Chapter 8 Financial Analysis and Alternatives Evaluation

8.1 Overview

This chapter reviews the financial capacity of AC Transit to build and operate the proposed project, and compares the performance of alternatives considered in this document in addressing the purpose and need for transit improvements in the project corridor.

8.2 Funding for Construction Costs

The East Bay BRT Project is estimated to cost between $310 million and $400 million to design and construct, depending upon the Build Alternative selected.[1] Four Build Alternatives, which differ in their proposed BRT and local service operating plans and their southern terminus in the City of San Leandro, are under consideration. The four alternatives and their costs are:

Build Alternatives	Capital Cost (YOE in millions)
Alt 1: Separate BRT and Local Service to BayFair BART (16.8 miles)	$360
Alt 2: Separate BRT and Local Service to San Leandro BART (14.7 miles)	$310
Alt 3: Combined BRT and Local Service to BayFair BART (16.8 miles)	$400
Alt 4: Combined BRT and Local Service to San Leandro BART (14.7 miles)	$340

Several variations in the alignments for the Build Alternatives are also under consideration. These include two possible alignments in Downtown Berkeley, four through Berkeley's Southside area, and two through the Eastlake district of East Oakland. Alignment variations propose BRT operations on alternate roadways or roadway couplets. Variations do not substantially change the total length of an alternative or its capital cost.

8.2.1 Committed Funding

At this time, $102.05 million in committed funding has been identified for the implementation of both Rapid Bus and East Bay BRT service, as shown in Table 8.2-1, below. Rapid Bus, which includes new express Route 1R and related capital and operating improvements within the project corridor, is an approved project already in implementation and consists of a subset of the components of the full BRT system, representing the best that can be done to improve corridor transit service without a

[1] All capital costs are expressed in year of expenditure (YOE) dollars.

major investment. For the purposes of this environmental document, and as a planned and programmed project, it is considered part of the No-Build Alternative.

Of the total identified funding, $42.73 million has been committed to expenditures on Rapid Bus related items as well as BRT design and environmental studies, including $16.0 million on upgrading traffic signals and $16.7 million on purchasing buses. The remaining $59.32 million is available for the construction of the BRT system.

Each of the identified sources of committed funding is described in the following sections.

Table 8.2-1: Committed Funding for No-Build Alternative (Rapid Bus) and Build Alternatives

Funding Source	Amount ($2005 in millions)
Regional Measure 2 (Bridge Tolls)	$65.00
Alameda County Measure B (Sales Tax)	$20.23
CMA TIP	$9.39
Federal Grant	$2.73
Federal STIP	$2.70
SAFETEA-LU	$2.00
Total	**$102.05**

Source: AC Transit, 2006

8.2.1.1 NEW BRIDGE TOLL FUNDING (REGIONAL MEASURE 2)

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.[2] In addition to the approximately $65 million committed for the construction of the East Bay BRT system, a portion of the new funds is earmarked to support capital (buses and related equipment) and operating costs for several express bus routes and the East Bay BRT service. A small portion of these funds is for late night “owl” bus service between BART stations when BART trains do not run. This measure provides $1.2 million per year to operate the owl service.

8.2.1.2 ALAMEDA COUNTY HALF CENT SALES TAX (MEASURE B)

A half-cent sales tax for transportation projects was approved by Alameda County voters in 1986 for a period of fifteen 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, $20 million (2002 $) was allocated for corridor projects, most of which are related to implementing this BRT project. This program is

[2] A further increase of $1 in bridge tolls was authorized by state statute AB 144 in July 2005 to fund the San Francisco Bay Area’s ongoing toll bridge seismic retrofit program. The increase, which raised auto tolls to $4, went into effect January 1, 2007.

administrated by the Alameda County Transportation Improvement Authority (ACTIA) and funds several roadway, transit and other transportation improvement projects in Alameda County.

8.2.1.3 ALAMEDA COUNTY CONGESTION MANAGEMENT AGENCY TIP

The Alameda County Congestion Management Agency (ACCMA) was created in 1991 by a joint-powers agreement between Alameda County and all its cities. 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 may agree to provide AC Transit additional funding to cover the following items:

- Two years (2007 and 2008) of maintenance and operations costs for signal connections for the San Pablo Avenue and the Telegraph Avenue/International Boulevard/East 14th Street Rapid Bus corridors.
- Construction management costs to keep Rapid Bus construction on schedule.
- Five years of maintenance costs for the four end-of-line, closed-circuit TV cameras being installed at AC Transit's request on both Rapid Bus lines.

8.2.1.4 FEDERAL GRANT

The federal government has provided a grant of $2.73 million for the study phase of the East Bay BRT Project and most recently $2 million in earmarked funds in the new SAFETEA-LU legislation (see below).

