArthur/San Pablo RPA in north Oakland, and the Central City East RPA and Coliseum RPA, both in East Oakland. In addition, a large part of the corridor is within Oakland's Enterprise Zone and Empowerment Zone. Oakland supports growth and development downtown and along the major transit corridors by investing in streetscape improvements (planting, street lighting, sidewalk furniture, etc.), façade improvement programs, business recruitment efforts, the use of redevelopment to facilitate private sector investment and development, the provision of parking, investment in public development with revitalization benefits for surrounding areas (such as the development of the City Administration Buildings at a key location in downtown Oakland), and the investment of funding for new affordable housing.

There is strong civic commitment and leadership for development, particularly in downtown Oakland, where housing and employment growth have been promoted and encouraged by the 10K Downtown Housing Initiative (10K Initiative). Launched by former Mayor Jerry Brown when he took office in 1999, the 10K Initiative is realizing its goal of attracting 10,000 new residents to downtown Oakland by encouraging the development of 6,000 market-rate housing units. As of February 2008, the 10K Initiative has resulted in the start and completion of 94 residential projects with 10,518 units. Twenty-eight projects (2,570 units) have been completed, 19 projects (1,998 units) are in construction, 24 projects (2,193 units) have received planning approvals, and 22 projects (3,752 units) are in the planning process. The 10K Initiative has altered Oakland's skyline with the construction of The Essex on Lake Merritt, the first high-rise residential construction in downtown Oakland in 20 years. To date, the number of units necessary to house 10,000 new residents has been surpassed.

A large number of development projects are underway in Oakland, including numerous residential and commercial projects in the corridor that are under construction or in the planning and development process. Examples of large projects within the corridor, often involving both private and public sector participation, include the Uptown Project; the redevelopment of the Jack London Square District; additional City Center development in downtown Oakland; the MacArthur BART Transit Village project in North Oakland; and the Fruitvale BART Transit Village project in East Oakland. Rebuilding and expansion of Oakland's major hospitals and medical centers also are anticipated.

There also is capacity for growth and intensification within the San Leandro subarea at the southern end of the corridor. There is new focus on the East 14th Street corridor as an opportunity for future mixed-use and higher-density infill development. The corridor is entirely within redevelopment project areas and includes the city's downtown and civic center, San Leandro Hospital, and the Bayfair Center and surrounding retail area. The San

Leandro BART Station area is adjacent to downtown and is being planned for transit village development. City redevelopment and economic development activities and planning currently are underway and anticipated to assist in streetscape enhancements, façade improvements, tenant recruitment, and land assembly to improve the area and facilitate its redevelopment. While much of San Leandro's growth has been along the I-880 corridor to the west, there is new interest in the East 14th Street corridor and the potential for growth and development there in the future.

Effect of Local and Regional Economic Conditions

Market support for corridor development is part of a larger trend toward renewed interest and reinvestment in older central city areas. The central areas in Oakland in particular are desirable because of several positive factors: a central location in the region; good transportation accessibility via the freeway network, rapid transit, and air, rail, and water transportation; relatively affordable space costs and land prices; relatively affordable housing and a desirable, urban lifestyle at lower cost than nearby San Francisco; accessibility to a well-educated workforce; proximity to a major university (UC Berkeley); a fiber-optic network for business; and the availability of space and land for expansion and development with basic infrastructure already in place. The corridor economy is diverse, attracting technology industries, while maintaining strengths as a location for traditional business activities. The housing market also is diverse, offering rental and for-sale housing over a range of rents and prices.

Extent of Available Land for Development or Redevelopment

ABAG prepares projections of the region's growth in housing and employment. ABAG's Projections 2005 estimates that between 2000 and 2025, the number of households in Alameda County is expected increase 19.1 percent. Table 7.1 shows the growth in the number of households for the County, and the cities of Berkeley, Oakland, and San Leandro.

Table 7.1 Alameda County Household Growth Estimates

	Number of Households – Growth (2000 to 2025)	Number of Households – Percent Growth (2000 to 2025)
Alameda County	124,004	19.1%
Berkeley	4,845	9.7%
Oakland	34,880	18.8%
San Leandro	5,658	15.6%

According to its General Plan, the City of Berkeley, with its well-established land use pattern, has experienced little change in population or housing supply in the last 30 years. From 1970 to 2000, the number of housing units has increased from 46,160 to 46,875. Due to the scarcity of available land, all new development in Berkeley will be infill development.

The City of Oakland's General Plan, adopted in March 1998, supported the addition of an average of almost 600 housing units per year through 2005, as compared with about 400 per year added from 1980 to 1995. This goal has been met in part by actions such as the 10K Downtown Housing Initiative. Land uses, densities, and transportation systems have been planned to support increased development along the City's major transportation corridors, in downtown, in transit-oriented districts near BART stations, along the water-front, or as part of infill projects.

The City of San Leandro's General Plan, adopted in May 2002, projected a total residential increase of 920 housing units from 2000 to 2015 on sites that currently are vacant. The General Plan indicated the possibility of adding "hundreds more multifamily units" along East 14th Street, San Leandro Boulevard, MacArthur Boulevard, and Washington Avenue on currently underused commercial sites. Over the same period, the population was anticipated to rise to 84,960 residents, a seven percent increase.

■ 7.3 Quantitative Land Use Information Template

Table 7.2 is the Quantitative Land Use Information Template that is required for the Small Starts application. It should be noted that the Central Business District that is listed is downtown Oakland and is defined by the 1.4-square-mile area bounded by Grand Avenue to the north, Lake Merritt to the east, Interstate 980 to the west, and Oakland Inner Harbor to the south.

Table 7.2 Quantitative Land Use Information for Small Starts

QUANTITATIVE LAND USE INFORMATION FOR SMALL STARTS	
PROJECT NAME:	**East Bay Bus Rapid Transit**
Population and Employment – Metropolitan Area, CBD, and Station Areas	
Item	**BaseYear/Opening Year**
Metropolitan Area	
Total Population	6,783,700
Total Employment	3,753,700
Central Business District [see footnote 1]	
Total Employment	64,990
Employment – Percent of Metropolitan Area	1.73%
CBD Land Area (sq. mi.)	1.4
Employment Density (e.g., jobs per sq. mi.)	47,360
Total All Station Areas (1/2-mile radius)	
Housing Units	88,522
Population	241,460
Employment	171,617
Land Area (square miles)	17.4
Housing Unit Density (units per sq. mi.)	5,087.5
Population Density (persons per sq. mi.)	13,877.0
Employment Density (persons per sq. mi.)	9,863.0

Source: U.S. Census Bureau, 2000.

1 Optionally, employment for the largest activity center(s) served by the New Start project may be reported.

8.0 Other Factors

8.0 Other Factors

This criterion addresses additional factors, not highlighted in other criteria, which will contribute to the overall success of the East Bay BRT Project. Other factors include:

- Environmental justice and carless populations on the East Bay BRT corridor;
- Sustainability/smart growth;
- Access to employment;
- Air quality;
- Relationship to regional congestion management initiatives; and
- Pedestrian environment.

These factors are discussed in more detail below.

■ 8.1 Environmental Justice (EJ) and Carless Populations along the East Bay BRT Corridor

The East Bay BRT project will improve access to minority and transit dependent communities along a corridor that has some of the highest concentrations of minority and low-income populations in the county. Additionally, the corridor serves populations that are more likely to be carless than in other parts of the county – in some parts of the corridor, as much as 49 percent of the population does not have a private automobile. As such, investments in this corridor represent direct benefit to some of the poorest households in the area. In the context of this analysis, EJ populations include ethnic minorities and low-income households. Transit dependency in this section refers to households with no vehicles, hereafter referred to as "carless populations."

Almost 74 percent of the population in the corridor is part of an ethnic minority, with Black/African Americans and Hispanics representing the largest ethnic minority followed by people of Asian descent. Table 8.1 summarizes the minority population in the region and within the BRT corridor. Figure 8.1 shows the percentage of minority populations along the BRT corridor. Overall, Oakland shows the highest concentration of ethnic minorities in the East Bay corridor, with the largest concentration between Oakland Central and Elmhurst.

Table 8.1 Minority Population, 2000

Location	2000 Population	Minority Population Total	Minority Population Percent
Alameda County	1,443,741	852,646	59.1%
City of Berkeley	102,743	46,052	44.8%
City of Oakland	399,484	305,531	76.5%
City of San Leandro	79,452	45,806	57.7%
Study Area, by Subarea			
Berkeley	43,582	16,958	38.9%
North Oakland	34,111	19,588	57.4%
Oakland Central	25,786	20,856	80.9%
San Antonio	37,773	31,288	82.8%
Fruitvale	21,990	21,933	99.7%
Central East Oakland	31,624	30,783	97.3%
Elmhurst	34,477	33,546	97.3%
San Leandro	26,877	15,032	55.9%
Ashland	6,802	4,000	58.8%
Study Area Total	**263,022**	**193,984**	**73.8%**

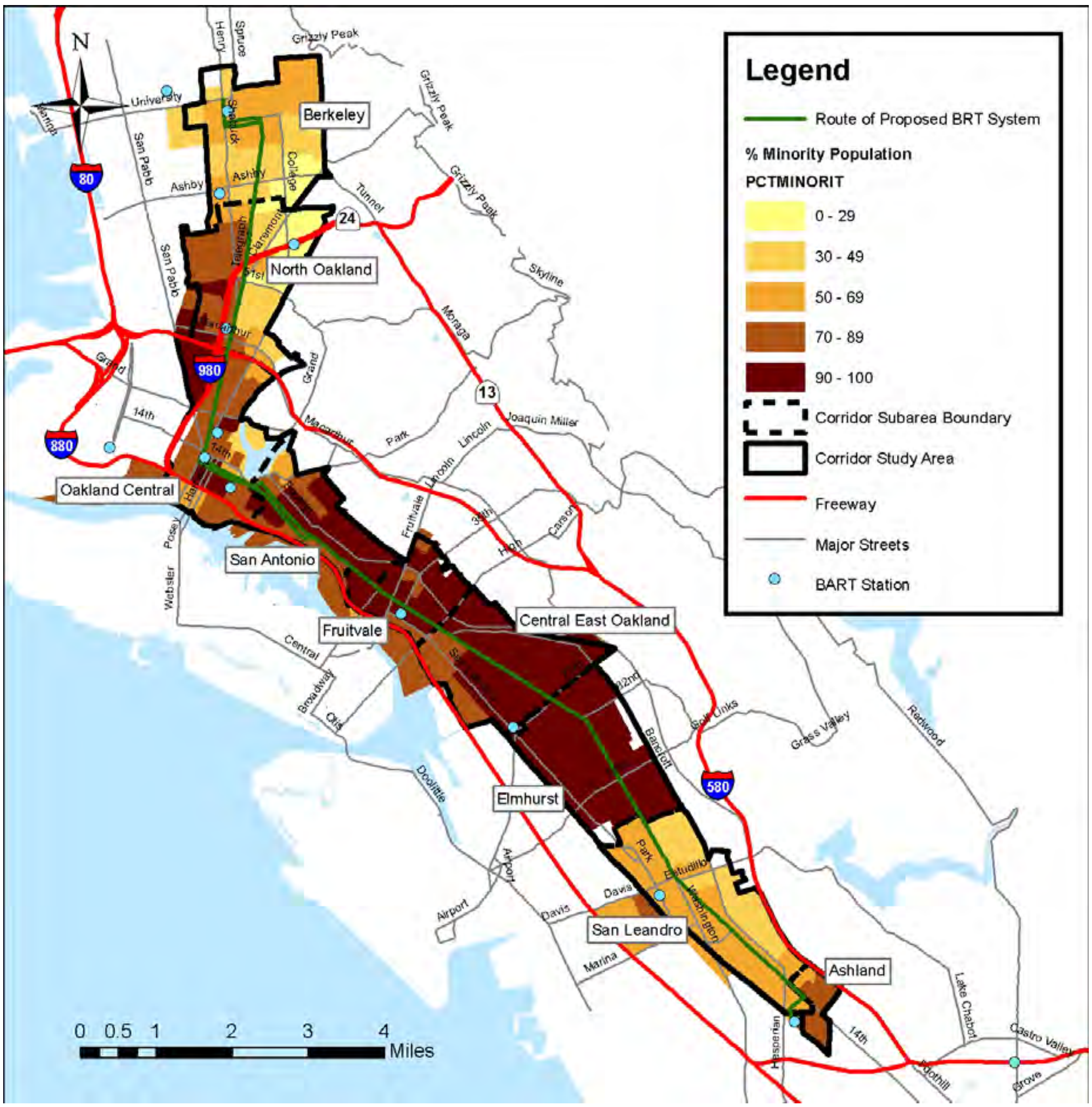
Source: U.S. Census Bureau, 2000; ABAG.

The East Bay BRT corridor is home to over 263,000 people, with 24.2 percent of the population living below the Federal poverty level in 2000, as defined by the U.S. Census Bureau. To account for the high cost of living in the San Francisco Bay Area, the region has defined the poverty level as twice the Federal threshold. As a result, the low-income population within the East Bay corridor accounts for 46.1 percent of the total corridor population. The poverty rates in most areas within the corridor are well above the poverty rates at the city, county, state, and national levels. Berkeley and Oakland Central have the highest percentage of low-income population in the corridor, followed by Central East Oakland, San Antonio, and Elmhurst. The median income for households in the corridor was approximately $34,100[1] in 2000, 39 percent lower than for Alameda County as a whole, and 20 percent lower than the average of each of the cities of Berkeley, Oakland, and San Leandro. Table 8.2 and Figures 8.2 and 8.3 show low-income population statistics

[1] Based on corridor analysis conducted for the DEIS.

in the corridor, using the Federal and regional definitions of poverty. Table 8.3 shows household median income and low-income population statistics based on 2000 Census and the 2007 American Community Survey. The poverty rate in the cities of Oakland and Berkeley is much higher than the poverty rates at the county, state, and national levels, and the poverty rate in San Leandro almost doubled in 2007 compared to 2000 data.

Figure 8.1 East Bay BRT Corridor
Minority Population



Source: U.S. Census Bureau, 2000.

Table 8.2 East Bay BRT Corridor
Low-Income Population, 2000

Location	2000 Population	Low-Income Population (Federal Definition)	Percent of Low-Income	Low-Income Population (MTC Definition)	Percent of Low-Income
Berkeley	43,582	14,959	34.3%	20,941	48.0%
North Oakland	34,111	5,809	17.0%	11,688	34.3%
Oakland Central	25,786	7,747	30.0%	14,407	55.9%
San Antonio	37,773	10,006	26.5%	19,535	51.7%
Fruitvale	21,990	4,639	21.1%	11,476	52.2%
Central East Oakland	31,624	8,432	26.7%	16,721	52.9%
Elmhurst	34,477	8,901	25.8%	18,597	53.9%
San Leandro	26,877	2,225	8.3%	5,855	21.8%
Ashland	6,802	809	11.9%	1,982	29.1%
Study Area Total	**263,022**	**63,528**	**24.2%**	**121,203**	**46.1%**

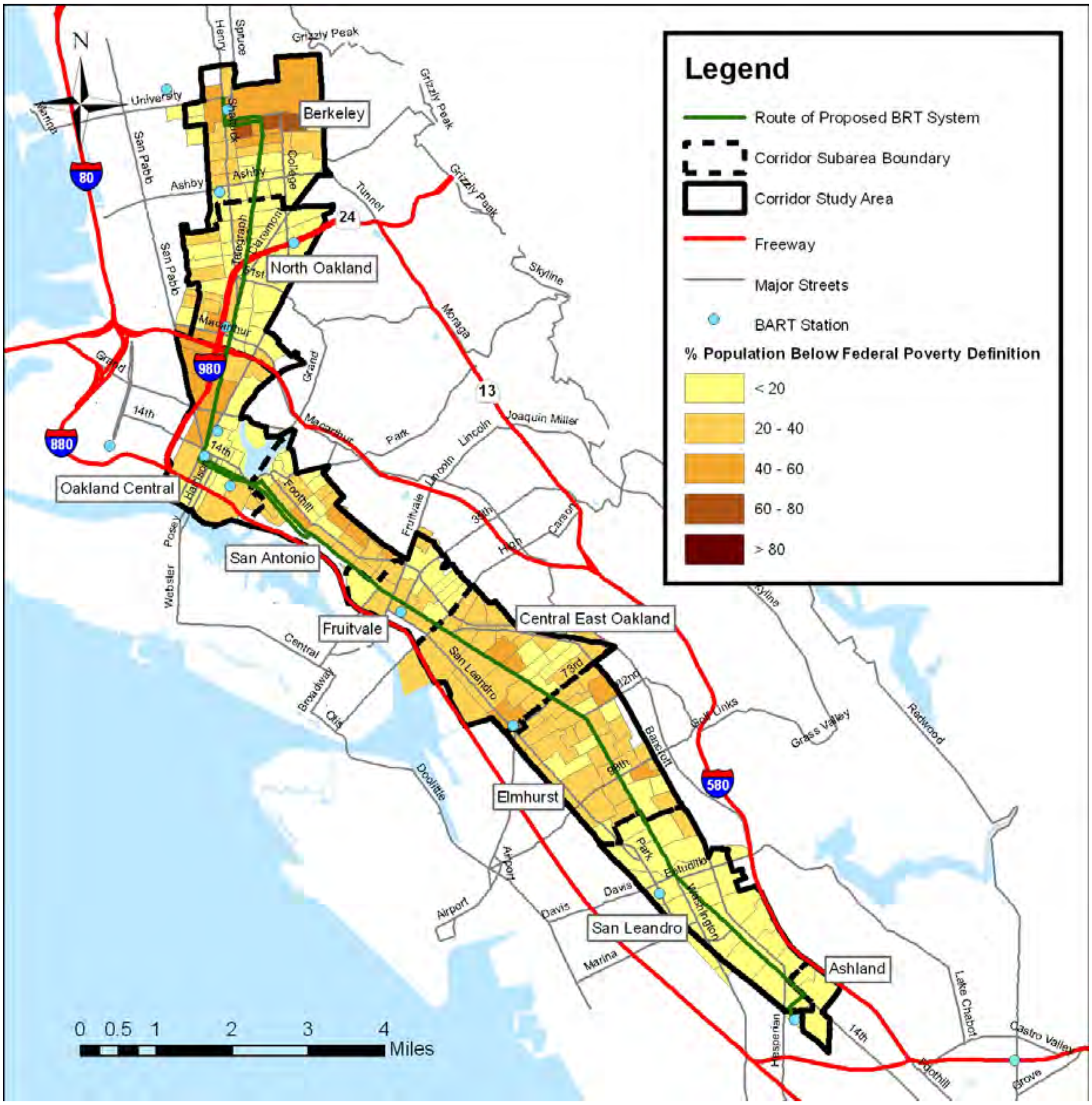
Source: U.S. Census, 2000.

Table 8.3 Median Household Income and Low-Income Population
U.S., California and Region, 2000 and 2007

	2000		2007	
Location	Median Household Income	Percent of Population Below Poverty Level	Median Household Income	Percent of Population Below Poverty Level
United States	$41,994	12.4%	$50,740	13.0%
California	$47,493	14.2%	$59,948	12.4%
Alameda County	$55,946	11.0%	$68,740	11.0%
City of Berkeley	$44,485	20.0%	$57,189	21.0%
City of Oakland	$40,055	19.4%	$46,475	17.6%
City of San Leandro	$51,081	6.4%	$63,173	11.7%

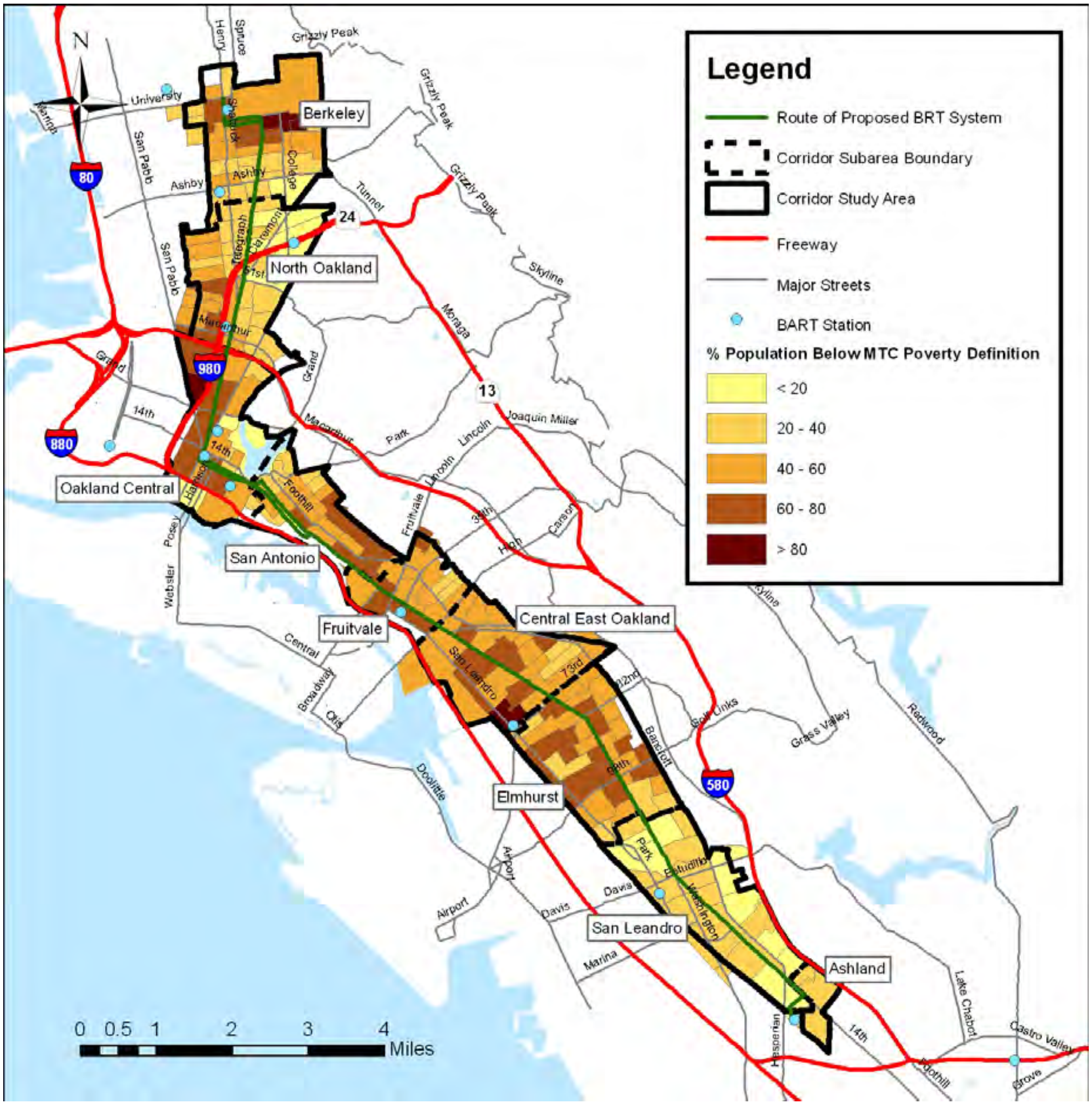
Sources: U.S. Census, 2000; American Community Survey, 2007.

Figure 8.2 East Bay BRT Corridor
Low-Income Population (Federal Definition of Poverty)



Source: U.S. Census Bureau, 2000.

Figure 8.3 East Bay BRT Corridor
Low-Income Population (MTC Definition of Poverty)



Source: U.S. Census Bureau, 2000.

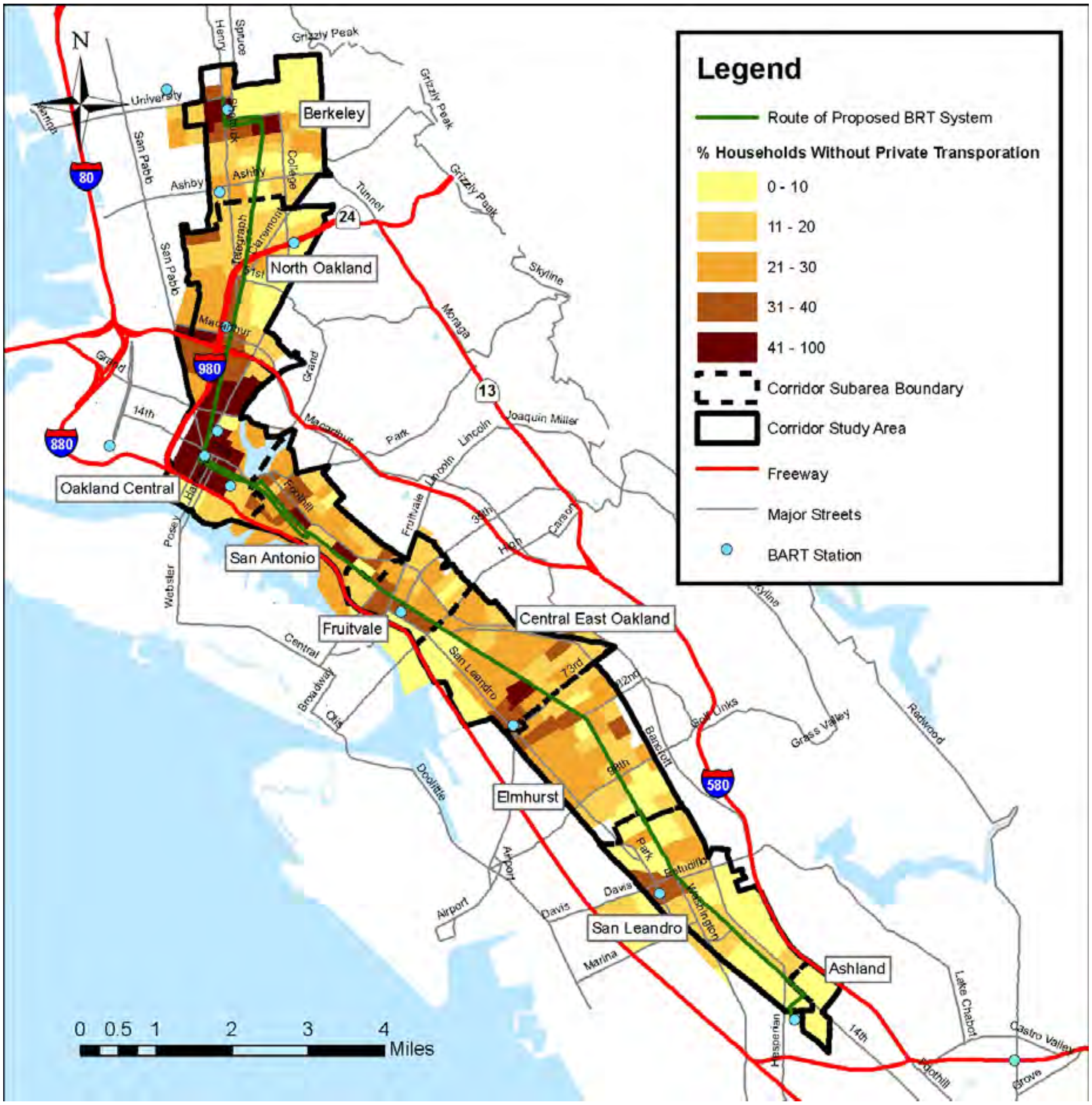
Table 8.4 and Figure 8.4 show the concentration of carless populations in the East Bay BRT corridor based on 2000 Census data. Twenty-three percent of the households within the corridor are without private vehicles, which is greater than Alameda County as a whole. Oakland Central shows the highest share of carless households, with almost half without a private vehicle.

Table 8.4 Households without Private Transportation

	Total Households	Households Without Private Transport	Percent of Households Without Private Transport
Alameda County	523,366	57,287	11%
City of Berkeley	44,955	7,649	17%
City of Oakland	150,790	29,584	20%
City of San Leandro	30,642	2,850	9%
Corridor, by Subarea			
Berkeley	17,675	3,811	22%
North Oakland	16,156	2,782	17%
Downtown Oakland	12,611	6,027	48%
San Antonio	12,571	3,097	25%
Fruitvale	5,730	1,418	25%
Central East Oakland	9,182	2,287	25%
Elmhurst	9,561	1,758	18%
San Leandro	11,525	1,518	13%
Ashland	2,355	162	7%
Study Area Total	**97,366**	**22,860**	**23%**

Source: U.S. Census Bureau, 2000.

Figure 8.4 East Bay BRT Corridor
Carless Population



Source: U.S. Census Bureau, 2000.

■ 8.2 Sustainability/Smart Growth

Growth and development within the proposed project corridor meet many of the regional Smart Growth objectives for land use and transit-oriented development. Over the last few decades, increases in automobile traffic on major roadways in the study area and traffic spillover onto local residential streets have eroded the livability of these areas. Coupled with lack of Smart Growth principles, the increases in auto traffic have lead to prevailing development of outward expansion – or sprawl in the region as a whole. This tendency adds to regional problems such as traffic congestion, air quality concerns, high housing prices, and diminishing open space that Smart Growth principles are designed to address.

The corridor cities of Berkeley, Oakland, and San Leandro are building upon strong existing transit-supportive land use patterns and carrying out extensive development and redevelopment efforts along Telegraph Avenue, International Boulevard/East 14th Street, and other areas in the corridor. As explained in Section 7.0 (Land Use), the study area plans for development are influenced by Smart Growth principles that call for increasing densities, infill development, use of existing infrastructure, and focusing growth in existing cities and along transit corridors in the central parts of the region.

The proposed East Bay BRT project supports the development policies of the three cities by improving transit access within the corridor and making locations along the corridor more attractive to people and businesses. Additionally, transit investment in a corridor that is being redeveloped to its highest and best use provides confidence to cities that their Smart Growth policies include the necessary infrastructure to address access issues. Consequently, the East Bay BRT Project supports growth and development and intensification of land uses along a major transit corridor, including the downtowns of three of the region's center cities,[2] and would support a more compact regional development pattern with less growth at the fringes. The proposed project would reduce the chance for sprawl in the region in the long run.

From a transportation perspective, the project is essential to improve transit travel times in the corridor. Currently, the proposed project corridor experiences traffic congestion during the peak hours. With growing population and corresponding traffic growth, the conditions would worsen by 2025 and bus service in the corridor would suffer from significant reliability issues and would not be efficient in serving existing and future populations. The improvements associated with the proposed East Bay BRT project support planned growth along the transit corridor. From a ride's perspective not only would travel time be reduced, but transit schedule reliability would be improved. From an agency perspective, the BRT would provide some of the most efficient service in the system, lowering future operating costs.

Faster speeds and improved bus schedule reliability would offer incentives for auto users to shift to public transit. Traffic studies conducted for the DEIS show that in 2025, under the Build Alternatives, there would be a shift to transit by some auto users for certain trips, as evidenced by a reduction in auto vehicle miles traveled in the county when compared to the No-Build Alternative. This reduction in auto trips would have a positive effect on transportation conditions in the area and would help support planned growth focused on the transit corridor. However, more important, the East Bay BRT provides a

[2] Source: AC Transit East Bay BRT Project Land Use Report, Hausrath Economics Group, 2005.

competitive transportation alternative, giving users a choice between auto or transit travel that is made efficient and reliable because it runs on exclusive BRT lanes.

In summary, given that the project is aimed at improving transit in a very urbanized and well developed corridor, it would not contribute to inducing growth beyond that already contemplated and anticipated. The East Bay BRT Project would complement and encourage growth and land use intensification as planned by both the three cities and the region alike. It would encourage in-fill and transit-oriented development in the corridor, thereby discouraging sprawl and improving air quality over time. The proposed project would be one factor supporting land use change combined with market forces, local land use policies, public investments, and capacity for growth to influence land use change over time.

8.3 Access to Employment

The East Bay BRT service will improve access to major employment centers in Alameda County, including Downtown Oakland, Downtown Berkeley, and the UC Berkeley Campus. Table 8.5 summarizes employment data for the region and the corridor for 2000 and 2025. An additional 41,025 jobs will be added within the corridor by 2025, for a 23 percent increase from 2000 employment levels. Most of this growth, in terms of net additional jobs, will occur in the Downtown Oakland, Berkeley, and San Leandro areas, with almost 86 percent of the additional employment by 2025. The East Bay BRT is expected to improve access to existing and future employment opportunities for some of the region's most transit-dependent populations.

Table 8.5 Projected Employment Growth in Study Area

Location	2000	2025	Growth 2000-2025	Percent Growth
Alameda County	751,680	1,014,190	262,510	35%
City of Berkeley	77,200	86,220	9,020	12%
City of Oakland	193,950	243,500	49,550	26%
City of San Leandro	54,230	64,080	9,850	18%
Corridor, by Subarea				
Berkeley	47,566	53,258	5,692	12%
North Oakland	12,281	13,636	1,355	11%
Downtown Oakland	77,553	102,646	25,093	32%
San Antonio	4,984	5,369	385	8%
Fruitvale	4,639	5,360	721	16%

Table 8.5 Projected Employment Growth in Study Area (continued)

Location	2000	2025	Growth 2000-2025	Percent Growth
Central East Oakland	7,946	10,752	2,806	35%
Elmhurst	6,119	6,558	439	7%
San Leandro	18,982	23,444	4,462	24%
Ashland	161	233	72	45%
Study Area Total	**180,231**	**221,256**	**41,025**	**23%**

Source: U.S. Census Bureau, 2000.

8.4 Air Quality

The State of California is well recognized for its environmental laws, which are more stringent than Federal environmental regulations. Alameda County, under the California Clean Air Act (CCAA), has been designated in attainment for carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2), whereas it has been designated in non-attainment for ozone (O_3), respirable particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$). The East Bay BRT project is in line with the state environmental goals, reducing emissions by providing a reliable travel alternative to vehicle travel, and attracting over 6,800 new transit riders in the year 2015 who would otherwise be traveling by car.

8.5 East Bay BRT Relation to Congestion Management Initiatives in the San Francisco Bay Area

The East Bay BRT project is part of Regional Measure 2 (RM2), a pricing initiative in the San Francisco Bay Area. RM2 was approved by voters in March 2004, raising the toll on the seven State-owned toll bridges in the San Francisco Bay Area by $1.00. The additional revenues are dedicated to fund various transportation projects within the region that have been determined to reduce congestion or to make improvements to travel in the toll bridge corridors, as identified in Senate Bill 916 (Chapter 715, Statutes of 2004).

Specifically, RM2 establishes the Regional Traffic Relief Plan and identifies specific transit operating assistance and capital projects and programs eligible to receive RM2 funding. Through this Plan, RM2 provides both capital and annual operating funding to the East Bay BRT program, as identified in our capital and operating plan.

The East Bay BRT project also is part of Resolution 3434, a Regional Transit Expansion Plan that was adopted in 2001 by the Metropolitan Transportation Commission (MTC) and updated with the Regional Transportation Plan. The Plan includes priority transit expansion projects, including rail, bus, and ferry services. The 2008 Draft Strategic Plan includes $35 million from CMAQ to be dedicated to the East Bay BRT. The project was selected as the Small Starts candidate for the region in the 2006 update of the resolution, and continues to be a priority for the Region and the County.

The project also has been included in both the Region Transportation Plan and the Alameda Countywide Plan since 2001. Both plans have been undergoing updates in 2008, including significant community input. The East Bay BRT project is included as a high priority project in both plans, with significant funds committed to the project. The Alameda Countywide Plan was adopted in June 2008. The Regional Transportation Plan is anticipated to be adopted in early 2009.

8.6 Pedestrian Environment

The East Bay BRT is expected to improve pedestrian safety along its alignment by enhancing pedestrian crossings at signalized intersections and reducing the level of automobile-pedestrian conflicts along major arterials. Signalized intersections through which BRT buses pass will be reconstructed curb-to-curb (by repaving and restriping along the BRT roadway; providing new curbs and ADA curb ramps where substandard) for 150 to 200 feet or more on each side of an intersection, resulting in properly designed, better demarcated crosswalks. At intersections with median BRT stations, safe refuges for persons crossing the roadway will be available at station access points, which also are in the median and connect to crosswalks via ADA-compliant ramps. Station access will be protected from traffic by railings, bollards and, when space allows, streetscape/landscape buffer zones. The concentration of bus passengers at stations adds to the pedestrian-supportive atmosphere.

The bidirectional, median BRT transitway will replace two of four traffic lanes (one each direction) on several sections of Telegraph Avenue and International Boulevard/East 14th Street. The reduction in auto lanes is traffic-calming and will 1) result in slower average auto speeds; and 2) reduce the likelihood of multiple-threat accidents between pedestrians and autos. The multiple threat arises when drivers in the far traffic lane have difficulty seeing pedestrians beginning to cross the street but who are blocked from view by vehicles in the lane nearer the curb. The latter vehicles also screen the views of pedestrians. Research has shown that accident risk is higher when pedestrians must cross two as opposed to one traffic lane in each direction. A median BRT lane does not pose the same threat as a median mixed-flow lane because the frequency of bus traffic is lower and only professional bus operators, trained to observe pedestrian movements, will be driving in the bus lane.

9.0 Local Financial Commitment

9.0 Local Financial Commitment

This section contains the financial plan developed for the proposed East Bay BRT project. The financial plan has been developed in accordance with FTA's June 2000 *Guidance for Transit Financial Plans*, and the reporting of the local financial commitment criterion is consistent with the July 2007 *Small Starts Updated Interim Guidance and Instructions*.

The two major elements included in this section are the Small Starts Finance Template and the East Bay BRT Financial Plan. The Finance Template provides a uniform reporting of the local financial commitment for the East Bay BRT project. The financial plan illustrates that AC Transit has a reasonable plan to secure the local share of the East Bay BRT capital costs, and that the East Bay BRT incremental O&M costs are less than five percent of AC Transit's operating budget.

Key supporting documentation for the local financial commitment criterion is listed below. This documentation is included as part of this submittal (see directory *05_Financial Plan Docs* of the submittal CD). AC Transit also will provide this documentation directly to FTA's assigned financial contractor for the East Bay BRT project:

- Capital cost estimates reported in the Standard Cost Category (SCC) worksheet;
- O&M model documentation;
- AC Transit Adopted Biennial Budgets (for Fiscal Years 05/06 and 06/07, and Fiscal Years 07/08 and 08/09;
- AC Transit Financial Statements, for Fiscal Years 2006 through 2007;
- AC Transit Comprehensive Annual Financial Report, Fiscal Year 2007;
- AC Transit Short-Range Transit Plan (SRTP), 2006 through 2016 (includes Fleet Management Plan, Figure A-2);
- MTC Adopted 2030 Long-Range Transportation Plan (LRTP, 2005);
- Regional Measure 2 (RM 2) Capital Program, Project List;
- RM 2 Transit Operations Funding;
- Alameda County Transportation Improvement Authority (ACTIA), Summary of Projects (June 25, 2008);
- Metropolitan Planning Commission (MTC), Resolution 3434 Strategic Plan Update (June 2008); and
- Alameda County Congestion Management Agency (ACCMA), 2008 Countywide Transportation Plan.

■ 9.1 Introduction to Financial Plan

Description of Project Sponsor

The Alameda-Contra Costa Transit District (AC Transit) is the third largest public bus system in California. The agency serves 13 cities and adjacent unincorporated areas in Alameda and Contra Costa counties, the second and third largest counties in the San Francisco Bay Area respectively. AC Transit has been serving the East Bay of the San Francisco region since 1960, taking over from the Key System and its predecessors. AC Transit's mission is to provide safe, convenient, courteous, and reliable transit service.

In November 1956, citizens voted to establish the AC Transit. Funding for the District was initially provided in 1959 through a voter-approved bond of $16.5 million that allowed AC Transit to acquire the bankrupt Key System from the California Public Utilities Commission in 1960. The Key System was the original street car system in what are now the most densely populated areas in the East Bay. Further funding mechanisms were approved by the voters, providing AC Transit with necessary operating assistance. The move to publicly operate a privately owned company was proof that voters viewed public transit as an integral component of their quality of life in the East Bay.

By 1974, AC Transit's service area stretched from the western Contra Costa County cities of San Pablo and Richmond to the southern cities of Fremont and Newark. For administrative purposes, AC Transit has two distinct segments: Special Transit Service District No. 1, which includes Alameda, Albany, Berkeley, El Cerrito, Emeryville, Hayward, Oakland, Piedmont, Richmond, San Leandro, San Pablo, and the unincorporated areas of Ashland, Castro Valley, El Sobrante, Kensington, and San Lorenzo. Special Transit Service District No. 2, which joined AC Transit in 1974, includes Fremont and Newark in Southern Alameda County, the northern portion of the rapidly growing Silicon Valley.

Today, AC Transit operates an extensive network of local, express, and transbay routes blanketing the 13 cities (and adjacent unincorporated areas) in Alameda and Contra Costa Counties along the east shores of San Francisco and San Pablo Bays. The total area served by AC Transit is approximately 390 square miles, with a population of over 1.4 million. AC Transit offers a broad range of transportation services for the East Bay, including 105 local and intercity express routes, and paratransit service.

AC Transit has grown since its 1960 start-up. From an operation that once totaled 19 million annual revenue service miles, AC has grown to operate more than 21 million in 2006. The number of passengers now carried annually is 67 million, compared to 48 million 30 years ago.

The system is governed by a seven-member Board of Directors elected by East Bay voters to four-year terms. Five of the seven Directors represent geographic wards while two are elected at-large. This Board has full power to conduct all business of the District, including the right to acquire, construct, own, operate, and control transit facilities; to establish tariffs; and to determine routes and levels of service.

The District's Board may accept assistance from the Federal and state governments, and it may incur indebtedness and exercise the right of eminent domain. The Board also is empowered to impose property taxes within the service area to support transit operations.

Description of Funding Partners

Metropolitan Transportation Commission

MTC is the regional planning agency for the nine-county San Francisco Bay Area. MTC functions as both the regional transportation planning agency – a state designation – and, is Federally designated as the region's metropolitan planning organization (MPO). As such, MTC is responsible for regularly updating the Regional Transportation Plan, a comprehensive blueprint for the development of mass transit, highway, airport, seaport, railroad, bicycle, and pedestrian facilities. The Commission also is the designated recipient of the region's Federal transportation funds and is tasked with developing the Transportation Improvement Program.

Over the years, state and Federal laws have given MTC an increasingly important role in financing Bay Area transportation improvements. At the Federal level, the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) and subsequent transportation legislation empowered MPOs like MTC to determine the mix of transportation projects best suited to meet their region's needs. To help set priorities for the hundreds of millions of dollars flowing each year to the Bay Area from flexible Federal funding programs, MTC convened the Bay Area Partnership, which is made up of some three dozen transportation and environmental agencies with a stake in the region's future.

MTC also administers state moneys, including those provided by the Transportation Development Act. Legislation passed in 1997 gives MTC and other regional transportation planning agencies increased decision-making authority over the selection of state highway projects and allocation of transit expansion funds for the State Transportation Improvement Program (STIP).

As the authority over the Bay Area's transportation funds, MTC oversees the efficiency and effectiveness of the region's transportation system. MTC monitors transit operators' budgets, conducts performance audits, and adopts a yearly productivity improvement program. MTC also helps ensure that the region's numerous bus, rail, and ferry systems are coordinating routes, fares, transfer policies, schedules, passenger information, and facilities.

Alameda County Congestion Management Agency (ACCMA)

ACCMA was created in 1991 by a joint-powers agreement between Alameda County and all its cities. The ACCMA Board is comprised of elected officials representing the cities and transit agencies in the county. The ACCMA disperses the proceeds of nine cents per gallon state fuel tax that was passed in 1990 to fund local, regional, and state transportation projects and services. Additional funding is derived from the Surface Transportation Program, the Congestion Mitigation and Air Quality (CMAQ) Program, and the

Transportation Fund for Clean Air Program. The ACCMA also develops the Alameda Countywide Transportation Plan which serves as both the Long-Range Transportation Plan for the county as well as the Alameda County project input to the Regional Transportation Plan. Over the last several plans, the ACCMA has included the East Bay BRT project as a "High-Priority Project" for funding allocation.

California Department of Transportation (Caltrans)

Caltrans provides Federal and state funding for capital expansion through the STIP, funding that, as mentioned earlier, is administered by MTC. Caltrans also administers planning grants and participates in planning and funding decisions as part as a nonvoting member of the Metropolitan Transportation Commission and as a full participant in the Bay Area Partnership. Caltrans also has administrative oversight for transportation projects subject to the California Environmental Quality Act (CEQA). Caltrans also has jurisdiction over state highways, including SR 185 (International Boulevard) which makes up a significant portion of the BRT corridor. While Caltrans' primary responsibility is to maintain and rehabilitate California's extensive highway network, it also is responsible for certain transit and planning functions. In this capacity, Caltrans District 4 office is responsible for approving MTC's Federal Transportation Improvement Program and Regional Transportation Plan. Caltrans further administers the Federal Transit Administration Section 5310, Elderly and Disabled program, the FTA Section 5311 Non-Urbanized Area Formula funds, the small urbanized area FTA Section 5316 Job Access and Reverse Commuter, and FTA Section 5316 New Freedom Programs.

Regional Economic Conditions

Population

According to U.S. Census data, population in Alameda and Contra Costa counties increased from approximately 2.1 million in 1990 to 2.4 million in 2000, for an estimated annual growth of 1.4 percent. Population growth in the region was at a faster pace than the overall population of the United States over the same period, which increased at an average annual growth rate of 1.2 percent. At the city level, population growth between 1990 and 2000 was higher in San Leandro (1.5 percent) than in the other cities within the BRT corridor, whereas Berkeley's population remained at the same level over the 10 year period.

Table 9.1 summarizes the population in Alameda County, which is part of the AC Transit service area and the three cities that will be served by the proposed East Bay BRT project, for 1990 and 2000 from the U.S. Census, and the 2025 population forecast prepared by the Association of Bay Area Governments (ABAG). The population forecast indicates that population growth at the county level will be slower than past trends, and a similar trend is observed in the cities served by the East Bay BRT, except for Berkeley, where growth is projected at 0.3 percent per year through 2025.

Table 9.1 Population Trends and Forecasts
1990 to 2025

	1990	2000	2025	Actual CAGR 1990-2000	Projected CAGR[a] 2000-2025
Berkeley	102,724	102,743	111,600	0.0%	0.3%
Oakland	372,242	399,484	449,500	0.7%	0.5%
San Leandro	68,223	79,452	87,600	1.5%	0.4%
City Total	**543,189**	**581,679**	**648,700**	**0.7%**	**0.4%**
Alameda County	1,279,182	1,443,741	1,702,171	1.2%	0.7%

Source: U.S. Census, MTC, ABAG.

[a] CAGR – Compounded Average Growth Rate.

Employment

Major employers in Alameda and Contra Costa counties include trade, transportation and utilities; government; professional and business services; and education and health services. In 2006, 19.3 percent of the employment in Alameda County was in the trade, transportation, and utilities, followed by government and professional and business services, with 18.7 percent and almost 15 percent, respectively. Education and health services accounted for approximately 12 percent of total employment.

Employment in Alameda County is projected to increase by almost 37 percent by 2025 (at a compound annual growth rate of 1.3 percent), from almost 752,000 in 2000 to over 1.0 million by 2025. Employment forecasts for Alameda County and by city from ABAG are summarized in Table 9.2. Employment growth is expected to be slower in the cities compared to the county employment, with the highest growth observed in the cities of Oakland and San Leandro.

Table 9.2 Employment Trends and Forecasts
2000 to 2025

	2000	2025	Projected CAGR 2000-2025
Berkeley	77,200	86,220	0.4%
Oakland	193,950	243,500	0.9%
San Leandro	54,230	64,080	0.7%
City Total	**325,380**	**393,800**	**0.8%**
Alameda County	751,700	1,028,259	1.3%

Source: MTC, ABAG.

Unemployment in Alameda County reached a five-year high of 6.9 percent in 2003, declining to around 4.4 percent in 2006 (see Table 9.3); a similar trend was observed in Contra Costa County over the same period. However, unemployment has continued to increase since 2006, approaching the unemployment rates experienced in 2003. Average unemployment rates at the State and national levels were estimated at 5.4 and 4.6 percent, respectively, in 2006. Recent data from the U.S. Bureau of Labor Statistics and California's Employment Development Department indicate that unemployment has increased significantly throughout the nation as of June 2008, with unemployment rates at the national level estimated at 5.5 percent; 7.0 percent in the State of California; 6.2 percent in Alameda County; and 6.3 percent in Contra Costa County, in comparison to 2007. Figure 9.1 shows the unemployment rates for the cities within the East Bay BRT corridor, the State of California, and the U.S. Overall, California unemployment rates have been higher than the national average (except in 2006) over the last seven years. At the local level, however, unemployment rates in Oakland have been significantly higher compared to other cities in the corridor and the State average.

Table 9.3 Unemployment Rates

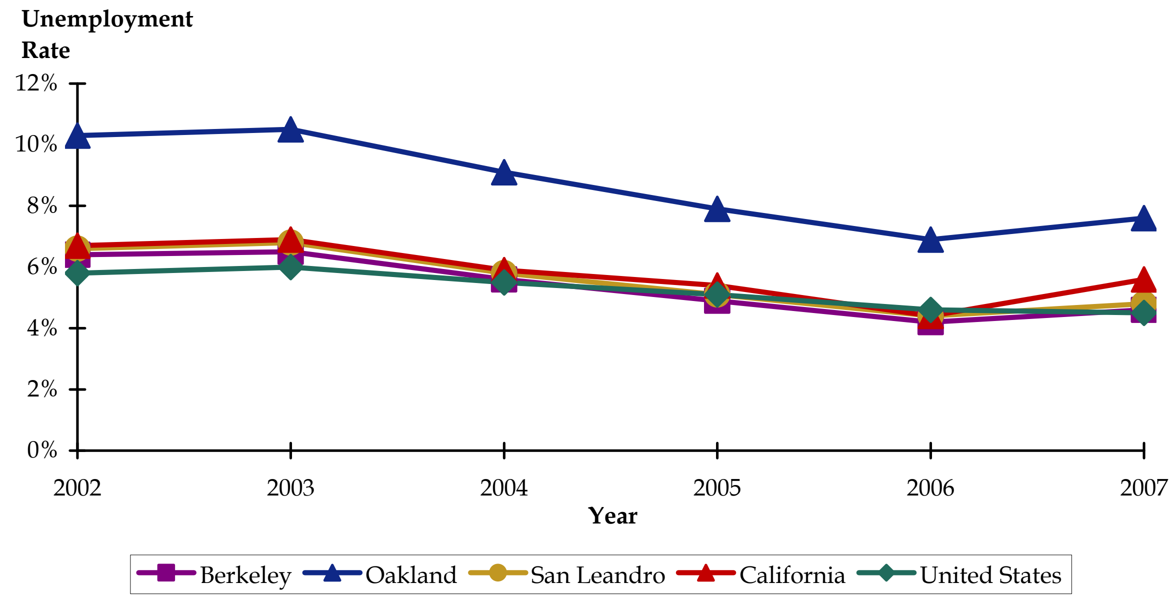
	2002	2003	2004	2005	2006	2007	June 2008
Alameda County	6.7%	6.9%	5.9%	5.1%	4.4%	4.8%	6.2%
Contra Costa County	5.7%	6.1%	5.4%	4.9%	4.3%	4.7%	6.3%
Berkeley	6.4%	6.5%	5.6%	4.9%	4.2%	4.5%	5.9%
Oakland	10.3%	10.5%	9.1%	7.9%	6.9%	7.4%	9.6%
San Leandro	6.6%	6.8%	5.8%	5.1%	4.4%	4.7%	6.1%
California	6.7%	6.9%	5.9%	5.4%	4.4%	5.4%	7.0%
United States	5.8%	6.0%	5.5%	5.1%	4.6%	4.6%	5.5%

Source: Bureau of Labor Statistics, California Employment Development Department.

Inflation

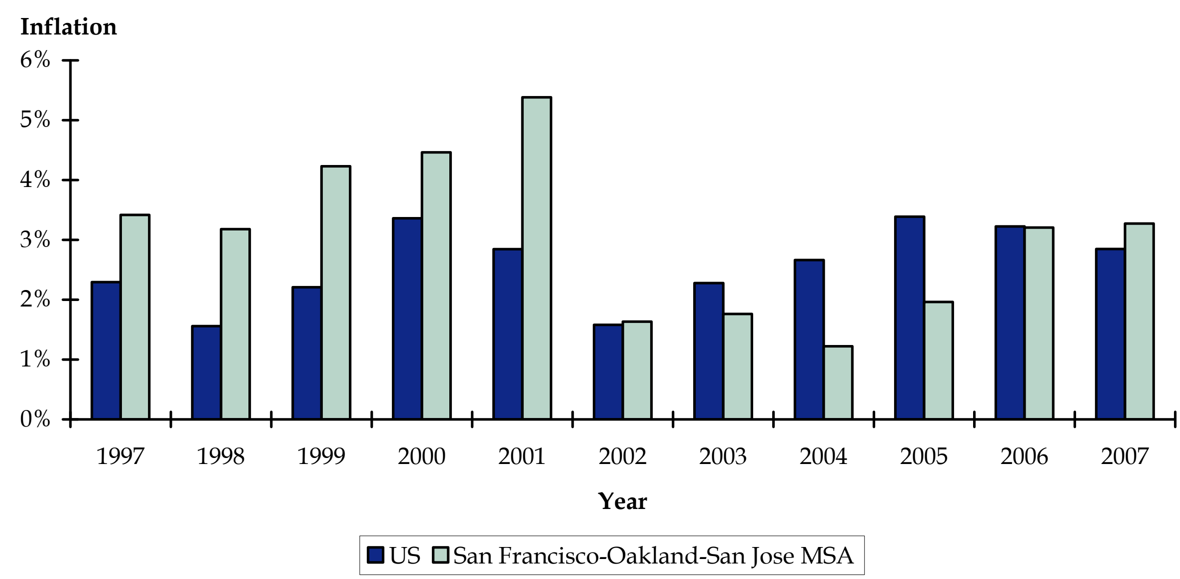
Figure 9.2 shows annual inflation rates for U.S. and the San Francisco-Oakland-San Jose metropolitan region, measured by the Consumer Price Index (CPI). The average inflation over the last 10 years is estimated at 2.6 percent in the United States and 3.0 percent for the San Francisco-Oakland-San Jose metropolitan region. National inflation forecasts from the Congressional Budget Office for fiscal years 2008 through 2018 indicate that inflation will decline to 2.2 percent by 2010, remaining at this rate thereafter.

Figure 9.1 Unemployment Rate



Source: Bureau of Labor Statistics, California Employment Development Department.

Figure 9.2 Consumer Price Index - US and San Francisco-Oakland-San Jose Metropolitan Statistical Area
1997 to 2007



Source: Bureau of Labor Statistics.

AC Transit Historical Data

Capital Expenses

Table 9.4 summarizes AC Transit capital expenditures from FY 2002 through 2006. Over the last five years, AC Transit has invested over $162 million in capital investments. Rolling stock expenditures accounted for approximately 76 percent of the capital investments.

Table 9.4 AC Transit Capital Expenditures
Millions of YOE Dollars, 2002 to 2006

Expense Type	2002	2003	2004	2005	2006	Total	Percent
Rolling Stock	8.2	31.7	47.7	25.5	9.6	122.7	76%
Systems and Guideway	0.0	4.3	0.9	3.4	12.1	20.7	13%
Facilities and Stations	1.2	1.0	3.8	2.9	0.7	9.5	6%
Other	8.4	0.1	0.0	0.7	0.2	9.3	6%
Total	**17.7**	**37.0**	**52.4**	**32.5**	**22.6**	**162.3**	**100%**

Source: National Transit Database.

Capital Funding

Table 9.5 summarizes the funding sources for capital expenditures at the Federal, state, and local levels, for fiscal years 2002 through 2006. Details of these funding sources are provided in Section 9.2 – Capital Plan.

Table 9.5 AC Transit Funding for Capital Expenses
Millions of YOE Dollars, 2002 to 2006

Funding Source	2002	2003	2004	2005	2006	Total	Percent
Local	0.0	0.0	0.0	15.1	0.0	15.1	9%
State	2.2	19.8	27.6	11.9	17.1	78.5	48%
Federal	7.8	17.2	24.9	5.6	5.5	61.0	38%
Other	7.7	0.0	0.0	0.0	0.0	7.7	5%
Total Capital Funds	**17.7**	**37.0**	**52.4**	**32.5**	**22.6**	**162.3**	**100%**

Source: National Transit Database.

Operating and Maintenance (O&M) Expenses

Table 9.6 summarizes AC Transit O&M expenditures from 2002 through 2006. The average annual growth over that period was 3.7 percent. Seventy-five percent of the O&M expenses are on wages and fringe benefits.

Table 9.6 AC Transit O&M Expenses
Millions of YOE Dollars, 2002 to 2006

Expense Type	2002	2003	2004	2005	2006	Total	Percent
Salaries/Wages/Benefits	175.5	200.8	183.8	183.8	198.9	942.8	75%
Materials and Supplies	16.3	17.4	15.7	19.7	23.8	92.9	7%
Purchased Transportation	17.2	17.6	18.2	18.0	16.8	87.7	7%
Other Operating Expenses	25.2	26.8	25.0	25.8	31.0	133.7	11%
Total O&M Costs	**234.1**	**262.6**	**242.7**	**247.3**	**270.4**	**1,257.1**	**100%**

Source: National Transit Database.

O&M Revenues

Table 9.7 summarizes the sources of funding for operating expenditures at the Federal, state, and local levels for fiscal years 2002 through 2006. Descriptions and details on these revenue sources are provided in Section 9.3 – Operating Plan.

Table 9.7 AC Transit O&M Funding and Revenues
Millions of YOE Dollars, 2002 to 2006

Revenues	2002	2003	2004	2005	2006	Total
Passenger Fares	46.1	42.2	45.8	44.7	49.0	227.9
Local Funds	161.4	171.9	163.5	152.3	166.5	815.5
State Funds	8.3	7.9	7.2	8.7	15.3	47.4
Federal Assistance	21.1	37.3	20.4	35.8	33.0	147.6
Other Operating Funds	6.6	4.9	7.3	8.0	8.9	35.7
Total Ops Funds	**243.6**	**264.1**	**244.2**	**249.6**	**272.6**	**1,274.1**

Source: National Transit Database.

Service Levels and Ridership

Table 9.8 summarizes AC Transit service levels and ridership for fiscal years 2002 through 2006. Ridership declined at an average growth rate of one percent per year; total annual vehicle miles and vehicle hours also decreased over this period. This drop in ridership is attributable to the severe economic conditions in 2002-2003 or "dot.com bomb" following September 11th. In December 2003, AC Transit was forced to cut a significant portion of its bus service due to budget constraints, an act that was accompanied by a hiring freeze and dismissal of almost 200 drivers and maintenance staff. The District has since recovered all but roughly two million in lost ridership since 2003. Nevertheless, planned service increases have largely been placed on hold until the agency's financial situation improves with the sole exception of service increases between 2005 and 2007 funded by a 2004 voter approved bridge toll increase.

Table 9.8 AC Transit Service Levels and Ridership,
2002 to 2006

Operating Characteristics	2002	2003	2004	2005	2006	CAGR
Annual Unlinked Trips	69,746,488	62,963,073	65,373,782	65,289,189	66,962,680	
Annual Growth		*-9.7%*	*3.8%*	*-0.1%*	*2.6%*	*-1.0%*
Annual Vehicle Revenue Miles	29,131,825	29,310,580	28,305,466	26,933,452	21,198,605	
Annual Growth		*0.6%*	*-3.4%*	*-4.8%*	*-21.3%*	*-7.6%*
Annual Vehicle Revenue Hours	2,424,606	2,443,850	2,309,625	2,189,906	1,817,463	
Annual Growth		*0.8%*	*-5.5%*	*-5.2%*	*-17.0%*	*-7.0%*

Source: National Transit Database.

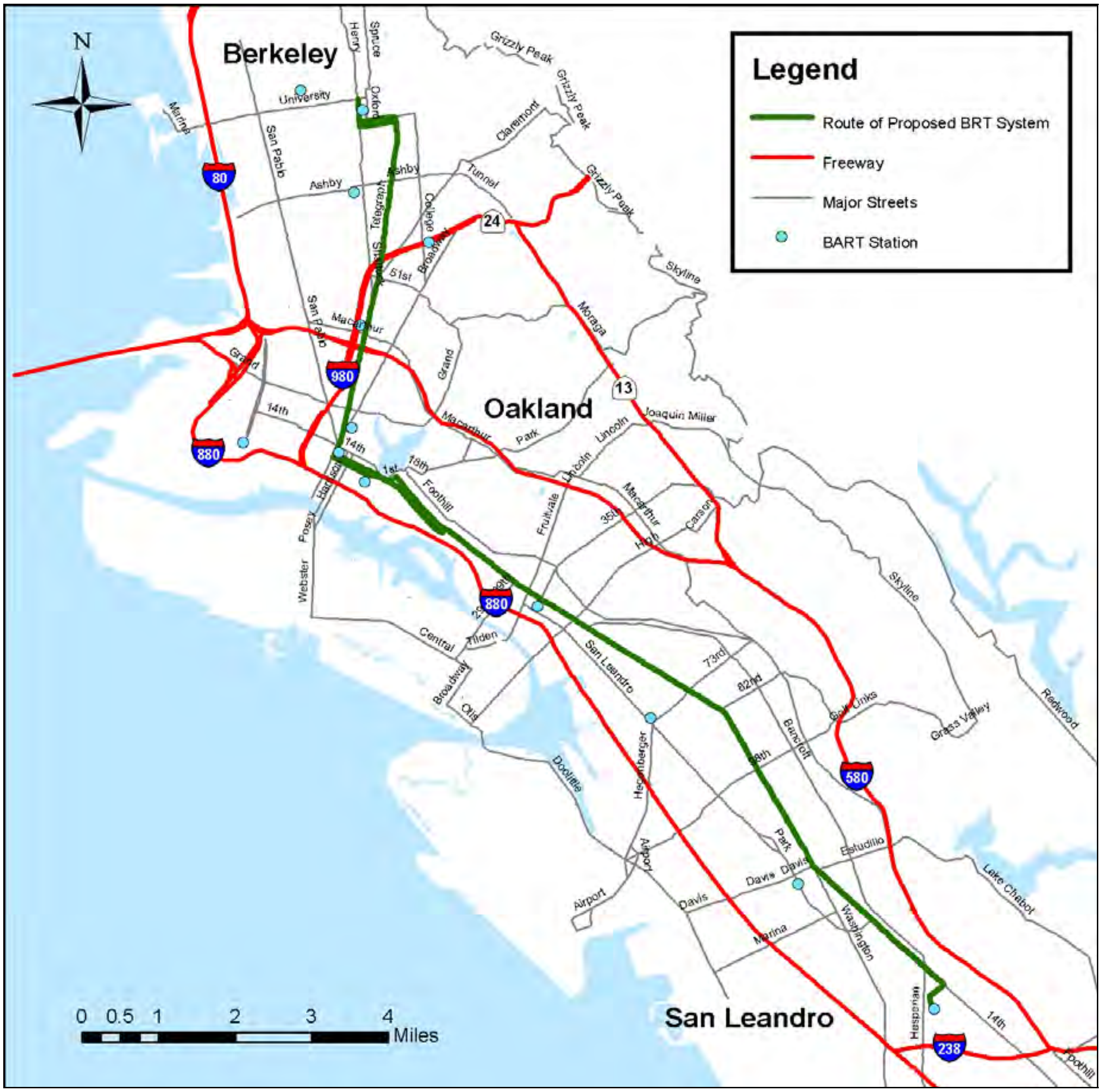
East Bay BRT Project Description

The AC Transit East Bay Bus Rapid Transit Project would provide high quality, fast, and frequent express bus service along an approximately 17-mile-long corridor extending from Downtown Berkeley and the University of California at Berkeley at the northern end, through Downtown Oakland, to San Leandro at the southern end. This corridor has characteristics that are highly conducive to transit use and particularly well-suited to bus rapid transit (BRT). The corridor is home to 260,000 residents and contains some of the highest employment and residential densities in the East Bay.

The proposed BRT alignment would follow primarily Telegraph Avenue in the northern portion of the corridor and International Boulevard/East 14th Street in the southern portion (see Figure 9.3). The alignment would begin near the Downtown Berkeley BART

Station, continue along the south side of the UC Berkeley campus to Telegraph Avenue, and then follow Telegraph Avenue to Broadway and Downtown Oakland. The alignment would continue south of Downtown Oakland along International Boulevard/East 14th Street through Downtown San Leandro to the Bayfair Center shopping mall and terminate at the Bay Fair BART Station.

Figure 9.3 East Bay BRT Alignment



The proposed BRT service would be supported by the existing local bus network; bus routes along the proposed BRT project alignment currently serve approximately 21,200 boardings a day – nearly 10 percent of AC Transit's total ridership.

The project would include dedicated bus lanes for about 85 percent of the corridor; intelligent transportation systems (ITS) elements such as transit signal priority and real-time information; high-frequency service (five-minute headways during peak and midday periods); BRT stations with amenities; barrier-free, proof-of-purchase fare collection; and low-floor, low-emission vehicles.

AC Transit's Other Planned Projects

In addition to the East Bay BRT project, AC Transit is planning for two additional BRT corridors: Grand-MacArthur BRT and Broadway-College BRT. Both projects currently are in early stages of planning and implementation is expected beyond the East Bay BRT implementation timeframe. Other major projects, the expansion of 72R and Richmond Parkway Park and Ride and the Ardenwood Park and Ride are fully funded, and are not expected to impact the financial viability of the East Bay BRT.

Grand-MacArthur BRT. AC Transit currently is preparing an Alternatives Analysis study funded with FTA 5339 funds as part of the San Francisco Bay Area Urban Partnership Program. This is a 17-mile corridor that operates from Eastmont Town Center in Oakland to the San Francisco Transbay Terminal. BRT service on Grand/MacArthur includes both arterial-running operation as well as HOV lane use to access the San Francisco-Oakland Bay Bridge into the San Francisco Transbay Terminal. The NL-MacArthur Transbay route is designed to serve as both congestion relief for Transbay travel, as well as provide mobility for local trips within the greater Oakland area.

Broadway-College BRT. This is a 13-mile corridor from the Berkeley Amtrak Station at 3rd and University to Broadway and Blanding in the City of Alameda. The corridor is presently served by Line 51, which operates along the University Avenue, College Avenue, and Broadway corridors, and then via Webster Street and Santa Clara Avenue in Alameda. It has one of the highest patronages in the AC Transit system, with about 22,000 boardings daily. Appropriately, headways are short: 8 minutes during peak periods, and 10-minutes midday. In 2003, the AC Transit Board designated the College/University corridor as a "Priority Corridor" and directed staff to further study the corridor for future improvements. This project is in very preliminary planning stages and has entailed various studies in the corridor.

Expansion of 72R Rapid and Richmond Parkway Park and Ride. AC Transit has been working with the Alameda Congestion Management Agency on a comprehensive I-80 corridor mobility project. I-80 is the most congested corridor in the Bay Area and the 72R runs on San Pablo Avenue, a major arterial that parallels I-80. Currently the San Pablo corridor has bus signal priority, next bus signage, and enhanced bus stops to Contra Costa Community College. Using Measure J and Proposition 1B Infrastructure Bond Funds (Corridor Mobility Improvement Account and Traffic Light Synchronization Program), the 72R rapid service will be expanded from the college to the Richmond Parkway Park-and-Ride lot which currently is being development with funding from Regional Measure 2 ($16 million) and State Transportation Improvement Program funds ($13 million). When completed, the Richmond Parkway Park and Ride will be able to accommodate 750 cars and will be a major hub for rapid, transbay express service, and BART feeder service.

Ardenwood Park and Ride. This park-and-ride project is funded with Regional Measure 2 funds and involves increasing the existing District-owned lot from 200 parking spaces to 400 parking spaces. This site also is a potential for the first Bus Transit-Oriented Development in the Bay Area and plans for studying this possibility are being considered.

9.2 Capital Plan

This section summarizes the assumptions and methodologies used to develop AC Transit's capital estimates for the East Bay BRT project, and planned capital investments through opening year (2015). The purpose of this section is to demonstrate that AC Transit has the financial capacity to implement the proposed improvements, while continuing to maintain its current infrastructure in state of good repair, and supporting its planned capital investments through 2015.

East Bay BRT Cost Estimates and Assumptions

The construction costs of the East Bay BRT project are estimated at $234.6 million (year-of-expenditure, (YOE) dollars). The costing elements were defined in a manner that conforms to the FTA Standard Cost Categories. Unit costs for civil construction were developed from RS Means 2007 Site and Work Landscape Costs data and compared to Caltrans data. As needed, information from peer projects or industry experience was utilized to supplement unit costs, for items such as station amenities. Additional information on the project cost estimates is provided in Section 4.0 of the FY 2010 Small Starts Submittal.

The project cost estimates were developed in base-year (2008) dollars and inflated to YOE after including contingency. The implementation period for this project is assumed from 2009 through 2015, with construction starting in 2012. An inflation factor of 3.5 percent was applied to convert the base-year estimates to YOE, based on the average five-year Construction Cost Index (CCI) in the San Francisco Bay Area.

Allocated contingency was applied directly to all SCC items, ranging from 23 percent to 56 percent. Overall, the allocated contingency is approximately 54 percent of the project costs (in constant dollars, 2008 dollars). The unallocated contingency was estimated at 4 percent of the project cost subtotal (items 10 through 80 of the SCC). Combined allocated and unallocated contingencies are estimated at 60 percent of the project cost (in 2008 dollars). Preliminary engineering and final design were estimated at about 3 and 10 percent of the construction costs, right-of-way, and vehicles (items 10 through 70 of the SCC); project management and administration also are estimated at about 13 percent of the construction costs and right-of-way.

Table 9.9 summarizes the project cost by SCC line item in 2008 and YOE dollars; additional detail is provided in the SCC worksheet included in Section 4.0 of the FY 2010 Small Starts submittal. The total project cost is $199.0 million in 2008 dollars, and $234.6 million in YOE dollars. Table 9.10 shows the schedule of expenditures in YOE dollars.

Table 9.9 East Bay BRT Project Cost Estimates
Millions of Dollars

Project Cost Item from SCC	Total (2008 Dollars)	Total (YOE Dollars)
10 Guideway and track elements	19.6	23.2
20 Station, stops, terminals, intermodal	38.1	45.3
30 Support facilities: yards, shops, administration buildings	0.0	0.0
40 Sitework and special conditions	42.2	50.2
50 Systems	36.8	44.6
60 ROW, land, existing improvements	12.3	14.1
70 Vehicles	0.0	0.0
80 Professional services	42.4	48.1
90 Unallocated contingency	7.7	9.0
100 Finance charges	0.0	0.0
Total	**199.0**	**234.6**

Source: SCC worksheet.
Note: Totals may not add up due to rounding.

Table 9.10 East Bay BRT Cost Schedule
Millions of YOE Dollars

2009	2010	2011	2012	2013	2014	2015	Total
4.7	5.2	13.4	61.0	78.3	69.4	2.6	234.6

Source: SCC worksheet.
Note: Totals may not add up due to rounding.

East Bay BRT Capital Funding Sources

The capital costs for the East Bay BRT project will be covered using the following funding sources:

- **FTA Section 5309 Small Starts.** AC Transit will request $75 million on Small Starts funding for the East Bay BRT project, accounting for 32 percent of the total project cost.

- **Other Federal.** AC Transit will commit $2.1 million in Federal funds from FTA Section 5309 BUS earmarks and $35 million in Congestion Mitigation and Air Quality funds to the project.

- **Regional Measure 2 (Bridge Tolls).** San Francisco Bay Area voters approved Regional Measure 2 (RM-2) in March 2004. This measure, authorized by state statute SB 916, raised tolls on state-owned bridges in the San Francisco Bay Area by $1 in order to fund a variety of transportation projects. Approximately $65 million are committed for the construction of the East Bay BRT system, in addition to $3 million per year in operating funds for the corridor. About $16.3 million have been invested to date for the implementation of the 1R Route, leaving approximately $48.7 million available for the East Bay BRT.

- **Alameda County Measure B (Sales Tax).** A half-cent sales tax for transportation projects was approved by Alameda County voters in 1986 for a period of 15 years. While the initial Measure B program ended in 2002, voters authorized a new Measure B by a majority of over 80 percent in November 2000. This new measure went into effect in April 2002, and more than doubles the share of sales tax funds available to AC Transit to operate service, from 11 percent to approximately 23 percent. In addition, funding was allocated for corridor projects, most of which are related to implementing this BRT project. This program is administrated by the Alameda County Transportation Improvement Authority (ACTIA) and funds several highway, transit, and other transportation improvement projects in Alameda County. Measure B funding for the East Bay BRT is estimated at $21 million (YOE dollars).

- **Alameda County Congestion Management Agency (ACCMA) TIP Funds.** ACCMA funding for the East Bay project will come from $52.7 million in STIP funds committed to the project.

- **AC Transit District Funds.** The remaining $0.4 million in funding for the East Bay BRT will come from an allocation of district existing capital funding.

Table 9.11 summarizes the funding sources and levels of commitment for the East Bay BRT.

Table 9.11 Source of Funding for East Bay BRT
Millions of YOE Dollars

Sources of Funds	Funding Level	Funding Share	Level of Commitment	Evidence of Commitment
Federal Sources:				
Section 5309 New Starts	75.0	32%	N/A	N/A
CMAQ	35.0	15%	Committed	MTC Resolution 3434
FTA Section 5309 BUS	2.1	1%	Committed	Earmark
Total Federal Funds	**$112.1**	**48%**		
Non-Federal Sources: *Regional Measure 2*	48.7	21%	Committed	MTC's RM2 List of capital projects
Alameda County Measure B	21.0	9%	Committed	ACTIA Projects Summary (2008)
ACCMA STIP funds	52.7	22%	Planned	ACCMA's Adopted 2008 Countywide Transportation Plan (FY 2009-2035)
AC Transit	0.04	0.02%	Planned	
Total Non-Federal Funds	**$122.5**	**52%**		
Total Project Budget	**$234.6**	**100%**		

AC Transit Baseline Capital Program

According to the most recent AC Transit Short-Range Transit Plan, the agency's capital program is estimated at $71.9 million (excluding the East Bay BRT project) from 2008 through 2017. A copy of the Biennial Adopted Budget (FY 2007-2008 and FY 2008-2009) has been provided as part of the supporting documentation.[1]

Table 9.12 summarizes AC Transit capital program through 2017, excluding the East Bay BRT project.

[1] See page 47 of the Adopted Biennial Budget for 10-year projections of AC Transit revenues, capital program, and operating expenses.

Table 9.12 Baseline Capital Program
Millions of YOE Dollars

Capital Program	Year 1 FY 2007-2008	Year 2 FY 2008-2009	Year 3 FY 2009-2010	Year 4 FY 2010-2011	Year 5 FY 2011-2012	Year 6 FY 2012-2013	Year 7 FY 2013-2014	Year 8 FY 2014-2015	Year 9 FY 2015-2016	Year 10 FY 2016-2017	Total FY 2008-2016
ADA Paratransit Vehicles	–	3,000	–	1,600	1,600	1,600	1,600	1,600	1,600	1,600	14,200
District Funded Capital	5,557	5,140	3,069	3,204	3,343	3,515	3,694	3,880	4,074	6,230	41,706
Capital Section 5307	–	–	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	16,000
Total Capital Expenses	**5,557**	**8,140**	**5,069**	**6,804**	**6,943**	**7,115**	**7,294**	**7,480**	**7,674**	**9,830**	**71,906**

Source: AC Transit Short-Range Plan 2006-2016.

AC Transit Capital Funding Sources

AC Transit's capital program is supported with Federal, state, and local, as described below.

Federal

FTA Section 5307 is AC Transit's primary source of capital funding. In 2007, AC Transit received $29.6 million, or roughly 30 percent of the Section 5307 funds apportioned to the San Francisco-Oakland Urbanized Area (UA). MTC uses a needs-based approach for distributing the Section 5307 funds and prioritizes revenue vehicle and fixed guideway replacement over other eligible projects.

MTC flexes a large portion of the Surface Transportation Program (STP) and Congestion Mitigation and Air Quality (CMAQ) funds to transit. The STP funds are distributed programmatically for various transportation projects but a large portion of these funds are directed to the transit capital shortfall resulting from oversubscription of the FTA Section 5307 and 5309 Fixed Guideway programs. Because AC Transit is one of the larger operators in the region with one of the most significant needs, they have benefited from the STP funds.

AC Transit also receives Congestion Management and Air Quality (CMAQ) Program funds for operating and capital purposes.

In the past few years, AC Transit also has received Section 5309 BUS grants, averaging about $500,000 annually for final engineering and construction of the East Bay Bus Rapid Transit System.

State

- MTC is the recipient of the region's State Transportation Improvement Program (STIP) which is funded by certain Federal and state funds. AC Transit has received between $4 and $10 million for capital rehabilitation and buses in the past few years.

- State Transit Assistance is generated from tax on gasoline. AC Transit received $11.9 million in FY 2007.

Local

Local funding for capital expenses include:

Regional Measure 2 (RM2) – As described above, RM2 is generated from $1.00 tolls on the state-owned bridges within the San Francisco Bay Area to support a variety of transportation investments. The RM2 capital program is estimated at $1.5 billion. AC Transit will receive or benefit from roughly $55 million in capital funding, in addition to the funding committed to the East Bay BRT project of roughly $50 million.

Alameda County Half-Cent Sales Tax (Measure B) – As described above, Measure B consists of levies from a 0.5 percent local transportation sales tax. The revenues are used for operating and capital expenses. In addition to funding dedicated to the East Bay BRT corridor, $2.0 million of Measure B funds also are dedicated to AC Transit for the San Pablo Avenue Rapid Bus improvements. Approximately $20 million in Measure B funding has been set-aside for the East Bay BRT project. The District received $23.1 million in Measure B in other operating revenues in FY 2007.

Contra Costa County Half-Cent Sales Tax (Measure C/J) – Similar to Measure B in Alameda County, Contra Costa collects revenues from a half-percent local transportation sales tax. Most funding has been dedicated to roadway projects and the BART extension to North Concord and Bay Point. In FY 2007, AC Transit received about $1.6 million from Measure C levies, used for operating purposes. Measure C will sunset and has been replaced by Measure J. AC Transit will receive roughly $68 million over the life of the county sales tax measure for expansion services.

Proposition 1B – The Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006, approved by the voters of California on November 7, 2006, established $3.6 billion to be deposited in the Public Transportation Modernization, Improvement, and Service Enhancement Account (PTMISEA). The funds were made available to transit operators eligible to receive State Transit Assistance (STA). Funds will be appropriated by the State Controller's Office based on the STA formula. Like STA funds, 50 percent of the PTMISEA funds are distributed on a revenue-based formula and 50 percent are distributed on a population-based formula. The District generates and is eligible for the revenue-based funds, and over the life of the bond, staff expects that the District will receive between $90 and $110 million in revenue-based funds.

Proposition 1B deposits $1.1 billion into the Transit System Safety, Security, and Disaster Response Account (TSSDRA) of which $1 billion has been set aside of transit operators eligible to receive STA. AC Transit is anticipating receiving roughly $20 million over the life of the bond.

Proposition 1B deposits $1 billion in the State-Local Partnership account. The formula for distributing these revenues is still being debated in the State Legislature. Funds will be made available for eligible transportation projects nominated by an applicant transportation agency. A dollar-for-dollar match of local funds shall be required for an applicant transportation agency to receive state funds under this program. If the legislature approves a voter approved measure formula, AC Transit is expected to receive $20 to 25 million.

AC Transit also commits $2 to $5 million annually in funds usually reserved for operating purposes to its capital budget. These revenues could be one or all of the following: Transit Development Act (TDA); State Transit Assistance (STA); AB 1107; Property Tax; or Fare Revenues. The description of these fund sources are outlined in the O&M Funding Source section below.

Potential Actions in the Event of Federal Funding Shortfalls or Project Cost Increases

If the Small Starts funding received for the East Bay BRT project is less than the expected 32 percent of the project costs, AC Transit will be able to cover the shortfall by using Infrastructure Bond and/or State Transit Improvement Program funding.

Capital Plan Summary

The capital costs of the East Bay BRT project are estimated at $234.6 million (YOE dollars), with construction scheduled for completion by 2015. Small Start funding is anticipated at $75 million (32 percent of the project cost), whereas other Federal funding sources will provide 16 percent of the project cost (CMAQ and other Federal). Of the non-Federal share, $69.7 million (30 percent of the project cost) will come from committed funding sources (e.g., RM 2 and Measure B).

Allocated and unallocated contingency for the project is estimated at over 50 percent of the project costs, which is reasonable for a project in the current stage of planning and design. AC Transit will continue investing in infrastructure, as shown in its 10-year short-range plan, with about $56.5 million to be invested in other capital assets throughout the East Bay BRT project implementation period (2009-2016).

■ 9.3 Operating Plan

This section summarizes the assumptions and methodologies used to develop AC Transit's O&M cost estimates for the East Bay BRT project and the existing system through opening year (2015). The purpose of this section is to demonstrate that AC Transit has the financial capacity to cover the subsidy requirement of the East Bay BRT project, and that the financial impact of the East Bay BRT operations is minimal compared to the existing service levels.

O&M Model Description

An operating and maintenance (O&M) cost model was developed to forecast baseline and the East Bay BRT project O&M costs, based on AC Transit operations data for fiscal year 2015. The O&M model consists of a simple four variable formulation, and was based on AC Transit's 2008 budget data. The cost drivers selected for use in the O&M model include vehicle miles, vehicle hours, peak buses, and stations. The unit costs for the first three cost drivers were derived using AC Transit's budgeted 2008 O&M expenses. The stations unit cost is introduced in the estimate of East Bay BRT O&M costs to capture the special costs of BRT O&M, such as systems and communications expenses, station and transitway maintenance, and fare collection. The stations unit cost is expected to consist primarily of labor with some ongoing materials costs. The unit cost was developed based on the additional staffing that will likely be required to maintain the BRT facilities, monitor operations, and collect fares. Labor costs for these positions were derived from AC Transit's 2008 budget information for comparable labor types. The model documentation was submitted to FTA in May 2008 for review, and revised in August 2008 to address FTA written comments provided in mid-August 2008. A report describing the structure of the model, the calibration of the model to recent financial results, the projected O&M costs of the Baseline (No-Build) Alternative, and the application of the model to forecast O&M costs for AC Transit's proposed Small Starts project has been included as part of the Supporting Documentation CD (*05_Financial Plan Docs*).

Service Level Projections

For the baseline, systemwide total vehicle revenue miles for FY 2006 were 21.2 million, and are projected at 25.5 million by 2015, for an annual growth rate of roughly 2.1 percent. Systemwide total vehicle revenue hours were about 1.8 million in 2006, and are projected at about 1.97 million by 2015, for an annual growth rate of roughly 1 percent. Historical growth in total vehicle revenue miles and total vehicle revenue hours from 1997 to 2006 was 1.0 percent and 1.3 percent per year, respectively. Historical data on service levels are shown in Section 9.1 (Table 9.8) for fiscal years 2002 through 2006. Between 1997 and 2003, AC Transit added almost 10 million miles, from 19.4 million vehicle revenue miles in 1997, peaking at 29.3 million vehicle revenue miles in 2003. Then, in December 2003, service was reduced due to budget constraints. While some service increases have been implemented due to new grant revenue, only minor increases in service are anticipated over the next 10 years, with service growth projected through 2009, and remaining consistent thereafter (excluding the East Bay BRT project).

The implementation of the East Bay BRT would add about 516,300 vehicle revenue miles to the system by 2015, accounting for approximately 2.0 percent of the systemwide total vehicle revenue miles. Table 9.13 shows baseline and Small Starts service levels projected to 2015.

Table 9.13 Operating Statistics
Forecast Service Levels, 2015

	2015
Revenue Vehicle Miles	
Systemwide (Baseline)	25,534,190
Systemwide (with BRT)	26,050,538
Baseline, 1R and 1 (Local)	1,566,323
Build, East Bay BRT	2,082,671
Increase (BRT – Baseline)	516,348
Revenue Vehicle Hours	
Systemwide (Baseline)	1,973,200
Systemwide (with BRT)	1,981,972
Baseline, 1R and 1 (Local)	148,148
Build, East Bay BRT	156,920
Increase (BRT – Baseline)	8,772

Sources: AC Transit FY 2006-2016 Short-Range Transportation Plan; East Bay BRT O&M Cost Estimating Methodology and Results Report (August 2008).

O&M Cost Estimates

According to the National Transit Database, AC Transit O&M costs in 2006 were $270.4 million. Systemwide O&M costs (excluding the East Bay BRT) are projected at $367.4 million by 2015. The annual growth rate of the systemwide O&M annual average costs is projected at 3.5 percent over the 2006 to 2015 period, as compared to a 6.5 percent annual growth rate of O&M costs over the last five years, based on analysis of NTD data. This growth rate reflects a significant increase in purchased transportation costs between 2001 and 2002, from approximately $680,000 to over $17 million. The annual growth after 2003 was 1.0 percent, which reflects reductions in service levels and labor costs.

Inflation in the San Francisco-Oakland-San Jose MSA over the last five years is estimated at 2.3 percent per year, and at 3.0 percent per year going back 10 years.

The East Bay BRT project is projected to begin operations by 2015. O&M costs in year-of-expenditure (YOE) dollars are projected at $30.7 million for the first year of full operation. Compared to the baseline alternative, the O&M costs would increase by $5.0 million with the implementation of the East Bay BRT project, accounting for 1.3 percent of the systemwide O&M costs. Table 9.14 summarizes the O&M Costs forecast for the existing system and the East Bay BRT project.

Table 9.14 O&M Costs Opening Year (2015)
Baseline and Small Starts Project

O&M Costs	2015
Systemwide (baseline)	367.4
Systemwide (with BRT)	372.4
Baseline, 1R and 1 (local)	25.7
Build, East Bay BRT	30.7
Incremental O&M Cost (BRT – Baseline)	5.0

Source: East Bay BRT O&M Cost Estimating Methodology and Results Report (August 2008); AC Transit Adopted Biennial Budget FY 2007-2008 and FY 2008-2009, 10-Year Projection.

O&M Funding Sources

AC Transit's O&M expenses are covered through a combination of Federal, state, and local operating and nonoperating revenue funds. These funding sources are described below.

Federal

- AC Transit receives **FTA Section 5307** Formula from the San Francisco/Oakland UA funding to support preventive maintenance and ADA operating activities. The amount of revenues for preventive maintenance varies each year. The amount of revenues for ADA operating ranges from $3 to $5 million annually.

- AC Transit receives a portion of the San Francisco/Oakland UA **FTA Section 5316 Job Access and Reverse Commute** funds for routes serving low-income populations.

State

- AC Transit receives **Transit Development Act (TDA)** and **State Transit Assistance (STA)** funds that are dedicated to operations. TDA is generated from a quarter-percent statewide retail sales tax. STA funding is generated from gasoline tax levies. The total TDA funding allocated to AC Transit was $56.7 million in 2007 and a total of $21.4 million in STA, which includes pass through revenues from BART to provide feeder service to its stations.

Local

- **AB 1107 –** The State has established a half-percent sales tax in the three BART counties (Alameda, Contra Costa, and San Francisco). Seventy-five percent of the funds are dedicated to BART and the remaining 25 percent is equally apportioned by MTC to AC Transit and San Francisco Metropolitan Transportation Authority (SFMTA). In 2007, AC Transit received almost $32 million in AB 1107 funds.
- **Parcel Taxes –** AC Transit received approximately $13.7 million in revenues generated from its parcel tax. Measure AA was approved by voters in November 2002 for AC Transit's capital or operations, which consisted in the implementation of a $24 parcel fee, approved for 5 years. Measure BB, approved by voters in November 2005, increased the parcel fee to $48, and extended the fee collection through 2015. Measure VV will be on the November 2008 ballot which if approved by the voters would extend the life of the Measure by 10 years to 2025 and increase revenues to a projected $28 million annually.
- **Property Taxes –** Alameda and Contra Costa counties allocate a percentage of property tax revenues to AC Transit. In FY 2007, AC Transit received $61.5 million in property tax revenues.
- **Measure B –** AC Transit receives an annual allocation from Alameda County's one-quarter cent transportation sales tax measure. In FY 2007, total Measure B revenues for operations were $23.1 million.
- **Measure C/J –** Measure C is Contra Costa County's one-quarter cent transportation sales tax measure. Measure J will supersede Measure C in FY 2009. In FY 2007, AC Transit received $1.6 million from Measure C but this will increase to roughly $2 million annually with Measure J.
- **Regional Measure 2 (RM 2) –** AC Transit receives $9.5 million annually from Regional Measure 2 revenues, the third dollar on the state-owned bridges for operating services. As previously mentioned, $3 million of these revenues are committed to the BRT operations.
- **Passenger Revenues –** According to NTD data, AC Transit passenger revenues amounted to almost $50.4 million. Ridership in 2007 was 67.2 million passengers, for an average fare of $0.75 per passenger. The AC Transit Board determines fare increases. Over the past 20 years, AC Transit has raised its fares on average 4 percent per year. AC Transit has increased its base fare three times since 2000. The base fare increased to $1.35 in 2000, then to $1.50 in 2003, and more recently to $1.75 in 2005, tracking closely to inflation.

- Table 9.15 summarizes AC Transit's historical data on passenger revenues, ridership, average fare, O&M costs, and farebox recovery ratio over the last six years. The average fare has fluctuated between $0.66 and $0.75, for an increase of 13.6 percent between 2002 and 2007. Farebox revenues have covered less than 20 percent of the systemwide O&M expenditures over the last five years.

Table 9.15 AC Transit Farebox Revenue, Ridership, and O&M Cost Data
2001 to 2007

	2002	2003	2004	2005	2006	2007
Passenger Fares	$46,148,081	$42,234,970	$45,784,339	$44,739,940	$48,969,669	$50,367,000
Annual Unlinked Trips	69,746,488	62,963,073	65,373,782	65,289,189	66,962,680	67,223,000
Average Fare	**$0.66**	**$0.67**	**$0.70**	**$0.69**	**$0.73**	**$0.75**
Total O&M Costs	$234,083,543	$262,603,855	$242,664,524	$247,324,514	$270,409,130	$283,473,000
Farebox Recovery Ratio	**19.7%**	**16.1%**	**18.9%**	**18.1%**	**18.1%**	**18.5%**

Source: National Transit Database; AC Transit Analysis of data.

Ridership forecast for the baseline system are projected at 262,367 weekly riders by 2015, for an annual ridership of 78.7 million passengers. The ridership annual growth rate is estimated at 1.8 percent between 2006 and 2015.

Fare assumptions in the travel demand model are in 1980 dollars. The forecast year is 2015; therefore, it is implicitly assumed that travel costs built into the model increase with inflation. The model base fare is $0.61 per boarding (in 1980 dollars), equivalent to the 1995 cash fare for a single trip. When adjusted for inflation, the model base fare is estimated at $1.90 by 2015. For the purpose of the financial plan analysis and to calculate the required operating subsidy for the East Bay BRT, the average fare is assumed at $0.94 by 2015, which is today's average fare adjusted by an annual growth rate of 2.8 percent.[2]

Ridership for the East Bay BRT is projected at about 42,560 weekly boardings by 2015, for an annual ridership of about 12.8 million passengers. Ridership on the East Bay alignment is projected to increase by almost 75 percent compared to the baseline alternative. The implementation of the East Bay BRT will attract over 6,800 new transit riders, for an additional 2.2 million new transit users per year. AC Transit's systemwide daily boardings are projected to increases by slightly over 13,000 with the BRT implementation. The East Bay BRT will generate an additional $3.6 million in farebox revenues compared to the baseline, covering 74 percent of the incremental BRT O&M costs.

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[2] Annual growth rate of average fare is consistent with the fare revenue assumptions from AC Transit's Adopted Biennial Budget FY 2007-08 and FY 2008-09, 10-Year Projections.

Other Operating Revenues include interest income, advertising, and other revenues. In 2007, other operating revenues totaled almost $8.9 million.

Table 9.16 summarizes AC Transit's revenues by fund source and provides 2015 projections of each source.

Table 9.16 AC Transit's Operating Revenues, Opening Year (Millions of Dollars)

Operating Revenue Sources	2015
Farebox Revenues (without BRT)	61.4
East Bay BRT Farebox Revenues (incremental)	3.7
Other Operating Revenues	8.1
State – TDA	74.3
State – STA and BART Transfers	17.9
Local – AB 1107	44.9
Local – Measure B	31.7
Local – Measure J	2.1
Local – Property Tax	79.4
Local – Parcel Tax	14.0
Local – Parcel Tax (new)[a]	14.0
ADA Subsidies	12.4
Other Operating Subsidies	15.6
Total	**379.5**

Sources: AC Transit Adopted Biennial Budget FY 2007-2008 and FY 2008-2009, 10-Year Projection; AC Transit analysis of East Bay BRT ridership and incremental farebox revenues.

[a] Measure VV will extend the life of the parcel tax and double current revenues. This measure will go to voters for approval in November 2008.

East Bay O&M Subsidy

As mentioned above, East Bay BRT revenues will cover 74 of the project's incremental O&M expenses. The required subsidy for the East Bay O&M increment is estimated at $1.3 million by opening year (2015). RM 2 provides an annual allocation of $3 million dedicated to the East Bay BRT to cover the East Bay O&M subsidy. In addition to the existing O&M revenues, other potential sources to subsidize the East Bay BRT operations include any operating surplus available to support AC Transit's annual O&M expenses.

Description of Cash Reserves for Potential O&M Cost Increases

AC Transit maintains a cash reserve for operations at a maximum of 10 percent of the annual operating budget, which can be used to meet unexpected increases in operating costs. If this reserve for operations falls below 10 percent in any given year, it is the goal of the Board of Directors to budget 1 percent of unrestricted general operating revenues to fund this reserve. In addition, any year-end unrestricted operating surplus shall revert to this reserve until the maximum reserve balance is achieved. A 10 percent cash reserve is equivalent to 1.2 months of operating expenses.

The 10-year projections from the most recent adopted biennial budget forecast a surplus of $34.4 million in 2015, which is available to cover any additional O&M costs. This amount is equivalent to roughly month of systemwide operating expenses, including the East Bay BRT O&M costs.

Operating Plan Summary

The East Bay BRT incremental O&M costs account for only 1.3 percent of the systemwide operating costs by 2015. Incremental farebox revenues from the BRT and dedicated operating revenues (RM 2) should be sufficient to cover the additional costs of operating the East Bay BRT project. Therefore, AC Transit has the capacity to operate this new service, while at the same time it operates and maintains the existing transit services.

■ 9.4 Financial Plan Uncertainties

AC Transit's 10-year SRTP was developed using assumptions that are in line with both historical and recent experience. The capital program shows the agency's capacity to invest in additional rolling stock to address ridership growth and bus route expansion, while at the same time maintaining the state of good repair of existing capital assets. East Bay BRT O&M costs were forecast based on a cost allocation model developed using AC Transit's adopted budget and data on O&M expenses, then added to AC Transit's forecast of systemwide operating expenses by 2015, based on the most recent adopted budget. Farebox revenue projections using AC Transit's average fare and projected ridership by 2015 were added to the 10-year projections from AC Transit's adopted budget on existing revenue sources. AC Transit assumptions are consistent with past experience, and account for current and future economic conditions that may affect cost and revenues. However, uncertainty is inherent in many of the financial plan variables. This section identifies areas in capital and O&M expenditures and revenues where uncertain conditions exist.

Sources of uncertainty identified in the capital plan include:

- **Inflation of Small Starts Project Capital Costs Over Time –** Construction costs for the Small Starts project has been converted into year-of-expenditure (YOE) dollars assuming an annual inflation rate of 3.5 percent based on the Construction Cost Index (CCI) for the San Francisco Bay area. A higher or lower rate of inflation than that assumed in the East Bay cost estimates would impact the agency's funding capacity.

- **Construction Cost Schedule –** Delays and the extension of construction schedule would increase the capital costs of a project.

- **Increases in Project Capital Costs –** Construction costs of the Small Starts project are subject to uncertainty due to a number of factors, such as unforeseen field conditions and variations in unit costs.

- **Actual Revenues from Dedicated Funding Sources –** Capital funding for the East Bay BRT is based on a series of underlying assumptions that reflect the commitment of its funding partners. Changes in expected funding could affect the scheduling of the capital investment program and Small Starts project implementation. However, based on best practices within the region, risk associated with this is unlikely to occur.

- **Actual Receipts of Capital Grants –** Annual allocations of Federal, state, and regional grants assumed to be used for project implementation are subject to appropriation processes, which are outside the control of AC Transit. The funding assumptions in the SCC worksheet are based on annual funding needs for project implementation and in the case of Small Starts funding, reasonable assumptions of maximum annual funding that might be appropriated per project (i.e., not to exceed $100 million per year). Allocations below current projections could have an impact to the capital plan by: 1) extending project schedule; 2) requiring local funding for a Small Starts project to be provided upfront, potentially affecting the schedule of other capital commitments; and 3) additional financing costs if debt is required to address funding shortfalls.

For the operating plan, the following sources of uncertainty have been identified:

- **Operating Cost Assumptions –** The O&M cost model uses several input variables, including unit costs, annual growth rates, and systemwide and project-specific service levels. Unit cost and annual growth rates are based on historical experience and calibration data for the base year. Service levels for the East Bay BRT are derived from the proposed operating plan; service levels also are determined by ridership forecasts. Higher O&M costs than projected would increase the O&M subsidy requirements, which, in turn, would affect local funding availability for other agency needs, e.g., capital needs.

- **Ridership and Fare Assumptions –** Fare revenues are a function of ridership and average fare assumptions. Changes to any of these assumptions would affect passenger revenues, impacting both the operating and capital plans.

- **Sales Tax, Property Tax, and Other Operating Revenue Assumptions –** Forecasts of O&M funding sources are based on several factors, such as projected economic conditions for the region, history of past allocations, and future allocations as estimated by funding partners. Lower revenues from these sources will affect the financial capacity of the agency.

Should the above assumptions about operating and capital funding and costs result in conditions that would not meet the needs of the project, it would become necessary to either reconsider the implementation of the East Bay BRT project or seek other funding sources to cover a deficit. Because one of the primary requirements for Federal funding support is that existing service not be curtailed to support the establishment of a new service, AC Transit will take steps to ensure that the implementation of the East Bay BRT Project does not hinder plans for regrowth of regular bus operations.

■ 9.5 Summary of East Bay BRT Financial Plan

This financial plan demonstrates that AC Transit has committed financial resources to support both the construction and future operations and maintenance of the East Bay BRT project. Furthermore, there are indications that AC Transit will be able to operate and maintain existing services and meet future capital replacements with the existing financial resources. If Measure VV is approved in November 2008, the financial capacity of AC Transit will be further strengthened with this additional funding over the long term.

FINANCE TEMPLATE			
PROJECT NAME:	**East Bay Bus Rapid Transit**		
Total Capital Cost of Project in Millions of Constant 2007 Dollars (from the SCC Main Worksheet)	$199.0	**Total Capital Cost of Project in Millions of YOE dollars (including finance charges, cost of PE and FD, and construction):** (from SCC Main Worksheet)	$234.6
Section 5309 New Starts Funding Anticipated (YOE $):	$75.0	**Section 5309 New Starts Share of Project Cost:**	32.0%
Estimated Cost of Preliminary Engineering (YOE $):	$4.8	**Estimated Cost of Final Design (YOE $):**	$16.3
Total Finance Charges Included in Capital Cost (include finance charges that are expected prior to either the revenue operations date or the fulfillment of the Section 5309 New Starts funding commitment, even if the financing charges are incurred by a funding partner that is not the project sponsor): (from SCC Main Worksheet)			$0

Other Federal Capital Funding Sources **(Non-5309 New Starts Funds such as FTA Section 5307, Surface Transportation Program (STP), Congestion Mitigation and Air Quality (CMAQ), Section 5309 Rail Modernization,**	**Type of Funds**	**Dollar Amount (millions of YOE dollars)**	**% of Total Capital Cost**
1) CMAQ	Federal	$35.0	14.9%
2) Other Federal	Federal earmark	$2.1	0.9%
3)			0.0%
4)			0.0%
State Capital Funding Sources **(Funds provided by State agencies or legislatures such as bonds, dedicated sales tax, annual legislative appropriation, transportation trust funds, etc.)**	**Type of Funds**	**Dollar Amount (millions of YOE dollars)**	**% of Total Capital Cost**
1)			0.0%
2)			0.0%
3)			0.0%
4)			0.0%
Local Capital Funding Sources **(Municipal, City, County, Township, or Regional funding such as bonds, sales tax, legislative appropriation, transportation trust funds, etc.)**	**Type of Funds**	**Dollar Amount (millions of YOE dollars)**	**% of Total Capital Cost**
1) Regional Measure 2	Toll Revenues	$48.7	20.8%
2) Alameda County Measure B	Sales Tax	$21.0	8.9%
3) STIP	State Highway Account	$52.7	22.5%
4) AC Transit	Agency capital funding	$0.04	0.0%
Private Sector/In-kind match/Other **(Donations of right-of-way, construction of stations or parking, or funding for the project from a non-governmental entity, business, or business assoc.)**	**Type of Funds**	**Dollar Amount (millions of YOE dollars)**	**% of Total Capital Cost**
1)			0.0%
2)			0.0%
3)			0.0%
TOTAL NON-SECTION 5309 FUNDING (millions of YOE dollars)		$160	68.0%
QA/QC CHECK: TOTAL CAPITAL COSTS LESS SECTION 5309 FUNDING LESS NON-SEC. 5309 FUNDING (SHOULD EQUAL		$0	---

FINANCE TEMPLATE (page 2)			
New Starts Project Financial Commitment			
Other Federal Sources (Linked from page 1)	**Specify Whether New or Existing Funding Source**	**Specify Status of Funds -- Committed, Budgeted, or Planned (See notes below)**	**Identify Supporting Documentation Submitted to Verify Funding Source**
1) CMAQ	Existing	Committed	MTC Resolution 3434, Strategic Plan Update (July 11, 2008)
2) Other Federal	Existing	Committed	Federal earmark, FY 2008 allocations
3)			
4)			
State Sources (Linked from page 1)			
1)			
2)			
3)			
4)			
Local Sources (Linked from page 1)			
1) Regional Measure 2	Existing	Committed	Approved by voters in March 2004
2) Alameda County Measure B	Existing	Committed	Approved by voters in November 2000
3) STIP	Existing	Planned	ACCMA's 2008 Adopted Countywide Transportation Plan, p. 67
4) AC Transit	Existing	Planned	
Private Sector/In-kind Match/Other (Linked from page 1)			
1)			
2)			
3)			

Reference Notes: The following categories and definitions are applied to funding sources:

Committed: Committed sources are programmed capital funds that **have all the necessary approvals** (legislative or referendum) to be used to fund the proposed project **without any additional action**. These capital funds have been formally programmed in the MPO's TIP and/or any related local, regional, or state CIP or appropriation. Examples include dedicated or approved tax revenues, state capital grants that have been approved by all required legislative bodies, cash reserves that have been dedicated to the proposed project, and additional debt capacity that requires no further approvals and has been dedicated by the transit agency to the proposed project.

Budgeted: This category is for funds that have been budgeted and/or programmed for use on the proposed project but remain uncommitted, i.e., the funds have not yet received statutory approval. Examples include debt financing in an agency-adopted CIP that has yet to receive final legislative approval, or state capital grants that have been included in the state budget, but are still awaiting legislative approval. These funds are almost certain to be committed in the near future. Funds will be classified as budgeted where available funding cannot be committed until the Full Funding Grant Agreement (FFGA) is executed, or due to local practices outside of the project sponsor's control (e.g., the project development schedule extends beyond the TIP period).

Planned: This category is for funds that are identified and have a reasonable chance of being committed, but are neither committed nor budgeted. Examples include proposed sources that require a scheduled referendum, reasonable requests for state/local capital grants, and proposed debt financing that has not yet been adopted in the agency's CIP.

FINANCE TEMPLATE (page 3)

Innovative Financing Methods

(Unconventional sources of funding which may include TIFIA, State Infrastructure Banks, Public/Private partnerships, Toll Credits, revenue finance methods, etc.)

Innovative Funding Source	Anticipated Funding Amount	Identify Supporting Documentation Submitted

Summary Information from the Operating Finance Plan

New Starts Project Annual Operating Cost in the Forecast Year (YOE$):	$4,953,400	Total Transit System (including New Starts Project) Annual Operating Cost in the Forecast Year (YOE$)	$372,358,400

Proposed Sources of Operating Funds (Proposed sources of operating funds that are anticipated to support operating expenses of the transit system.)	Dollar Amount	Type of Funding Source	Annual/Dedicated	Specify Whether New or Existing Funding Source
Farebox Revenues (systemwide + BRT)	$65,097,699	---	---	---
State Funding (TDA; STA; BART Transfers)	$92,213,000	Sales and gas tax	Dedicated	Existing
Local Sales Taxes (AB 1107; Measures B and J)	$78,748,000	Sales tax	Dedicated	Existing
Property Tax	$79,377,000	Property tax	Dedicated	Existing
Measures AA/BB	$14,000,000	Parcel tax	Dedicated	Existing
Measure VV	$14,000,000	Parcel tax	Dedicated	New
Other Operating Revenues	$8,120,000	Interest Income, Advertising, Other	Dedicated	Existing
Other Operating Subsidies	$27,982,000	ADA Subsidies; RM 2; JARC; STA I-Bond	Dedicated	Existing
Total	$379,537,699			

Transit System Operating Characteristics

Current Systemwide Characteristics (Can be the same data as reported to the FTA for the National Transit Database)	Number/Value	**Future Transit System with New Starts Project** (Systemwide characteristics at completion of the New Starts Project)	Number/Value
Farebox Recovery Percent	18%	**Farebox Recovery Percent**	17.5%
Number of Buses	632	**Number of Buses**	632
Number of Rail Vehicles	n/a	**Number of Rail Vehicles**	n/a
Current Annual Passenger Boardings	66,962,680		
Daily Passenger Boardings	226,732		
Average Fare	$0.73	**Average Fare**	$0.91
Average Age of Buses	7		
Average Age of Rail Vehicles	n/a		
Revenue Miles of Service Provided	21,198,605	**Revenue Miles of Service**	26,050,538
Revenue Hours of Service Provided	1,817,463	**Revenue Hours of Service**	1,981,972

10.0 Before and After Study Plan

10.0 Before and After Study Plan

A Before and After Study Plan has been prepared, describing how AC Transit will collect and report information about the East Bay BRT project. As described in the plan that follows, AC Transit will assemble information on:

- Project scope;
- Transit service levels;
- Capital costs;
- Operating and maintenance costs; and
- Ridership patterns and revenues.

This information will be provided throughout project planning, development, and design and continues until two years after revenue operation begins. The Before and After Study Plan will build on data collection, preservation, and reporting efforts developed for this Small Starts submittal/Project Development request and which are expected to continue for subsequent submittals to the FTA.

Before and After Data Preservation and Collection Plan

Introduction

The Federal Transit Administration's (FTA) December 2000 Final Rule on Major Capital Investment Projects requires that New Start project proponents collect data on key project characteristics generated 1) during planning and project development, 2) immediately before implementation of the project, and 3) two years after the project opens for service. SAFETEA-LU amended Section 5309(g)(2)(c) to codify this regulatory requirement. This requirement also applies to Small Start projects. Project sponsors, as a condition of receiving a Full Funding Grant Agreement (FFGA), must assemble information on:

1) Project scope;
2) Transit service levels;
3) Capital costs;
4) Operating and maintenance costs; and
5) Ridership patterns and revenues.

This information is provided throughout project planning, development, and design, and continues until two years after revenue operation begins.

SAFETEA-LU additionally requires FTA to summarize the information provided by project sponsors on these key project characteristics in a Report to Congress on the results of any before and after studies completed during that year.

This document provides the proposed data collection and preservation plan for the East Bay BRT project.

Project Description

The AC Transit East Bay Bus Rapid Transit Project would provide high-quality, fast, and frequent express bus service along an approximately 17-mile-long corridor extending from downtown Berkeley and the University of California at Berkeley at the northern end, through downtown Oakland, to San Leandro at the southern end. This corridor has characteristics that are highly supportive of transit use and particularly well-suited to bus rapid transit (BRT). The corridor is home to 260,000 residents and contains some of the highest employment and residential densities in the East Bay.

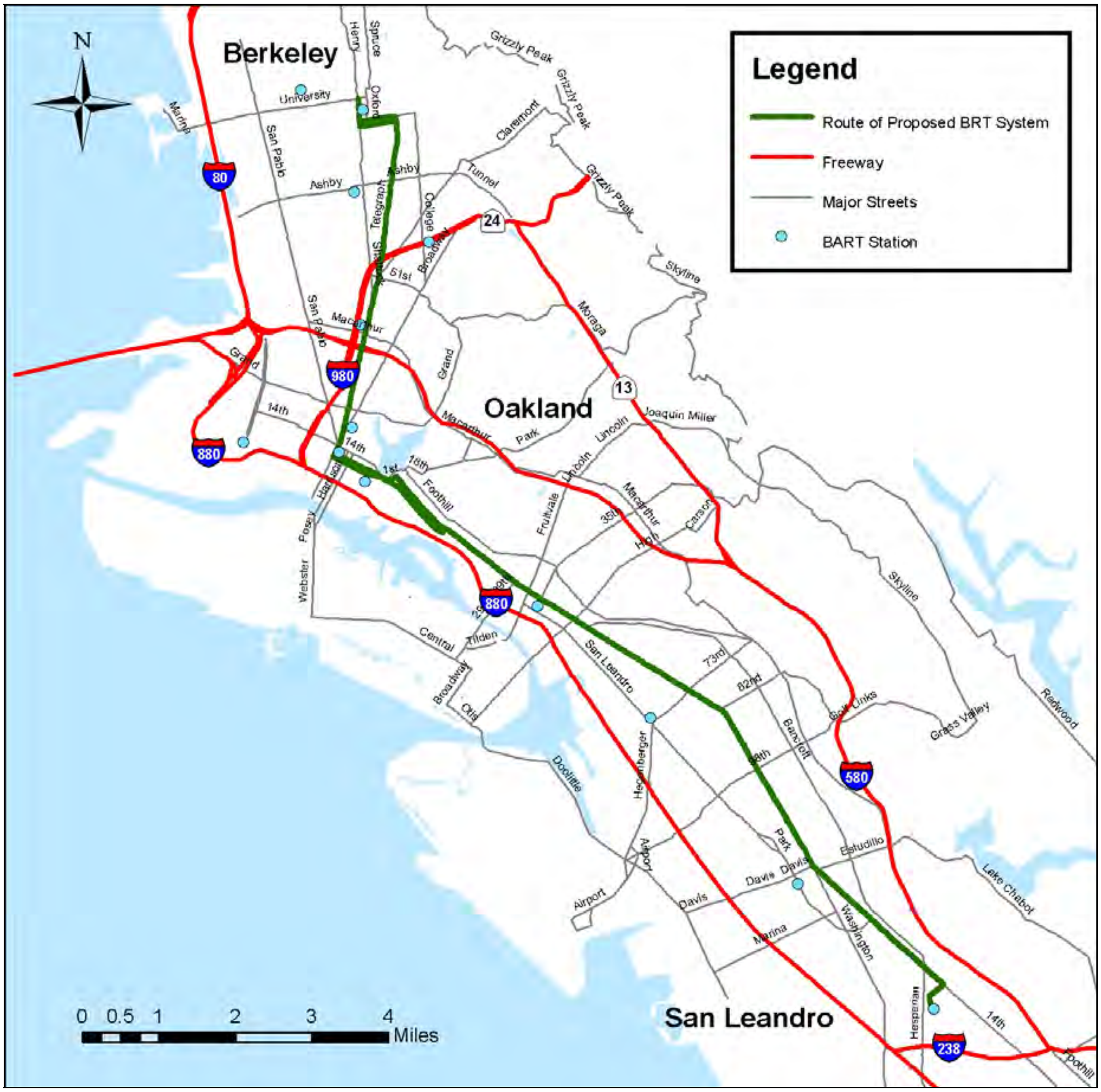
The East Bay BRT Project corridor is centered on downtown Oakland, the East Bay's largest city, which provides work for 71,000 people. The northern end of the corridor is anchored by the University of California at Berkeley (UC Berkeley), host to almost 35,000 students and over 15,000 employees. An additional 13,520 people work in downtown Berkeley. South of downtown Oakland, a third of the corridor passes through some of the San Francisco Bay Area's densest residential neighborhoods, averaging 13,440 persons per square mile (21 persons per acre).[1] The southern end of the corridor is anchored by the Bay Fair Bay Area Rapid Transit (BART) station, a major transfer station for three BART lines and seven local bus routes. The station also serves the Bayfair Center, a regional shopping mall that is currently under expansion.

The proposed BRT alignment would follow primarily Telegraph Avenue in the northern portion of the corridor and International Boulevard/East 14th Street in the southern portion (see Figure 1). The alignment would begin near the downtown Berkeley BART Station, continue along the south side of the UC Berkeley campus to Telegraph Avenue, and then follow Telegraph Avenue to Broadway and downtown Oakland. The alignment would continue south of downtown Oakland along International Boulevard/East 14th Street through downtown San Leandro to the Bayfair Center shopping mall and terminate at the Bay Fair BART Station.

The proposed BRT service would be supported by the existing local bus network. Bus routes along the proposed BRT project alignment currently serve approximately 21,200 boardings a day – approximately 10 percent of AC Transit's total ridership.

[1] For comparison, the citywide population density of San Francisco is 16,000 persons per square mile.

Figure 1. Proposed East Bay Bus Rapid Transit System



The project would include the following features:

- **Dedicated Bus Lanes –** The BRT transitway consists of traffic lanes converted for exclusive transit use, for approximately 85 percent of the 16.9-mile corridor. The dedicated lanes provide improved travel times and better schedule reliability. Median transitways 22 to 24 feet in width will serve two-directional travel while side-running transitways 11 to 12 feet in width serve single direction travel. Along most roadways, transit lanes would be established by converting mixed-flow traffic lanes to transit-only lanes.

- **Intelligent Transportation Systems Elements (ITS) –** Two main elements of ITS would be implemented as part of the East Bay BRT project: 1) transit signal priority treatments and signal coordination throughout the BRT project alignment; and 2) real-time bus arrival information displayed (and announced) at stations as well as available on the Internet.

- **Bus Frequencies of Five-Minute Headways during Peak and Midday Periods –** All bus service along the project alignment would be operated along the BRT transitway as express service. The only routes that would use mixed-flow lanes would be those that operate along short segments of the alignment before continuing onto other streets.

- **Forty-Nine BRT Stations –** The BRT system would include 49 stations, spaced approximately every one-quarter to one-half mile. Stations would include: comfortable shelters, level boarding platforms, benches, security technologies, and fare machines, among other features.

- **Fare Collection –** The proposed East Bay BRT fare system would be barrier-free self-service, proof-of-payment fare collection.

- **BRT Vehicles –** AC Transit would deploy low-floor, low-emission, and 60-foot articulated buses on East Bay BRT service. These could be similar to the articulated coaches currently assigned to Rapid Bus Route 1R. Because the BRT operates with a higher average speed than existing services, it makes more productive use of the bus fleet. As a result, AC Transit would be able to deploy the East Bay BRT service without procuring additional buses.

Responsibilities

Internal

The project sponsor for the East Bay BRT project is the Alameda-Contra Costa Transit District (AC Transit), the agency that operates public transit services provided to 13 cities and adjacent unincorporated areas of Alameda and Contra Costa counties. AC Transit is the third-largest bus operator in California, operating 105 bus routes and serving a total of 67 million passengers annually.

The design phase for the East Bay BRT project is the responsibility of the AC Transit Service Development Department, and is managed by Jim Cunradi, who reports to the manager of the Long-Range Planning Department, Tina Spencer (who reports to the Deputy General Manager of Service Development). The Deputy General Manager of Service Development, Nancy Skowbo reports directly to AC Transit's General Manager, Rick Fernandez. The Before and After Study will be the responsibility of the Manager of Long-Range Planning, Tina Spencer (who reports to the Deputy General Manager of Service Development). The Deputy General Manager of Service Development, Nancy Skowbo reports directly to AC Transit's General Manager, Rick Fernandez.

Primary AC Transit responsibilities related to the project include:

- Manage the planning, scope, design and engineering, construction administration, and construction inspection;
- Provide oversight for project technical issues;
- Develop recommendations for resolutions for unique problems arising out of unforeseen conditions brought to light during project planning, development, and implementation; and
- Develop responses to Project Management Oversight (PMO) contractor requests to prevent the deterioration of budget and schedule.

AC Transit departments involved in the development phase of the East Bay BRT project include, Service Development, Facilities Maintenance, and Operations.

Metropolitan Transportation Commission (MTC)

MTC is the regional planning agency for the nine-county San Francisco Bay area. MTC functions as both the regional transportation planning agency – a state designation – and, for Federal purposes, as the region's metropolitan planning organization (MPO). As such, it is responsible for regularly updating the Regional Transportation Plan, a comprehensive blueprint for the development of mass transit, highway, airport, seaport, railroad, bicycle, and pedestrian facilities. The Commission also screens requests from local agencies for state and Federal grants for transportation projects to determine their compatibility with the plan.

Association of Bay Area Governments (ABAG)

ABAG is the official comprehensive planning agency for the San Francisco Bay region. ABAG's mission is to strengthen cooperation and coordination among local governments. In doing so, ABAG addresses social, environmental, and economic issues that transcend local borders. The 101 cities and all nine counties within the San Francisco Bay Area are voluntary members of ABAG, representing nearly all of the region's population.

ABAG is charged with developing the regional land use plan. Data on growth and development patterns were developed by ABAG for use in forecasting project ridership.

Federal Transit Administration

FTA will review and approve the Before and After Study work program. FTA also will review any before and after data developed during the project planning and development phase, as well as draft and final reports.

PMO Contractors

The PMO contractors designated by FTA will assist in reviewing project data.

Scope of Work/Data Collection and Preservation Plan

Task 1 – Organization

- Assembly and review of project planning documents to date;
- Meeting of project participants;
- Preparation of draft work plan; and
- Preparation of final work plan.

Task 2 – Documentation of Forecasts

The East Bay BRT ridership forecasts, and capital and operating and maintenance cost estimates will be reported to FTA as part of the Small Starts submittal process. These key metrics are, in turn, required to be reported annually by FTA, both in its annual New Starts report to Congress and in the contractor performance report mandated by SAFETEA-LU. More detail about reporting of specific forecasts is provided below.

A. Project Scope and Capital Costs

1) East Bay BRT Alternatives Analysis:

    a) Collect project planning documents – All relevant documents related to the project scope and estimation of capital costs during both the Berkeley-Oakland-San Leandro Major Investment Study (MIS) between 1999 and 2002 and the NEPA process beginning in May 2003 will be identified and assembled. These documents currently are maintained by AC Transit under the Research and Planning Department.

    b) Document project scope – A detailed project description will be developed documenting the physical scope of the project. The description will include extent of dedicated bus lanes, BRT station locations, communication and control systems, vehicle specifications, and passenger amenities. The expected timing and duration of construction will be documented. Costs are assembled in the Standard Cost Categories (SCC) worksheet developed for this request to initiate project development.

2) Project Development:

   a) Collect project planning documents – All relevant documents related to the project scope and estimation of capital costs during the project development phase will be identified and assembled in the project document management system. This will include not only the project development reports but all supporting technical memoranda, drawings, and similar materials, and other relevant materials (e.g., electronic spreadsheets used in cost estimation).

   b) Document project scope – A detailed project description will be developed documenting the physical scope of the project as planned in project development. The description will include extent of dedicated bus lanes, BRT station locations, communication and control systems, vehicle specifications, and passenger amenities. The expected timing and duration of construction will be documented. Costs are assembled in the SCC worksheet developed for this request to initiate project development and subsequent Small Starts submittals.

3) Project Construction Grant Agreement (PCGA):

   a) Document project as specified in PCGA – A detailed project description will be developed documenting the physical scope of the project as specified for the PCGA. The description will include extent of dedicated bus lanes, BRT station locations, communication and control systems, vehicle specifications, and passenger amenities. The expected timing and duration of construction will be documented. Costs are assembled in the Standard Cost Categories (SCC) worksheet developed for this request to initiate project development and subsequent Small Starts submittals.

   b) Document any changes in scope, capital costs, or schedule from project development.

B. Operating and Maintenance Costs

1) East Bay BRT Alternatives Analysis:

   a) Operating plan. Documentation will include the following measures for the East Bay BRT:

      i) Headways (peak, off-peak, night, weekend);

      ii) Travel Time;

      iii) Fleet Size;

      iv) Bus Stops; and

      v) Revenue vehicle miles traveled and revenue hours.

b) Systemwide operating statistics:

i) Number of routes;

ii) Fleet Size;

iii) Bus Stops; and

iv) Revenue vehicle miles and revenue hours.

c) Operating and maintenance costs:

i) East Bay BRT; and

ii) Systemwide.

2) Project Development:

a) Operating plan. Documentation will include the following measures for the East Bay BRT, and any changes from AA will be explained:

i) Headways (peak, off-peak, night, weekend);

ii) Travel Time;

iii) Fleet Size;

iv) Bus Stops; and

v) Revenue vehicle miles traveled and revenue hours.

b) Systemwide operating statistics:

i) Number of routes;

iii) Fleet Size;

ii) Bus Stops; and

iii) Revenue vehicle miles.

c) Operating and maintenance costs:

i) East Bay BRT; and

ii) Systemwide.

3) Project Construction Grant Agreement:

a) Operating plan. Documentation will include the following measures for the East Bay BR, with any changes from project development explained:

i) Headways (peak, off-peak, night, weekend);

ii) Travel Time;

iii) Fleet Size;

iv) Bus Stops; and

v) Revenue vehicle miles traveled and revenue hours.

b) Systemwide operating statistics:

i) Number of routes;

ii) Fleet Size;

iii) Bus Stops; and

iv) Revenue vehicle miles.

c) Operating and Maintenance Costs:

i) East Bay BRT; and

ii) Systemwide.

C. Ridership

1) East Bay BRT Alternatives Analysis:

a) Document Methods – The methods and procedures used in the East Bay BRT alternatives analysis to develop forecasts of project ridership will be documented. This includes not just the description of the procedures or the functional relationships, but also all of the underlying data that were used in developing the forecasts:

i) Obtain and document electronic and hard copy of geographic analysis system (traffic analysis zones);

ii) Obtain and document electronic and hard copy of transportation networks;

iii) Obtain and document electronic and hard copy of travel forecasting functional relationships; and

iv) Obtain and document electronic and hard copy of demographic and economic forecast data (e.g., population, employment, parking costs, transit fares, etc.).

b) Document Results:

i) Document electronic and hard copy of trip tables by mode and purpose; and

ii) Document travel assignments.

2) Project Development:

a) Document Methods – The methods and procedures used in the project development phase of the project to develop forecasts of project ridership will be documented. This includes not just the description of the procedures or the functional relationships, but also all of the underlying data that were used in developing the forecasts:

i) Obtain and document electronic and hard copy of geographic analysis system (traffic analysis zones);

ii) Obtain and document electronic and hard copy of transportation networks;

iii) Obtain and document electronic and hard copy of travel forecasting functional relationships;

iv) Obtain and document electronic and hard copy of demographic and economic forecast data (e.g., population, employment, parking costs, transit fares, etc.);

v) Document changes from the AA/EIS phase; and

vi) Changes in the projected system ridership as reported in the East Bay BRT alternatives analysis will be documented. This will include not only changes in total ridership but also changes in ridership by bus route, by market segment, or by other meaningful grouping. Changes in the design of the project, in forecasts of population, economic activity, transportation systems, or in other factors that would have affected the ridership forecasts will be identified and documented.

b) Document Results:

i) Document electronic and hard copy of trip tables by mode and purpose; and

ii) Document travel assignments, including boardings and mode of access by station.

c) Document changes from the AA/EIS phase.

Task 3 – Documentation of Conditions Before Project Implementation

A. Project Scope

1) Document any refinements from the PCGA.
2) Document the timing and duration of construction (from the PCGA).

B. Transit Service Levels

1) Area covered – The service area for which data will be gathered will be described.

2) Measures to be documented are those shown in Task 2, B.

3) Data sources – AC Transit.

4) How reported – The sources of data on AC Transit operations will be the same as those used for NTD reporting for systemwide reporting. For route-level performance, operational data will be obtained through automated systems.

C. Capital Costs

1) Document costs from Construction documents, using FTA activity line item (ALI) codes, noting and explaining any changes from the PCGA.

D. Operating and Maintenance Costs

1) Document revised operating and maintenance cost estimates, noting and explaining any changes from the PCGA.

E. Ridership and Revenue

AC Transit uses automatic passenger counters to capture ridership information on a route or corridor-specific basis. AC Transit will collect data on each scheduled trip at least once over a set period of time to obtain a composite snapshot of overall daily ridership. At a minimum, the data collected will provide an estimate of average daily ridership for the entire route, and average daily ridership by station. Additionally, AC Transit will use a variety of data sources and methods to augment and validate the automated systems, such as on-board ride-checks and surveys, and use of farebox data for purposes of determining cash payments.

F. Other Factors Affecting Costs and/or Ridership

1) **Construction Cost Index Values –** The Engineering News Record construction cost index (CCI) for San Francisco will be researched and recorded for the cost years used in estimation of project costs.

2) **Consumer Price Index –** The CPI for the San Francisco-Oakland-San Jose region will be documented for each year in which cost estimates were prepared and will be monitored and recorded during the construction period.

3) **Congressional Budget Office (CBO) Urban Consumer Price Index (CPI-U) Projections –** The CBO CPI-U outyear projections will be documented for each year in which O&M cost estimates were prepared and will be monitored and recorded during the construction period.

4) **Cost of Gasoline –** The average price of gasoline in the San Francisco metropolitan region will be obtained from the local AAA office. This information will be documented and compared against operating cost per mile values used in the Alameda County Congestion Management Agency (ACCMA) travel forecasting model.

5) **Parking Costs –** Most of the corridor has short-term metered parking. Hourly costs for on-street parking will be collected corridor-wide. In addition, all-day off-street parking will be collected for downtown Berkeley, the University of California campus and downtown Oakland.

6) **Planned Development –** Updated information on planned development will be obtained from the Planning Department, or Community and Economic Development Departments in the three affected cities – Berkeley, Oakland, and San Leandro.

7) **Transit Wage Rates –** Average wage rates for AC Transit will be recorded for each year since the start of the East BRT alternatives analysis process. This information will be obtained from AC Transit records.

8) **Regional Economic Trends –** Information on San Francisco-Oakland-San Jose region economic trends will be provided.

9) **Transportation Infrastructure Construction –** Information about planned highway or streets and roads construction that may affect the project will also be obtained through the California Department of Transportation (Caltrans) and the Public Works Departments of the three affected cities – Berkeley, Oakland and San Leandro.

10) **Other Notable Occurrences –** Information about other significant changes (i.e., catastrophic events such as earthquakes, major fires, security issues, or institutional) will be documented.

Task 4 – Documentation of Conditions after Project Opening

Data will be collected during the first full fiscal year after project opening, anticipated in 2015. Because AC Transit's fiscal year runs from July 1 through June 30, the data will be collected or documented for the fiscal year beginning July 1, 2015.

A. Physical Scope (as Built)

1) A detailed project description will be developed documenting the physical scope of the project as actually constructed. Major items such as project length (mixed traffic and exclusive bus only lanes) and number of stations will be recorded. Other major cost items (e.g., systems, other sitework) will be described and documented. Any changes from the EIS phase and/or PCGA will be documented and explained. Finally, the actual length of the construction period will be documented.

B. Transit Service Levels (as Operated)

1) Area covered – The service area for which data will be gathered will be described.

2) Measures to be documented are those shown in Task 2, B.

3) Data sources – As operated from AC Transit.

4) How reported – The sources of data on AC Transit operations will be the same as those used for NTD reporting. Comparison of the as-operated levels to those anticipated in the EIS studies will be documented.

C. Capital Costs

1) Sources of Information – Project expenditures will be reported and summarized using FTA ALI codes. These reports will be available monthly during the project construction period. While there will be some work continuing and likely some claims unresolved on opening day, the vast majority of capital costs should have been incurred and claims resolved by the end of the first full year of operation. AC Transit records and PMO reports will provide needed capital cost information.

2) Adjustments:

    a) For changes in physical scope – Differences between the project as built and the project as planned and described in the PCGA will be documented. Estimates of the impacts of these changes on actual construction as compared to estimated costs will be prepared; and

    b) As built costs will be expressed in year-of-expenditure dollars and compared to anticipated expenditures as detailed in the PCGA. All changes will be noted and explained.

D. Operating and Maintenance Costs

1) Information Sources – AC Transit uses automated systems to determine operating hours/miles for purposes of assigning revenues and expenses for services.

2) As operated costs will be reported in year-of-expenditure dollars, consistent with an approach developed for the East Bay BRT, noting and explaining any changes from the PCGA.

E. Ridership

AC Transit uses automatic passenger counters to capture ridership information on a route or corridor-specific basis. AC Transit will collect data on each scheduled trip at least once over a set period of time to obtain a composite snapshot of overall daily ridership. At a minimum, the data collected will provide an estimate of average daily ridership for the entire route, and average daily ridership by station. Additionally, AC Transit will use a variety of data sources and methods to augment and validate the automated systems, such as on-board ride-checks and surveys, and use of farebox data for purposes of determining cash payments.

Task 5 – Proposed Analyses

A. Project Scope

1) Planned versus As Built:

   a) Analyze and explain changes in project scope from East Bay AA/EIS through PCGA; and

   b) Analyze and explain changes in project scope from PCGA to After Implementation, as described in Task 4; and

   c) Analyze and explain changes in project scope from Before Implementation (Task 3) to After Implementation (Task 4).

B. Transit Service Levels

1) Planned versus After Implementation:

   a) Maps/schedules will be prepared illustrating the service plan in the project corridor as envisioned in the AA/EIS phase of study and as actually operated;

   b) Charts will be prepared comparing the service measures as documented in Tasks 2 and 4; and

   c) Explanation of any changes will be provided.

2) Before versus After Implementation:

   a) Maps/schedules will be prepared illustrating the service plan in the project corridor as envisioned in the AA/EIS phase of study and as actually operated;

   b) Charts will be prepared comparing the service measures as documented in Tasks 3 and 4; and

   c) Any changes will be analyzed and explained.

C. Capital Costs

1) Estimated versus After Implementation:

   a) A chart will be prepared that compares costs as documented in Task 2 (East Bay BRT AA/EIS, Project Development, and PCGA) with Task 4, after implementation costs; and

   b) Analysis of project versus achieved costs will be conducted in year-of-expenditure dollars. A construction cost index and Consumer Price Index for the San

Francisco-Oakland-San Jose region will be analyzed in relation to actual costs. The analysis of capital costs will seek to identify not only the differences between costs as estimated and as achieved, but also the project components that contributed to these differences. This will include assessment of differences between estimated and achieved costs by component (e.g., dedicated busway, stations, right-of-way acquisition, vehicles, design, environmental mitigation, etc.) with special attention given to any changes in project scope. Other documented changes that may have had a significant impact on achieved project costs but which cannot be specifically identified by cost category will be discussed.

2) Before and After Implementation:

   a) A chart will be prepared that compares costs as documented in Task 3 with final costs as documented in Task 4; and

   b) Any changes from Task 3 to Task 4 will be analyzed and explained.

D. Operating and Maintenance Costs

1) Estimated versus After Implementation:

   a) A chart will be prepared that compares costs as documented in Task 2 (East Bay BRT AA/EIS, project development, and PCGA) with Task 4, after implementation costs; and

   b) Analysis of any changes from the PCGA to after implementation costs will be conducted and documented. The analysis will focus on differences due to changes in the number of units (e.g., revenue vehicle hours, revenue vehicle miles, etc.) and changes in the cost per unit. To the extent possible, the analysis will address costs by component, including vehicle operations, maintenance, etc. Changes in the Consumer Price Index for the San Francisco-Oakland-San Jose region will be analyzed in relation to actual costs.

2) Before and After Implementation:

   a) A chart will be prepared that compares costs as documented in Task 3 with final costs as documented in Task 4; and

   b) Any changes from Task 3 to Task 4 will be analyzed and explained.

E. Ridership

1) Ridership Estimates versus After Implementation:

   a) A chart will be developed that shows the changes in ridership between the East Bay BRT AA/EIS and project development (Task 2) and after implementation (Task 4). This will include not only changes in system ridership, but also changes in ridership by station, by market segment, and other meaningful comparisons; and

b) An analysis will explain how changes in the design of the project, forecasts of population, economic activity, transportation systems, or other factors affected the ridership forecasts and actual outcomes.

2) Before versus After Implementation:

   a) A chart will be prepared to show changes in ridership projections and ridership characteristics as documented in Tasks 3 and 4; and

   b) An analysis will explain the impacts the project had on overall ridership and ridership characteristics for the East Bay BRT and system as a whole.

Task 6 – Findings and Recommendations

1) **Summarize Findings –** A summary will be prepared highlighting the major findings of the analysis. The relationship between forecast and achieved values of capital cost, operating cost, and ridership will be documented. Major factors influencing the differences will be presented.

2) **Summarize Recommendations –** Based on the comparisons of forecast and achieved values, recommendations will be developed for improving the methods for developing forecasts, for presenting forecasts, or for other actions that would foster better use of data in making transit investment decisions.

3) **Prepare Draft Report –** The Before and After draft report and the associated findings and recommendations will be prepared and submitted to FTA.

4) **Discuss Report with FTA –** The Before and After draft report will be reviewed with FTA.

5) **Revise Report –** Based on discussions with FTA, the draft report will be revised.

6) **Prepare Final Report –** The final version of the Before and After Report will be prepared and submitted to FTA.

Preservation of Data

AC Transit will retain raw and correlated data from the Before and After survey, in electronic format, for a period of seven years after opening of the East Bay BRT.

11.0 Project Management Plan

11.0 Project Management Plan

A Project Management Plan (PMP) has been prepared, demonstrating the organizational structure and technical capacity of AC Transit to undertake the project development phase of East Bay BRT project. This PMP, which follows, will be updated as the East Bay BRT project advances through project development into construction. As described in the plan, AC Transit has demonstrated experience and expertise to undertake the East Bay BRT project, and the PMP describes in more detail the approach for the project development phase.

East Bay Bus Rapid Transit Project

PROJECT MANAGEMENT PLAN

For

Project Development Phase

Prepared for the Federal Transit Administration

By

The Alameda-Contra Costa Transit District

September 2008 Rev 1.0

Table of Contents

Page

Acronyms and Definitions

AC Transit	Alameda-Contra Costa Transit District *(local project sponsor)*
BCE	Baseline Cost Estimate *(project cost estimate against which status and changes are compared; a project is typically divided into several BCE contract units, each with associated scope and cost)**
BRT	Bus rapid transit *(higher level express bus service with range of operational and capital improvements, such as signal priority, stations, branding, and possibly dedicated bus lanes, among other features)*
CEQA	California Environmental Quality Act *(state's process for environmental impact assessment of projects/actions)*
CPM	Critical path method *(scheduling method that includes linked project activities and their durations—in a network—indicating minimum time to complete project)*
DEIR or EIR	Draft environmental impact report (*prepared in conformance with CEQA)*
DEIS or EIS	Draft environmental impact statement *(prepared in conformance with NEPA)*
FTA	Federal Transit Administration *(federal agency administering and funding transit programs)*
LPA	Locally preferred alternative *(local decision makers'/ project sponsors' preferred solution to transportation needs)*
LRT	Light rail transit *(fixed-guideway rail typically powered by overhead catenary system)*
MIS	Major Investment Study *(system level analysis of transportation problems/needs and proposed solutions)*
NEPA	National Environmental Policy Act (*federal process for environmental impact assessment)*
PMC	Project management consultant *(project sponsor's designated entity with responsibility for day-to-day management of project design and construction)*
PMP	Project management plan *(describes approach, including relevant policies and procedures, to managing project implementation)*
QA	Quality assurance *(auditing/review program ensuring quality processes, including quality control procedures, are being implemented)*

Acronyms and Definitions, cont.

QC	Quality control *(process to ensure certain level of quality in a product or service; control and verification of quality standards)*
RAMP	Real Estate Acquisition and Management Plan *(process for acquisition of right-of-way, associated relocations, etc.)*
ROD	Record of Decision *(document separate from, but associated with, an EIS that officially discloses FTA's decision as to which alternative is to be implemented)*
SAFETEA –LU	Safe, Accountable, Flexible Efficient Transportation Equity Act: A Legacy for Users (*federal legislation authorizing transportation programs for 2005-09 periods)*
TAC	Technical advisory *committee (study/project advisory group of AC Transit department staff)*
VE	Value engineering *(project review to identify potential ways to save costs and enhance project value/benefits)*
WBS	Work breakdown structure *(itemization/description of work activities in logical, hierarchical format)*

***Other Definitions**:

Cost Baseline	Established cost basis for project implementation. Baseline is changed only in accordance with established procedures and required approvals.
Master Schedule	Encompasses all major phases and elements of a project in a single critical path network; working project schedule
Rapid Bus	First level of bus rapid transit improvements; includes limited stops, transit signal priority, service branding
Schedule Baseline	Similar to cost baseline, it establishes the time basis for project implementation; approved project schedule that is only changed in accordance with established procedures and required approvals
Scope Baseline	Basis of project design. The baseline is typically based on ROD and/or formalized in other project agreements, such as grant funding agreements.
Small Starts	Program element of SAFETEA-LU providing federal funding of up to $75 million for capital projects with total costs under $250 million

East Bay Bus Rapid Transit Project
Alameda Contra Costa Transit District
Project Management Plan Outline, Project Development Phase

Note: This document contains a general outline for the anticipated entire Project Management Plan required for the project. As such, several sections have not been addressed until the project is further developed. Later iterations of this Plan will include details for sections that are currently in outline format.

1. PURPOSE OF THE PROJECT MANAGEMENT PLAN

1.1. PMP Defined

A Project Management Plan (PMP) is required by the Federal Transit Administration (FTA) for all "New Starts/Small Starts" funded projects and certain other major capital projects. This PMP applies to the Alameda-Contra Costa Transit District's proposed East Bay BRT Project, which is requesting entry into Project Development and will likely pursue federal Section 5309 grant funding of up to $75 million. The PMP is being prepared in conformance with FTA guidance, including Project and Construction Management Guidelines; 49 USC 5327 and 49 CFR 633, Project Management Oversight; and other relevant guidelines.

Although a federal requirement, the PMP is an important document that helps the project sponsor develop a sound management approach to project implementation. It provides an invaluable framework for designing and constructing a project. This PMP

- Specifies project management procedures and the organizational structure that AC Transit will follow in carrying out the East Bay BRT Project.
- Provides guidelines for orderly coordination of project related activities by the various agencies, organizations, and staff that are or will be involved in the East Bay BRT Project.
- Establishes for the current project phase the general policies, procedures and management approach that will be used to administer Project Development, which includes preliminary and final design of East Bay BRT facilities and systems.

The PMP identifies the basic tasks necessary to complete the project successfully and the people, methods, resources, and lines of communication for performing these tasks. Roles and responsibilities of project staff, directly and indirectly involved, are identified.

1.2. PMP Revisions

The PMP is a living document. AC Transit will maintain the PMP throughout the Project Development, construction, and test and start-up phases of the East Bay BRT Project, updating it as necessary for significant project changes to ensure it remains relevant and useful. Updates will be provided FTA and, most importantly, key staff and organizations that are part of the project. All staff and organizations participating in the project will have access to the PMP.

2. PROJECT INTRODUCTION

2.1 Project Description

The East Bay BRT Project is an approximately 17-mile BRT line connecting Berkeley, Oakland, and San Leandro. Figure 2-1 shows the East Bay BRT Project Alignment. A BRT project can include various types of improvements but essentially represents an investment in bus facilities and operations somewhere between express bus and light rail transit. Improvements range from stop improvements with traffic signal priority for advancing buses through signalized intersections along arterials (referred to as transit signal priority—TSP) to providing dedicated bus lanes or segregated transitways, and light-rail-like stations with passenger amenities. The East Bay BRT Project is proposed to be a high-level BRT investment with major improvements to increase bus speeds and ensure high schedule adherence. The project will include the following features:

- Dedicated bus lanes along arterial streets connecting Downtown Berkeley, the University of California, Downtown Oakland, Downtown San Leandro, and the Bayfair Center in San Leandro;
- Transit signal priority treatments and signal coordination throughout the BRT project alignment;
- BRT service operating at 5-minute headways during peak periods;
- Forty-nine stations spaced 1/4- to 1/2-mile apart (wider spacing than local buses, comparable to light rail service);
- Station features including: shelters, boarding platforms, benches, security features, fare machines, bus arrival information, and other amenities;
- Pre-paid ticketing and proof-of-payment fare verification; and
- Low-floor, multi-door, low-emission BRT vehicles.

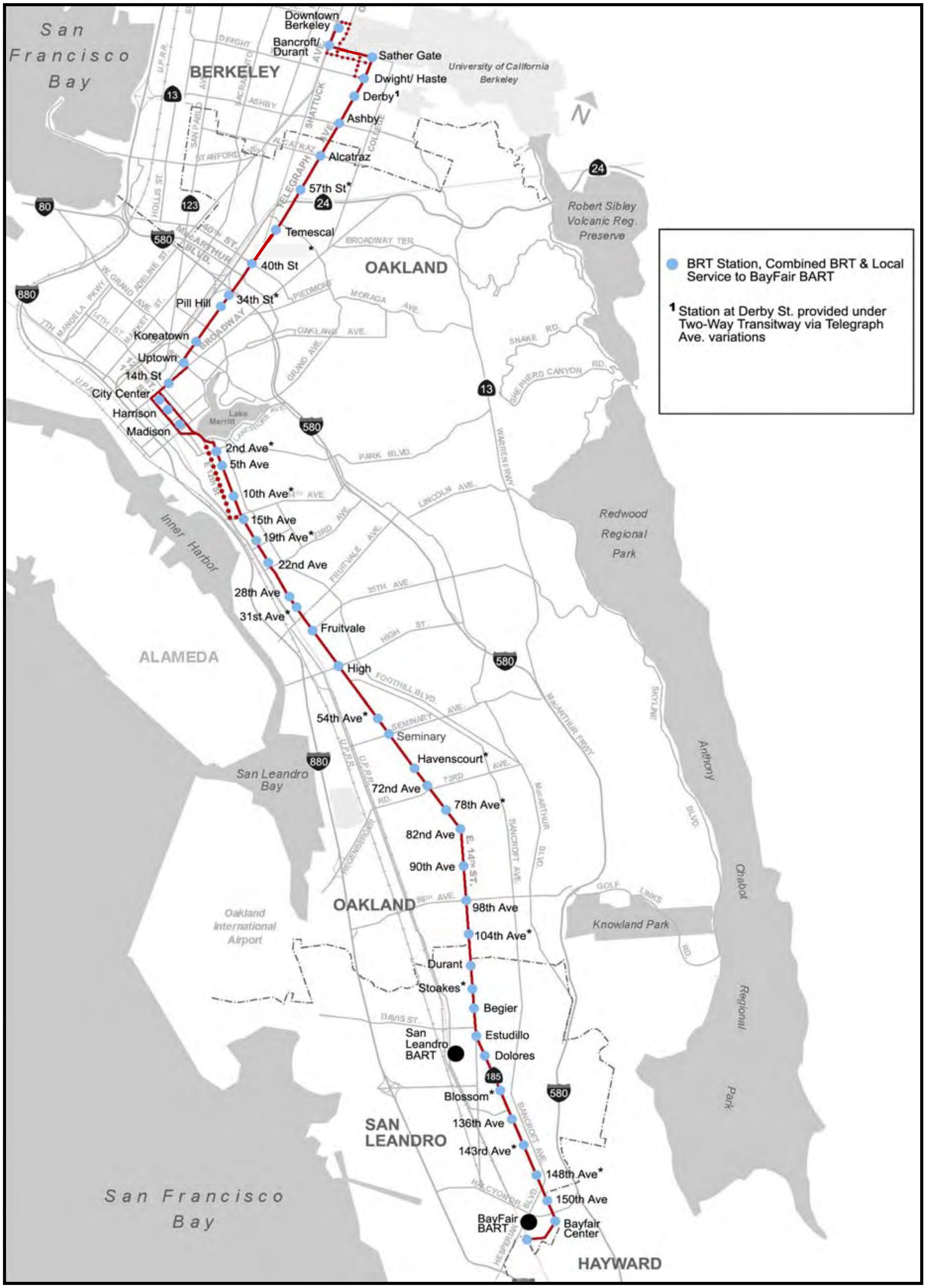


Figure 2-1: East Bay BRT Project Alignment

The proposed BRT service will be supported by the existing local bus network; bus routes along the proposed BRT project alignment are projected to serve approximately 24,400 boardings a day in 2015 —nearly 10 percent of AC Transit's total projected ridership.

2.1.1 BRT Transitway

The transitway is the lane or lanes in which BRT buses would operate. Three basic types of transitways are proposed for the East Bay BRT Project:

- BRT-only lanes;
- BRT lanes shared to a limited extent with mixed traffic; and
- Mixed-flow traffic lanes in which BRT buses are provided no special treatments.

BRT-Only Lanes

BRT-only lanes would be used by BRT and emergency vehicles, the latter when necessary for expedited travel, while shared BRT lanes and mixed-traffic lanes would be used by all types of vehicles. BRT-only lanes would be located in the median of the street or, in some limited cases, in the outside travel lanes (the lane closest to the curb). Cross traffic would not be allowed to cross BRT-only lanes except at signalized intersections where space for turning movements would be carefully integrated into the transitway design. BRT-only lanes would be provided on streets such as Shattuck Avenue, Telegraph Avenue, International Boulevard/East 14th Street, and under certain alignment options, along other arterial street segments. An example of a BRT-only lane configuration is provided in Figure 2-2.

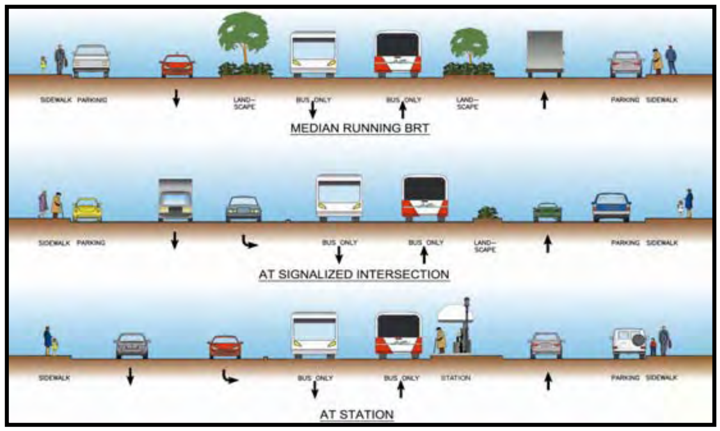


Figure 2-2: Roadway Cross Section with BRT-only Lanes

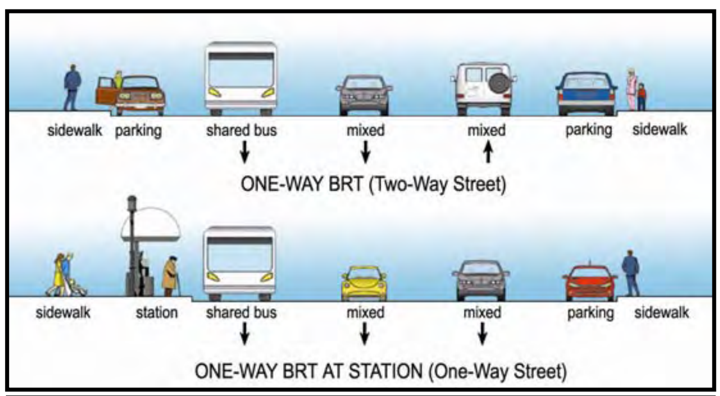


Figure 2-3: Roadway Cross Section with Shared BRT Lane, Side Running

Shared BRT Lanes

Shared BRT lanes are proposed where other vehicles need to access the lanes to make turns or for entering or exiting parking spaces. Shared lanes would be either next to the curb or the curbside parking lanes. An example of a shared BRT lane is shown in Figure 2-3. Use of the lanes by through traffic is restricted. Cross traffic would be allowed to cross shared BRT lanes between signalized intersections.

Mixed-Flow Traffic Lanes

Mixed-flow lanes for BRT operations are proposed in areas where dedicated or shared lanes are not feasible. These locations include places with very high bus traffic and narrow, capacity-constrained streets where local auto access must be maintained. Figure 2-4 depicts the type of transitway to be implemented along each segment of the project alignment.

2.1.2 BRT Stations

Stations are designed to provide passenger platforms 8- to 10-feet wide and typically 60-feet long, raised a minimum of 13 inches above the top of roadway pavement. Platforms will be at or slightly lower than the floor level of BRT buses, allowing fast and convenient passenger loading and unloading. Buses pull into the station for boarding and alighting through right-side doorways. The distance between the bus doorway and platform edge is to be minimized to avoid any safety concerns of a large gap. Buses include a ramp at the middle door, which can be extended to provide a continuous surface between the bus floor and platform for individuals with limited mobility and/or wheelchairs. All station elements will be ADA-compliant (i.e., conform to design standards established by the Americans with Disabilities Act of 1990 [“ADA”], as amended). [1]

The typical BRT operational configuration will have only one bus picking up or dropping off passengers at a station at any time. In certain locations, where local buses could also stop to pick up and drop off passengers, stations platforms will be extended to 120 feet to accommodate two buses simultaneously.

[1] Americans with Disabilities Act, Public Law 336 of the 101st Congress, was enacted July 26, 1990. The ADA prohibits discrimination and ensures equal opportunity for persons with disabilities in employment, state and local government services, public accommodations, commercial facilities, and transportation.

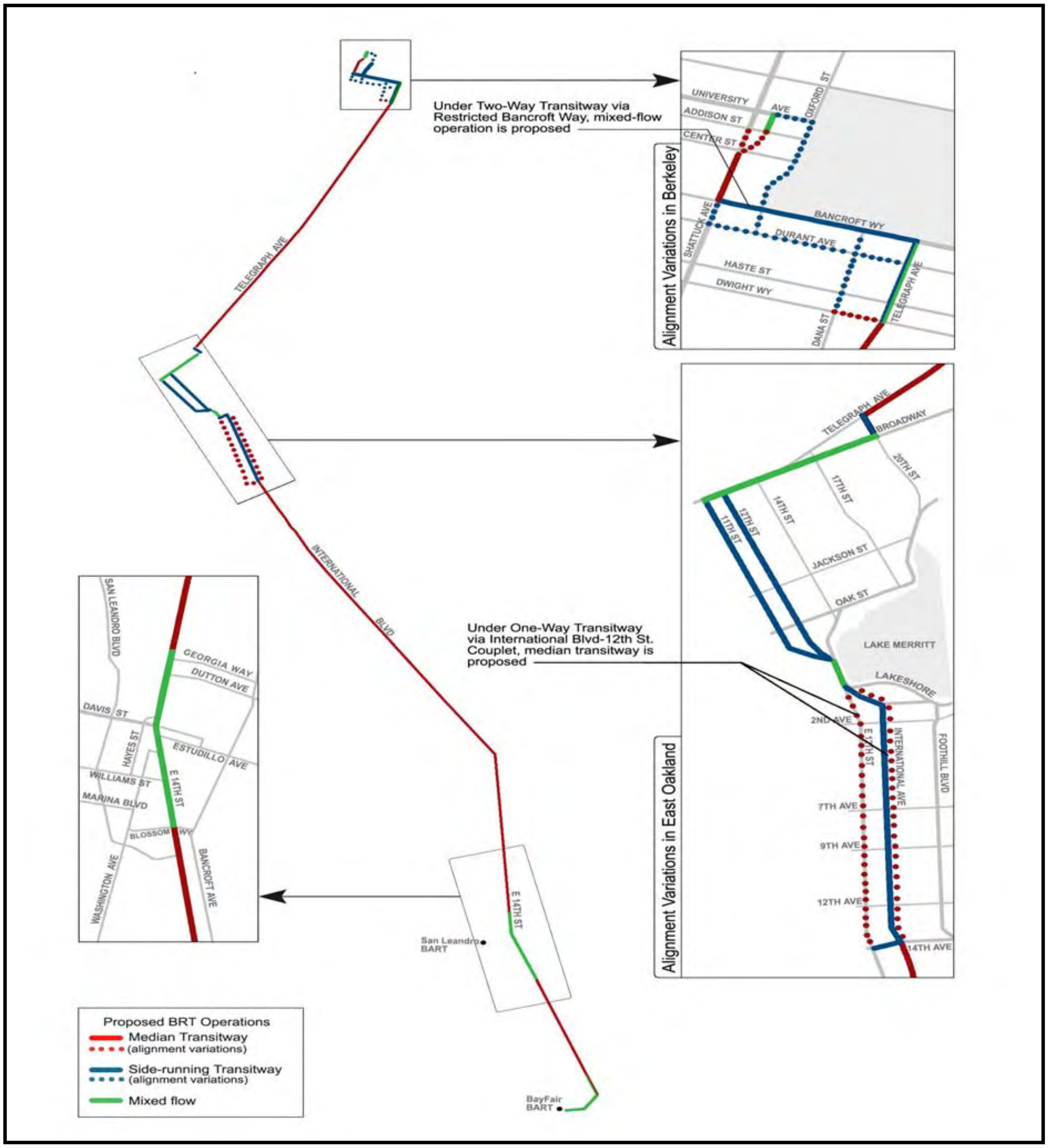


Figure 2-4: Alignment Type/BRT Operations for East Bay BRT Project

All stations will include the following features:

- Raised platforms with lighting;
- Ticket vending machines, a minimum of one at each station platform;

- Passenger information kiosks featuring (a) active data displays and ADA-compliant audio capability, and (b) display space for maps, schedules, and other passenger information;
- Windscreens and framed canopy shelters with benches for the comfort of waiting passengers;
- ADA-compliant routes of access and egress from the street crosswalk or sidewalk;
- Emergency telephones/intercoms at all major transfer stations; and
- ADA-compliant tactile warning bands along platform edges.

A representative schematic of BRT station, showing top-down and side views, is provided in Figure 2.5.

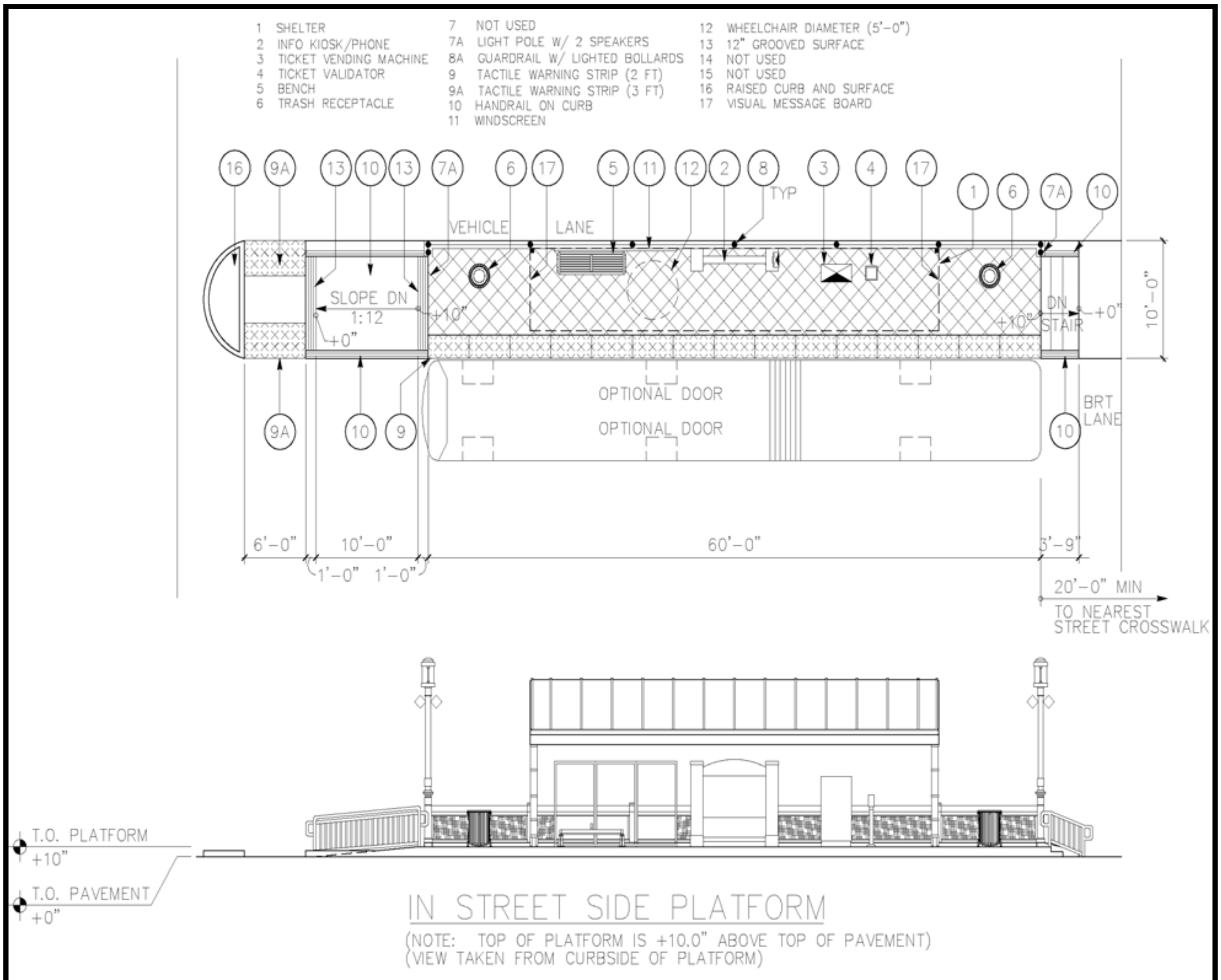


Figure 2-5: Schematic of Typical BRT Station (Street Median)

2.2 Project Purpose and Need

Recognizing the importance of the East Bay BRT transit corridor, AC Transit proposed a project that is designed to:

- Improve transit service and better accommodate high existing bus ridership;
- Increase transit ridership by providing a viable and competitive transit alternative to the private automobile;
- Improve and maintain efficiency of transit service delivery and lower AC Transit's operating costs per rider; and
- Support local and regional planning goals to organize development along transit corridors and around transit stations.

Meeting the four-fold project purpose described above would respond to the following corridor and AC Transit needs:

- Improve transit schedule reliability and reduce transit travel times;
- Improve transit service efficiency by reducing AC Transit's operating cost per rider;
- Enhance accessibility by public transit to jobs and corridor activity centers by expanding transit capacity and making transit more competitive with the automobile;
- Improve boarding and alighting of buses and make transit more convenient for passengers with disabilities or other mobility restrictions;
- Expand travel options and reduce reliance on automobile travel along the increasingly congested roadways, thereby helping to improve the capacity and efficiency of the local transportation network;
- Support transit-oriented residential and commercial development of the project corridor; and
- Better serve low-income and transit-dependent populations.

2.3 Project History

In the early 1990's AC Transit completed a systematic study of its busiest routes. That study, called the Alternative Modes Analysis, was completed in 1993 and it identified priority corridors and candidate technologies for major transit investments that would serve ridership cost-effectively. The study identified the Berkeley/Oakland/San Leandro corridor as the single best corridor for further evaluation.

Over a three-year period from 1999 to 2002, the District conducted a Major Investment Study (MIS) of the Berkeley/Oakland/San Leandro corridor to examine alternatives for improved transit service. The MIS established nine key service objectives that have guided the identification and evaluation of improvement options. The MIS service objectives were:

1. Provide Frequent Transit Service;
2. Improve Access to Major Employment and Educational Centers and Enhance Connections to other Transit;
3. Improve Ease of Entry and Exit on Vehicles for all Transit Riders, including Persons with Disabilities;
4. Improve Transit Service Reliability;
5. Ensure Security, Comfort and Cleanliness Waiting for Riding on Transit;
6. Increase Percentage of Trips Made by Transit and Reduce Percentage of Automobile;
7. Identify a Set of Transit Alternatives that has a High Probability of Being Funded;
8. Support Transit-Oriented Residential and Commercial Development; and
9. Provide an Environmentally Friendly Service that Contributes to Air Quality Improvement

The above service objectives were converted to various, specific performance measures by which to evaluate the environmental, operational, and financial attributes of the future Build Alternatives developed as part of the Draft Environmental Impact Statement (DEIS--NEPA) and Draft Environmental Impact Report (DEIR--CEQA) process.

The MIS identified three modal options that could best meet established objectives while satisfying the needs of the market. The modal alternatives examined were Light Rail Transit (LRT), Bus Rapid Transit (BRT), and Enhanced Bus. Three alignment alternatives in the northern portion of the corridor and three in the southern portion were analyzed for each of these modes. Referenced by their major arterials, the northern alignments were Telegraph Avenue, College Avenue / Broadway, and Shattuck Avenue / Telegraph Avenue. The southern alignments were International Boulevard/East 14th Street, Foothill Boulevard / Bancroft Avenue and San Leandro Street / San Leandro Boulevard.

On August 2, 2001 the AC Transit Board of Directors adopted BRT as the Locally Preferred Alternative (LPA). BRT was selected because it could provide many of the same features as LRT and would attract a large number of new riders at a much lower cost and with fewer traffic, parking, and construction impacts than LRT. The Board also recommended that an early implementation of “Rapid Bus” should be pursued with the understanding that the investments made during the early implementation would be preserved to the greatest extent possible for use in any BRT alternatives.

The LPA alignment primarily would use Telegraph Avenue in the northern portion of the corridor and International/East 14th Street in the southern portion. It formed the alignment of the East Bay BRT Project under evaluation during the current environmental review and conceptual engineering phase of project development.

The MIS, DEIS/DEIR and other project studies have been conducted with input and guidance from key stakeholder agencies, elected officials, community leaders, and the general public. Public participation and agency consultation for this project have been accomplished through a variety of formal and informal means, including project development team meetings; formal meetings with elected officials, community leaders, members of the general public, focus groups, and resource agency staff; circulation of draft documents and flyers; and information consultations with stakeholders from the neighborhoods and communities within the proposed project corridor.

2.4 Description of Important Decisions

The District has been discussing the concept of different transit alternatives along the corridor since the early 1990's. The following constitutes a brief description of the important decisions that have ultimately culminated in the project:

1. May 12, 1993 – The District completed and adopted the report detailing a systematic study of its busiest routes called the Alternative Modes Analysis. This analysis identified priority corridors and candidate technologies for major transit investments that would serve the Districts ridership cost-effectively. The study identified the heavily urbanized Berkeley/Oakland/San Leandro corridor as the single best corridor for further evaluation.
2. November, 2000 – Voters of Alameda County approved a local ½ cent sales tax measure (Measure B) that included a project to implement capital improvements along a Berkeley/Oakland corridor, following the selection of the corridor through a Major Investment Study.
3. August 2, 2001 – The AC Transit Board of Directors adopted BRT as the Locally Preferred Alternative for mode and that an early implementation of "Rapid Bus" should be pursued. This decision was made after the District conducted a Major Investment Study (MIS) of the Berkeley/Oakland/San Leandro corridor to examine alternatives for improved transit service.
4. March 2, 2004 – Voters in the San Francisco Bay Region approved Regional Measure 2, which increased the tolls by $1 on the region's seven state-owned toll bridges in order to implement the Regional Traffic Relief Plan. The Plan included $65 million toward capital improvements on the

Telegraph/International/East 14th Street Corridor in addition to $3 million annually in operational subsidy for current "Rapid Bus" and future BRT service on the corridor.

5. May 5, 2004 – The AC Transit Board of Directors Planning Committee approved the set of BRT options for study in the DEIS/DEIR. The BRT options studied were:
   - BRT Operating Plans – Two Options:
     - o Widely spaced stations (1/2 mile) that would have underlying local service; and
     - o Closer spaced stations (1/3 mile) that would have higher frequency, but no local underlying service.

   The No-Build Alternative was Rapid Bus. This service concept employs some of the BRT treatments, including TSP, bus stop improvements, headway-based schedules, and low-floor buses. Rapid service operates every 12 minutes, with stations spaces approximately every ½ mile. It is complemented by local service along the same alignment operating at 15-minute peak and 20-minute midday headways. This service concept has been tentatively approved by FTA as the Baseline Alternative for preparation of a Small Starts submittal.

6. May 4, 2007 – The DEIS/DEIR was released for public comment. Notice appeared in the Federal Register announcing a 60-day comment period. Final comments were received by July 3, 2007.
7. June 2007 – Four public hearings held at four different venues (June 7, 12, 13, and 14).
8. July 3, 2007-- Close of DEIS/DEIR Comment Period; documentation of public hearings and assembly of comments.
9. July 2007-July 2008 – City staff and community outreach to define details of the LPA for preparation of the Final EIS/EIR.

Upcoming project milestones and major decisions include <<Iris: Below should be updated to be consistent with what it says in Project Description>>:

10. May/July 2008 (Q2, 2008)– Initial submittal to FTA of preliminary materials supporting a Small Starts application and preparation of the Small Starts Criteria report for Federal Fiscal Year 2010.
11. September 2008 (Q3, 2008) – submittal of complete Small Starts submittal and request to enter Project Development.
12. Late 2008 (Q4, 2008) – Local city approval of LPA concept for evaluation in Final EIS/EIR.

13. Late 2008 (Q4, 2008) – AC Transit Board of Directors adoption of a specific LPA for evaluation in Final EIS/EIR
14. Late 2008 (Q4, 2008)– FTA approval for East Bay BRT Project to enter Project Development
15. 2009 through early 2010 (Q1, 2009-Q1, 2010)– Preparation of Final EIS/EIR
16. Early 2010 (Q1/Q2, 2010) -- Certification of EIS/EIR by AC Transit Board of Directors; Record of Decision by FTA
17. 2009 (Q1-4, 2009) – Preliminary Engineering phase of Project Development

Additional detail on the project schedule through the final design phase of Project Development and for construction and start-up of the East Bay BRT Project is included in the discussion of the project baseline schedule.

2.5 Development and Phasing

The project is phased for implementation over two major steps:

- Implementation of a Rapid Bus service that sets the major alignment of the corridor and implements transit signal priority through most of the corridor. Priority treatments include upgraded or new traffic signals and controllers and traffic signal software improvements. As noted, Rapid Bus serves as the Baseline/No-Build Alternative for environmental review and Small Starts evaluation.

  This service was implemented on June 24, 2007.
- Implementation of the full Bus Rapid Transit project is slated for development following approval by FTA to enter Small Starts Project Development and award of a Record of Decision (ROD) by FTA following completion and review of the project EIS/EIR and its certification by the AC Transit Board of Directors. The completion of the environmental process is anticipated late 2009.

Additional detail on the implementation schedule for the project is provided in the following section and in Appendix B, Schedule.

2.6 Scope, Cost(Budget) and Schedule Baseline

In order to effectively manage the Project Development, construction, and test and start-up phases of the East Bay BRT Project, AC Transit will develop a Scope Baseline, Capital Cost Baseline, and Schedule Baseline. These three documents will provide the physical and functional description of the project, the capital cost of constructing the project, and the schedule for implementing the project.

2.6.1 Physical and Functional Scope Baseline

The Scope Baseline describes the full set of improvements included as part of the project and will be established during the Preliminary Engineering phase of Project Development. At this time the project limits and features are assumed to be as described in Section 2.1. It is possible project details will change during the course of LPA approvals by corridor cities and by AC Transit as well as during Preliminary Engineering. The geographic limits and level of proposed project improvements could be modified, depending upon local decisions and further findings of the Final EIS/EIR process.

The ROD will be based upon and include a summary of the project definition as developed in the engineering design and supporting documentation. The Scope Baseline will include a detailed project operations plan that describes how the project will operate, including the routing, headways, and station stops for BRT buses; span (hours) of service by day of the week; passenger access to and from BRT stations; fare payment and enforcement; failure and special events operations; and other operations detail. Project improvements and proposed project operation will be made consistent.

Should the project definition change following receipt of a ROD, AC Transit will evaluate the effect on the Scope Baseline as described in the ROD. AC Transit will update the Baseline as necessary upon completing the necessary environmental reviews and receiving the necessary approvals from FTA and other project sponsors, if any.

2.6.2 Capital Cost Baseline

The Capital Cost Baseline describes the cost to construct and implement the East Bay BRT Project. The Capital Cost Baseline will be established during the Preliminary Engineering phase of Project Development and be consistent with the Scope Baseline. The conceptual capital cost for the project is estimated to be $234.6 million (year of expenditure dollars), see Appendix A.

Updated cost estimates will be prepared at least three times prior to construction: at the close of Preliminary Engineering (approximately 30 percent design complete); approximately midway through Final Design (approximately 65 percent design complete) and just prior to construction bidding.

Changes to the Cost Baseline could occur as design advances and new information is uncovered; if the Scope Baseline changes; if the Schedule Baseline changes; and/or if materials and supplies costs and general construction market conditions change. There must be one-to-one correspondence between the Scope Baseline, Schedule Baseline, and Capital Cost Baseline. AC Transit will revise the Cost Baseline as necessary to reflect the scope and schedule and obtain any required FTA approvals. Should the Cost Baseline change in total value or change significantly across major Baseline Cost Estimate (BCE) units following award of a Project Construction Grant Agreement, AC Transit will (1) notify FTA, (2) request a determination by FTA whether the grant agreement would require an amendment, (3) coordinate with FTA to execute such amendment.

The major capital cost categories for the project, based on concept design, are as follows:

- SCC 10 Guideway Elements;
- SCC 20 Stations, Stops, Terminals, Intermodal;
- SCC 40 Sitework and Special Conditions;
- SCC 50 Systems;
- SCC 60 ROW, Land, Existing Improvements;
- SCC 80 Professional Services; and
- SCC 90 Unallocated Contingency.

The guideway elements are for roadway improvements for BRT buses (the “transitway”).

Forty-nine new light-rail-like stations are proposed. Some stations would be in-street median platforms and some would be curb extensions.

Sitework includes utility relocations, non-BRT street work in the vicinity of stations and allowances for environmental mitigation. The last item is mainly additional street and signal improvements to minimize traffic impacts.

Systems element include traffic and BRT signals; emergency telephone, CCTV and TVMs on stations, fiber optics backbone connecting stations and the operations control center, and operations control center improvements at AC Transits Central Dispatch facility.

Right-of-way required for the project is very limited. The allowance is for minor easements and acquisitions to modify curbs at several intersections for better turning radii and for traffic impact mitigation.

Professional services include the costs for design, construction management (CM), project management for design and CM, and an allowance for permitting. There is also an allowance for test and start of the project prior to revenue opening.

Unallocated Contingency is included to account for unforeseen project costs not associated with the above cost categories.

2.6.3 Schedule Baseline

A baseline schedule for the project will be established simultaneously with setting the East Bay BRT Project scope and budget baselines, at the close of the Preliminary Engineering phase of Project Development.

A preliminary schedule for design and construction is provided in Appendix B. The major schedule milestones are as follows:

- Q1, 2009 – Preliminary Engineering to be initiated
- Q1, 2010 – Final Design Phase Commence
- Q1, 2012 – Final Design Complete
- Q2, 2012 – Commence Construction
- Q4, 2014 – Construction Complete
- Q1, 2015 – Test and Certification; Project (Construction) Close-out
- Q1, 2015 – Revenue Operations Commence for BRT Service

Project Development is anticipated to proceed for approximately three years, to early 2012, with construction of BRT improvements then commencing and completed in late 2014. Revenue operations of the full BRT system will begin in 2015 although AC Transit anticipates that segments of the project could open for limited service earlier.

2.7 Project Legal Authority

On May 5, 1993, the AC Transit Board of Directors adopted the Alternative Modes Analysis report that detailed the project corridor and outlined its potential for future implementation. Further, within this recommendation, the Board of Directors directed staff to pursue funding possibilities that would permit the implementation of the recommendations. Given the direction from the AC Transit Board of Directors, and by signature of the letter of submission for this PMP, commensurate with the submission of the application for Small Starts Funding, the General Manager of AC Transit has the legal authority to obligate AC Transit to implement the East Bay Bus Rapid Transit Project.

2.8 Project Delivery Strategy

Consultant support for East Bay BRT Project planning and conceptual design for the MIS and DEIS/DEIR phases of the project was procured through a conventional request for proposals solicitation. Upon selection of the best qualified contractor team, services were negotiated for a defined scope of work, performed on a cost plus fixed-fee basis.

AC Transit intends to obtain consultant support services for completion of the environmental review phase of the project (Final EIS/EIR) and for Project Development design services using a similar procurement.

The method of procurement for construction services has not been established at this time. Procurement of consultant and contractor services and of materials, supplies and equipment for the East Bay BRT Project will conform to AC Transit Board Policy 350, adopted 4/92 with subsequent amendments.

3. PROJECT ORGANIZATION

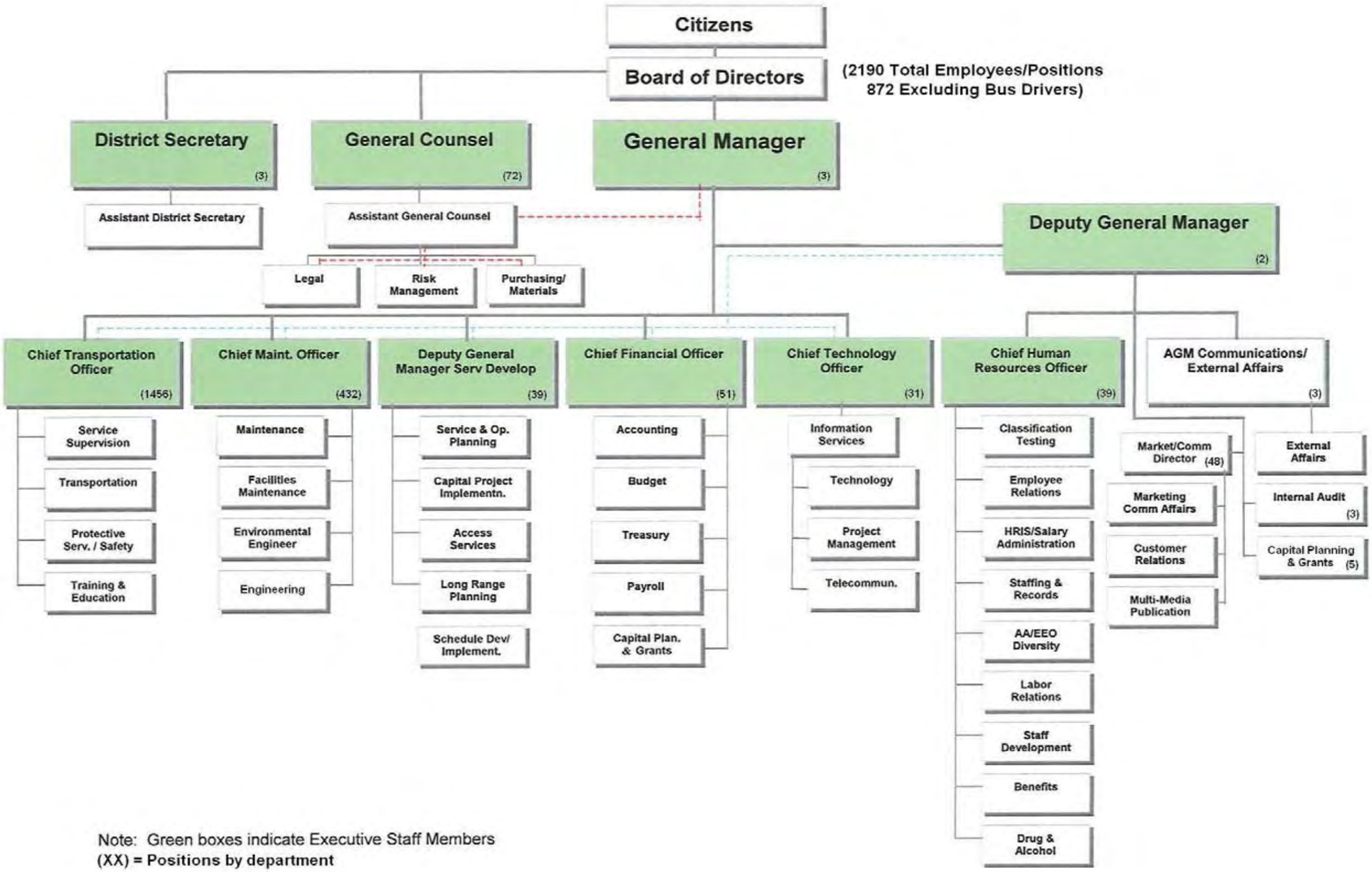
3.1. AC Transit District Organization and Key Departments

The AC Transit 2008-09 adopted budget includes 2190 total positions within basically 11 departments. The largest departments are Transportation, with 1456 budgeted positions, and Maintenance, with 432 budgeted positions. The District's organizational structure is shown in Figure 3-1. The East Bay BRT Project is within the Service Development Department, under the management of Deputy General Manager Nancy Skowbo.

Various departments provide key support to the project and will assume increasingly important roles as the East Bay BRT Project advances into Project Development and construction. These departments include, under the AC Transit Deputy General Manager Jim Gleich, (1) External Affairs, (2) Capital Planning and Grants, and (3) Marketing/Communications, and within the Finance Department under Chief Financial Officer Deborah McClain, (4) Accounting and (5) Budgeting.

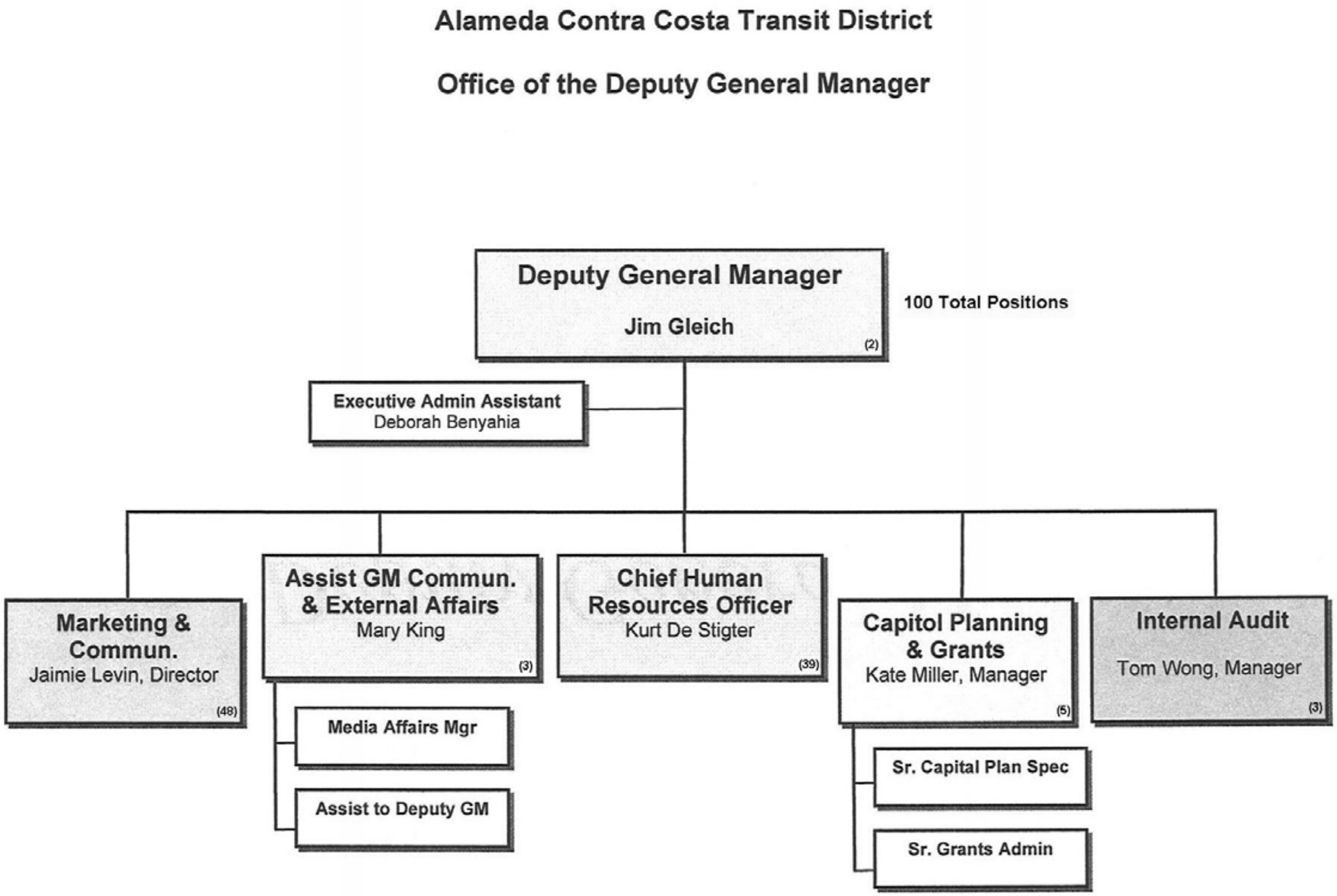
Figures 3-2 and 3-3 provide more detail on these key support departments. External Affairs coordinates with local government officials and agencies as well as state and national officeholders to keep them up-to-date on the project. The AC Transit Marketing and Communications Department focuses on coordinating the public and agency involvement process that is integral to project development. The department provides information announcements to riders and the interested public in the form or brochures, rider alerts, and web-site information. It also supports the project management team in meetings and presentations. Capital planning and Grants is responsible not just for securing regional, state and federal funding but, in coordination with the Budget Division of the Finance Department, establishing the long-term capital program for the District that includes the East Bay BRT Project. Capital Planning and Grants would be the lead department in negotiating, processing, and reporting status of a Project Construction Grant Agreement for the project.

Figure 3-1
Alameda Contra Costa Transit District Organization Chart



Note: Green boxes indicate Executive Staff Members
(XX) = Positions by department

Figure 3-2



(xx)=Positions by functional area

Figure 3-3

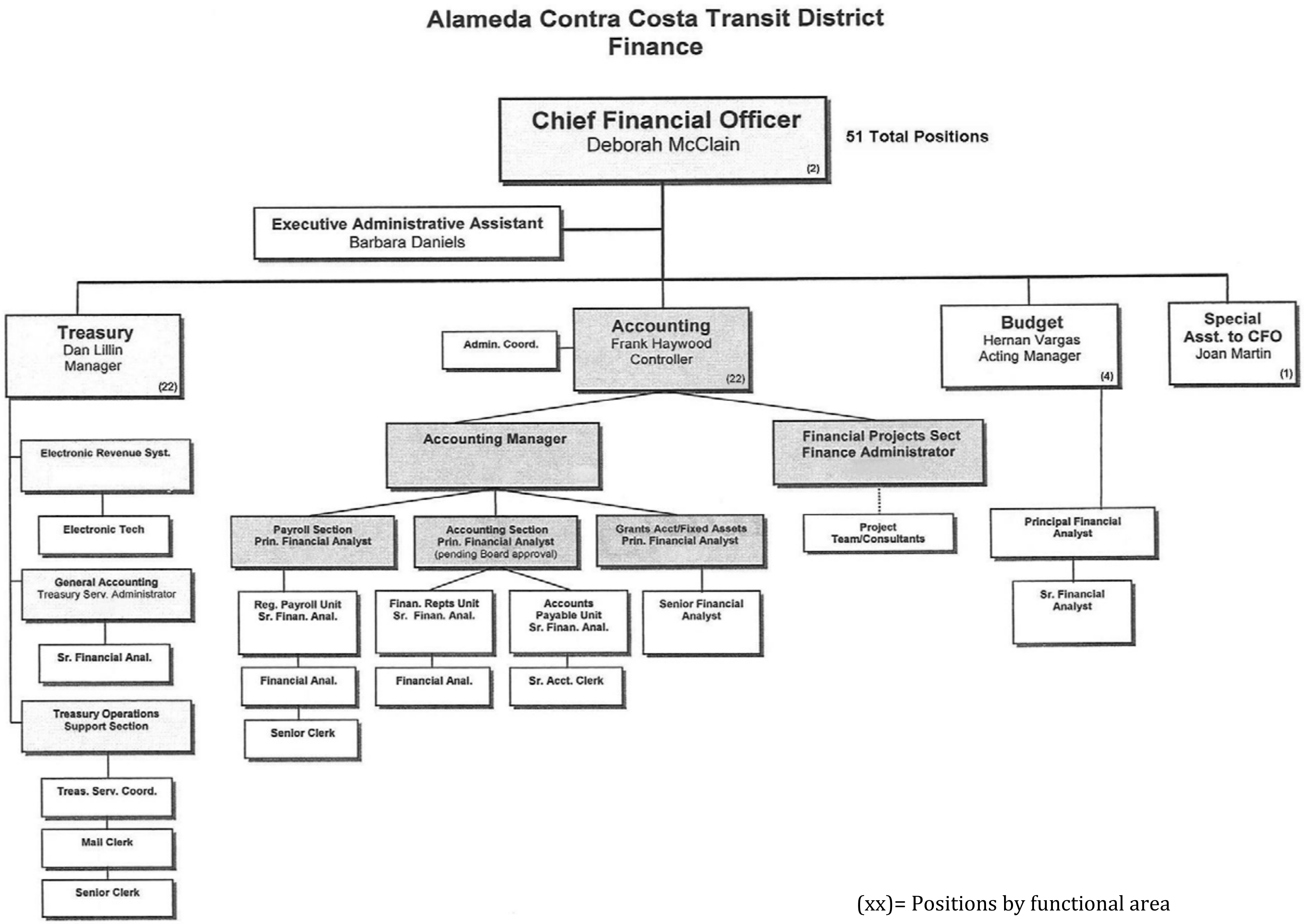
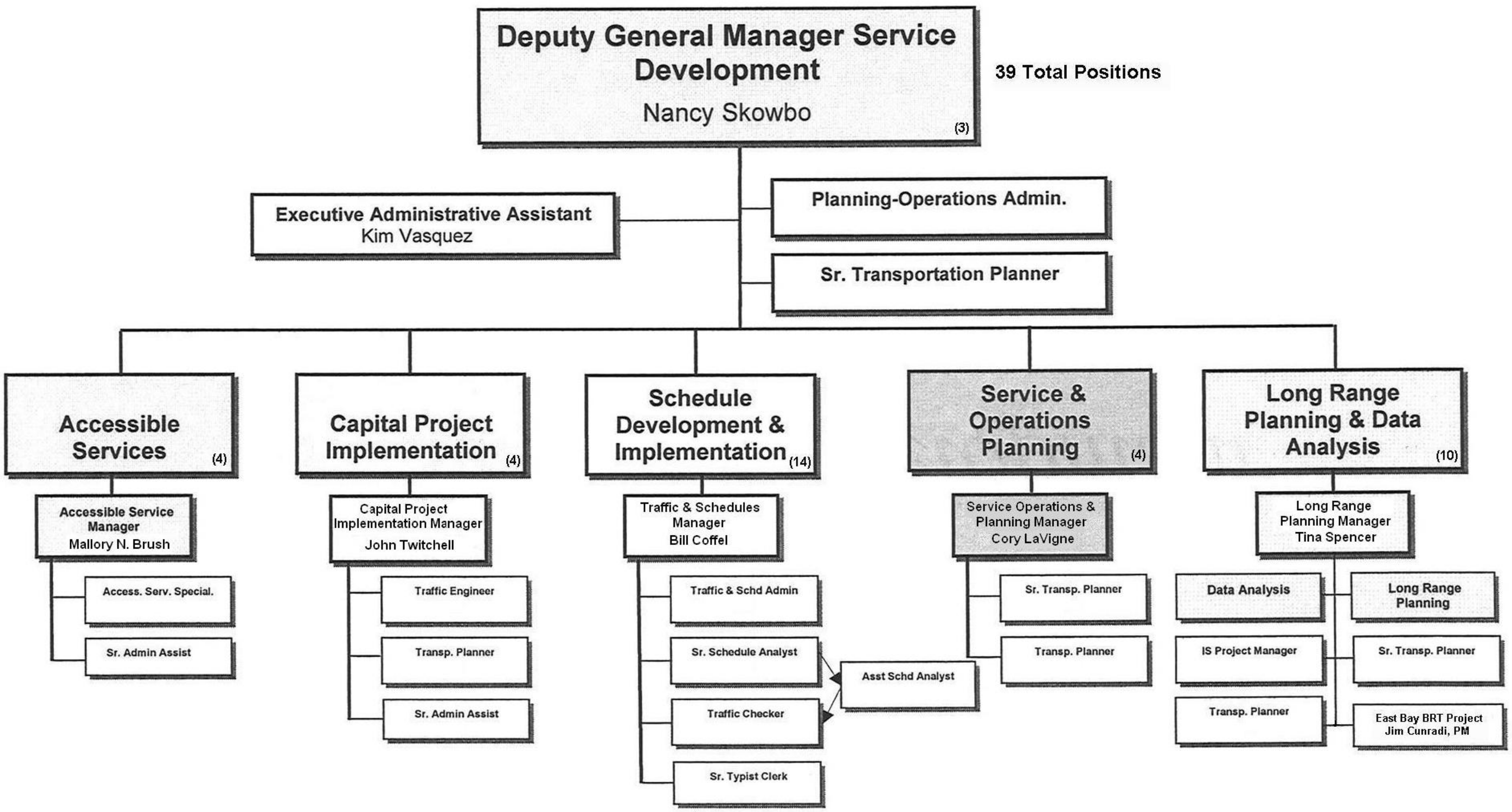

Alameda Contra Costa Transit District
Finance
Chief Financial Officer
Deborah McClain
(2)
51 Total Positions
Executive Administrative Assistant
Barbara Daniels
Treasury
Dan Lillin
Manager
(22)
Admin. Coord.
Accounting
Frank Haywood
Controller
(22)
Budget
Hernan Vargas
Acting Manager
(4)
Special
Asst. to CFO
Joan Martin
(1)
Electronic Revenue Syst.
Electronic Tech
General Accounting
Treasury Serv. Administrator
Sr. Financial Anal.
Treasury Operations
Support Section
Treas. Serv. Coord.
Mail Clerk
Senior Clerk
Accounting Manager
Financial Projects Sect
Finance Administrator
Payroll Section
Prin. Financial Analyst
Accounting Section
Prin. Financial Analyst
(pending Board approval)
Grants Acct/Fixed Assets
Prin. Financial Analyst
Project
Team/Consultants
Principal Financial
Analyst
Sr. Financial
Analyst
Reg. Payroll Unit
Sr. Finan. Anal.
Financial Anal.
Senior Clerk
Finan. Repts Unit
Sr. Finan. Anal.
Financial Anal.
Accounts
Payable Unit
Sr. Finan. Anal.
Sr. Acct. Clerk
Senior Financial
Analyst
(xx)= Positions by functional area

Figure 3-4

Alameda Contra Costa Transit District

Office of the Deputy General Manager Service Development



(xx)=Indicates positions by functional area

The AC Transit Finance Department provides, in addition to budgeting services, cost accounting services to the East Bay BRT project team. As the project advances and more contracts are entered into by the District, strict accounting controls on the availability and use of funds are of particular importance.

3.2. Service Development Department

As noted, the East Bay BRT Project during planning and through completion of design (Project Development) is under the management of the Service Development Department (Figure 3-4, previous page). Preparation of the project final environmental impact statement (FEIS), as with the draft EIS, is the responsibility of Long-Range Planning and Data Analysis, under Tina Spencer, and the East Bay BRT Project team, headed by Project Manager Jim Cunradi. Detail on East Bay BRT Project team organization is provided in the following section.

Under the current plan for project implementation, the East Bay BRT Project will undergo a project management transition as it moves into final design and construction. Long-Range Planning will be responsible for all environmental documentation (and will coordinate the monitoring of environmental compliance after the project receives a Record of Decision). It will also manage the engineering and architectural design process through at least the 30 percent completion level, which is anticipated to provide sufficient detail for the scope and cost (both operations and capital) to support advancing the project to design completion and negotiation of a Project Construction Grant Agreement with FTA.

At approximately the 30 percent level of design completion, Service Operations and Planning and Capital Project Implementation will be responsible for completion of design and preparing construction-ready bid documents. Service Operations and Planning will be responsible for preparing a detailed operating plan for BRT service consistent with its final configuration (e.g., type and features of the in-street BRT transitway and passenger stations) through the project corridor. Capital Project Implementation has successfully completed the design and construction administration of two Rapid Bus projects in the District. As the project is bid for construction, additional project support will be available through the newly established AC Transit Engineering Department, which is to provide construction management services to District capital projects.

A project management team will be established to integrate AC Transit capabilities for final design and construction. The PMP will be updated accordingly to reflect the proposed transition in project management at the close of the environmental review and preliminary engineering phases.

3.3. Project Organization Chart: Planning, Environmental Clearance, and Initial Engineering

AC Transit has instituted an organizational structure consisting of representatives of the various participating jurisdictions and departments to provide oversight of the project during planning, environmental clearance, and engineering to approximately the 30 percent level. This structure is similar to that used during previous planning efforts related to project implementation, including the Major Investment Study, draft Environmental Impact Statement, and conceptual engineering. Figure 3-5 illustrates the project management team for the East Bay Bus Rapid Transit Project.

3.4. Roles and Responsibilities

The project is within the Service Development Department, Long-Range Planning division. The Project Manager reports to the Manager of Long-Range Planning and draws on the technical services provided by the various divisions within Service Development and on the support of other AC Transit departments. Complementing AC Transit's resources available to the project are several specialty consultants. The specific roles and responsibilities of the East Bay BRT Project team are described below.

Project Manager – Jim Cunradi

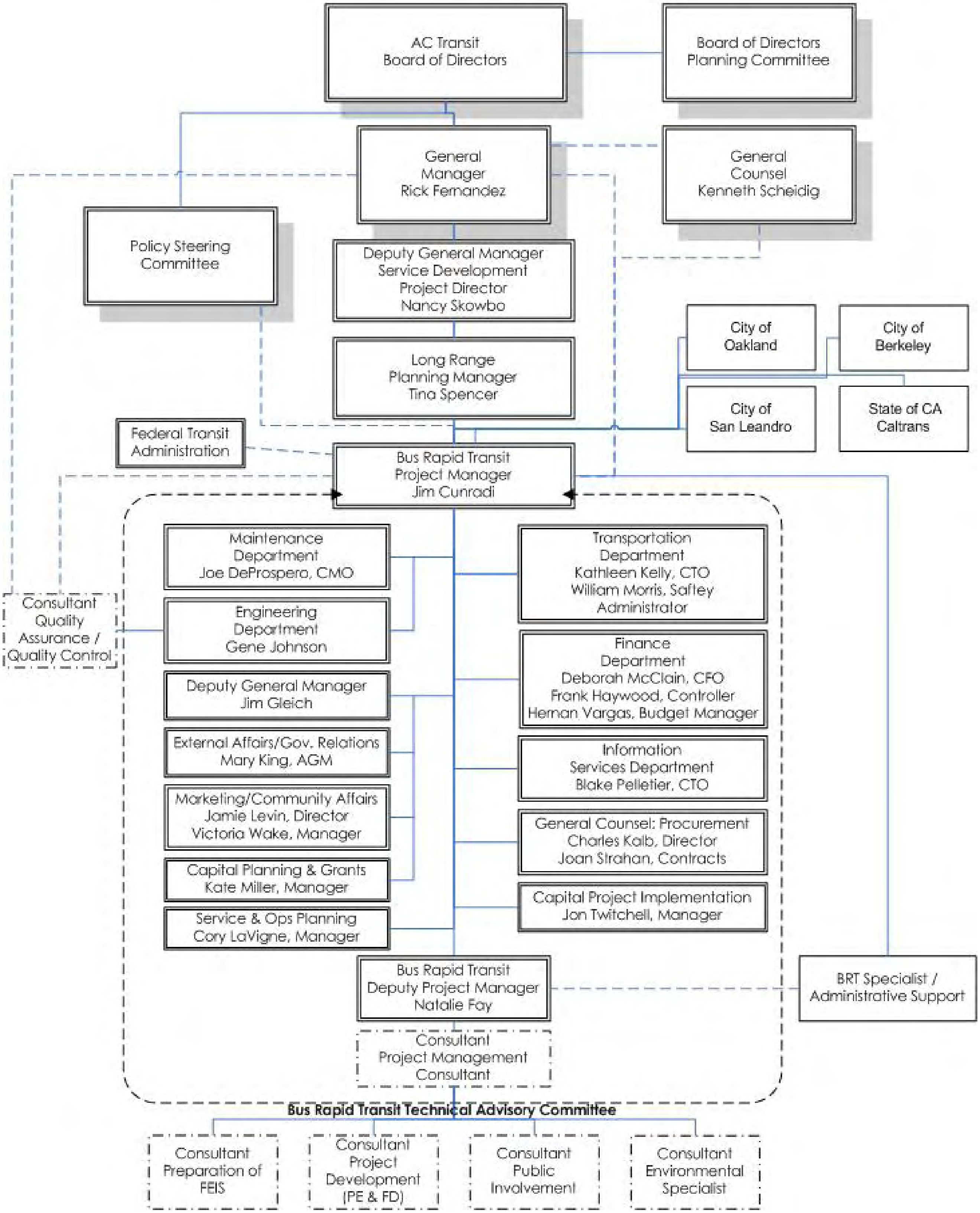
The East Bay BRT Project Manager is Jim Cunradi of the Service Development Department. The Project Manager is responsible for directing, overseeing, and coordinating all aspects of the project, while maintaining a high quality standard, keeping project costs contained within proposed budgets and completing tasks within the adopted schedule. The Project Manager also oversees AC Transit's participation within the project, including delegation and task assignment, and regular project progress reports to the AC Transit Executive Staff, the General Manager, and the Federal Transit Administration. The Project Manager reports regularly and directly to the Project Steering Committee, the East Bay BRT Technical Advisory Committee, the AC Transit General Manager, and to the AC Transit Board of Directors.

Deputy Project Manager – Natalie Fay

The Deputy Project Manager provides general oversight services for consultant contracts. The Deputy Project Manager provides general oversight for all technical work performed for the project which may include utilities, permitting, right of way issues, vehicles, community development, and design.

-Figure 3-5

East Bay Bus Rapid Transit Project
Project Team Organizational Structure



She reports regularly to the Project Manager and in the event of an absence of the Project Manager, the Deputy Project Manager assumes full project authority and responsibility.

Bus Rapid Transit Technical Advisory Committee (BRT TAC)

The BRT internal TAC assists the Deputy Project Manager with oversight responsibilities in association with all technical work to be completed for the project including utilities, permitting, right of way issues, vehicles, community development, design and design quality assurance, procurement matters, and third party agreements. The BRT TAC is comprised of members from each AC Transit department listed in Figure 3-5. Each department is to appoint two members, one active and one substitute who provide direct input into project development throughout the life of the project.

BRT Specialist / Administrative Support – Vacant

The BRT Specialist / Administrative Support position reports directly to the Project Manager but also provides support and assistance to the Deputy Project Manager. The Specialist is responsible for overall document configuration, correspondence and communication, and project controls and status reports. Support responsibilities also include:

- Implementation of adequate document control and configuration management schemes
- Assistance with the preparation of documents including management plans, scopes, schedules, budgets, and status reports.
- Coordination of progress monitoring activities
- Preparation of correspondence to various committees, and setting meeting dates, times and locations and coordination of meeting agendas and minutes.

This position could be filled either by District staff or by a consultant contract. At this point a decision has not been made regarding employment status.

Service and Operations Planning and Capital Project Implementation. The roles of these two divisions within the Service Development Department are described in Section 3.2.

Project Management Consultant (PMC) – Consultant

The Project Management Consultant for the project reports directly to the Deputy Project Manager. The primary responsibility of the PMC is to monitor and coordinate the completion of tasks necessary to accomplish the contract scope's goal of producing products on-time, at a high quality, and within the adopted budget. The PMC supports the East Bay BRT Project team with project controls functions, including preparation of the project master schedule; review of contractor/consultant schedules; review and validation of cost estimates; and budget/cost tracking.

Another important role of the PMC is to focus on the development and assignment of tasks to the engineering team (initially, the preliminary engineering component of Project Development). Longer-term requirements include assisting AC Transit in developing, implementing, and monitoring the performance of project specific quality control and quality assurance programs; implementing and coordinating all design and constructability reviews; and ensuring design is in compliance with the adopted project scope, engineering design objectives, and federal, state and local regulations and guidelines. The PMC provides regular progress reports to the Project Manager.

Upon successful entry into Project Development, this position will be filled by a consulting firm. It is intended that this position remain throughout the Project Development and construction phases to ensure consistency and continuity in project implementation.

AC Transit Departmental Support

Various AC Transit departments outside of Service Development support project implementation, from design through revenue start-up. In addition to those described in Section 3.2, these departments include:

- Information Services (development and maintenance of information systems)
- Maintenance and Engineering (services to be provided primarily for the construction phase)
- Transportation (operations reviews and operating safety and security support).

3.5. Use of Consultants

In addition to the PMC, AC Transit proposes to secure consultant services for completion of environmental clearance (Final EIS/EIR), ongoing environmental compliance monitoring, design, construction management, and real estate acquisition if necessary. The current consultant for environmental clearance could be retained through a contract extension in order to complete the final document in a timely manner. Design services would be obtained through a separate procurement, beginning possibly late 2008.

Consultants are under the direct supervision of AC Transit's project management team. Having consultants perform many technical project management and design tasks will allow AC Transit to minimize the number of District staff on the project. Because existing staff outside the core East Bay BRT Project team have limited availability beyond their current and proposed levels of support to the project, and because many would normally not have the expertise necessary to carry out project management and design services, the District would need to hire new staff to fill the roles assigned consultants. Only limited staff additions will be necessary under the planned approach.

Following are the main consultant support activities through the design phase:

- Project management of project consultants and contractors;
- Project environmental clearance;
- Public involvement, which is critical from planning through construction;
- Preliminary and final designs, including refinement of design standards and criteria (30 percent; 60 percent and 90/100 percent engineering designs);
- Surveying and mapping;
- Urban landscape/streetscape designs;
- Development and monitoring of design and construction quality assurance and quality control programs;
- Systems equipment specifications development and functional design;
- Capital and operating cost estimate;
- Right of way program development and acquisitions support;
- Support AC Transit in conducting "before" and "after" studies; and
- Project reporting and support to AC Transit in maintaining and organizing project documentation and progress reporting.

Consultants will also assist AC Transit in preparing construction bid packages and support the Procurement Department in the bidding process. Construction management services will also be secured prior to beginning project construction.

3.6. *Coordination with Other Agencies*

The East Bay BRT Project requires close liaisons with cities along the corridor, Caltrans, and other agencies. Other agencies include both funding partners and other organizations affected by proposed project improvements. Among these other agencies are utilities (East Bay Municipal Utilities District, Pacific Gas & Electric Company, and various private utilities with facilities along the alignment). AC Transit will also continue to coordinate closely with FTA.

In accordance with guidelines supporting the implementation of SAFETEA-LU, a Project Coordination plan will be prepared that describes how AC Transit will involve and coordinate with the numerous local, regional, state, and federal organizations affected by and/or participating in the project. The plan, covering first the completion of the environmental clearance phase of the project, will provide a basis for a coordination plan covering design and construction.

4. PROJECT MANAGEMENT CONTROL SYSTEMS

This section describes management systems that will be used to carry out project design and construction and monitor performance relative to the scope, schedule, and budget.

4.1. *Definition of Project Scope: Work Breakdown Structure*

Work activities and related information to complete the project will be formalized in a work breakdown structure (WBS). The WBS provides a systematic framework for defining and organizing—and integrating— the entire East Bay BRT Project into manageable elements from the perspective of the scope, schedule and budget. The WBS must be easy to understand and apply.

A detailed WBS will be developed during Preliminary Engineering. It is anticipated to include up to seven breakdown levels of work, as follows:

1. Level 1 = Overall project ID (EB BRT). This is the summation of all work activities and their costs.

2. Level 2 = Project phase (PE, FD, Construction).

3. Level 3 = Project element (e.g., BRT transitway, Systems) (Divides project phase into its elements).

4. Level 4 = Individual project component (e.g., environmental review, design, public involvement, post grant agreement) (Divides each element into several individual components).

5. Level 5 = Individual phases or subphases
   (Divides elements into implementation subphases and/or geographic areas. Level 5 can be used to represent the bid/contract packages to complete the subphase).

6. Level 6 = Detailed operations
   (Represents the bid/contract packages to complete the subphase).

7. Level 7 = Additional activities detail.

A well formulated WBS will allow project management and staff to define all work elements and, when tied to the schedule and budget, track performance in these areas.

4.2. Schedule Control

4.2.1. Baseline Schedule

The Baseline Schedule provides the reference benchmark by which AC Transit will monitor past performance, current progress, and evaluate whether the project will meet future milestones. The Baseline will be approved by the Project Manager and an executive committee established by AC Transit to monitor the East Bay BRT Project. Changes to key baseline milestones must be approved by the executive committee. Executive milestones, once established, will be identified in the PMP and performance relative to the milestones will be indicated in monthly progress reports prepared for the project and provided to FTA and other project sponsors.

Two levels of detail in the Baseline Schedule are proposed:

Level 1, Project Summary (highest level of information, typically presented in bar chart format and covering major design, construction, system integration, test and start-up, and similar milestones.

Level 2, Project Master Schedule detail, a highly detailed network schedule that shows for all significant project activities/stages the logical sequence of activities to complete the stage, interfaces and constraints with other activities, start and completion dates, including durations, and network and logic diagrams.

The Project Master Schedule encompasses all phases and elements of the project in a single critical path network (CPM). It integrates and summarizes all other schedules and design/construction/start-up program elements. The Project Master Schedule will be cost loaded (indicate the costs for major activities/stages) and to the extent practical. It will also be resource loaded (indicate the staff and other resources required to major activities/stages). AC Transit will maintain the Project Master Schedule with the support of the Project Management Consultant (PMC).

Periodic updates of the Master Schedule will be made, at least monthly during major construction periods.

4.2.2. Contractor/Construction Schedules

Prime contractors/consultants will prepare and maintain CPM cost loaded contract schedules. The CPM schedules should be organized in terms of activity detail, logic and activity ties to accurately reflect all work required by the contract. Contractor/consultant schedules will be in a consistent format with the AC Transit Master Schedule, which will incorporate sufficient detail from contract schedule to accurately depict project status and performance.

4.2.3. Monitoring Progress

Schedule control is the process of maintaining the Project Master Schedule and having it accurately reflect actual progress versus planned progress (the latter as indicated by the Baseline Schedule). AC Transit will continually record and update schedule progress and report deviation from the Baseline. Schedule status reports will be prepared and reviewed by East Bay Project management staff, including the Project Manager.

When major milestones change, the revisions must be approved by the executive committee. As appropriate, a new Baseline Schedule will be adopted, incorporating the milestone changes, and become the basis for progress monitoring. Updates of the Baseline Schedule must be reviewed by FTA.

4.2.4. Scheduling System

AC Transit will use a precedence-based CPM scheduling system in establishing the Project Master Schedule. The preferred schedule program/software will be selected at the outset of Preliminary Engineering.

4.3. Cost Control

Cost control involves managing the project budget, cost estimates, and expenditures. Controlling capital costs to conform to budgets is important. Monitoring cost trends will indicate whether actual cost performance is consistent with planned performance as indicated by the cost baseline.

The Baseline Cost Estimate to be established during Preliminary Engineering will be the basis for comparing with two cost tracking estimates:

- *Current Working Estimate*, which is a continuously updated estimate of contracted costs, current cost estimate for activities not yet contracted, allocated and unallocated contingencies, and other project cost allowances/reserves. The percent complete for both major project activities and the overall East Bay BRT Project is compared to the percent of budget expended. The Current Working Estimate will provide project management and executive committee an accurate indication of current financial status. Variance in costs compared to the BCE will be monitored closely.

- *Cost to Complete*, which will be prepared approximately every six months and provide a more systematic evaluation of pending and future costs relative to budget for all major project activities and the total project. The Cost to Complete should account for all potential cost exposure on the project (existing contract commitments, pending changes, potential changes, and other cost exposures) and indicate the potential impacts to contract and project budgets. The Cost-to-Complete Report will be submitted to FTA.

When either the Current Working Estimate or Cost to Complete is at variance with the BCE, corrective actions will be developed to bring cost trends into balance with the BCE, if at all possible. If cost trend reports indicate estimates are exceeding the BCE/budget and cannot be brought into balance without major changes to the project, a Project Recovery Plan and/or BCE budget amendment may be initiated in consultation with FTA.

4.4. Configuration Management

Changes to the project scope, budget, and schedule must be closely tracked. Monitoring and documenting significant changes systematically is referred to as configuration management. The objective is to ensure that a baseline project in each of these areas has been established at some particular point in project development and is not changed without formal, systematic reviews and approvals. Configuration management will also help identify and control how a particular change affects other project elements. Proposed changes in the project must be accompanied by analysis of any cost and schedule impacts. Policies and procedures should be in place to ensure changes in project definition follow an orderly process. Included among these would be an established approval authority for minor and major changes to the project.

AC Transit is in the process of defining the process of configuration management. The following sections describe general steps for configuration changes during design and during construction.

4.4.1 Configuration Changes During Design

It is project management's responsibility to identify design changes affecting the definition of the Scope Baseline, and to supervise the development of requirements to revise baseline documents, such as engineering drawings, the BCE and Project Master Schedule.

Project management will present the proposed changes to the executive management committee, which will review supporting documentation and subsequently adopt or modify the proposed changes.

Approval of the changes will be followed by an update of baseline documents. The updated documents become the revised project record to which all other changes would be made.

4.4.2 Configuration Changes During Construction

[To be determined]

4.5 Document Control

Closely related to configuration control is recording and filing of project documents, both baseline and change documentation. Control of contract and related procurement documents will be the responsibility of the AC Transit Procurement Department. A uniform document control system will be established to organize, file, and retrieve documents.

Control of project drawings and specifications will be primarily the responsibility of the Project Management Consultant. The Consultant's internal procedures must conform to AC Transit document control procedures and be approved by AC Transit.

Policies controlling the collection, transmittal and distribution of information within the document control system will be established.

Retention of controlled documents will comply with all applicable laws and FTA requirements.

4.6 Change Orders

Changes to contracts are important information that will be documented and maintained in the Document Control system for the East Bay BRT Project.

AC Transit will designate a Contract Administrative/Project Controls Manager once Preliminary Engineering commences. The Controls Manager will be responsible for coordinating and managing the Document Control program. This individual will be within the Procurement Department but have direct report responsibility to the East Bay BRT Project Manager.

Policies and procedures for change order control will be provided in more detail in future updates to the PMP.

5. PLANNING MANAGEMENT

The East Bay BRT is in the planning and conceptual design phase. AC Transit is requesting FTA approval to enter Project Development and to complete environmental documentation in the form of a Final EIS/EIR.

Project Development for Small Starts projects includes both Preliminary Engineering and final design activities, which typically cover design to 30% (PE) and then to 100% design completion. For purposes of the PMP, reference to the PE phase of Project Development assumes design completion to 30%.

The environmental review phase generally concludes with a Record of Decision (ROD) by the federal lead agency, in this case FTA, about the time a project completes Preliminary Engineering. NEPA phases prior to issuance of a ROD include draft EIS (DEIS) and Final EIS (FEIS). When the federal NEPA process proceeds concurrently with the California CEQA process and a joint environmental document is prepared, the reference is to the DEIS/DEIR phase and the Final EIS/EIR phase.

The project has completed the DEIS/DEIR phase of environmental review and upon approval to enter Project Development, design will progress towards 30 percent design completion and a ROD.

Preparation of the Final EIS/EIR is to commence in early 2009 and be completed with publication of the final document in early 2010, followed by AC Transit Board of Directors certification of the EIS/EIR in and a FTA ROD by spring 2010. This will conclude the environmental planning phase of project implementation, although environmental compliance monitoring will continue through construction. Compliance monitoring involves ensuring the environmental mitigations agreed to in the project and as specified in the ROD are fully executed.

5.1 Permitting and Agreements

An important outcome of environmental planning will be the identification of permits and agreements that will be or likely will be required to design, construct and operate the East Bay BRT Project. Among these permits could be storm water runoff and discharge, construction, and materials/waste disposal permits. Long-term easements or joint use agreements will need to be executed with corridor cities and the California Department of Transportation (Caltrans) for AC Transit to have continuing control over the BRT transitway and facilities, which are to be located in exiting public rights-of-way, and to define responsibilities for facilities maintenance and repair. Planning support is anticipated to facilitate the permitting and easement/local agency cooperative agreement processes.

Planning in support of the project design and construction phases is likely to continue at some level. Should there be changes proposed in the project scoping, planning level studies of the effects of the changes, including whether a change has new environmental impacts, would be conducted.

AC Transit has enlisted consultant support to complete the environmental review and concept engineering phase and will retain environmental specialist consultant support during the balance of design and during construction. The environmental specialist reports through the Project Management Consultant to the AC Transit Deputy Project Manager.

6. DESIGN MANAGEMENT (PROJECT DEVELOPMENT PHASE)

Design is a process of refinement and reevaluation and further refinement of project detail. The design may ultimately be carried to a level of detail to support issuance of construction contract documents.

AC Transit has not determined the preferred method of procurement for the East Bay BRT Project, and therefore the level of design that will be prepared by its design consultant before going to bid. All design work is nonetheless to be controlled by adopted design criteria and standards, relevant codes and statutes, the project quality assurance and design review procedures, the packaging of procurements, and feedback from peer review, including value engineering studies.

Responsibility for design performance and the day-to-day management of the design consultant will be under the Project Management Consultant. General oversight and control of East Bay BRT Project design is the responsibility of the AC Transit in-house project management team.

Design goals include developing a design that accurately reflects the intended scope of the project; minimizes costs of construction and operation; and results in a project of high quality and minimal impacts. The design process must be carefully controlled and the design plans themselves of high quality.

6.1 Design Standards and Design Reviews

These will be established jointly by the design consultant and the Project Management Consultant. Standards and criteria will be approved by AC Transit. Criteria must reflect both corridor cities' and Caltrans' design objectives and requirements. Exceptions to requirements must be noted and receive the approval of the cities and/or Caltrans.

The PMC will establish for AC Transit the process for design development, design submittals, reviews, and the incorporation of design comments into plan revisions. AC Transit envisions a process whereby periodic design coordination meetings will be held between the design consultant and the PMC. As the design advances, design coordination meetings will be held with corridor city and Caltrans engineering staff.

The design consultants will submit for review and approval designs at the approximately 30 percent, 60 percent and 90/100 percent levels (90 percent possibly constituting the last comprehensive review with the 100 percent design checked for incorporation of all relevant final comments from plan reviewers—"final verification"). With each design submittal an updated construction cost estimate will be provided.

6.2 Constructability Review

A detailed review of the constructability of the proposed project designs is desired and should include representatives from the contractor community. The review will include a thorough review of the possible methods of construction and their difficulty; the sequence of construction; potential construction conflicts and difficult contractor interfaces; and adequacy of design detail and clarity as they could influence contractor bid decisions. At least one constructability review is proposed, at the 60 percent submittal. Additional reviews will be considered, including at completion of Preliminary Engineering, and at 90 percent design should there be major changes in the scope of proposed construction methods following the 60 percent submittal.

6.3 Design Quality

The design consultant will be required to prepare and submit all design plans, specifications, and related documents in accordance with the consultant's design quality assurance/quality control program. That program will be reviewed by and must be approved by AC Transit prior to the consultant receiving notice to proceed with the design contract. The Project Management Consultant will be the District's representative in this area and continually monitor design quality. Formal quality assurance reviews of the design process will be conducted by the Project Management Consultant. These audits will be documented and maintained in the project record. Unannounced quality audits will also be performed.

Additional detail on the proposed East Bay BRT quality program will be provided in Section 9, Construction Management.

6.4 Value Engineering

Value engineering (VE) reviews provide an opportunity to identify and consider ways to improve project design and construction, often at a lower cost. A successful VE review will offer alternative methods of design and construction that reduce cost and/or improve project cost-effectiveness while maintaining important functional and aesthetic goals. FTA recommends conducting a VE review towards the end of PE (or 30% design completion) so design proposals can be incorporated into engineering plans without major modifications or rework. FTA also suggests a second VE review during the course of final design, for instance at 60 design completion.

Along with the Project Management Consultant, AC Transit will conduct a formal VE review at or near the completion of Preliminary Engineering in conformance with FTA guidance. An independent VE consultant will be engaged to lead the review. Other participants will include AC Transit staff, the Project Management Consultant, and peer agency reviewers.

The following tasks will define the effort:

- Project Management Consultant shall coordinate all work of the VE team, including distributing project information and responding to data requests.
- VE team shall request from the District and be provided relevant technical reports; engineering and architectural drawings, plans, specifications, cost estimates, and any other pertinent background information on the project.
- VE team with the Project Management Consultant will schedule and conduct a VE orientation meeting, with representatives of the design consultant and AC Transit. The VE process will be explained. AC Transit will give a background presentation on the project and the design consultant will review the design process, including significant issues and concerns, if any.

- Develop construction and operating cost frameworks, or models, for evaluation of project life-cycle costs. These frameworks will provide the basis for estimating savings/costs of VE recommendations.
- Conduct a VE workshop, possibly in two parts, where initial findings would be presented and discussed with the broader VE study team of AC Transit, the Project Management Consultant and the design consultant. The VE team proposals will be screened and refined based on workshop input and documented in a final VE report. Potential cost savings from VE recommendations will be identified and recommendations offered on preferred actions/items for incorporation into the evolving project design.

VE should be a continuing process, although frequent formal VE reviews are probably not feasible due to their cost. Targeted VE reviews will be considered during construction. AC Transit proposes to combine construction VE with construction risk assessment updates. The risk assessment and management program for the East Bay BRT project will be described in Section 10.

[*The following sections of the PMP will be developed in the future updates of this document.]*

7. COMMUNICATIONS PROGRAM

7.1 Purpose

7.2 FTA Coordination and Oversight

7.3 Internal Organization Communication

7.4 Coordination Meetings

7.5 Executive Staff

7.6 Project Staff

7.7 External and Stakeholder Communication

7.8 State and Local Governmental Agencies

7.9 Community Outreach and Public Information

8 PROCUREMENT AND CONTRACT MANAGEMENT

8.1 General Procurement Plan

8.2 Contract Management

8.3 Procurement Procedures

8.4 New and Innovative Contracting Strategies

8.5 Contractor Outreach Meetings

8.6 Evaluation and Award Policies

8.7 Contracting Policies

8.8 Change Order and Extra Work Order Procedures

8.9 Claims Management Procedures

8.10 Professional Services

8.11 Construction

8.12 Equipment Supply/Installation

8.13 Civil Rights Program

8.13.1 Disadvantaged Business Enterprise (DBE)

8.13.2 Equal Employment Opportunity (EEO)

8.13.3 Small Business Enterprise (SBE)

8.14 Dispute Resolution

8.15 Bid Protest Procedures

8.16 Contractual Disputes

9. CONSTRUCTION MANAGEMENT

9.1 Construction Management Plan

9.2 Responsibilities

9.3 Change Management

9.4 Construction Quality Assurance/Quality Control

9.5 Quality Assurance

9.5.1 Field Construction Quality Control

9.6 Contract Administration

9.7 Design Support

9.8 Value Engineering Change Proposal Evaluations

9.9 Construction Safety

9.10 Traffic Management Program

9.11 Oversight of Contractors Maintenance of Traffic Operations

9.12 Final Acceptance/Contract Close-out Plan

9.12.1 Beneficial Occupancy/Substantial Completion

9.12.2 Final Inspection and Acceptance

9.12.3 Final Payment and Release of Retention

9.12.4 As-Built/As-Installed Records

10. PROJECT RISK ASSESSMENT AND RISK MANAGEMENT PLAN

10.1 Risk Management Plan

10.2 Risk Identification

10.3 Risk Management

10.4 Control, Allocation and Mitigation of Risks

10.5 Insurance Program

11. SYSTEM SAFETY AND SECURITY

11.1 System Safety

11.1.1 System Safety Program Plan

11.1.2 System Safety Certification

11.2 System Security

11.3 Construction/Installation Safety and Security

11.3.1 Construction/Installation Safety Program

11.3.2 Construction/Installation Security Program

12. QUALITY MANAGEMENT

12.1 Objectives and Definition

12.2 Quality Manager

12.3 Quality Plan Methods, General

12.4 Quality Implementation During Design

12.5 Quality Implementation During Construction

12.5.1 Surveillance and Audits

12.6 Inspection and Testing

13. REAL ESTATE ACQUISITION AND MANAGEMENT

13.1 Right-of-Way Acquisition

13.1.1 Public Rights-of-Way
13.1.2 Acquisition of Private Property

13.2 Environmental Site Assessments

13.3 Appraisal Process

13.3.1 Real Property Appraisal
13.3.2 Furniture, Fixture, and Equipment Appraisal
13.3.3 Lost Business Goodwill Appraisal
13.3.4 Relocation Estimate
13.3.5 FTA Interface
13.3.6 Real Property Appraisal Review

13.4 Negotiations

13.4.1 Real Property
13.4.2 Tenants
13.4.3 Relocation
13.4.4 Goodwill
13.4.5 FTA Interface
13.4.6 Negotiator

13.5 Condemnation

13.5.1 Coordination with Negotiations
13.5.2 FTA Interface
13.5.3 Notice
13.5.4 Hearing of Necessity
13.5.5 Condemnation Suit
13.5.6 Order of Possession
13.5.7 Right of Entry Permit

13.6 Certification

13.7 Relocation

13.8 Easements

13.9 City Thorough-Fare Memorandum of Understanding

13.10 Construction

13.11 Utility

13.12 Property Management

13.12.1 Prior to Construction
13.12.2 During Construction

13.12.3 After Construction

13.12.4 Joint Development

14. START-UP PREPARATIONS

14.1 Integrated Test Program

14.2 Test Plans and Procedures

14.3 Activation Planning

14.4 Training Plan

14.5 Operations and Maintenance Period

APPENDIX A

Capital Cost Estimate

MAIN WORKSHEET - BUILD ALTERNATIVE (Rev.11a, June 4, 2008)

Alameda Contra Costa Transit District — Today's Date: 7/3/08

East Bay Bus Rapid Transit Project Alameda County, CA — Yr of Base Year $: 2008

Current Phase: Selection of Preferred Alternative — Yr of Revenue Ops: 2015

For all cells, round to the nearest 1,000 before inserting costs!	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	YOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	**16.91**	12,521	7,034	**19,556**	**$ 1,157**	**14%**	**10%**	**23,233**
10.01 Guideway: At-grade exclusive right-of-way				0				0
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	16.91	12,521	7,034	19,556	$ 1,157			23,233
10.03 Guideway: At-grade in mixed traffic				0				0
10.04 Guideway: Aerial structure				0				0
10.05 Guideway: Built-up fill				0				0
10.06 Guideway: Underground cut & cover				0				0
10.07 Guideway: Underground tunnel				0				0
10.08 Guideway: Retained cut or fill				0				0
10.09 Track: Direct fixation				0				0
10.10 Track: Embedded				0				0
10.11 Track: Ballasted				0				0
10.12 Track: Special (switches, turnouts)				0				0
10.13 Track: Vibration and noise dampening				0				0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	**47**	24,401	13,709	**38,110**	**$ 811**	**28%**	**19%**	**45,276**
20.01 At-grade station, stop, shelter, mall, terminal, platform	47	24,401	13,709	38,110	$ 811			45,276
20.02 Aerial station, stop, shelter, mall, terminal, platform				0				0
20.03 Underground station, stop, shelter, mall, terminal, platform				0				0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.				0				0
20.05 Joint development				0				0
20.06 Automobile parking multi-story structure				0				0
20.07 Elevators, escalators				0				0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	16.91	0	0	**0**	**$ -**	**0%**	**0%**	**0**
30.01 Administration Building: Office, sales, storage, revenue counting				0				#DIV/0!
30.02 Light Maintenance Facility				0				#DIV/0!
30.03 Heavy Maintenance Facility				0				#DIV/0!
30.04 Storage or Maintenance of Way Building				0				#DIV/0!
30.05 Yard and Yard Track				0				#DIV/0!
40 SITEWORK & SPECIAL CONDITIONS	16.91	27,054	15,199	**42,253**	**$ 2,499**	**31%**	**21%**	**50,198**
40.01 Demolition, Clearing, Earthwork		3,913	2,198	6,111				7,260
40.02 Site Utilities, Utility Relocation		4,732	2,658	7,390				8,780
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments				0				0
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks		2,898	1,628	4,526				5,377
40.05 Site structures including retaining walls, sound walls				0				0
40.06 Pedestrian / bike access and accommodation, landscaping		7,911	4,445	12,356				14,680
40.07 Automobile, bus, van accessways including roads, parking lots		7,600	4,270	11,870				14,102
40.08 Temporary Facilities and other indirect costs during construction				0				0
50 SYSTEMS	16.91	23,567	13,240	**36,806**	**$ 2,177**	**27%**	**18%**	**44,637**
50.01 Train control and signals				0				0
50.02 Traffic signals and crossing protection		7,049	3,960	11,009				13,351
50.03 Traction power supply: substations				0				0
50.04 Traction power distribution: catenary and third rail				0				0
50.05 Communications		8,652	4,861	13,512				16,387
50.06 Fare collection system and equipment		5,796	3,256	9,052				10,978
50.07 Central Control		2,070	1,163	3,233				3,921
Construction Subtotal (10 - 50)	16.91	87,543	49,182	**136,725**	**$ 8,086**	**100%**	**69%**	**163,344**
60 ROW, LAND, EXISTING IMPROVEMENTS	16.91	9,444	2,833	**12,278**	**$ 726**		**6%**	**14,089**
60.01 Purchase or lease of real estate		7,297	2,189	9,486				10,885
60.02 Relocation of existing households and businesses		2,148	644	2,792				3,204
70 VEHICLES (number)	**0**	0	0	**0**			**0%**	**0**
70.01 Light Rail				0				#DIV/0!
70.02 Heavy Rail				0				#DIV/0!
70.03 Commuter Rail				0				#DIV/0!
70.04 Bus				0				#DIV/0!
70.05 Other				0				#DIV/0!
70.06 Non-revenue vehicles				0				#DIV/0!
70.07 Spare parts				0				#DIV/0!
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	16.91	27,302	15,066	**42,368**	**$ 2,506**	**31%**	**21%**	**48,065**
80.01 Preliminary Engineering		2,721	1,504	4,225				4,793
80.02 Final Design		9,321	5,088	14,409				16,347
80.03 Project Management for Design and Construction		3,596	1,996	5,592				6,344
80.04 Construction Administration & Management		8,754	4,918	13,672				15,511
80.05 Professional Liability and other Non-Construction Insurance				0				0
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.		1,159	577	1,736				1,969
80.07 Surveys, Testing, Investigation, Inspection				0				0
80.08 Start up		1,751	984	2,734				3,102
Subtotal (10 - 80)	16.91	124,289	67,081	**191,370**	**$ 11,318**		**96%**	**225,498**
90 UNALLOCATED CONTINGENCY				**7,655**			**4%**	**9,055**
Subtotal (10 - 90)	16.91			**199,025**	**$ 11,771**		**100%**	**234,553**
100 FINANCE CHARGES				**0**			**0%**	**0**
Total Project Cost (10 - 100)	16.91			**199,025**	**$ 11,771**		**100%**	**234,553**
Allocated Contingency as % of Base Yr Dollars w/o Contingency				53.97%				
Unallocated Contingency as % of Base Yr Dollars w/o Contingency				6.16%				
Total Contingency as % of Base Yr Dollars w/o Contingency				60.13%				
Unallocated Contingency as % of Subtotal (10 - 80)				4.00%				
YOE Construction Cost per Mile (X000)								$9,661
YOE Total Project Cost per Mile Not Including Vehicles (X000)								$13,872
YOE Total Project Cost per Mile (X000)								$13,872

Enter finance charges on Inflation Worksheet.

APPENDIX B

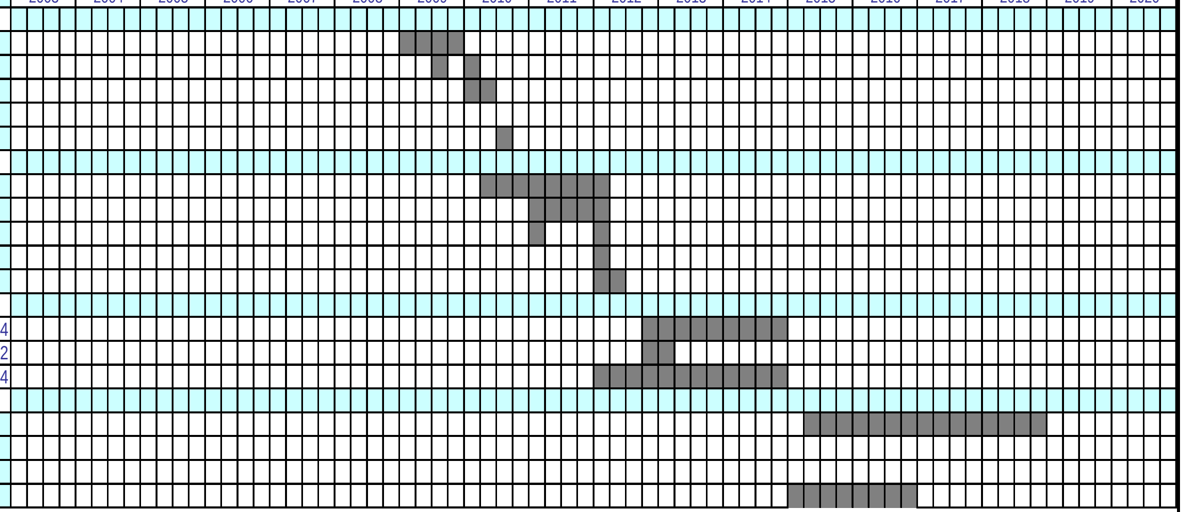
Table B1: East Bay BRT Project Schedule (Design and Construction)

S C H E D U L E

(Rev.10, May 7, 2007)

Alameda Contra Costa Transit District	Today's Date	**5/1/08**
East Bay Bus Rapid Transit Project Alameda County,	Yr of Base Year $	2008
Current Phase: In AA	Yr of Revenue Ops	2015

	Start Date	End Date	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Preliminary Engineering	01/01/09	01/01/10																		
Design Build and Baseline Alternatives																				
Cost estimating, scheduling, ridership forecasting																				
Reviews																				
Develop FEIS, receiving Record of Decision																				
Submit request / receive FTA approval to enter Final Design																				
Final Design	03/02/10	03/01/12																		
Develop design/contract docs for Build Alternative																				
Cost estimating, scheduling, ridership forecasting																				
Reviews																				
Submit request / receive FTA approval for FFGA																				
Bid period and award																				
Construction	06/29/12	12/16/14																		
Construction of Fixed Infrastructure	06/29/12	12/16/14																		
ROW, Land, Existing Improvements, Relocation	06/29/12	12/26/12																		
Vehicle acquisition and testing	01/01/12	12/16/14																		
Revenue Ops / Closeout of Project	03/16/15	06/14/15																		
Revenue Operations																				
Before and After Study: Two years post Rev Ops																				
Fulfillment of the New Starts funding commitment																				
Completion of project close-out, resolution of claims																				



Distribution of Future Costs	Duration		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Professional Services																				
Preliminary Engineering	1.0	100%					0%	0%	100%	0%										
Final Design	2.0	100%					0%	0%	0%	50%	50%									
Project Management for Design and Construction	6.5	100%					0%	0%	10%	15%	15%	15%	15%	15%	15%					
Construction Administration & Management	2.5	100%					0%	0%			0%	20%	40%	40%						
Insurance																				
Legal; Permits; Review Fees by other agencies, cities, etc.		100%					0%	0%	5%	10%	20%	20%	20%	15%	10%					
Surveys, Testing, Investigation, Inspection		0%					0%	0%	0%	0%	0%	0%								
Start up	0.25	100%											0%	0%	100%					
Construction	2.5																			
10 GUIDEWAY & TRACK ELEMENTS		100%								0%	0%	25%	50%	25%	0%	0%				
20 STATIONS, STOPS, TERMINALS, INTERMODAL		100%								0%	0%	25%	50%	25%	0%	0%				
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS		100%								0%	0%	0%	50%	50%	0%	0%				
40 SITEWORK & SPECIAL CONDITIONS		100%								0%	0%	25%	50%	25%	0%	0%				
50 SYSTEMS		100%								0%	0%	10%	20%	70%	0%	0%				
60 ROW, LAND, EXISTING IMPROVEMENTS		100%								0%	0%	100%	0%	0%	0%	0%				
70 VEHICLES		100%								0%	0%	10%	40%	50%	0%	0%				
80 PROFESSIONAL SERVICES		100%					0%		10%	10%	27%	27%	15%	8%	3%	0%				
90 UNALLOCATED CONTINGENCY		100%					0%		4%	8%	8%	10%	30%	30%	10%	0%				
100 FINANCE CHARGES		100%					0%		4%	8%	8%	10%	30%	30%	10%	0%				

12.0 NEPA Scoping

12.0 NEPA Scoping

FTA's July 2007 *Updated Interim and Instructions for Small Starts* requires a project to have progressed beyond the National Environmental Policy Act (NEPA) scoping phase before entering into Small Starts project development. The East Bay BRT project has undergone significant analysis and environmental review. It was adopted as the locally preferred alternative (LPA) for the Berkeley-Oakland-San Leandro corridor by AC Transit on August 2, 2001 following a Major Investment Study, and has been included in the region's financially constrained Regional Transportation Plan. A Draft Environmental Impact Statement (DEIS) for the project was completed and circulated in May 2007. The DEIS included four alternatives, each a variation of the LPA. The variations differ in their southern terminus (San Leandro BART or Bay Fair BART) and their operating plan (BRT and local service versus BRT only). Four public meetings were held in June during the public comment period that closed on July 3, 2007. AC Transit is currently responding to and addressing public comments on the DEIS, and is using these comments to develop a refined LPA for analysis in a final Environmental Impact Statement (FEIS).

Prior to preparation of the DEIS, a total of six public meetings for the East Bay BRT were held in various locations within the study corridor to collect scoping comments, with five of these meetings held in late May/early June 2003. A final meeting on February 11, 2004 in the Fruitvale and San Antonio districts of Oakland served as the official scoping meeting for the NEPA document. A copy of the scoping report and the slide show used for the NEPA Scoping meeting at the Fruitvale-San Antonio Senior Center are included at the end of this section. The scoping report provides details on the scoping process and summarizes the comments provided by participants and stakeholders at these meetings.

AC Transit
Berkeley/Oakland/San Leandro East Bay Bus Rapid Transit EIS/R

Summary of Public Scoping Meetings

June 3, 2004

Submitted By:

MARKETING

I. Project and Public Participation Process Overview

Alameda Contra Costa Transit District (AC Transit) and its partnering cities of Berkeley, Oakland, and San Leandro are working together to improve transit service in the Berkeley/Oakland/San Leandro corridor. The corridor stretches 18 miles from downtown Berkeley and the University of California at the northern end, through downtown Oakland, to San Leandro at the southern end, ending at the Bay Fair Bay Area Rapid Transit (BART) station.

Over a two-year period from 1999 to 2001, AC Transit conducted a Major Investment Study (MIS) to examine a variety of alternatives for improved transit service for the corridor. On August 2, 2001, the AC Transit Board of Directors adopted Bus Rapid Transit (BRT) operating primarily on Telegraph Avenue in the north and International Boulevard/East 14th Street in the south as the Locally Preferred Alternative (LPA). The LPA would feature high-capacity express buses operating in dedicated lanes on existing roadways.

As part of Phase II of this project, AC Transit will prepare an Environmental Impact Statement/Report (EIS/R) pursuant to the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). As part of the EIS/R, a Notice of Intent (NOI) was published in the Federal Register and distribution of the Notice of Preparation (NOP) was made to local, state, and Federal agencies. The NOI and NOP announced that an EIS/R will be prepared by AC Transit for the East Bay BRT Project. The documents included a project description, project location, and overview of the potential environmental impacts.

A database including key stakeholders, local agencies, neighborhood groups, and business/merchant associations was developed. The Phase I major investment study (MIS) database was used as the starting point for the expanded and refined Phase II database. Residents, businesses, and associations within the project corridor were identified and added to the database. Government officials and key constituency groups were also contacted to obtain recommendations for inclusions.

II. The Scoping Process

As part of the EIS/R process, scoping was conducting to inform constituents, residents, transit riders, and interested public agencies and organizations about the scope of the project and to obtain information from them regarding alternatives and issues to be considered during the environmental studies. As part of the scoping process, AC Transit conducted the following activities:

- Published a Notice of Intent to prepare an EIS in the Federal Register and distributed Notice of Preparation packages to state and Federal agencies;
- Developed a database of interested parties to ensure broad reach and involvement with approximately 1,200 individuals;
- Conducted six public meetings in Berkeley, Oakland, and San Leandro to collect scoping comments;
- Distributed over 1,500 notification flyers to individuals and organizations in the database and at high-traffic locations;
- Developed sign-up sheets, comment cards, and presentation materials;
- Placed newspaper advertisements in general and ethnic publications in Berkeley, Oakland, and San Leandro;
- Distributed press releases and conducted follow-up calls with local media;
- Conducted Spanish and English language media relations;
- Conducted follow-up calls to stakeholder organizations to encourage meeting attendance; and
- Provided the public with project e-mail, telephone, and web site information.

The six public scoping meetings were conducted by AC Transit to gather comments prior to initiating the environmental studies. Approximately 150 individuals from the community attended the meetings. The meetings were held at the following locations throughout the corridor to ensure residents, business owners, governmental officials and stakeholders participated and provided input:

Wednesday, May 28, 2003
San Leandro
San Leandro City Hall
835 East 14th Street

Monday, June 2, 2003
East Oakland
Allen Temple
8501 International Boulevard

Wednesday, June 4, 2003
Berkeley
North Berkeley Senior Center
1901 Hearst Avenue

Thursday, June 5, 2003
Downtown Oakland and North Oakland
Oakland City Hall
One Frank Ogawa Plaza

Thursday, June 5, 2003
Downtown Oakland and North Oakland
Oakland City Hall
One Frank Ogawa Plaza

Wednesday, February 11, 2004
Fruitvale and San Antonio districts, Oakland
Fruitvale-San Antonio Senior Center
3301 East 12th Street

The Oakland meeting for the Fruitvale and San Antonio districts on Wednesday, February 11, 2004, served as the official scoping meeting for NEPA purposes. In general, the public meetings were designed to provide the public with information regarding the environmental process and scope of the East Bay BRT Project. Meetings were held in public locations close to public transit. Each meeting began in an open house format with exhibits, maps, and information boards on display and AC Transit and consultant staff available to explain exhibits and answer questions. Following the open house, a formal presentation was held in which detailed information, maps, and issues were presented. The formal presentation provided a project overview, including basic design concepts and the proposed alignment with possible alignment variations; description of the alternatives previously considered and how the BRT alternative was chosen as the locally preferred alternative (LPA); advantages of the BRT alternative; and anticipated environmental, technical, and engineering issues. A professional meeting facilitator helped ensure that all participants had an opportunity to provide input in an open forum. As comments where shared by participants, the meeting facilitator and official meeting recorder captured verbal input. Participants were also encouraged to provide input directly to AC Transit staff by completing a comment card or e-mailing comments.

The Fruitvale and San Antonio districts of Oakland have a high-density Hispanic population. Therefore the scoping meeting held for those districts included a Spanish interpreter, Spanish project materials, and Spanish display boards. Comment cards, agendas, and project information were also available in a bilingual format. To facilitate discussions with the participants, a bilingual meeting facilitator conducted the meeting discussion in English and Spanish.

Phone calls were made to key constituents to help ensure attendance at the public scoping meetings. These stakeholders included:

- The University of California at Berkeley (UC Berkeley);
- The Berkeley Chamber of Commerce;
- The San Leandro Chamber of Commerce;
- The Oakland Chamber of Commerce;
- Oakland Pedestrian Safety;
- Telegraph Area Association;
- Walk and Roll Berkeley;
- Berkeley Ecological and Safe Transportation;
- Korean Town Merchant Association;
- Unity Council; and
- Various other neighborhood associations in Berkeley, Oakland, and San Leandro.

English and Spanish advertisements for the scoping meetings were placed in the following publications:

- The Berkeley Daily Planet
- The Daily Californian
- The Recorder
- The Oakland Tribune
- The San Leandro Times
- El Latino Newspaper

A media announcement was distributed to local media. Media announcements promoted the date, time, and location of all meetings. Telephone calls were made to media encouraging their attendance. In addition to the above media, the following media received information and were encouraged to promote the meetings:

- El Mundo Spanish Weekly
- El Mensajero
- El Observador
- El Hispano Newspaper
- El Reporter
- Nuevo Mundo
- La Union
- KSTS 48
- KDTV 14
- KSOL 99.8 FM/99.1 FM

Both the Oakland Tribune and the Bohemio News attended and covered at least one of the public scoping meetings.

In addition to the six public scoping meetings, AC Transit held several meetings with stakeholder agencies in the corridor to obtain their input on the project (Table 1).

Table 1. Agency Meetings for Scoping Process

Date	Agency
4-Mar-03	City of Berkeley Transportation, Planning
10-Mar-03	City of Oakland Community and Economic Development Agency (CEDA)
22-Apr-03	East Bay BRT Technical Advisory Committee (TAC)
25-Jun-03	Alameda County Congestion Management Agency (CMA)
22-Jul-03	UC Berkeley
28-Jul-03	City of Berkeley Transportation, Planning
11-Aug-03	California Department of Transportation (Caltrans)
14-Aug-03	City of Oakland Redevelopment
11-Sep-03	Bay Area Rapid Transit (BART) Planning
3-Oct-03	City of San Leandro Transportation, Planning
28-Oct-03	City of Berkeley, UC Berkeley
20-Nov-03	City of Berkeley Transportation, Planning
25-Nov-03	City of Oakland CEDA
1-Dec-03	City of San Leandro
4-Dec-03	City of Oakland CEDA, Public Works
12-Jan-04	City of Oakland CEDA, Public Works
14-Jan-04	City of Oakland Council Aids
28-Jan-04	Berkeley Planning Commission
18-Feb-04	Oakland Planning Commission
19-Feb-04	Berkeley Transportation Commission
18-Mar-04	City of Oakland CEDA, Public Works
23-Mar-04	City of San Leandro

III. Summary of Scoping Comments

AC Transit invited residents, businesses, and agency and stakeholder representatives to attend public scoping meetings in order to learn about the project and provide valuable input for consideration. Comments on various aspects of the project were received during the facilitated discussion, through e-mails, and through comments cards. The comments received generally fell into the following categories:

- Impacts on Local Bus Stops/Service/BART
- Neighborhood and Business Impacts
- Alignment and Service Options
- Construction Impacts
- Project Cost and Benefit
- Traffic Flow
- Pedestrian and Bicycle Safety
- Miscellaneous Items

Comments provided also directed AC Transit staff to consider alternatives such as:

- Providing service to Jack London Square
- Reviewing ways in which Chinatown in Oakland can be better serviced
- Better serving the university staff and student population at UC Berkeley
- Considering streets other than Telegraph in Berkeley for the project alignment
- Using a Davis/San Leandro Boulevard alignment to bypass downtown San Leandro

Overall, participant comments indicated support for the BRT project and many expressed desire to see the project come to fruition. Supporters emphasized the positive economic impacts of the project. Participants were especially keen in ensuring that this project worked closely with economic development projects in their areas. Areas of growth, new development, or redevelopment were highlighted as regions AC Transit should consider when making decisions. Economic development areas potentially having regional economic importance were seen as likely benefiting from additional transportation service.

Some residents and businesses from specific areas along the corridor expressed concerns regarding impacts to local businesses. Individuals in Berkeley who have businesses along Telegraph Avenue were concerned about negative impacts due to parking loss, increased traffic congestion, construction, and the possibility of a transit mall. Members of the Telegraph Area Association presented handouts with alternative BRT alignments and designs that they felt would circumvent these impacts.

Business owners and residents also expressed concerns regarding traffic circulation within the study area. Residents wanted to ensure that drivers did not divert from Telegraph Avenue, International Boulevard or East 14th Street onto neighborhood streets. The removal of through traffic lanes for BRT was seen as potentially causing increased traffic congestion. Many residents were also concerned about distances between left turn opportunities, as the project proposes limiting left turns along the alignment to signalized intersections only.

Many participants expressed concern that the level of local bus service be maintained in concert with the new BRT service and that plans should link existing routes with the new BRT corridor. They indicated that a strengthening of east-west service could benefit BRT ridership.

Concern about how the BRT corridor supported and enhanced the existing BART system was also expressed. Participants wanted to ensure that the BRT route neither duplicated service nor pulled riders from BART. They wanted BRT and BART ticketing and fares to be coordinated, and questioned how it would be done. Individuals also questioned whether AC Transit would be competing for regional transportation funds as BART does.

Throughout the scoping process, meeting participants asked for clarification regarding who gives the ultimate approval for the project. Furthermore, participants in San Leandro asked whether there would be a joint agreement among the cities to approve the project.

Finally, AC Transit was also encouraged to promote pedestrian- and bicycle-friendly corridors and maintain pedestrian safety as a key objective. Participants wanted to know whether the study would review safety at bus stops. Participants inquired about existing and future bicycle lanes and the Berkeley Bicycle Coalition requested that AC Transit consider adding bike racks inside the cabins of the buses.

IV. Comments by Topic

This section summarizes comments, concerns, and questions raised at the public scoping meetings in each city, categorized by city and by topic. Public input from the scoping process falls under one of eight topics:

- Impacts on Local Bus Stops/Service/BART
- Neighborhood and Business Impacts
- Alignment and Service Options
- Construction Impacts
- Project Cost and Benefit
- Traffic Flow
- Pedestrian and Bicycle Safety
- Miscellaneous Items

Impacts on Local Bus Stops/Service/BART:

Oakland

- Better local service, e.g., increased east-west bus service, will contribute to BRT ridership.
- There should be good connections to local service and BART stations.
- BART and BRT ticketing and fares: how will they be coordinated?
- Will additional routes be added?
- Put additional bus routes in the area of Laney College.

San Leandro

- Local service along Bancroft should be maintained.
- If local routes are eliminated along the alignment, there should be additional BRT stops.

Berkeley

- BRT traffic impacts: what are their effects on local bus service?
- What are the effects of reduced frequency of local bus service?

Neighborhood and Business Impacts:

Oakland

- People may park in residential neighborhoods to access BRT stations, creating a parking impact for local residents.
- Loss of parking in front of businesses along the route may impact businesses.
- BRT traffic impacts will improve conditions for transit and pedestrians along the alignment by diverting traffic to other streets.
- Telegraph already has tremendous traffic especially around rush hour: The best way to let buses and cars move down the corridor would be to remove parking off the street.
- Installing 34 stops along the corridor would mean losing 340 parking spaces.

- BRT could be positive for economic development along the south corridor.
- The elderly or those from independent living housing need bus service and easy access to stops.

San Leandro

- Redevelopment or high-impact housing are not needed in downtown San Leandro.
- Parking in downtown San Leandro: what are the impacts?

Berkeley

- Traffic diversion from Telegraph: what are the impacts on the Southside and other neighborhoods?
- Tree removal on Telegraph is unacceptable.
- Street closures for special events: will it still be possible along the BRT alignment?
- The Telegraph Improvement District is opposed to a transit mall on Telegraph Avenue

Alignment and Service Options:

Oakland

- Service should include Chinatown: it is a main destination in Oakland.
- Service should include Jack London Square.
- The northern segment of the alignment should loop around UC Berkeley in order to better service the students, as most of the riders are students.

San Leandro

- The corridor should extend farther south on East 14th Street and Mission Boulevard

Berkeley

- BRT should serve Rockridge BART.
- Amtrak, UC Berkeley, and the San Pablo corridor should be linked by BRT or connecting service.
- The Berkeley marina should have improved bus service.

Construction Impacts:

San Leandro

- Construction may create excessive noise
- Construction may cause pollution, such as vehicle emissions
- What are the construction impacts on local businesses on East 14th Street?
- Will there be services and/or funds available for relocation and improved entry/access during construction?
- How many hours of construction will there be in each area, and when will it be done?

Project Cost and Benefit:

Oakland

- Is the investment in this project worth the cost?
- Will the BRT be affordable?
- How much time would really be saved with the extra distance between proposed stops?

San Leandro

- What are the cost impacts to riders for the future?
- Have ridership studies demonstrated return on investment?
- Will BRT get drivers out of their cars?
- The BRT travel time improvements are significant.

Berkeley

- The 30 percent reduction in travel time on BRT does not justify the costs.

Traffic Flow:

Oakland

- Consider alternatives featuring a special lane that would allow not only buses but also other high-occupancy vehicles, and/or would exclude autos only at certain hours.
- Seniors don't want more cars and traffic on East 12th Street near the existing BART station.
- Will the BRT environmental study coordinate with the Telegraph bike lane environmental study?
- Do emergency vehicles have access to the dedicated lanes?

San Leandro

- What will be the queuing impacts on the three-lane portion of East 14th Street when buses block traffic?

Berkeley

- The proposal for a pedestrian mall on Telegraph needs to evaluate impacts on traffic.
- Study the conversion of Bancroft from one-way to two-way: The goal would be to limit Bancroft to local traffic.
- Remove street parking and narrow lanes to provide BRT/HOV lanes and to add increased loading/drop-off zones (merchants could offer valet parking) along BRT route.
- Close Telegraph to through automobile traffic.
- Have dedicated bus lanes only at some times, such as during commuter hours.
- Buses need dedicated lanes.
- Can the area's tight intersections accommodate turns by the proposed larger BRT buses without being reconfigured?

- What effects would there be on north-south and east-west automobile travel, especially by customers of the commercial district?

Pedestrian and Bicycle Safety:

Oakland
- Through many positive impacts, the project would make International Boulevard safer for pedestrians.
- Safe pedestrian crossings should be made at station locations.
- An increase in bus traffic might compromise the safety of children walking to schools in the corridor.
- What safety features will address the unloading of passengers onto the new median instead of the sidewalk?
- Will the BRT system cause the traffic to slow down on Fruitvale Avenue and how will pedestrian safety be addressed in this corridor?
- AC Transit should include additional lighting at stations for safety.

San Leandro
- Safety could be compromised with pedestrians crossing against the signal or cars running red lights at intersections where signal priority has been activated.
- Will there be safety studies for the stops?

Berkeley
- By slowing automobile travel speed and encouraging shoppers to look at businesses, the transit/pedestrian mall will create a pedestrian- and bicycle-friendly environment.
- Make Durant and Bancroft safer for pedestrians and bicyclists by making them two-way – thereby slowing traffic – and adding bike lanes.
- The transit mall would endanger pedestrians as buses accelerate.

Miscellaneous:

Oakland
- Personal security at ticket machines and station access should be addressed.
- The EIR document should investigate environmental justice issues.
- Why are funds being funneled into duplicating BART when other areas are having their service decreased or eliminated?
- Waiting until 2009 is too long for improved service, as much could change by then.
- Consider including trees in the design of BRT.

San Leandro
- What are the possible effects on historic structures?
- What are the plans for security on the buses as well as stations?
- What is the added pollution and noise of more buses?
- Consider alternative fuels to diesel for BRT.
- BRT can give people choices other than cars.
- The BRT system can improve transit reliability in the corridor.
- Who gives the ultimate approval on this project and the EIS/R?

Berkeley

- If BRT lacks quiet, nonpolluting new buses, it is not worth the investment.
- To what extent would automobile traffic be slowed and how would this affect air pollution and noise levels?

East Bay Bus Rapid Transit

Scoping Meeting

11 February 2004

Purpose of Tonight's Scoping Meeting

- Present East Bay Bus Rapid Transit (BRT) project
- Explain possible benefits and impacts of BRT
- Receive your input on possible project impacts to study
- Receive your input on project variations to study

RAPID
East Bay Bus Rapid Transit

AC TRANSIT

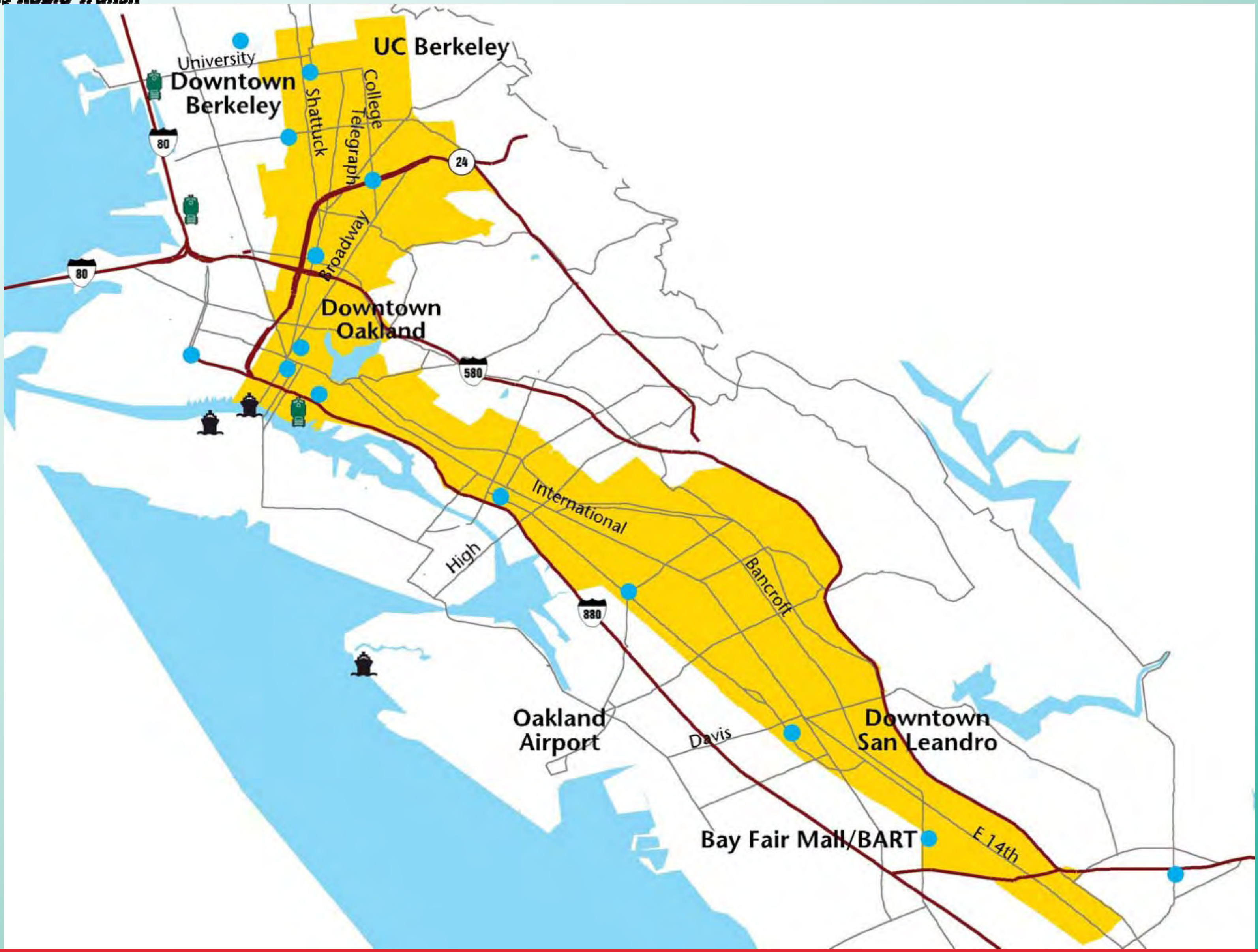
Tonight's Scoping Meeting

- Overview of tonight's meeting
- Your role

RAPID
East Bay Bus Rapid Transit

Study Area

AC TRANSIT



Project Purpose and Need

- Better accommodate increasing bus ridership
- Improve speed and reliability of local transit service
- Better serve major travel markets
- Reduce auto use
- Contribute to transit-oriented development and neighborhood revitalization
- Better serve low-income and minority populations

RAPID

East Bay Bus Rapid Transit

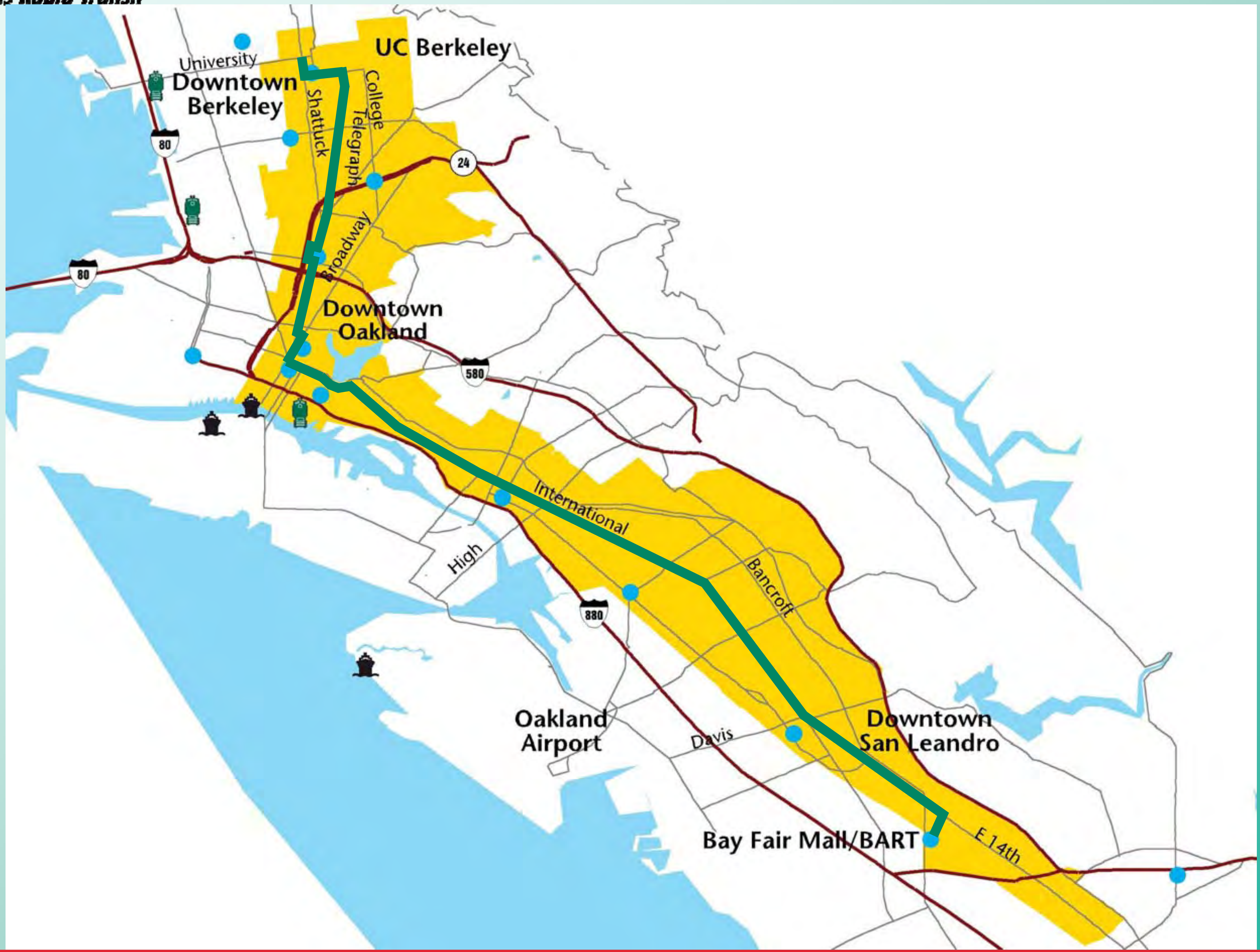
AC TRANSIT

Alternatives Studied in Major Investment Study (1999-2001)

Technology Options	North Corridor Options	South Corridor Options
~~Enhanced Bus~~	~~Shattuck Ave~~	~~Foothill Blvd/ Bancroft Ave~~
Bus Rapid Transit	Telegraph Ave	International Blvd/ E 14^{th} St
~~Light Rail Transit~~	~~College Ave/ Broadway~~	~~San Leandro Blvd~~

Prepared by Cambridge Systematics, Inc.

Project Alignment



Overall Project Development Process

Major Investment Study	Preferred Alternative	Environmental Study	Refined Preferred Alternative	Final Design	Construc- tion
1999- 2001	*Aug 2001*	*Now*	*2005*	*2005-2007*	*2007-2009*

Prepared by Cambridge Systematics, Inc.

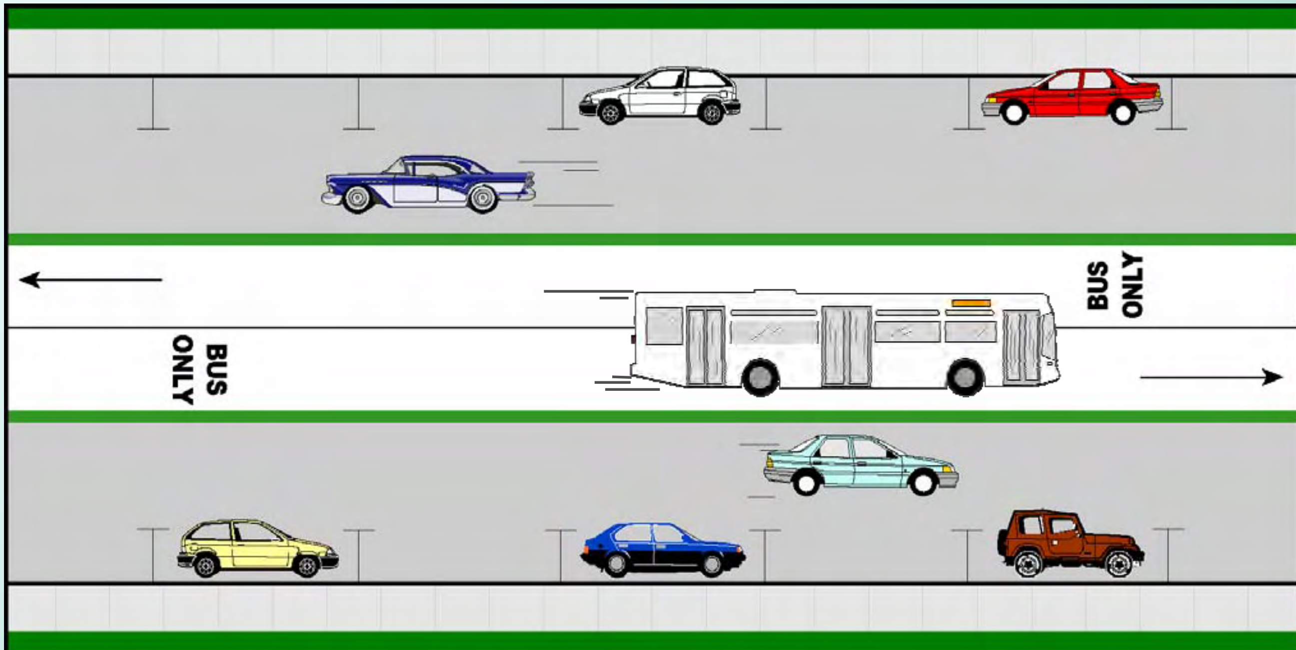
Questions of Clarification

East Bay Bus Rapid Transit

Bus Rapid Transit (BRT)

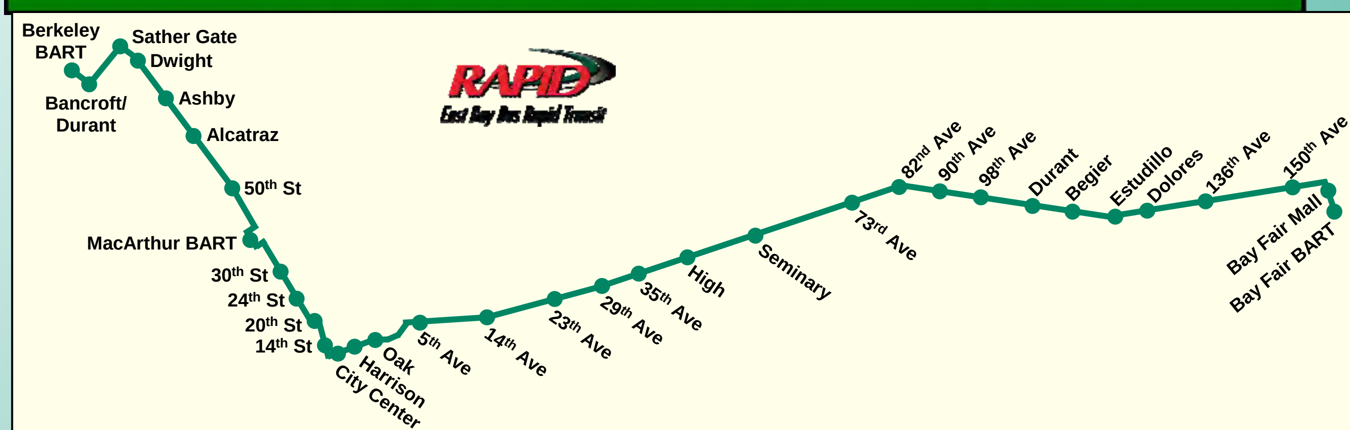
Rail-Like Performance at a Fraction of the Cost

BRT Provides Fast, Reliable Service



Bus-only lanes

Traffic signal priority



Wider station spacing

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East Bay Bus Rapid Transit

BRT Has Rail-Like Stations

AC TRANSIT

Ticket machines

Shelter, lighting, security

Level boarding

Real-time arrival signs

Prepared by Cambridge Systematics, Inc.

Vancouver B-Line

Before

After

Telegraph at Webster - Current

RAPID
East Bay Bus Rapid Transit

Telegraph at Webster - Proposed

AC TRANSIT

Project Benefits

- Improve transit travel time
  - 25-35 percent reduction
- Improve transit reliability
- Easy-to-use, comfortable, secure transit service
  - Rail-like system design
- Increase transit ridership
  - 30-40 percent more corridor riders
  - Viable alternative to driving
- Provides focus for development and revitalization
- Improve service to low-income and minority areas

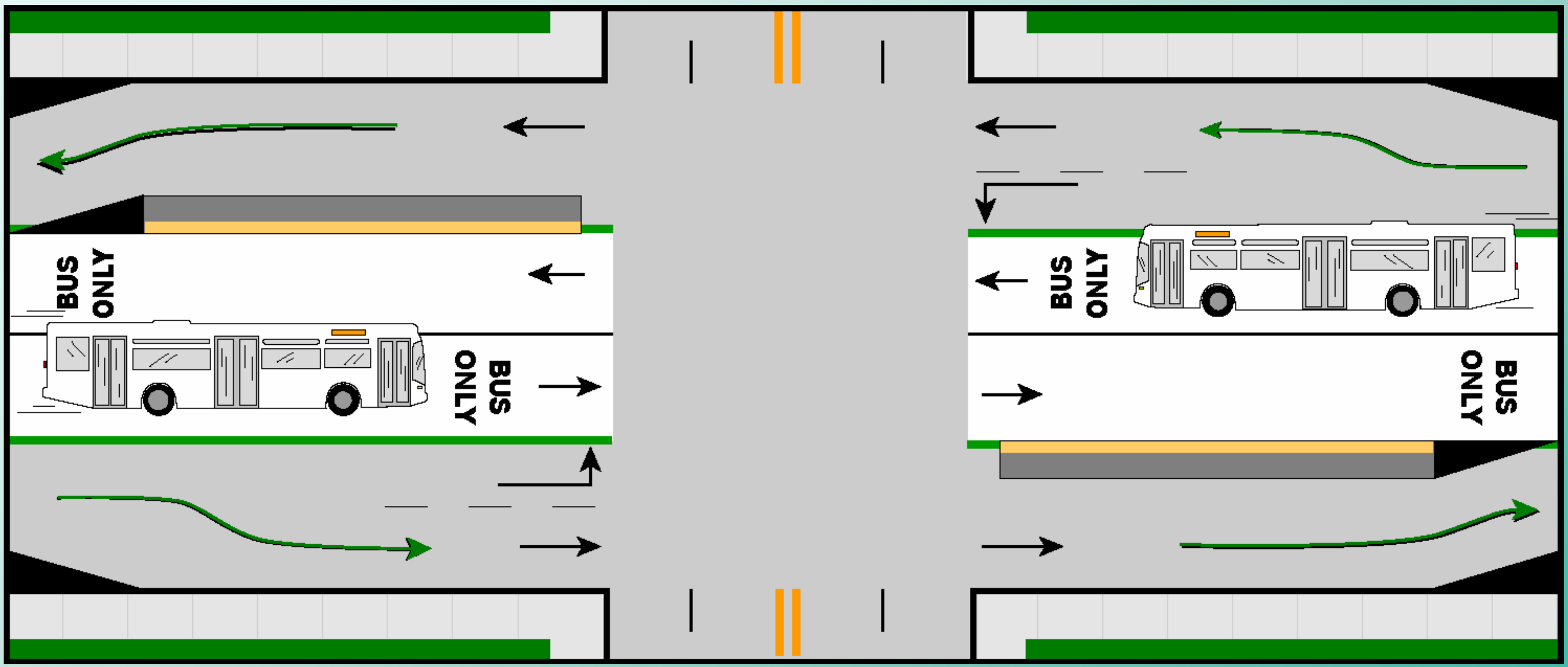
Potential Project Impacts to be Evaluated

- Fewer lanes of traffic
- Traffic diversions
- Reduced street parking near BRT stations
- Restricted turning movements across bus-only lanes
- Changes to street appearance
- Changes to bike lanes and bike routes
- Possible noise and vibration impacts
- Possible effects on historic structures
- Temporary construction impacts

RAPID East Bay Bus Rapid Transit

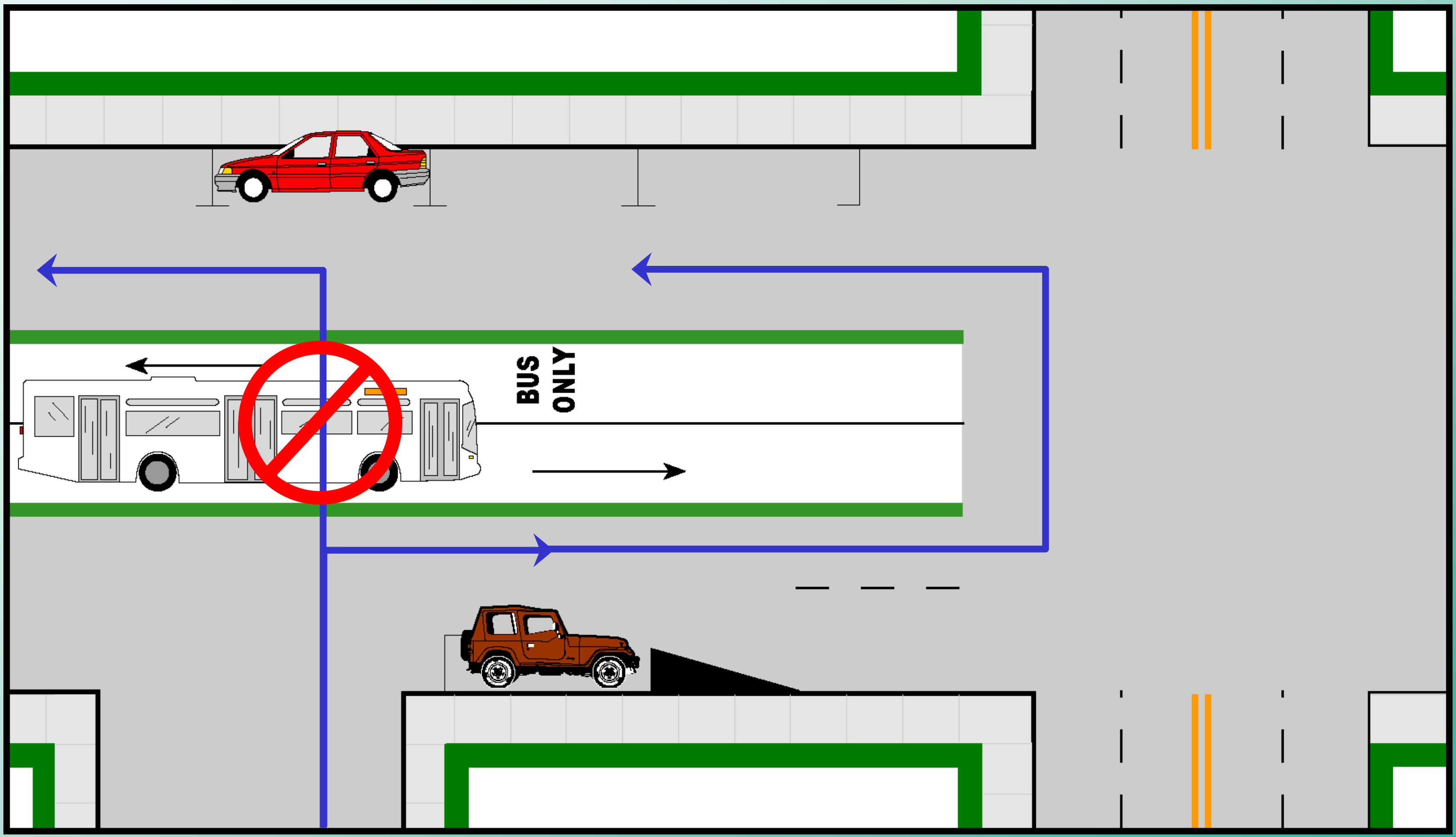
Parking Impact at BRT Stations

AC TRANSIT



10-20 spaces lost per intersection

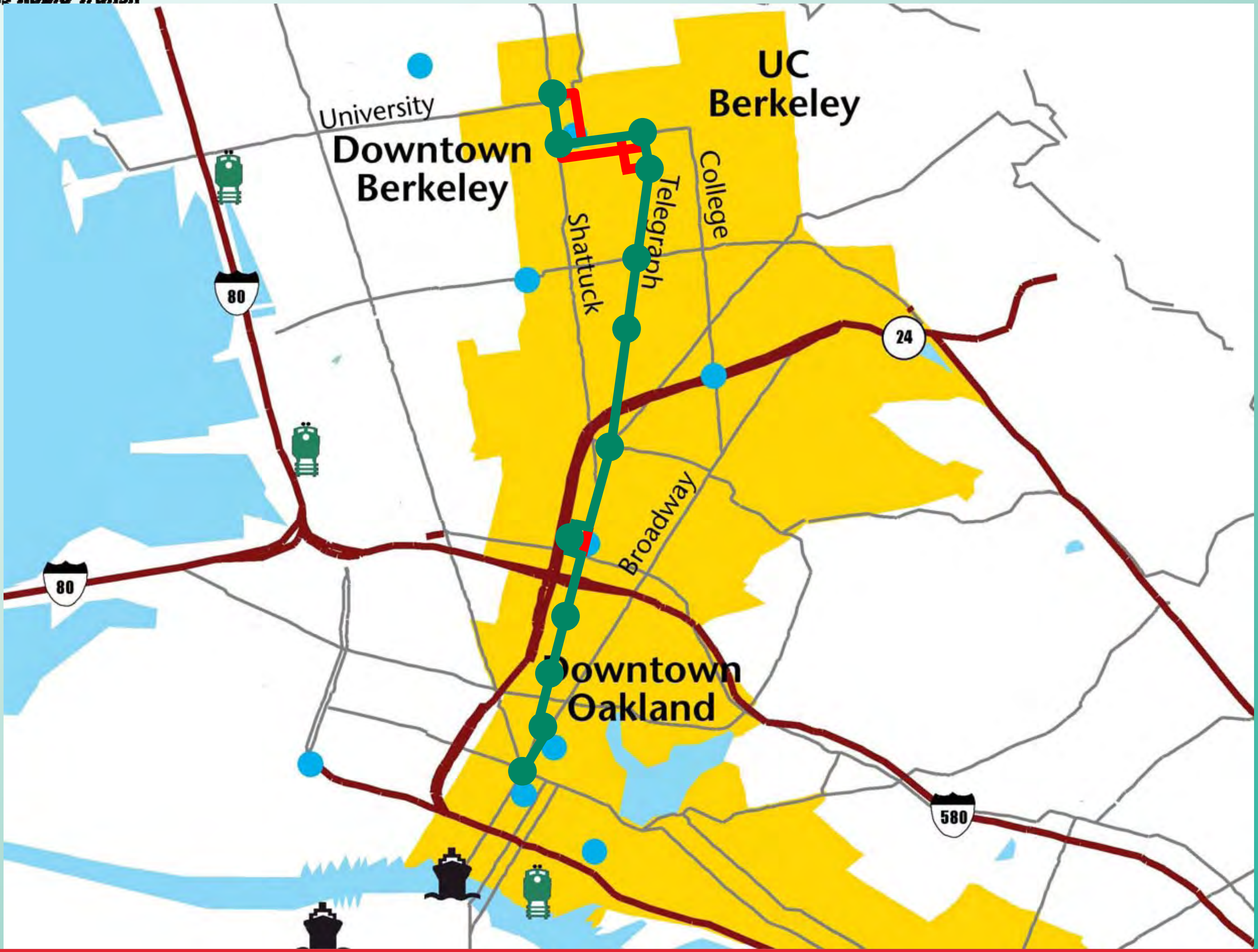
Local Street Turning Movement Impact



Mitigations

- AC Transit will attempt to mitigate any significant impacts
- Example mitigations:
  - Refine BRT design to reduce parking, traffic impacts
  - Construct new off-street parking
  - Modify traffic signal timing
  - Install new traffic signals
  - Add more left and right turn pockets

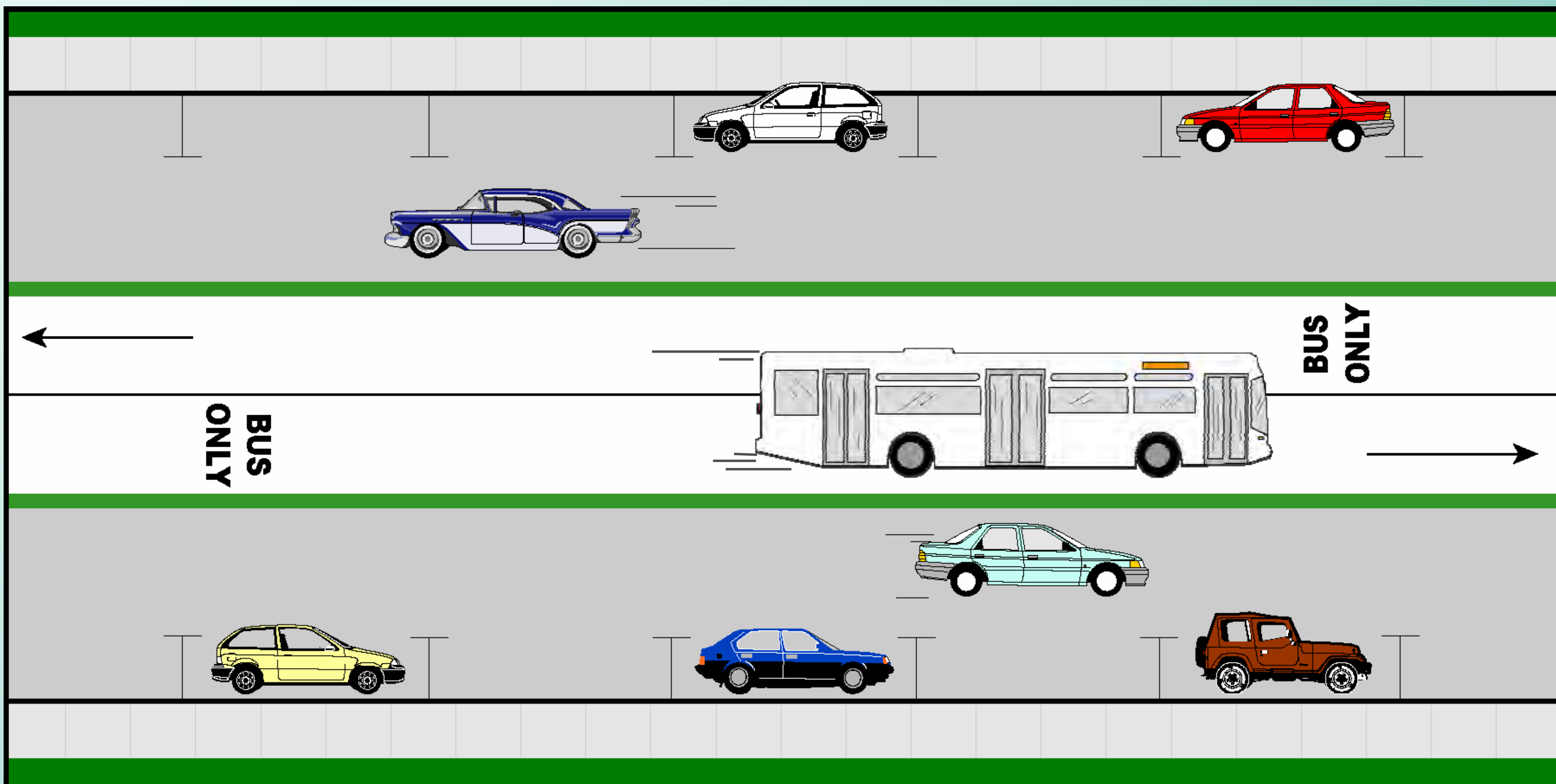
Northern Segment



Southern Segment

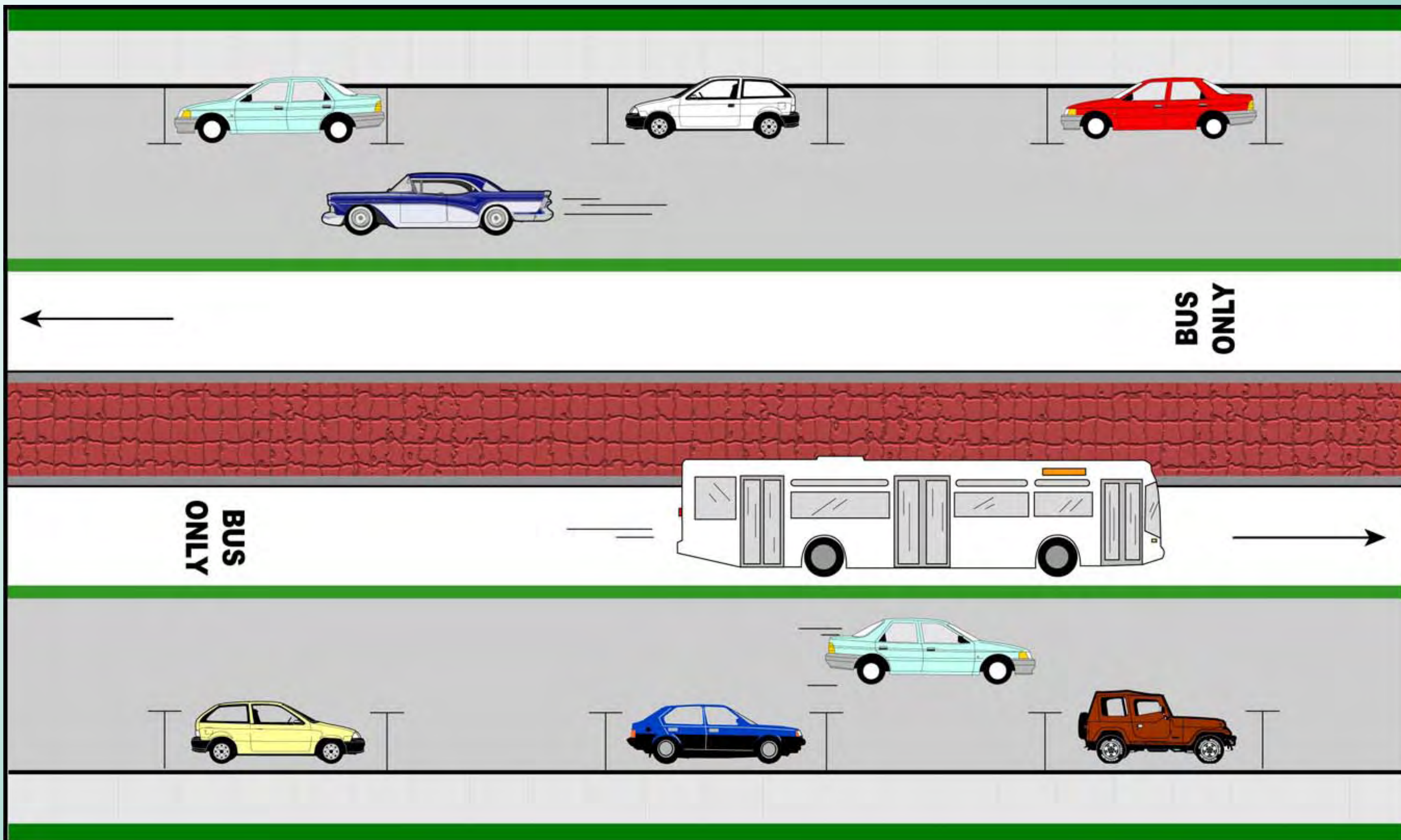
Discussion

Bus-Only Lanes in Median

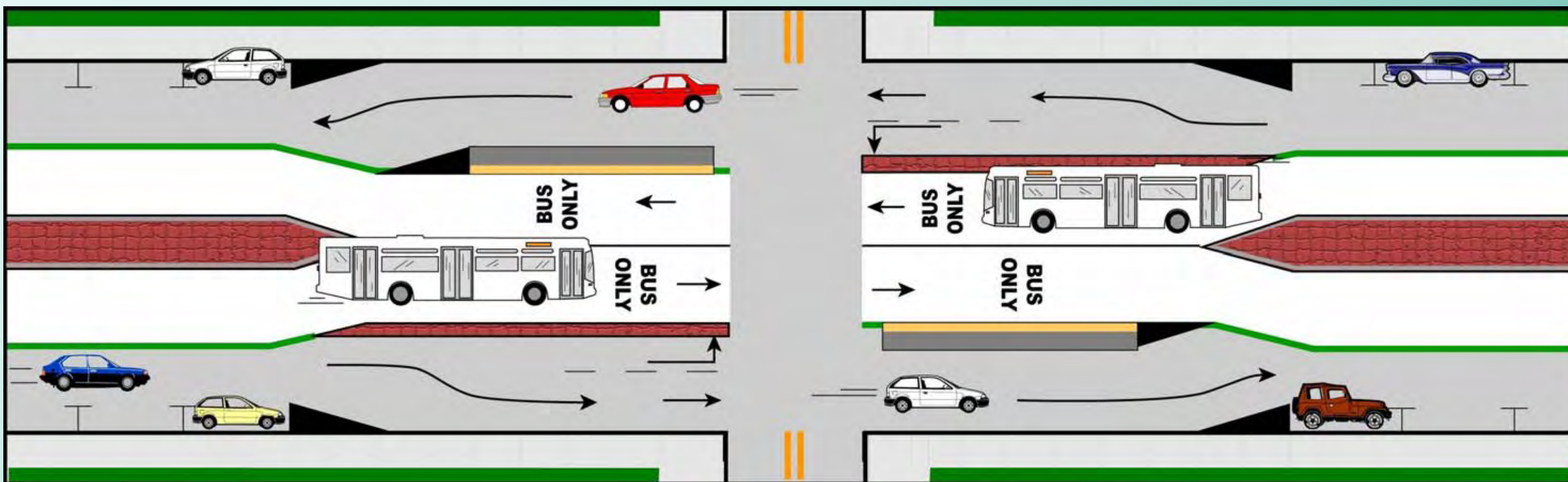


RAPID East Bay Bus Rapid Transit

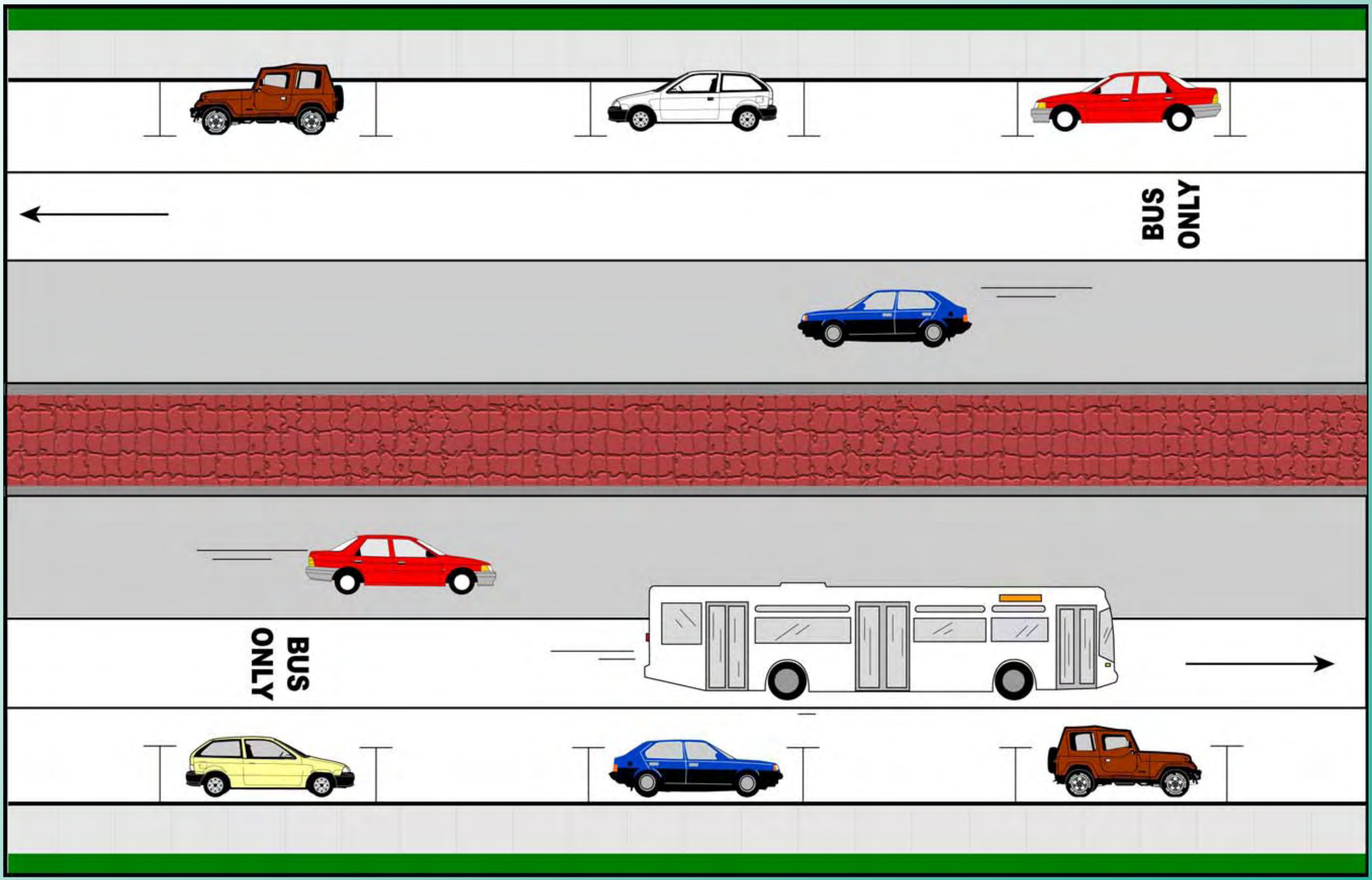
Bus-Only Lanes with Center Median



BRT Station with Center Median



Side-Running Bus-Only Lanes



Discussion

Study Schedule

Winter 2003/4	*Spring 2004*	*Summer, Fall 2004*	*Winter 2004/5*	*Winter 2004/5*	*Spring 2005*
Scoping	**Identify BRT Options for Study**	**Detailed Evaluation**	**Draft Environmental Review Document**	**Public Comment**	**Identify Preferred BRT Option**

RAPID
East Bay Bus Rapid Transit

AC TRANSIT

How to Stay Involved

Your Involvement is Critical

- Get on mailing list
- Attend future meetings
- Send us comments
  - Mail-in your comment card
  - Email us: planning@actransit.org
- Learn more
  - Website: www.actransit.org
  - Subscribe to news: www.actransit.org/customer/listserv

13.0 Local Support

13.0 Local Support

The East Bay BRT project has the support of key state and local officials and decision-makers. Following are letters of support from:

- Mayor Ronald V. Dellums, City of Oakland;
- Steve Heminger, Executive Director, Metropolitan Transportation Commission;
- Dennis R. Fay, Executive Director, Alameda County Congestion Management Agency (ACCMA) – letters to various Congress members (Senators Barbara Boxer, Dianne Feinstein, and Pete Stark, and Congresswoman Barbara Lee); and
- Christine Monsen, Executive Director, Alameda County Transportation Improvement Authority (ACTIA).

CITY OF OAKLAND

1 FRANK H. OGAWA PLAZA • 3RD FLOOR • OAKLAND, CALIFORNIA 94612

Office of the Mayor
Ronald V. Dellums
Mayor

(510) 238-3141
FAX: (510) 238-4731
TDD: (510) 238-7629

January 25, 2007

The Honorable Barbara Lee
United States House of Representatives
2444 Rayburn Building
Washington, D.C. 20515

Dear Congresswoman Lee:

As I'm sure you know, AC Transit is again requesting $75 million for the Berkeley-Oakland-San Leandro Bus Rapid Transit Small Starts Program. I write on behalf of the City of Oakland to express my enthusiastic support for this request.

On a daily basis this corridor is used by over 40,000 bus riders, a large majority of whom reside in Oakland—the largest city on the route. Many of these passengers are transit dependant seniors and students for whom the service provides a critical life line. And as the service improves in efficiency and convenience, vast numbers of Oakland residents are leaving their automobiles at home as they travel to work, school, stores and medical appointments. The reduction in carbon emissions and dependency on high priced fuel makes for a better quality of life for all Oakland residents.

This project will provide critical improvements to AC Transit and, as speed and reliability increase, will have a substantial effect on the health and economic stability of many people. These are key elements in the model city I envision Oakland to be. Your support for this project will move the vision we share for Oakland one step closer to reality.

I appreciate your consideration of this request.

Sincerely,

Ronald V. Dellums

Ronald V. Dellums
Mayor

METROPOLITAN
TRANSPORTATION
COMMISSION

Joseph P. Bort MetroCenter
101 Eighth Street
Oakland, CA 94607-4700
TEL 510.817.5700
TTY/TDD 510.817.5769
FAX 510.817.5848
E-MAIL info@mtc.ca.gov
WEB www.mtc.ca.gov

February 8, 2008

The Honorable Dianne Feinstein
United States Senate
331 Hart Senate Office Building
Washington, D.C. 20510

Re: Support for Alameda-Contra Costa Transit's Bus Rapid Transit Project

Dear Senator Feinstein:

The Metropolitan Transportation Commission supports the Alameda-Contra Costa Transit District's (AC Transit) Fiscal Year 2009 appropriations request for $15 million for its Berkeley-Oakland-San Leandro Bus Rapid Transit (BRT) project. AC Transit is seeking a total of $75 million from the Federal Transit Administration's Small Starts funding process and will be submitting an application to FTA this spring.

As the Bay Area's metropolitan planning organization, MTC has adopted a Regional Transit Expansion Program that establishes a next generation of transit expansion, including candidate New Starts and Small Starts projects. AC Transit's Bus Rapid Transit is the Commission's endorsed project for Small Starts. The Commission also has committed $65 million in Regional Measure 2 bridge tolls to this project.

MTC selected this project as a regional priority primarily because it serves a densely populated urban corridor with almost 25,000 daily riders. Ridership along the corridor is projected to double when the BRT is completed. The corridor is home to a number of diverse communities, with numerous low-income and transit-dependent residents.

Part of the historic Key Route system, the corridor is well suited for BRT development. The project consists of speed improvements — including signal priorities, dedicated bus lanes and proof of payment fare verification. The project also features rider amenities, including enhanced stations and real-time bus arrival information.

Transportation investments have been shown to stimulate redevelopment in blighted urban areas. Much of the Berkeley-Oakland-San Leandro BRT corridor includes areas that are in need of revitalization. This project will support redevelopment throughout the corridor.

Thank you for your continued leadership on issues important to the Bay Area.

Sincerely,

Steve

Steve Heminger
Executive Director

cc: Rick Fernandez, AC Transit

ALAMEDA COUNTY
CONGESTION MANAGEMENT AGENCY

1333 BROADWAY, SUITE 220 • OAKLAND, CA 94612 • PHONE: (510) 836-2560 • FAX: (510) 836-2185
E-MAIL: mail@accma.ca.gov • WEB SITE: accma.ca.gov

January 10, 2008

The Honorable Pete Stark
U.S. House of Representatives
2371 Rayburn HOB
Washington, DC 20515

Dear Senator Boxer:

As you may know, AC Transit is requesting $75 million for the Berkeley-Oakland-San Leandro Bus Rapid Transit Small Starts Program. I am writing to express our support for this request. This project is one of five high priority projects in the CMA's long-range transportation plan.

On a daily basis this corridor is used by over 40,000 bus riders. Many of these passengers are transit dependent seniors and students for whom the service provides a critical life line. As the service improves in efficiency and convenience, Oakland, Berkeley and San Leandro residents are leaving their automobiles at home as they travel to work, school, stores and medical appointments. The reduction in carbon emissions and dependency on high priced fuel makes for a better quality of life for the residents of these cities.

This project will provide critical improvements to AC Transit and, as speed and reliability increase, will have a substantial effect on the health and economic stability of many people.

I appreciate your consideration to this request.

Sincerely,

Dennis R. Fay

Dennis R. Fay
Executive Director

ALAMEDA COUNTY
CONGESTION MANAGEMENT AGENCY

1333 BROADWAY, SUITE 220 • OAKLAND, CA 94612 • PHONE: (510) 836-2560 • FAX: (510) 836-2185
E-MAIL: mail@accma.ca.gov • WEB SITE: accma.ca.gov

January 10, 2008

The Honorable Barbara Lee
United States House of Representatives
2444 Rayburn Building
Washington, D.C. 20515

Dear Congresswoman Lee:

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This project will provide critical improvements to AC Transit and, as speed and reliability increase, will have a substantial effect on the health and economic stability of many people.

I appreciate your consideration to this request.

Sincerely,

Dennis R. Fay

Dennis R. Fay
Executive Director

ALAMEDA COUNTY
CONGESTION MANAGEMENT AGENCY

1333 BROADWAY, SUITE 220 • OAKLAND, CA 94612 • PHONE: (510) 836-2560 • FAX: (510) 836-2185
E-MAIL: mail@accma.ca.gov • WEB SITE: accma.ca.gov

January 10, 2008

The Honorable Dianne Feinstein
331 Hart Senate Office Building
Washington, DC 20510

Dear Senator Feinstein:

As you may know, AC Transit is requesting $75 million for the Berkeley-Oakland-San Leandro Bus Rapid Transit Small Starts Program. I am writing to express our support for this request. This project is one of five high priority projects in the CMA's long-range transportation plan.

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This project will provide critical improvements to AC Transit and, as speed and reliability increase, will have a substantial effect on the health and economic stability of many people.

I appreciate your consideration to this request.

Sincerely,

Dennis R. Fay

Dennis R. Fay
Executive Director

ALAMEDA COUNTY
CONGESTION MANAGEMENT AGENCY

1333 BROADWAY, SUITE 220 • OAKLAND, CA 94612 • PHONE: (510) 836-2560 • FAX: (510) 836-2185
E-MAIL: mail@accma.ca.gov • WEB SITE: accma.ca.gov

January 10, 2008

The Honorable Barbara Boxer
112 Hart Senate Office Building
Washington, DC 20510

Dear Senator Boxer:

As you may know, AC Transit is requesting $75 million for the Berkeley-Oakland-San Leandro Bus Rapid Transit Small Starts Program. I am writing to express our support for this request. This project is one of five high priority projects in the CMA's long-range transportation plan.

On a daily basis this corridor is used by over 40,000 bus riders. Many of these passengers are transit dependent seniors and students for whom the service provides a critical life line. As the service improves in efficiency and convenience, Oakland, Berkeley and San Leandro residents are leaving their automobiles at home as they travel to work, school, stores and medical appointments. The reduction in carbon emissions and dependency on high priced fuel makes for a better quality of life for the residents of these cities.

This project will provide critical improvements to AC Transit and, as speed and reliability increase, will have a substantial effect on the health and economic stability of many people.

I appreciate your consideration to this request.

Sincerely,

Dennis R. Fay

Dennis R. Fay
Executive Director

ACTIA

ALAMEDA COUNTY TRANSPORTATION IMPROVEMENT AUTHORITY

1333 Broadway
Suite 300
Oakland, CA 94612

Telephone:
510/893-3347

Facsimile:
510/893-6489

Webpage:
www.ACTIA2022.com

February 1, 2008

The Honorable Dianne Feinstein
United States Senate
331 Hart Senate Office Building
Washington D.C. 20510-0504

SUBJECT: AC TRANSIT BUS RAPID TRANSIT BERKELEY-OAKLAND-SAN LEANDRO CORRIDOR

Dear Senator Feinstein,

The Alameda Contra Costa Transit District (AC Transit) is seeking $15 million in FY 2008-09 appropriations for its Berkeley-Oakland-San Leandro Bus Rapid Transit (BRT) project. AC Transit will be seeking a total of $75 million of FTA Small Starts funding for the project and will be submitting an application to FTA this spring. ACTIA is writing this letter to express our strong support for the Berkeley-Oakland-San Leandro Bus Rapid Transit (BRT) project.

The 18-mile corridor is one of the most heavily used bus corridors in the AC Transit District, serving 25,000 daily riders. It extends from downtown Berkeley and the University of California in the north, through downtown Oakland, and continues through downtown San Leandro terminating at a major regional shopping center and BART station. The service will support existing compact land use patterns; promote transit-oriented development; serve major institutions, civic uses, and hospitals; and serve low-income and minority neighborhoods that have a high level of transit dependency. Ridership on the line is expected to double when the project is complete.

The Telegraph Avenue/International Boulevard Corridor Transit Project is one of the key transit projects included in Alameda County's Measure B program passed by 81.5 percent of Alameda County voters in 2000. The Alameda County Transportation Authority is dedicating over $22 million to the implementation of this project, which will reduce transit travel time and increase service reliability along this heavily travelled East Bay transit corridor. An additional $77 million in state and local funds have been programmed for implementation of the project.

AC Transit has implemented the first phase of the project by installing Rapid Bus improvements, including traffic signal upgrades, along the 18-mile corridor and purchasing new low-floor buses for the upgraded service. Revenue service for the Rapid Bus line was initiated in June 2007.

The second project phase, Bus Rapid Transit, proposes further transit preferential treatments, including: stations and shelters; lighting; real-time bus arrival information; transit signal priority treatments and coordination, and exclusive bus lanes. AC Transit released the Draft EIS/EIR for the BRT in May 2007 and is in the process of responding to comments and working with the local jurisdictions to adopt an implementable Locally Preferred Alternative that meets the federal Small Starts funding criteria. The Record of Decision for the project is anticipated at the end of 2008.

Thank you for your leadership on this important Bay Area transit project.

Sincerely,

Jim Gonzales for

Christine Monsen

City of San Leandro
Civic Center, 835 E. 14th Street
San Leandro, California 94577

Office of the Mayor 510-577-3356
Fax 510-577-3340

January 18, 2007

The Honorable Pete Stark
United States House of Representatives
239 Cannon House Office Building
Washington, D. C. 20515

Dear Congressman Stark:

I am writing to express support for AC Transit's request for $75 million in funding for the Berkeley-Oakland-San Leandro Bus Rapid Transit project in the Federal Small Starts Program. Bus Rapid Transit provides innovative transit at a capital cost that is one-sixth that of light rail. Bus Rapid Transit will provide critical transit improvements that target the core urban area and transit-dependent population in San Leandro.

AC Transit's Bus Rapid Transit Corridor would significantly improve transit service along the major arterial of East 14th Street in San Leandro and contributes directly to our City's Redevelopment Plan. The enhanced bus project would include street level improvements including real-time traveler information, signal priority and comfortable bus shelters that would reduce travel times, increase pedestrian safety and improve operational efficiency, benefits that would be seen immediately by the citizens of San Leandro.

The Bus Rapid Transit Project is an intelligent, incremental use of local and Federal funding that will provide for the key components of what will become a world-class Bus Rapid Transit corridor. The corridor will greatly improve connectivity between the cities of San Leandro, Oakland and Berkeley. Its design would ensure that buses efficiently transport San Leandro citizens to work and to shopping areas and bring citizens from nearby communities into San Leandro, contributing to our economic growth. Currently this corridor carries 40,000 bus passengers daily. The completed BRT corridor project is projected to increase ridership by 50% and decrease ride time by 27-33%.

AC Transit's Bus Rapid Transit Program is an excellent demonstration of its goal to serve the greatest number of passengers in a cost-effective manner, and the citizens of San Leandro look forward to its implementation.

Thank you for your continued leadership on issues of importance to San Leandro.

Sincerely,

Anthony B. Santos
Mayor


Agenda Item 5 – Attachment 2
East Bay Bus Rapid Transit
presented to
Policy Steering Committee
presented by
AC Transit
May 19, 2009

Effect on Travel Time*
Downtown Berkeley to Bay Fair BART

- “Separate” has fast BRT and a slow local bus
  - BRT: 59 minute
  - Local: 109 min
  - Average: 76 min
- “All-in-One” on average faster than Separate
  - BRT: 66 min

* Year 2025, PM peak

2

Sources:

BRT from East Bay BRT DEIS/R, Table 3.1-11

Local developed by adjusting existing local bus travel time for projected added congestion in mixed-flow travel lanes

Average for “Separate” is a weighted average of BRT and Local, weighted by peak period service frequency (8 BRT per hour, 4 Local per hour)

Transit Ridership
Year 2025

	No-Build	Separate BRT and Local	All-in-One
Corridor Transit Boardings	*28,100*	43,700	49,200
New Transit Trips*		5,300	9,300

* Increase over No-Build

3

Source:

East Bay BRT DEIS/R, Table 3.1-12

Auto Travel
Year 2025

	Separate BRT and Local	All-in-One
Reduction in Daily Auto Trips	5,300	9,300
Reduction in Daily Auto VMT*	11,800	20,700

* Vehicle Miles Travelled

4

<u>Sources:</u>

Reduction in Auto Trips is equal to Increase in Transit Trips from previous slide

Reduction in Auto VMT is from the East Bay BRT DEIS/R, Table 4.14-1, expressed on a daily basis.

Energy and Greenhouse Gases

Year 2025

	Separate BRT and Local	All-in-One
Reduction in Annual Energy Usage	50,000 gallons*	210,000 gallons*
Reduction in Annual GHGs	120 tons**	1,900 tons**

* Annual Gasoline and gasoline equivalents

** Annual CO_2 and CO_2 equivalents

5

Source:

The above figures were estimated by Cambridge Systematics in early 2008 (after the release of the East Bay BRT DEIS/R) using a new U.S. EPA methodology.

Daily:	Separate	All-in-One
Reduction Energy Usage	170 gallons	690 gallons
Reduction GHGs	0.4 tons	6.3 tons

Capital and Operating Cost
Service Frequency (Weekday, Minutes Between Buses)

	Peak	Midday	Evening	Owl
Existing				
1R	12	12		
1	15	20	20	60
Separate BRT and Local				
BRT	7.5	7.5	20	
1	15	15	20	60
All-in-One				
BRT	5	5	10	60

Sources:

Existing from AC Transit schedules

All-in-One from AC Transit East Bay BRT FY2010 Small Starts Submittal, Operations And Maintenance Cost Estimating Methodology And Results Report, Table 2-2.

Separate developed to provide the same bus frequency as All-in-One (e.g., 12 per hour during the peak and midday) and have the same local bus frequency as Existing.

Capital and Operating Cost
$ millions

	No-Build	Separate BRT and Local	All-in-One
Capital Cost		$215	$235
Annual Operating Cost*	*$21.5*	$26.9	$25.6
Annual Operating Cost Net of Fare Revenue*	*$15.0*	$18.2	$15.4

* Estimate for year 2025 costs in 2008 dollars.

7

Sources:

All-in-One Capital Cost from AC Transit East Bay BRT FY2010 Small Starts Submittal, Section 4.2, Main Worksheet – Build Alternative.

All-in-One Operating Cost from AC Transit East Bay BRT FY2010 Small Starts Submittal, Operations And Maintenance Cost Estimating Methodology And Results Report, Table 4-1, but converted from year 2015 to year 2025.

Separate Capital Cost developed by applying cost factor ratios by line item based on East Bay BRT DEIS/R cost estimates to the All-in-One Capital Cost estimate.

Separate Operating Cost generated by using the three-factor operating cost model developed for All-in-One for the AC Transit East Bay BRT FY2010 Small Starts Submittal, but with factor inputs adjusted by applying factor ratios based on East Bay BRT DEIS/R estimates.

Operating Cost Net of Fare Revenue calculated by Cambridge Systematics by subtracting net fare revenue from operating cost. Cambridge Systematics can provide further details, if needed.

	Oper Cost per Boarding	Subsidy per Boarding	Farebox Recovery
No Build	$2.56	$1.78	30%
Separate	$2.05	$1.28	38%
All-in-One	$1.74	$0.97	44%

Effect on Walk Distance

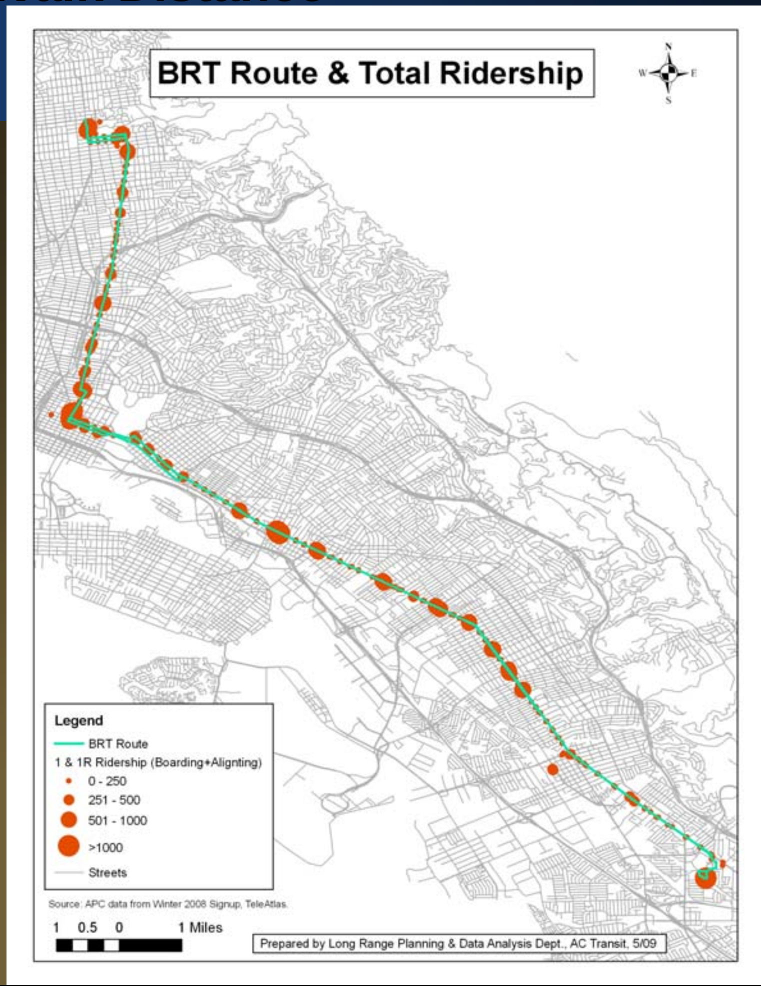
- Some local bus stops removed with All-in-One
- 80% of riders unaffected
  - They walk to the same station as today
- 20% of riders would need to go to a different station
  - Some passengers have no increase in walk distance
  - Some passengers walk further but, the walk distance is on average one additional block

8

Source:

May 2009 analysis by Cambridge Systematics of current AC Transit route 1 and 1R boardings and alighting by station.

Effect on Walk Distance



9

Source:

Map of current Route 1 and 1R boardings and alightings

Sources from East Bay BRT DEIS/R

Companion to Annotated Policy Steering Committee Presentation on May 15, 2009

References assembled June 9, 2009

The following pages are tables referenced in the Annotated Policy Steering Committee Presentation on May 15, 2009.

1	AC Transit East Bay BRT DEIS/R, Table 3.1-11: AC Transit Travel Times under Existing, 2025 No-Build, and 2025 Build Alternatives
2	AC Transit East Bay BRT DEIS/R , Table 3.1-12: Average Weekday Bus and Rail Transit Boardings, under 2025 No-Build, and 2025 Build Alternatives
3	AC Transit East Bay BRT DEIS/R , Table 4.14-1: Estimated Energy Usage for Alameda County, No-Build and Build Alternatives (2025)
4	AC Transit East Bay BRT FY2010 Small Starts Submittal, Table 2-2, East Bay BRT Service along project corridor (2015)
5	AC Transit East Bay BRT FY2010 Small Starts Submittal, Section 4.2, Main Worksheet for Build Alternative
6	AC Transit East Bay BRT FY2010 Small Starts Submittal, Operations And Maintenance Cost Estimating Methodology And Results Report, Table 4-1, Annual O&M Costs (2015)

Table 1

Table 3.1-11: AC Transit Travel Times under Existing, 2025 No-Build, and 2025 Build Alternatives: Downtown Berkeley to BayFair BART Station											
				2025 Build Alternatives							
	2003 Conditions	2025 No-Build		Alt 1 Separate BRT and Local Service to BayFair BART		Alt 2 Separate BRT and Local Service to San Leandro BART		Alt 3 Combined BRT and Local Service to BayFair BART		Alt 4 Combined BRT and Local Service to San Leandro BART	
Time Period	Travel Time (minutes)	Travel Time (minutes)	Percent Change from 2003[1]	BRT Travel Time (minutes)	Percent Change from No-Build[2]	BRT Travel Time[3] (minutes)	Percent Change from No-Build[2]	BRT Travel Time (minutes)	Percent Change from No-Build[2]	BRT Travel Time[3] (minutes)	Percent Change from No-Build[2]
Peak	92	78	-16%	59	-24%	66	-15%	66	-15%	72	-7%
Midday	90	74	-18%	57	-23%	62	-16%	63	-14%	68	-7%
Evening	75	59	-21%	53	-11%	56	-5%	58	-2%	61	3%

Notes:
[1] Negative % indicates improvement relative to 2003.
[2] Negative % indicates improvement/shorter travel time relative to 2025 No-Build.
[3] Route Y Rapid Bus between Downtown San Leandro and BayFair BART.
Source: Nelson\Nygaard Consulting Associates, *AC Transit Technical Memorandum: East Bay BRT Operating Plan and Cost Analysis*, November 2005.

Table 2

Table 3.1-12: Average Weekday Bus and Rail Transit Boardings, under 2025 No-Build, and 2025 Build Alternatives									
		2025 Build Alternatives							
	2025 No-Build	Alt 1 Separate BRT and Local Service to BayFair BART		Alt 2 Separate BRT and Local Service to San Leandro BART		Alt 3 Combined BRT and Local Service to BayFair BART		Alt 4 Combined BRT and Local Service to San Leandro BART	
Patronage Measure	Number	Number	Percentage Increase over No-Build	Number	Percentage Increase over No-Build	Number	Percentage Increase over No-Build	Number	Percentage Increase over No-Build
BRT Service Boardings	13,530	34,950	158%	32,530	140%	46,670	245%	44,240	227%
Boardings along BRT Alignment	28,050	43,750	56%	42,050	50%	49,230	76%	47,540	69%
AC Transit Systemwide Boardings[1]	259,800	269,400	3.7%	267,100	2.8%	275,900	6.2%	273,700	5.3%
BART Systemwide Boardings	400,000	396,000	-1.0%	398,000	-0.5%	394,200	-1.5%	396,200	-1.0%
Increase in Regionwide Transit Trips[2]		5,320		4,580		9,320		8,020	

Notes:
[1] Includes Transbay services
[2] Increase in new linked (door-to-door) transit trips over future No-Build
Source: *AC Transit East Bay Bus Rapid Transit, Transit Patronage and Forecasting Methodology Report, May 2006.*

Table 3

Table 4.14-2: Estimated Energy Usage for Alameda County, No-Build and Build Alternatives (2025)				
Alternative	**Annual Auto VMT*** (in millions)	**Annual Bus VMT*** (in millions)	**Total BTUs*** (in trillions)	**Equivalent in Gallons of Gasoline*** (in millions)
No-Project	11,136.5	2.3	54.5	493.3
Alternative 1	11,133.0	3.0	54.5	493.4
Alternative 2	11,133.4	3.0	54.5	493.4
Alternative 3	11,130.3	2.9	54.5	493.2
Alternative 4	11,131.2	2.9	54.5	493.3

Notes:

VMT = Vehicle miles of travel

BTU = British thermal unit, a measure of energy consumption.

Source: *Operating Plan and Cost Analysis, Technical Memorandum – East Bay BRT EIR/EIS* (Nelson Nygaard, 2005). Travel forecasts provided by Cambridge Systematics.

Table 4

Table 2-2: East Bay BRT Service along Project Corridor (2015)										
			Weekday Headway in Minutes[1]				Weekend Headway in Minutes[1]			
Segment	**Route**	**Stops**	**Peak**	**Midday**	**Evening**	**Owl[2]**	**Peak**	**Midday**	**Evening**	**Owl[2]**
Downtown Berkeley/ Shattuck Ave to Telegraph Ave & Oakland City Limit	East Bay BRT	6	5	5	10	60	12	12	15	60
Telegraph Ave from City Limit to Downtown Oakland (Broadway @ 14th St)	East Bay BRT	9	5	5	10	60	12	12	15	60
Downtown Oakland to San Leandro City Limit (Durant Ave)	East Bay BRT	22	5	5	10	60	8	8	10	60
San Leandro from City Limit to BayFair BART Station	East Bay BRT	12	5	5	10	60	8	8	10	60

Notes:
[1] Typical headway during the period cited. For O&M cost estimates, including estimates of hours and miles of service, service frequencies are assumed to transition (i.e., progressively increase or decrease) into the subsequent period.
[2] Owl service operates from approximately 12 midnight to 5 am and therefore provides for 24-hour service coverage in the corridor.

Source: *AC Transit and Kimley-Horn and Associates, Inc.*

Table 5

M A I N W O R K S H E E T - B U I L D A L T E R N A T I V E							(Rev.11a, June 4, 2008)	
Alameda Contra Costa Transit District							Today's Date	7/3/08
East Bay Bus Rapid Transit Project Alameda County, CA							Yr of Base Year $	2008
Current Phase: Selection of Preferred Alternative							Yr of Revenue Ops	2015

	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	YOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	**16.91**	12,521	7,034	**19,556**	**$ 1,157**	**14%**	**10%**	**23,233**
10.01 Guideway: At-grade exclusive right-of-way				0				0
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	16.91	12,521	7,034	19,556	$ 1,157			23,233
10.03 Guideway: At-grade in mixed traffic				0				0
10.04 Guideway: Aerial structure				0				0
10.05 Guideway: Built-up fill				0				0
10.06 Guideway: Underground cut & cover				0				0
10.07 Guideway: Underground tunnel				0				0
10.08 Guideway: Retained cut or fill				0				0
10.09 Track: Direct fixation				0				0
10.10 Track: Embedded				0				0
10.11 Track: Ballasted				0				0
10.12 Track: Special (switches, turnouts)				0				0
10.13 Track: Vibration and noise dampening				0				0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	**47**	24,401	13,709	**38,110**	**$ 811**	**28%**	**19%**	**45,276**
20.01 At-grade station, stop, shelter, mall, terminal, platform	47	24,401	13,709	38,110	$ 811			45,276
20.02 Aerial station, stop, shelter, mall, terminal, platform				0				0
20.03 Underground station, stop, shelter, mall, terminal, platform				0				0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.				0				0
20.05 Joint development				0				0
20.06 Automobile parking multi-story structure				0				0
20.07 Elevators, escalators				0				0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	16.91	0	0	**0**	**$ -**	**0%**	**0%**	**0**
30.01 Administration Building: Office, sales, storage, revenue counting				0				#DIV/0!
30.02 Light Maintenance Facility				0				#DIV/0!
30.03 Heavy Maintenance Facility				0				#DIV/0!
30.04 Storage or Maintenance of Way Building				0				#DIV/0!
30.05 Yard and Yard Track				0				#DIV/0!
40 SITEWORK & SPECIAL CONDITIONS	16.91	27,054	15,199	**42,253**	**$ 2,499**	**31%**	**21%**	**50,198**
40.01 Demolition, Clearing, Earthwork		3,913	2,198	6,111				7,260
40.02 Site Utilities, Utility Relocation		4,732	2,658	7,390				8,780
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments				0				0
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks		2,898	1,628	4,526				5,377
40.05 Site structures including retaining walls, sound walls				0				0
40.06 Pedestrian / bike access and accommodation, landscaping		7,911	4,445	12,356				14,680
40.07 Automobile, bus, van accessways including roads, parking lots		7,600	4,270	11,870				14,102
40.08 Temporary Facilities and other indirect costs during construction				0				0
50 SYSTEMS	16.91	23,567	13,240	**36,806**	**$ 2,177**	**27%**	**18%**	**44,637**
50.01 Train control and signals				0				0
50.02 Traffic signals and crossing protection		7,049	3,960	11,009				13,351
50.03 Traction power supply: substations				0				0
50.04 Traction power distribution: catenary and third rail				0				0
50.05 Communications		8,652	4,861	13,512				16,387
50.06 Fare collection system and equipment		5,796	3,256	9,052				10,978
50.07 Central Control		2,070	1,163	3,233				3,921
Construction Subtotal (10 - 50)	16.91	87,543	49,182	**136,725**	**$ 8,086**	**100%**	**69%**	**163,344**
60 ROW, LAND, EXISTING IMPROVEMENTS	16.91	9,444	2,833	**12,278**	**$ 726**		**6%**	**14,089**
60.01 Purchase or lease of real estate		7,297	2,189	9,486				10,885
60.02 Relocation of existing households and businesses		2,148	644	2,792				3,204
70 VEHICLES (number)	**0**	0	0	**0**			**0%**	**0**
70.01 Light Rail				0				#DIV/0!
70.02 Heavy Rail				0				#DIV/0!
70.03 Commuter Rail				0				#DIV/0!
70.04 Bus				0				#DIV/0!
70.05 Other				0				#DIV/0!
70.06 Non-revenue vehicles				0				#DIV/0!
70.07 Spare parts				0				#DIV/0!
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	16.91	27,302	15,066	**42,368**	**$ 2,506**	**31%**	**21%**	**48,065**
80.01 Preliminary Engineering		2,721	1,504	4,225				4,793
80.02 Final Design		9,321	5,088	14,409				16,347
80.03 Project Management for Design and Construction		3,596	1,996	5,592				6,344
80.04 Construction Administration & Management		8,754	4,918	13,672				15,511
80.05 Professional Liability and other Non-Construction Insurance				0				0
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.		1,159	577	1,736				1,969
80.07 Surveys, Testing, Investigation, Inspection				0				0
80.08 Start up		1,751	984	2,734				3,102
Subtotal (10 - 80)	16.91	124,289	67,081	**191,370**	**$ 11,318**		**96%**	**225,498**
90 UNALLOCATED CONTINGENCY				**7,655**			**4%**	**9,055**
Subtotal (10 - 90)	16.91			**199,025**	**$ 11,771**		**100%**	**234,553**
100 FINANCE CHARGES				**0**			**0%**	**0**
Total Project Cost (10 - 100)	16.91			**199,025**	**$ 11,771**		**100%**	**234,553**
Allocated Contingency as % of Base Yr Dollars w/o Contingency				53.97%				
Unallocated Contingency as % of Base Yr Dollars w/o Contingency				6.16%				
Total Contingency as % of Base Yr Dollars w/o Contingency				60.13%				
Unallocated Contingency as % of Subtotal (10 - 80)				4.00%				
YOE Construction Cost per Mile (X000)								$9,661
YOE Total Project Cost per Mile Not Including Vehicles (X000)								$13,872
YOE Total Project Cost per Mile (X000)								$13,872

Table 6

Table 4-1 Annual O&M Costs (2015)
East Bay BRT and Baseline/No-Build Alternative Compared

	Baseline/No-Build		East Bay BRT		Difference (BRT less Baseline)		% Change in Cost
Factor	**Input Value**	**Annual Cost**	**Input Value**	**Annual Cost**	**Input Value**	**Annual Cost**	
Platform Hours	156,083	$9,508,730	165,517	$10,083,458	9,434	$574,729	6%
Vehicle Miles	1,727,711	$4,949,973	2,251,148	$6,449,644	523,437	$1,499,671	30%
Peak Vehicles	31	$5,987,242	31	$5,987,242	-	$0	0%
BRT Stations	1	$39,000	49	$1,911,000	48	$1,872,000	NA
Total Costs		**$20,484,945**		**$24,431,345**		**$3,946,400**	**19%**

Source: Kimley-Horn & Associates, 2008

AC Transit East Bay BRT

Analysis of Effect on Walk Distance with "All-in-One" Operating Scenario
Based on AC Transit Winter 2008 Weekday Ridership Data

Summary of Results

May 6, 2009

	Berkeley	Oakland	San Leandro	Total East Bay BRT Corridor
# Pax that Walk to a Different Station	797	5,424	2,297	8,518
# Pax that Don't Walk to a Different Station	5,271	28,115	5,012	38,398
Total Daily Boardings and Alightings	6,068	33,539	7,309	46,916
% Pax that Walk to a Different Station	13%	16%	31%	18%
% Pax that Don't Walk to a Different Station	87%	84%	69%	82%

NOTE: Of the 18% of passengers that walk to a different station, many have no increase in walk distance (i.e., they walk the same distance, but in the opposite direction)

* Analysis conducted in "ONOFFS_Route1and1R" DBF file
* Current and Future Bristol and Durant Stops included in San Leandro calculations

Agenda Item 5
Attachment 4

AC Transit East Bay BRT

Analysis of Effect on Walk Distance with "All-in-One" Operating Scenario
Based on AC Transit Winter 2008 Weekday Ridership Data

Assumptions and Methodology

May 6, 2009

Methodology

1 Using the Route map and Station stops from AC's GIS route maps , we determined the current locations of all 1 and 1R stops.

2 Using the GIS layer, we tagged which of the current day 1 stops are doubled with a 1R stop and merged them into one dbf file within the GIS layer.

3 We added the field "1_1R_On-Of" and mapped out boardings and alightings based on the Winter 2008 signup (Dec 08-March 09 data). For stop locations with 1R, we added the boardings and alightings for 1 and 1R.

4 We then used the CS internal "List of Stations 09-04-02.xls" file to tag which of the current day stops are BRT station locations.

5 We used a current day AC Transit routemap to determine which station resides in which city (San Leandro, Oakland, Berkeley)

Assumptions

1 The 1R stops at the Crescent loop in Berkeley. Because there is no Crescent loop stop in the 1 layer, we just assigned them to Fulton and Kittredge (NB) and to Shattuck and Kittredge (SB).

1a *NB there are now 159 people assigned to Fulton and Kittredge (CS) instead of 60 at Fulton and Kittredge and 99 at Crescent Loop (Winter Signup)

1b *SB there are now 292 assigned to Shattuck and Kittredge (CS) instead of 99 at Cresent Loop, 122 at Center/Shattuck and 71 at Shattuck and Kittredge.

2 Davis St/Hays St and Davis St/ Hays St Counts are assigned to the San Leando BART station layer in the SB direction, giving a total of 525 passengers.

3 BRT stations are obtained from the "List of Stations 09-04-02.xls" and effort was made to assign the BRT station to the closest existing 1 station in the GIS map.

4 14th and Estabrook (BRT) is mapped to 14th and Blossom (1) in NB

5 14th and Estudillo (BRT) is mapped to 14th and Joaquin (1) in NB

6 NOTE: Could consider Denis/Hayes (1) to be 14th and Estudillo (BRT) in NB. Currently not the case.

7 14th and Georgia (BRT) is mapped to 14th and Dutton (1) in NB. This could have been Sunnyside, but comparison unfair due to the 1R stop.

8 NOTE: 14th and Dutton (ridership = 136) vs 14th and Sunnside (ridership = 21)

9 12th and Madison (BRT) maps to 11th and Oak (1) in NB

10 20th and Broadway (BRT) maps to 20th and Telegraph (1) in NB

11 Telegraph and 30th (BRT) maps to Telegraph and 31st (1) in NB

Telegraph and Haste (BRT) maps to Telegraph and Dwight Way (1) in NB. Also include Telegraph Haste (1) in BRT stop calculation.

Shattuck at Center (BRT) maps to both Shattuck and Allston (1) as well as Shattuck and Kittredge (1) in SB

BRT stop at Durant and Dana in SB

Telegraph and Haste (BRT) maps to Telegraph and Dwight (1) in SB

Telegraph at 57th (BRT) maps to Telegraph and 58th (1) in SB

Note: Could move the BRT station to Telegraph and 59th (ridership = 182) vs Telegraph and 58th (ridership = 15)

Telegraph and 49th (BRT) maps to Telegraph and 50th (1) in SB

Agenda Item 5
Attachment 4

AC Transit East Bay BRT
Analysis of Effect on Walk Distance with "All-in-One" Operating Scenario
Based on AC Transit Winter 2008 Weekday Ridership Data

Assumptions and Methodology

May 6, 2009

International and 20th (BRT) maps to International and 21st (1) in SB
International and 35th (BRT) maps to International and 34th (1) in SB
International and 72nd (BRT) maps to International and Hegenberger (1) in SB
International and Georgia (BRT) maps to Inernational and Stoakes (1) in SB
Note: Could move the BRT station to 14th and Best/Dutton (ridership = 139) vs. 14th and Stoakes (ridership = 31)
14th and Estabrook (BRT) is mapped to 14th and Cornwall (1) in SB

AC Transit East Bay BRT

Analysis of Effect on Walk Distance with "All-in-One" Operating Scenario
Based on AC Transit Winter 2008 Weekday Ridership Data

Data Sources

May 6, 2009

File Name	Purpose	Format	Received From	Date Received
"Spring09_Routes_corrected"	Route Map for AC Transit Routes	SHP	AC Transit	4/30/2009
"tpatstplistSpring09.xls"	Station Stops in Lat/Long for all AC Transit Routes	XLS	AC Transit	4/30/2009
"1-1R Winter 0812 signup.xls"	Ridership for 1 and 1R Weekday	XLS	AC Transit	4/30/2009
"List of Stations 09-04-02.xls"	BRT Station List (49 in each direction)	XLS	CS internal	4/21/2009

AC Transit East Bay BRT

Analysis of Effect on Walk Distance with "All-in-One" Operating Scenario
Based on AC Transit Winter 2008 Weekday Ridership Data

Calculation Details

May 6, 2009

Direction	Stop #	Stop Description	1R Stop	1+1R Weekday Ons + Offs	All-In-One BRT Station	Walk to Different Station	City
Northbound	1	bayfair bart station	Yes	975	Yes	No	San Leandro
Northbound	2	COELHO DR:MOONEY AV	No	14	No	Yes	San Leandro
Northbound	3	E 14TH ST:159TH AV	No	114	No	Yes	San Leandro
Northbound	4	E 14TH ST:BAYFAIR DR	Yes	180	Yes	No	San Leandro
Northbound	5	E 14TH ST:153RD AV	No	52	No	Yes	San Leandro
Northbound	6	E 14TH ST:150TH AV	Yes	158	Yes	No	San Leandro
Northbound	7	E 14TH ST:148TH AV	No	33	Yes	No	San Leandro
Northbound	8	E 14TH ST:145TH AV	No	50	No	Yes	San Leandro
Northbound	9	E 14TH ST:143RD AV	No	62	Yes	No	San Leandro
Northbound	10	E 14TH ST:141ST AV	No	19	No	Yes	San Leandro
Northbound	11	E 14TH ST:SAN LEANDRO BLVD	Yes	352	Yes	No	San Leandro
Northbound	12	E 14TH ST:BLOSSOM WY	No	64	Yes	No	San Leandro
Northbound	13	E 14TH ST:SYBIL AV	No	24	No	Yes	San Leandro
Northbound	14	E 14TH ST:DOLORES AV	Yes	117	Yes	No	San Leandro
Northbound	15	E 14TH ST:JOAQUIN AV	Yes	71	Yes	No	San Leandro
Northbound	16	DAVIS ST:HAYS ST	No	292	No	Yes	San Leandro
Northbound	17	SAN LEANDRO BART STATION	No	402	No	Yes	San Leandro
Northbound	18	DAVIS ST:HAYS ST	No	62	No	Yes	San Leandro
Northbound	19	E 14TH ST:BEGIER AV	No	32	Yes	No	San Leandro
Northbound	20	E 14TH ST:DUTTON AV	Yes	136	Yes	No	San Leandro
Northbound	21	E 14TH ST:SUNNYSIDE DR	No	21	No	Yes	San Leandro
Northbound	22	E 14TH ST:BROADMOOR BLVD	No	40	No	Yes	San Leandro
Northbound	23	E 14TH ST:DURANT AV	No	101	Yes	No	San Leandro
Northbound	24	INTERNATIONAL BLVD:104TH AV	Yes	535	Yes	No	Oakland
Northbound	25	INTERNATIONAL BLVD:100TH AV	No	47	No	Yes	Oakland
Northbound	26	INTERNATIONAL BLVD:98TH AV	Yes	674	Yes	No	Oakland
Northbound	27	INTERNATIONAL BLVD:94TH AV	No	70	No	Yes	Oakland
Northbound	28	INTERNATIONAL BLVD:90TH AV	Yes	536	Yes	No	Oakland

AC Transit East Bay BRT

Analysis of Effect on Walk Distance with "All-in-One" Operating Scenario
Based on AC Transit Winter 2008 Weekday Ridership Data

Calculation Details

May 6, 2009

Direction	Stop #	Stop Description	1R Stop	1+1R Weekday Ons + Offs	All-In-One BRT Station	Walk to Different Station	City
Northbound	29	INTERNATIONAL BLVD:87TH AV	No	50	No	Yes	Oakland
Northbound	30	international blvd:86th ave	No	121	No	Yes	Oakland
Northbound	31	international blvd:82nd ave	Yes	635	Yes	No	Oakland
Northbound	32	INTERNATIONAL BLVD:80TH AV	No	27	No	Yes	Oakland
Northbound	33	INTERNATIONAL BLVD:78TH AV	No	51	Yes	No	Oakland
Northbound	34	international blvd:73rd ave	Yes	871	Yes	No	Oakland
Northbound	35	INTERNATIONAL BLVD:69TH AV	No	77	No	Yes	Oakland
Northbound	36	INTERNATIONAL BLVD:HAVENSCOURT BLVD	Yes	464	Yes	No	Oakland
Northbound	37	INTERNATIONAL BLVD:64TH AV	No	105	No	Yes	Oakland
Northbound	38	INTERNATIONAL BLVD:62ND AV	No	79	No	Yes	Oakland
Northbound	39	international blvd:seminary ave	Yes	654	Yes	No	Oakland
Northbound	40	INTERNATIONAL BLVD:57TH AV	No	31	No	Yes	Oakland
Northbound	41	INTERNATIONAL BLVD:54TH AV	No	110	Yes	No	Oakland
Northbound	42	INTERNATIONAL BLVD:52ND AV	No	63	No	Yes	Oakland
Northbound	43	INTERNATIONAL BLVD:48TH AV	No	91	No	Yes	Oakland
Northbound	44	INTERNATIONAL BLVD:46TH AV	No	89	No	Yes	Oakland
Northbound	45	international blvd:high st	Yes	648	Yes	No	Oakland
Northbound	46	INTERNATIONAL BLVD:40TH AV	No	38	No	Yes	Oakland
Northbound	47	INTERNATIONAL BLVD:38TH AV	No	94	No	Yes	Oakland
Northbound	48	international blvd:34th ave	Yes	1372	Yes	No	Oakland
Northbound	49	INTERNATIONAL BLVD:FRUITVALE AV	No	160	Yes	No	Oakland
Northbound	50	INTERNATIONAL BLVD:29TH AV	No	118	Yes	No	Oakland
Northbound	51	INTERNATIONAL BLVD:MITCHELL ST	No	33	No	Yes	Oakland
Northbound	52	INTERNATIONAL BLVD:26TH AV	Yes	478	No	Yes	Oakland
Northbound	53	INTERNATIONAL BLVD:23RD AV	No	170	Yes	No	Oakland
Northbound	54	INTERNATIONAL BLVD:21ST AV	No	85	Yes	No	Oakland
Northbound	55	INTERNATIONAL BLVD:19TH AV	No	36	No	Yes	Oakland
Northbound	56	INTERNATIONAL BLVD:17TH AV	No	30	No	Yes	Oakland

AC Transit East Bay BRT

Analysis of Effect on Walk Distance with "All-in-One" Operating Scenario
Based on AC Transit Winter 2008 Weekday Ridership Data

Calculation Details

May 6, 2009

Direction	Stop #	Stop Description	1R Stop	1+1R Weekday Ons + Offs	All-In-One BRT Station	Walk to Different Station	City
Northbound	57	INTERNATIONAL BLVD:14TH AV	Yes	321	Yes	No	Oakland
Northbound	58	INTERNATIONAL BLVD:10TH AV	Yes	341	Yes	No	Oakland
Northbound	59	international blvd:8th st	No	92	No	Yes	Oakland
Northbound	60	international blvd:5th st	Yes	371	Yes	No	Oakland
Northbound	61	INTERNATIONAL BLVD:1ST AV	Yes	350	Yes	No	Oakland
Northbound	62	12TH ST:FALLON ST	No	24	No	Yes	Oakland
Northbound	63	12TH ST:OAK ST	Yes	291	Yes	No	Oakland
Northbound	64	12TH ST:JACKSON ST	No	48	No	Yes	Oakland
Northbound	65	12th st:harrison st	Yes	349	Yes	No	Oakland
Northbound	66	12th st:webster st	No	45	No	Yes	Oakland
Northbound	67	12th st:broadway	Yes	1474	Yes	No	Oakland
Northbound	68	BROADWAY:14TH ST	Yes	652	Yes	No	Oakland
Northbound	69	BROADWAY:17TH ST	No	79	No	Yes	Oakland
Northbound	70	BROADWAY:19TH ST (19TH ST BART STATION)	No	38	No	Yes	Oakland
Northbound	71	20th:telegragh ave	Yes	569	Yes	No	Oakland
Northbound	72	TELEGRAPH AV:W GRAND AV	No	11	No	Yes	Oakland
Northbound	73	telegraph ave:24th st	Yes	433	Yes	No	Oakland
Northbound	74	TELEGRAPH AV:27TH ST	No	68	No	Yes	Oakland
Northbound	75	TELEGRAPH AV:29TH ST	No	83	No	Yes	Oakland
Northbound	76	TELEGRAPH AV:31ST ST	Yes	345	Yes	No	Oakland
Northbound	77	TELEGRAPH AV:34TH ST	No	72	Yes	No	Oakland
Northbound	78	TELEGRAPH AV:36TH ST	No	29	No	Yes	Oakland
Northbound	79	TELEGRAPH AV:38TH ST	No	85	No	Yes	Oakland
Northbound	80	TELEGRAPH AV:40TH ST	Yes	635	Yes	No	Oakland
Northbound	81	TELEGRAPH AV:43RD ST	No	29	No	Yes	Oakland
Northbound	82	TELEGRAPH AV:46TH ST	No	116	No	Yes	Oakland
Northbound	83	TELEGRAPH AV:49TH ST	Yes	459	Yes	No	Oakland
Northbound	84	TELEGRAPH AV:CLAREMONT AV	No	102	No	Yes	Oakland

AC Transit East Bay BRT

Analysis of Effect on Walk Distance with "All-in-One" Operating Scenario
Based on AC Transit Winter 2008 Weekday Ridership Data

Calculation Details

May 6, 2009

Direction	Stop #	Stop Description	1R Stop	1+1R Weekday Ons + Offs	All-In-One BRT Station	Walk to Different Station	City
Northbound	85	TELEGRAPH AV:55TH ST	No	41	No	Yes	Oakland
Northbound	86	TELEGRAPH AV:AILEEN ST	No	23	No	Yes	Oakland
Northbound	87	TELEGRAPH AV:58TH ST	No	37	Yes	No	Oakland
Northbound	88	telegraph ave:59th st.	Yes	218	No	Yes	Oakland
Northbound	89	TELEGRAPH AV:62ND ST	No	35	No	Yes	Oakland
Northbound	90	telegraph ave:alcatraz ave	Yes	293	Yes	No	Oakland
Northbound	91	TELEGRAPH AV:PRINCE ST	No	29	No	Yes	Berkeley
Northbound	92	TELEGRAPH AV:WEBSTER ST	Yes	349	Yes	No	Berkeley
Northbound	93	TELEGRAPH AV:ASHBY AV	No	40	No	Yes	Berkeley
Northbound	94	TELEGRAPH AV:RUSSELL ST	No	37	No	Yes	Berkeley
Northbound	95	TELEGRAPH AV:STUART ST	No	52	No	Yes	Berkeley
Northbound	96	TELEGRAPH AV:DERBY ST	No	44	Yes	No	Berkeley
Northbound	97	TELEGRAPH AV:PARKER ST	No	73	No	Yes	Berkeley
Northbound	98	TELEGRAPH AV:DWIGHT WY	Yes	467	Yes	No	Berkeley
Northbound	99	TELEGRAPH AV:HASTE ST	No	44	Yes	No	Berkeley
Northbound	100	TELEGRAPH AV:DURANT AV	No	218	Yes	No	Berkeley
Northbound	101	BANCROFT WY:TELEGRAPH AV	Yes	697	Yes	No	Berkeley
Northbound	102	BANCROFT WY:DANA ST	No	39	No	Yes	Berkeley
Northbound	103	bancroft wy:ellsworth st	No	25	No	Yes	Berkeley
Northbound	104	FULTON ST:KITTREDGE ST	No	159	No	Yes	Berkeley
Northbound	105	CENTER ST:SHATTUCK SQ (BERKELEY BART STATION)	Yes	1066	Yes	No	Berkeley
Southbound	2	SHATTUCK AV:ALLSTON WY	Yes	803	Yes	No	Berkeley
Southbound	3	SHATTUCK AV:KITTREDGE ST	No	292	Yes	No	Berkeley
Southbound	4	DURANT AV:SHATTUCK AV	No	85	No	Yes	Berkeley
Southbound	5	DURANT AV:FULTON ST	No	30	No	Yes	Berkeley
Southbound	6	DURANT AV:ELLSWORTH ST	No	21	No	Yes	Berkeley
Southbound	7	DURANT AV:DANA ST	Yes	415	Yes	No	Berkeley
Southbound	8	DANA ST:HASTE ST	No	32	No	Yes	Berkeley

AC Transit East Bay BRT

Analysis of Effect on Walk Distance with "All-in-One" Operating Scenario
Based on AC Transit Winter 2008 Weekday Ridership Data

Calculation Details

May 6, 2009

Direction	Stop #	Stop Description	1R Stop	1+1R Weekday Ons + Offs	All-In-One BRT Station	Walk to Different Station	City
Southbound	9	TELEGRAPH AV:DWIGHT WY	Yes	554	Yes	No	Berkeley
Southbound	10	TELEGRAPH AV:PARKER ST	No	44	No	Yes	Berkeley
Southbound	11	TELEGRAPH AV:DERBY ST	No	38	Yes	No	Berkeley
Southbound	12	TELEGRAPH AV:STUART ST	No	38	No	Yes	Berkeley
Southbound	13	TELEGRAPH AV:RUSSELL ST	No	30	No	Yes	Berkeley
Southbound	14	TELEGRAPH AV:ASHBY AV	No	30	No	Yes	Berkeley
Southbound	15	TELEGRAPH AV:WEBSTER ST	Yes	284	Yes	No	Berkeley
Southbound	16	TELEGRAPH AV:PRINCE ST	No	33	No	Yes	Berkeley
Southbound	17	TELEGRAPH AV:ALCATRAZ AV	Yes	234	Yes	No	Oakland
Southbound	18	TELEGRAPH AV:62ND ST	No	31	No	Yes	Oakland
Southbound	19	TELEGRAPH AV:60TH ST	No	18	No	Yes	Oakland
Southbound	20	telegraph ave:59th st	Yes	182	No	Yes	Oakland
Southbound	21	TELEGRAPH AV:58TH ST	No	15	Yes	No	Oakland
Southbound	22	TELEGRAPH AV:AILEEN ST	No	8	No	Yes	Oakland
Southbound	23	TELEGRAPH AV:55TH ST	No	35	No	Yes	Oakland
Southbound	24	TELEGRAPH AV:52ND ST	No	56	No	Yes	Oakland
Southbound	25	TELEGRAPH AV:50TH ST	Yes	452	Yes	No	Oakland
Southbound	26	TELEGRAPH AV:45TH ST	No	60	No	Yes	Oakland
Southbound	27	TELEGRAPH AV:44TH ST	No	62	No	Yes	Oakland
Southbound	28	TELEGRAPH AV:40TH ST	Yes	668	Yes	No	Oakland
Southbound	29	TELEGRAPH:MACARTHUR	No	82	No	Yes	Oakland
Southbound	30	TELEGRAPH AV:36TH ST	No	26	No	Yes	Oakland
Southbound	31	TELEGRAPH AV:34TH ST	No	74	Yes	No	Oakland
Southbound	32	TELEGRAPH AV:32ND ST	No	29	No	Yes	Oakland
Southbound	33	TELEGRAPH AV:30TH ST	Yes	356	Yes	No	Oakland
Southbound	34	TELEGRAPH AV:27TH ST	No	77	No	Yes	Oakland
Southbound	35	TELEGRAPH AV:24TH ST	Yes	388	Yes	No	Oakland
Southbound	36	TELEGRAPH AV:W GRAND AV	No	39	No	Yes	Oakland

AC Transit East Bay BRT

Analysis of Effect on Walk Distance with "All-in-One" Operating Scenario
Based on AC Transit Winter 2008 Weekday Ridership Data

Calculation Details

May 6, 2009

Direction	Stop #	Stop Description	1R Stop	1+1R Weekday Ons + Offs	All-In-One BRT Station	Walk to Different Station	City
Southbound	37	20th:telegragh ave	Yes	655	Yes	No	Oakland
Southbound	38	BROADWAY:19TH ST (19TH ST BART STATION)	No	33	No	Yes	Oakland
Southbound	39	broadway:17th st	No	57	No	Yes	Oakland
Southbound	40	BROADWAY:14TH ST (12TH ST BART STATION)	Yes	1662	Yes	No	Oakland
Southbound	41	11TH ST:BROADWAY (12TH ST BART STATION)	Yes	537	Yes	No	Oakland
Southbound	42	11th st:harrison st	Yes	363	Yes	No	Oakland
Southbound	43	11th st:madison st	Yes	297	Yes	No	Oakland
Southbound	44	11TH ST:CONVENTION CENTER	No	40	No	Yes	Oakland
Southbound	45	INTERNATIONAL BLVD:2ND AV	Yes	413	Yes	No	Oakland
Southbound	46	international blvd:5th st	Yes	414	Yes	No	Oakland
Southbound	47	international blvd:8th st	No	104	No	Yes	Oakland
Southbound	48	INTERNATIONAL BLVD:10TH AV	Yes	280	Yes	No	Oakland
Southbound	49	INTERNATIONAL BLVD:14TH AV	Yes	311	Yes	No	Oakland
Southbound	50	INTERNATIONAL BLVD:17TH AV	No	36	No	Yes	Oakland
Southbound	51	INTERNATIONAL BLVD:19TH AV	No	39	No	Yes	Oakland
Southbound	52	INTERNATIONAL BLVD:21ST AV	No	77	Yes	No	Oakland
Southbound	53	INTERNATIONAL BLVD:23RD AV	No	152	Yes	No	Oakland
Southbound	54	INTERNATIONAL BLVD:26TH AV	Yes	519	No	Yes	Oakland
Southbound	55	INTERNATIONAL BLVD:29TH AV	No	100	Yes	No	Oakland
Southbound	56	INTERNATIONAL BLVD:FRUITVALE AV	No	204	Yes	No	Oakland
Southbound	57	international blvd:34th ave	Yes	1418	Yes	No	Oakland
Southbound	58	INTERNATIONAL BLVD:38TH AV	No	111	No	Yes	Oakland
Southbound	59	INTERNATIONAL BLVD:40TH AV	No	29	No	Yes	Oakland
Southbound	60	international blvd:high st	Yes	639	Yes	No	Oakland
Southbound	61	INTERNATIONAL BLVD:46TH AV	No	47	No	Yes	Oakland
Southbound	62	INTERNATIONAL BLVD:49TH AV	No	96	No	Yes	Oakland
Southbound	63	INTERNATIONAL BLVD:52ND AV	No	89	No	Yes	Oakland
Southbound	64	INTERNATIONAL BLVD:54TH AV	No	85	Yes	No	Oakland

AC Transit East Bay BRT

Analysis of Effect on Walk Distance with "All-in-One" Operating Scenario
Based on AC Transit Winter 2008 Weekday Ridership Data

Calculation Details

May 6, 2009

Direction	Stop #	Stop Description	1R Stop	1+1R Weekday Ons + Offs	All-In-One BRT Station	Walk to Different Station	City
Southbound	65	INTERNATIONAL BLVD:57TH AV	No	42	No	Yes	Oakland
Southbound	66	international blvd:seminary ave	Yes	600	Yes	No	Oakland
Southbound	67	INTERNATIONAL BLVD:62ND AV	No	69	No	Yes	Oakland
Southbound	68	INTERNATIONAL BLVD:64TH AV	No	89	No	Yes	Oakland
Southbound	69	INTERNATIONAL BLVD:HAVENSCOURT BLVD	Yes	464	Yes	No	Oakland
Southbound	70	INTERNATIONAL BLVD:69TH AV	No	101	No	Yes	Oakland
Southbound	71	INTERNATIONAL BLVD:HEGENBERGER RD	Yes	827	Yes	No	Oakland
Southbound	72	INTERNATIONAL BLVD:78TH AV	No	68	Yes	No	Oakland
Southbound	73	INTERNATIONAL BLVD:80TH AV	No	46	No	Yes	Oakland
Southbound	74	INTERNATIONAL BLVD:82ND AV	Yes	575	Yes	No	Oakland
Southbound	75	INTERNATIONAL BLVD:85TH AV	No	136	No	Yes	Oakland
Southbound	76	INTERNATIONAL BLVD:87TH AV	No	86	No	Yes	Oakland
Southbound	77	INTERNATIONAL BLVD:90TH AV	Yes	534	Yes	No	Oakland
Southbound	78	INTERNATIONAL BLVD:94TH AV	No	122	No	Yes	Oakland
Southbound	79	international blvd:98th ave	Yes	654	Yes	No	Oakland
Southbound	80	INTERNATIONAL BLVD:100TH AV	No	51	No	Yes	Oakland
Southbound	81	INTERNATIONAL BLVD:102ND AV	No	52	No	Yes	Oakland
Southbound	82	INTERNATIONAL BLVD:104TH AV	Yes	524	Yes	No	Oakland
Southbound	83	E 14TH ST:BRISTOL BLVD	No	57	No	Yes	San Leandro
Southbound	84	E 14TH ST:DURANT AV	No	54	Yes	No	San Leandro
Southbound	85	E 14TH ST:W BROADMOOR BLVD	No	48	No	Yes	San Leandro
Southbound	86	E 14TH ST:STOAKES AV	No	31	Yes	No	San Leandro
Southbound	87	E 14TH ST:BEST AV (DUTTON AV)	Yes	139	No	Yes	San Leandro
Southbound	88	E 14TH ST:LORRAINE BLVD	No	16	Yes	No	San Leandro
Southbound	89	E 14TH ST:TOLER AV	No	16	No	Yes	San Leandro
Southbound	91	SAN LEANDRO BART STATION	No	525	No	Yes	San Leandro
Southbound	93	E 14TH ST:W ESTUDILLO AV	No	403	Yes	No	San Leandro
Southbound	94	e 14th st:w juana ave	No	49	No	Yes	San Leandro

AC Transit East Bay BRT

Analysis of Effect on Walk Distance with "All-in-One" Operating Scenario
Based on AC Transit Winter 2008 Weekday Ridership Data

Calculation Details

May 6, 2009

Direction	Stop #	Stop Description	1R Stop	1+1R Weekday Ons + Offs	All-In-One BRT Station	Walk to Different Station	City
Southbound	95	E 14TH ST:PARROTT ST	Yes	137	Yes	No	San Leandro
Southbound	96	E 14TH ST:CASTRO ST	No	33	No	Yes	San Leandro
Southbound	97	E 14TH ST:CORNWALL WY	No	79	Yes	No	San Leandro
Southbound	98	E 14TH ST:SAN LEANDRO BLVD	No	90	No	Yes	San Leandro
Southbound	99	E 14TH ST:SAN LEANDRO HOSPITAL	Yes	258	Yes	No	San Leandro
Southbound	100	E 14TH ST:141ST AV	No	41	No	Yes	San Leandro
Southbound	101	E 14TH ST:144TH AV	No	75	Yes	No	San Leandro
Southbound	102	E 14TH ST:148TH AV	No	26	Yes	No	San Leandro
Southbound	103	E 14TH ST:HESPERIAN BLVD	Yes	177	Yes	No	San Leandro
Southbound	104	E 14TH ST:FAIRMONT DR	No	67	No	Yes	San Leandro
Southbound	105	e 14th st:bayfair dr	Yes	312	Yes	No	San Leandro
Southbound	106	159TH AV:E 14TH ST	No	122	No	Yes	San Leandro
Southbound	107	COELHO DR:MOONEY AV	No	20	No	Yes	San Leandro
Southbound	108	BAYFAIR BART STATION	Yes	1163	Yes	No	San Leandro

Agenda Item 5
Attachment 5

Memorandum

TO: Jim Cunradi, Cory LaVigne, Robert del Rosario, Tina Spencer, AC Transit

FROM: Andrew Tang

DATE: 16 April 2009

RE: East Bay Bus Rapid Transit
VMT, Greenhouse Gases, Emissions, Fuel Consumption

This memorandum summarizes information developed by the Cambridge Systematics (CS) team on vehicle-miles of travel (VMT), greenhouse gases, emissions, and fuel consumption for the East Bay Bus Rapid Transit (BRT) project.

Our first analyses were those conducted in support of the May 2007 Draft Environmental Impact Statement/Report (DEIS/R). The information used to develop the DEIS/R values for Alternative 3 (Combined BRT and Local Service to Bay Fair BART) are shown in the table below in the "DEIS/R" column. The DEIS/R results are based on emission rates from the EMFAC 2002 model.

In late 2007, we estimated the reduction in emissions due to reduced auto travel alone and developed an initial estimate of the reduction in CO_2 using emission rates from the EMFAC 2007 model. This information is shown in the table in the "EMFAC 2007" column.

In early 2008, we updated the analysis of fuel consumption and CO_2 emissions using a revised U.S. EPA methodology. This information is shown in the table in the "US EPA" column. The figure shown in this column for the overall reduction in emissions of CO_2 and CO_2 equivalents (auto and bus combined) can also be expressed as a decrease of 6.3 tons per day or 1,900 tons per year.

The CS team will re-analyze the effects of the East Bay BRT on VMT, greenhouse gases, emissions, and fuel consumption in the FEIS/R.

VMT, Greenhouse Gas, Emission, Fuel Consumption Information
Year 2025, Combined BRT and Local Service to Bay Fair

	DEIS/R (May 2007)	EMFAC 2007 (Late 2007)	US EPA (Early 2008)
Auto VMT (miles per day)	-21,000	-21,000	-21,000
Auto Fuel (gallons per day)	-920	-920	-920
Bus Fuel (gallons per day)	+450		+230
Auto + Bus Fuel (gallons per day)	-470		-690
Auto NO_X (lbs per day)		-13.8	
Auto + Bus NO_X (lbs per day)	-10		
Auto SO_X (lbs per day)		-0.18	
Auto + Bus SO_X (lbs per day)	0		
Auto PM_{10} (lbs per day)		-1.83	
Auto + Bus PM_{10} (lbs per day)	-1		
Auto $PM_{2.5}$ (lbs per day)		-1.14	
Auto + Bus $PM_{2.5}$ (lbs per day)	-1		
Auto ROG (lbs per day)		-2.47	
Auto + Bus ROG (lbs per day)	-6		
Auto CO (lbs per day)		-48.5	
Auto + Bus CO (lbs per day)	-42		
Auto CO_2 (lbs per day)		-19,800	-18,800*
Bus CO_2 (lbs per day)			+6,300*
Auto + Bus CO_2 (lbs per day)			-12,500*

* CO_2 and CO_2 equivalents

East Bay Bus Rapid Transit
Agenda Item 5 – Attachment 6

presented to

Policy Steering Committee

presented by

AC Transit

June 19, 2009

Purpose

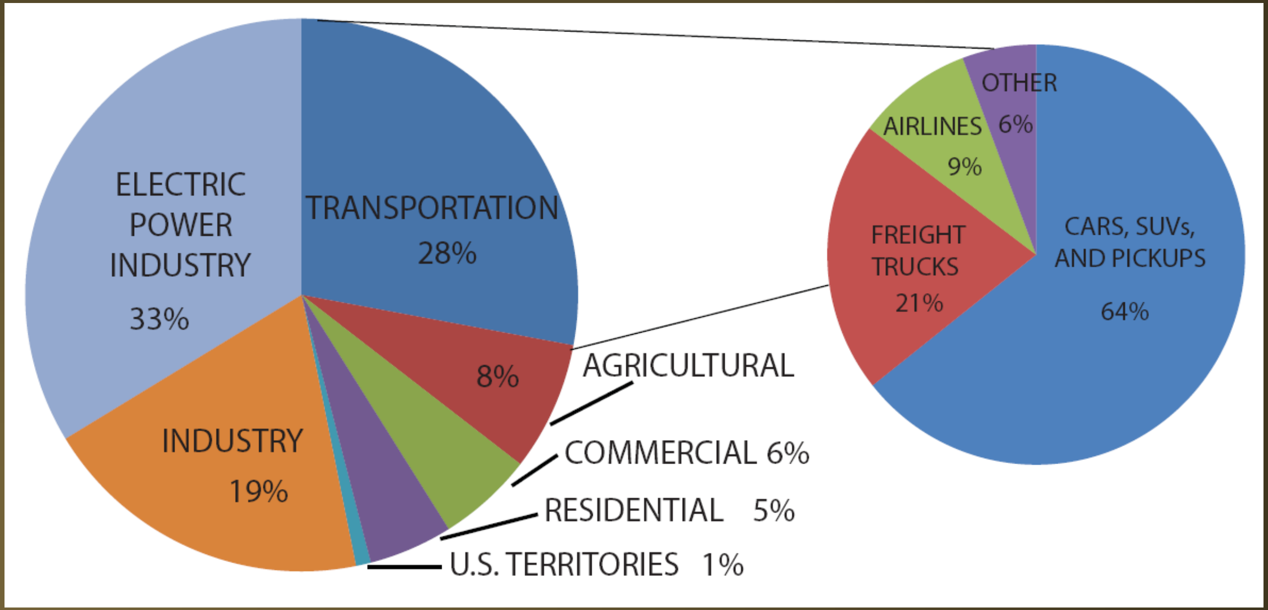
- Background on Greenhouse Gas (GHG) Emissions
  - Define GHG
  - Policy and Legal Framework

- Findings: East Bay BRT and GHG Emissions
  - Recap of Operating Plan Findings
  - Calculation Methods
  - Results: GHG Impacts of BRT

- Opportunities: East Bay BRT and More Emissions Reductions
  - System Efficiencies
  - Vehicle Technology / Fuels
  - Vehicle Miles Traveled / Land Use / Incentives

Background: What are Greenhouse Gases (GHGs)?

- The U.S. EPA has determined that GHGs contribute to global climate change.
- GHG is emitted through the combustion of fossil fuels.
- Transportation contributes 28% of total U.S. GHG. Carbon Dioxide (CO_2) accounts for 95% of GHG in the transportation sector.
- Each gallon of gasoline produces 20.5 lbs of CO_2.



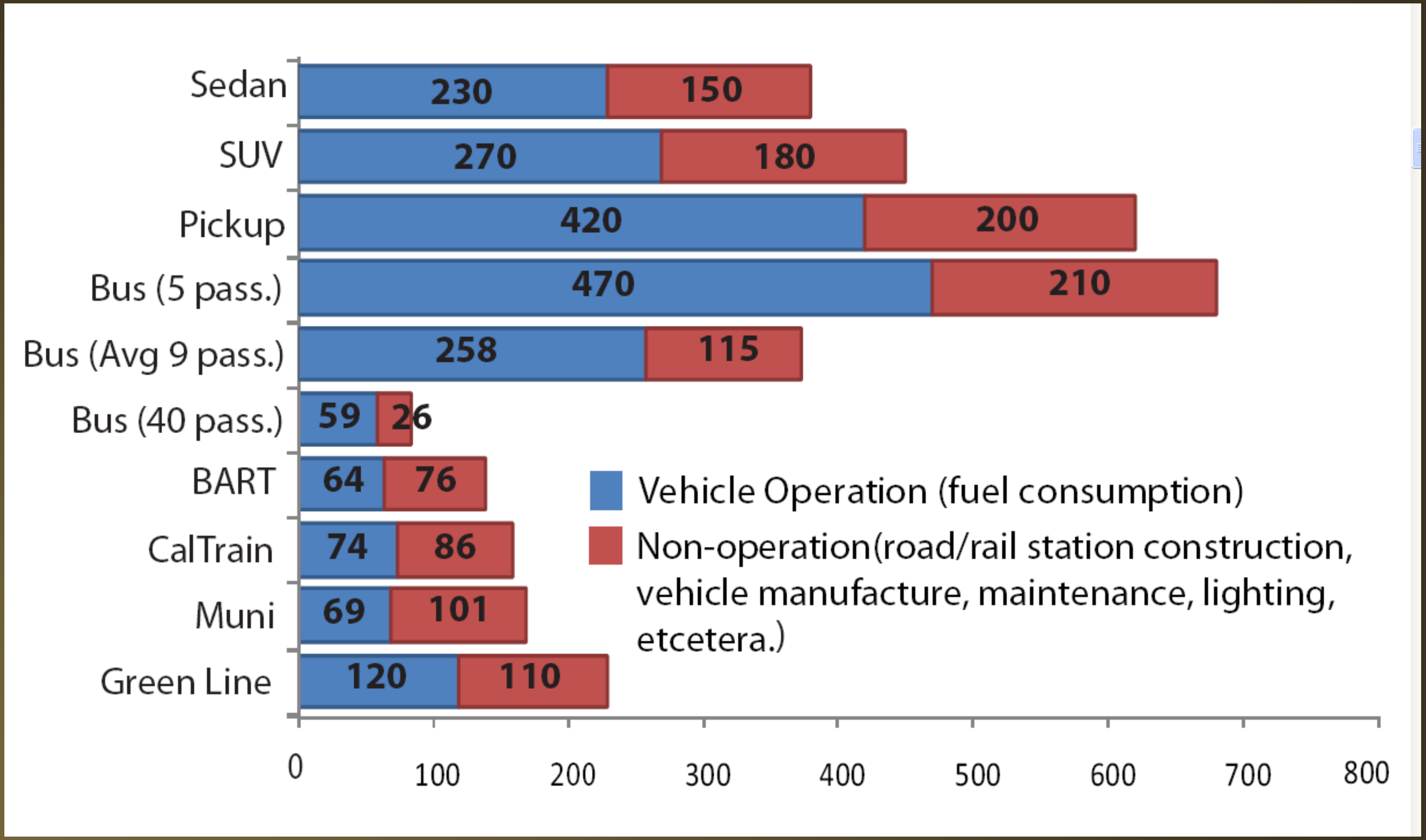
Source: http://www.fta.dot.gov/documents/PublicTransportationsRoleInRespondingToClimateChange.pdf

Background:
The Changing Policy and Legal Framework

- **California is at the forefront of GHG and Climate Change policies and legislation.**
  - **AB 32 – Global Warming Solutions Act of 2006 requires GHG reduction to 1990 levels by 2020.**
  - **SB 375 – Directs Metropolitan Planning Organizations such as MTC to consider the links between transportation and land use and develop Sustainable Communities Strategies.**

Background:
What is the Role of AC Transit?

- **Although public transportation is not explicitly addressed in the legislation, AC Transit has the opportunity to support region and state-wide initiatives.**



Source: http://www.fta.dot.gov/documents/PublicTransportationsRoleInRespondingToClimateChange.pdf

Findings: Recap of Operating Plan Comparison

	Separate BRT and Local	All-in-One
Average Transit Travel Time		+
Transit Ridership		+
Auto Travel		+
Energy, Greenhouse Gases		+
Capital Cost	+	
Operating Cost		+
Bicycle Environment		+
Traffic Impacts		+
Parking Impacts	similar	
Walk Access	+	

Findings:
Calculation Methods for GHG Impacts

Two methods the East Bay BRT project used to calculate the GHG impact of public transportation

1) Method #1 : Energy Impacts (used in DEIS)

- Energy impacts (fuel consumption) were measured and used to calculate the GHG impacts.

2) Method #2: USEPA Calculation (used post-EIS)

- Total GHG Reduction =
(Change in weekday bus VMT x bus mpg) +
(Change in weekday auto VMT x average mpg)

Findings:
Auto Travel Reduction, *Year 2025*

(Reported May 15, 2009)

	Separate BRT and Local	All-in-One
Reduction in Daily Auto Trips	5,300	9,300
Reduction in Daily Auto VMT*	11,800	20,700

* Vehicle Miles Travelled

(Reported May 15, 2009)

Mode Shift Effects: Auto → BRT = Lower GHG

Findings:
Energy and Greenhouse Gases, *Year 2025*

(Reported May 15, 2009)

	Separate BRT and Local	All-in-One
Reduction in Annual Energy Usage	50,000 gallons*	210,000 gallons*
Reduction in Annual GHGs	120 tons**	1,900 tons**

* Annual Gasoline and gasoline equivalents

** Annual CO_2 and CO_2 equivalents

East Bay BRT could reduce overall GHG emissions by 6 tons of CO_2 equivalent per day

Opportunities: Further GHG Reductions

SYSTEM EFFICIENCIES

- Improve BRT performance to attract more motorists
- Optimize frequency hourly/seasonally to minimize fuel use

TECHNOLOGY (VEHICLES/FUELS)

- Implement new technologies that have lower emissions
  - Hydrogen fuel cell bus technology
  - Hybrid propulsion systems
  - Low carbon fuels

VMT / LAND USE / INCENTIVES

- Coordinate with cities to develop incentive programs for developers building near BRT. Provide incentives to ride transit.

MEMORANDUM

TO: Policy Steering Committee **DATE:** June 19, 2009

FROM: Jon Twichell, Transportation Planning Manager

SUBJECT: Information on Agenda Item No. 6, Ridership on the 1/1R

SUMMARY

The implementation of the 1-1 Rapid corridor was complex, and accomplished via two major changes in service, during 2006 and 2007. One immediate result of Rapid service being fully implemented in 2007 was a shift in ridership: formerly two-thirds local and one-third limited, post-Rapid the split between local and Rapid usage is 50-50. Data from the fall of 2008 indicates an increase of 11.4% in Rapid ridership and 9.4% in overall corridor ridership. 2008 survey data also indicates that about half of Rapid riders used modes other than bus, for their trip previously.

BACKGROUND

The Policy Steering Committee (PSC) requested 1/1R ridership information as an agenda item for discussion. AC Transit has a good deal of data on the 1/1R lines, some collected internally, and some via consultant reports. Nelson/Nygaard conducted "before and after" studies of ridership and schedule adherence that included: Rider surveys after the 2006 service changes, in 2007 after the Rapid implementation; and again in 2008 once the route had been on the street for over a year. The Nelson/Nygaard reports have been forwarded to Committee members, and key results are provided in this memo.

DISCUSSION

<u>Lines 1 / 1R Background and Ridership Information</u>

The figures in Attachment 1 to this memo are from a series of Nelson/Nygaard survey reports on the 1/1 Rapid Corridor. They illustrate how the 1 Rapid evolved into its present route, and what ridership results have been up to this point.

The 1 and 1R were created out of two former route corridors, the 82 and 82 Limited along International Boulevard and East 14th Street from the San Leandro Bayfair BART station to downtown Oakland, and the 40/40L/43 routes along Telegraph Avenue from downtown Oakland to downtown Berkeley. While the International Boulevard Corridor had limited as well as local service, the Telegraph Corridor did not, as the 40L became a local on Telegraph Avenue.

In 2006, the 82 and 82L schedules were adjusted to correspond to Rapid schedule standards. In addition, 82 Limited stops were moved to conform to future Rapid stops. The San Leandro BART station was removed from the Limited route, and a new terminus was implemented at Bayfair BART, again corresponding to the planned Rapid route.

Prior to implementing any service changes on the corridor, initial ridership numbers were captured in 2005 on those segments that would ultimately become the 1 and 1 Rapid routes. Counts for "Phase II," the 2006 changes, were also collected. Although these routes would be substantially changed when the Rapid was implemented, Nelson/Nygaard attempted to mirror the Rapid corridor as closely as possible.

Full implementation of the 1 and 1 Rapid occurred in June of 2007; post-implementation boarding counts were conducted in September, 2007 – barely three months after changes on the 1 and 1R corridor were put in place. Total corridor counts over Phases I, II and III were preliminary and inconclusive. The primary finding was a substantial ridership shift from local service to the new Rapid service. Before implementation of the Rapid, ridership was essentially two-thirds local and one third limited; after Rapid implementation, ridership was equally divided between local and Rapid.

A subsequent count of 1 Rapid ridership conducted in November, 2008, indicates that as people have become more familiar with the route, ridership has increased. 2008 Rapid ridership is 11.4% higher than 2007 Rapid ridership. All three major segments of the 18-mile route showed improvement; the Northern/Telegraph Avenue segment had the most substantial increase. Corridor ridership, using Automatic Passenger Counter (APC) counts from late 2008, indicates a 9.4% overall increase.

A final piece of interesting information is a survey question on how patrons made their trip prior to the implementation of the 1 Rapid. While we tend to look at the trends of cumulative daily boardings, in fact there is regular turnover of individual riders. Figure 3-3 indicates that, of the 2008 1 Rapid riders, almost 15% had previously used a car for their trip. Only one-half of the respondents indicated that they were on an AC Transit bus previously for that trip. And, a substantial number of patrons reported that their trips had either not been made previously, or had been made on BART.

Attachments:
Attachment 1: PowerPoint Presentation

BRT Policy Steering Committee

June 19, 2009

Agenda Item 6

Attachment 1

1 – 1Rapid

Implementation and Ridership

Lines 82/82L/40/43 evolved into Lines 1 and 1R over a two-year period, 2006-2007.

Figure 2-1 Configuration of Service Operating in the Corridor

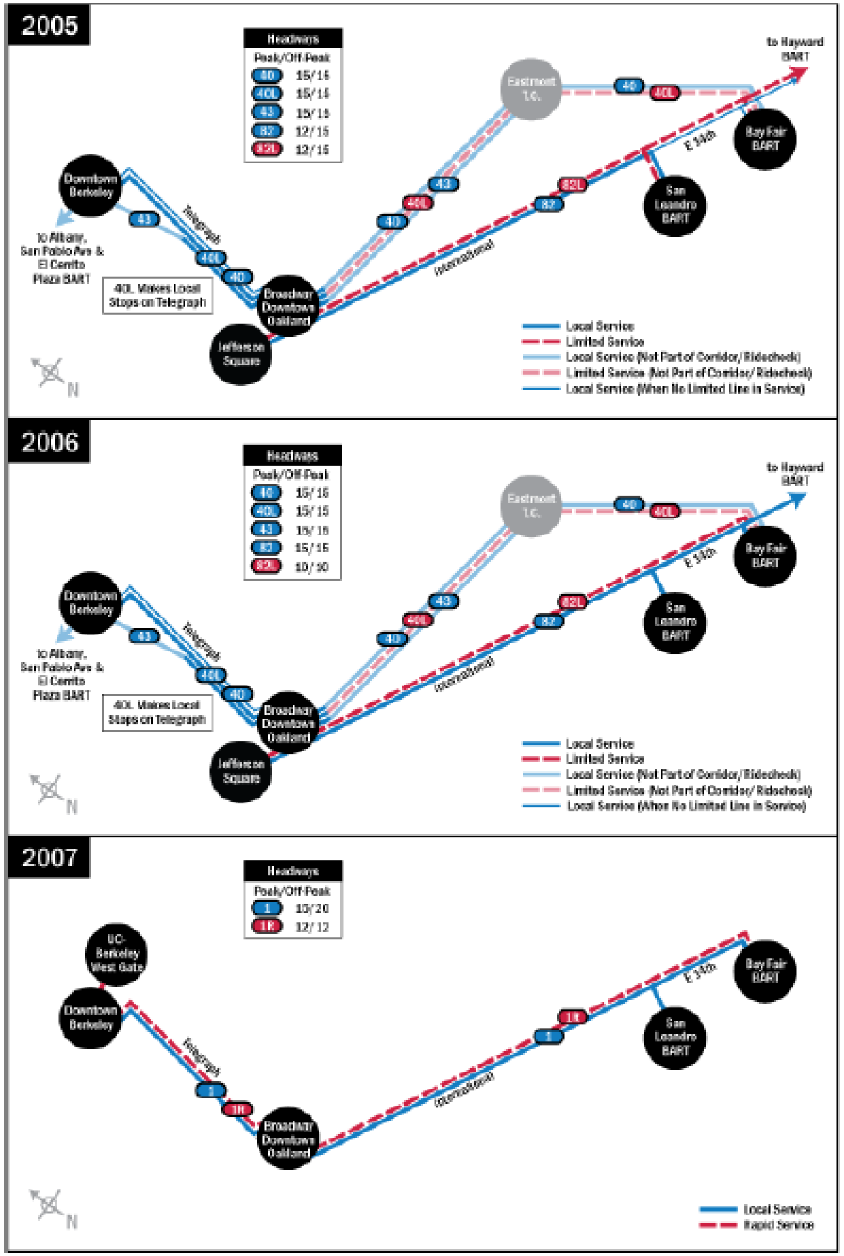


Figure 2-2 Average Weekday Boardings in Corridor, 2005-2007 [1]

	2005	2006	(2005-06)	2007	(2006-07)	(2005-07)
TOTAL	22,339	21,077	- 6%	21,441	+ 2%	- 4%
By Service Type						
Limited/Rapid	7,409	7,615	+ 3%	10,680	+ 40%	+ 44%
Local	14,930	13,462	- 10%	10,761	- 20%	- 28%
By Segment						
Northern (Telegraph)	6,964	6,305	- 9%	6,425	+ 2%	- 8%
Southern (International/E. 14th)	15,375	14,772	- 4%	15,016	+ 2%	- 2%
By Direction of Travel						
Northbound	10,192	10,363	+ 2%	10,703	+ 3%	+ 5%
Southbound	12,147	10,714	- 12%	10,738	0 %	- 12%

Since changes impacted a number of different lines, ridership three months after implementation showed little change.

Figure 2-1 Average Weekday Boardings for Route 1R, 2007-2008

	Total [1]	% Change	Per Revenue Service Hour [2]	% Change
2007	10,791	-	58.4	-
2008	12,023	+11.4%	61.6	+5.6%

Figure 2-2 Average Weekday Boardings by Segment, 2007-2008

	Northern (Telegraph)	Central (International)	Southern (E. 14th)
2007			
Boardings in Segment	2,615	4,817	3,359
% of Total for Route	24%	45%	31%
2008			
Boardings in Segment	3,268	5,139	3,616
% of Total for Route	27%	43%	30%
% Change from 2007	+25.0%	+6.3%	+7.7%

2008 1R Ridership shows substantial gains. The northern (Telegraph Avenue) segment showed the most gains.

International Telegraph East 14th Corridor Ridership

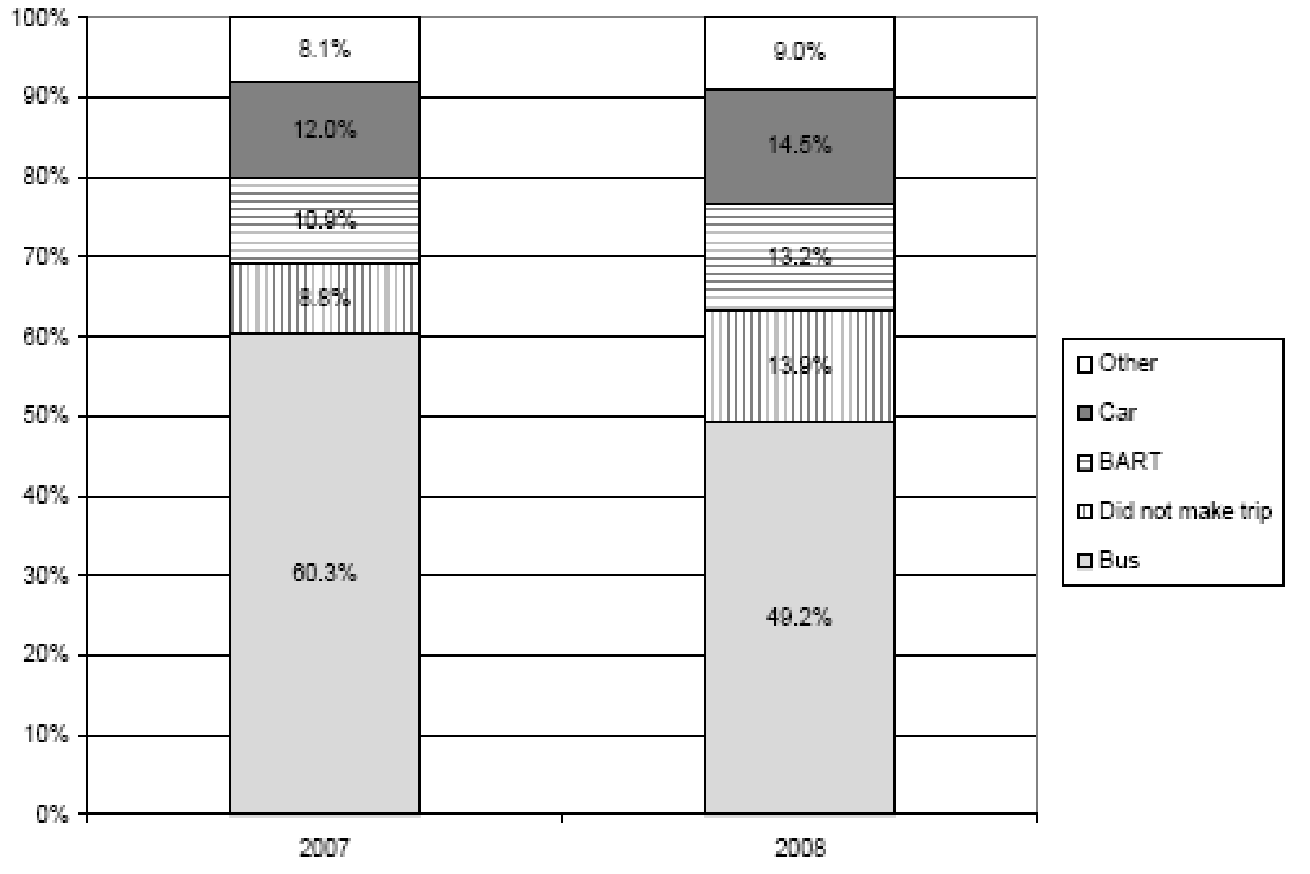
2005	2006	2007	2008	
22,339	21,077	21,441	23,461	(9.4% increase over 2007)

Corridor Ridership Breakdown

	2007	2008
1	10,680	11,631
1R	10,761	11,830

Corridor and Route Information shows a continued 50-50 distribution of local and Rapid ridership as well as substantial ridership gains in 2008.

Figure 3-3 How did you make this trip before the 1R?



More than 50% of 1R riders did not make their trip previously by bus; 14.5% of 2008 1R riders previously traveled by car.

MEMORANDUM

TO: Policy Steering Committee **DATE:** June 19, 2009

FROM: Jim Cunradi – Project Manager, AC Transit

SUBJECT: **INFORMATION** - Agenda No. 7: Proposed Motion/Resolution to Select BRT Operating Plan

Summary

AC Transit Staff presented an evaluation of the two Bus Rapid Transit operating plans evaluated in the Draft EIS/R at the May 15, 2009 meeting of the BRT Policy Steering Committee. The committee considered the performance of the two operating plans evaluated in the May 2007 Draft Environmental Impact Statement/Report: "Separate BRT & Local Service" and the "Combined BRT & Local Service" (now called All-in-One). The operating plans were evaluated for the following measures:

- Transit travel time
- Transit ridership
- Auto travel
- Energy and greenhouse gases
- Capital cost
- Operating cost
- Bicycle environment
- Traffic impact
- Parking impact
- Walk access

The All-in-One operating plan showed superior performance in all the above areas except in walk access.

RECOMMENDATION

AC Transit recommends that the BRT Policy Steering Committee adopt the resolution contained in Attachment A that recommends to the AC Transit Board of Directors that the Locally Preferred Alternative to be studied in the Final EIS/R should incorporate the All-in-One operating plan

Attachments:
Attachment 1: PSC Resolution to Select Bus Rapid Transit Operating Plan

Agenda Item 7
Attachment 1

PSC Resolution to Select Bus Rapid Transit Operating Plan

Whereas: AC Transit established the Policy Steering Committee to make recommendations on project policies to the AC Transit Board of Directors.

Whereas: The Policy Steering Committee adopted Service Objectives which establish goals for transit investment in the Berkeley, Oakland, and San Leandro corridor including:

1. Improve access to major employment and educational centers and enhance connections to other AC Transit services, BART, ferry services and other transit providers
2. Improve transit service reliability
3. Provide frequent transit service
4. Ensure security, cleanliness and comfort waiting for and riding on transit
5. Support transit-oriented residential and commercial development
6. Increase the percentage of trips made by transit, and reduce the percentage by automobile
7. Identify a set of transit improvements that has a high probability of being funded
8. Improve ease of entry and exit on vehicles for all transit riders, including persons with disabilities
9. Provide an environmentally friendly transit service that contributes to air quality improvement

Whereas: AC Transit conducted a Major Investment Study that culminated in a recommendation by the Policy Steering Committee to the AC Transit Board of Directors that Bus Rapid Transit on East 14th Street, International Boulevard and Telegraph Avenue is the Locally Preferred Alternative

Whereas: AC Transit prepared a Draft Environmental Impact Statement/Report on Bus Rapid Transit on East 14th Street, International Boulevard and Telegraph Avenue

Whereas: The DEIS/R evaluated two distinct operating plans: Separate BRT & Local Service and Combined BRT & Local Service (now called All-in-One)

Whereas: The DEIS/R identified the All-in-One as the superior option for achieving all of the approved Service objectives of the project

Therefore: Be it resolved that the Policy Steering Committee recommends to the AC Transit Board of Directors that the Locally Preferred Alternative be based on the All-in-One operating plan