8.2.1.5 FEDERAL STIP

The California Federal Statewide Transportation Improvement Program (FSTIP) is a staged, multi-year, statewide, intermodal program of transportation projects that is consistent with the statewide transportation plan, metropolitan plans, Federal Transportation Improvement Programs (FTIPs) and related planning processes. The FSTIP is prepared by the California Department of Transportation in cooperation with the Metropolitan Planning Organizations (MPOs) and the Regional Transportation Planning Agencies (RTPAs). This program is funded through the federal gas tax.

8.2.1.6 SAFTEA-LU

Two earmarks for East Bay BRT Project implementation in Alameda County exist within the Bus and Bus Facilities line-item sections of SAFETEA-LU (*Safe, Accountable, Flexible, Efficient Transportation Act—A Legacy for Users*, August 2005), which authorized federally funded transit and highway programs for the period 2005 through 2009. Earmark 75 is for $418,000, while earmark 288 is for $1.672 million.

8.2.2 Potential Sources of Funding

Potential sources of funding for the remaining approximately $250 million to $340 million of East Bay BRT Project construction costs have been identified and include the following:

8.2.2.1 STATE INFRASTRUCTURE BOND

California voters in November 2006 authorized $19.9 billion in transportation infrastructure improvement bonds (Proposition 1B). Also approved was a measure directing that funds from the state sales tax on gasoline go to transportation projects only. The two measures will support approximately $30 billion in expenditures over the next decade. The bonds include funding for various transportation projects, including local and regional public transit improvements. AC Transit may be able to secure a portion of funds specified for congestion relief, public transportation modernization and service enhancements, and/or state-local partnerships for the East Bay BRT Project. Alternatively, the infrastructure bond, by substantially increasing state funding for transportation, could alleviate somewhat the funding constraints facing local/regional projects in the San Francisco Bay Area. The East Bay BRT Project may be able to secure additional local/regional funding as a result.

8.2.2.2 STATE TRANSPORTATION IMPROVEMENT PROGRAM (STIP)

California's State Transportation Improvement Program (STIP) is a multi-year capital improvement program of transportation projects funded from the State Highway Account and other funding sources. The 2006 STIP, approved April 2006, contains over 1,000 projects with a programmed value of approximately $14.2 billion over the next five years. The recently approved Proposition 1B infrastructure bond allocated an additional $2 billion to projects in the STIP (these funds are not included in the $14.2 billion total.). AC Transit may receive additional funding from the STIP through the Regional Improvement Program (RIP). This state program provides funds to the San Francisco Bay area that are directly programmed by the Metropolitan Transportation Commission (MTC), the local MPO, through the Regional Transportation Improvement Program. While the California Transportation Commission allocates funds, decisions on what should be included in the program and the responsibility for amending, delivering, and managing the program fall to MTC. About 75 percent of all state funds available for capital programming flow through this mechanism.

8.2.2.3 STATE TRAFFIC CONGESTION RELIEF PROGRAM (TCRP)

This program was implemented as part of the governor's FY 2000 budget and funds specific transportation projects that address traffic congestion. Funding for this program flows through MTC.

8.2.2.4 FTA SMALL STARTS PROGRAM

This new Federal Transit Administration (FTA) program will be funded out of the existing Section 5309 New Starts program for projects with an FTA funding share under $75 million and total project cost under $250 million. This program is being funded at $200 million in each year from 2007 to 2009 and is particularly applicable to transit agencies implementing BRT systems. At this time the East Bay BRT Project does not qualify as a Small Starts Project and AC Transit has made no determination to pursue such a project. However, in the event the Preferred Alternative proposed by

AC Transit for the East Bay BRT Project (at the conclusion of this phase of the environmental review process) meets Small Starts program requirements, AC Transit may consider securing funding under this program.

8.2.2.5 FTA SECTION 5307 – URBANIZED AREA FORMULA FUNDS

This funding source can be used for the acquisition, construction, improvement, and maintenance of transit facilities and equipment. It is primarily used in this region for bus replacement. Resources are allocated to urban areas according to population size and a statistically based formula, and are usually matched on an 80 percent federal, 20 percent local basis. Within the MTC metropolitan area, only routine bus replacement is eligible for this fund source.

8.2.2.6 FTA SECTION 5309 – CAPITAL PROGRAM, DISCRETIONARY BUS

This funding source provides discretionary funds allocated on a project basis. They are primarily directed to rail modernization and major bus projects that require funding beyond that available under Section 5307. This funding source usually requires a 20 percent local match and is subject to annual appropriations.

8.2.2.7 TRANSPORTATION FUND FOR CLEAN AIR

The Transportation Fund for Clean Air (TFCA) provides grants to local governments for projects that will reduce air pollution. The Bay Area Air Quality Management District (BAAQMD) administers the grant program in the San Francisco Bay Area. The program is funded by a surcharge of $4.00 on motor vehicle registration fees. The surcharge revenues are to be used to implement specified transportation control measures that are included in the BAAQMD's Clean Air Plan, developed and adopted pursuant to the requirements of the California Clean Air Act. Forty percent of the TFCA funds are programmed by the county CMAs. Alameda County CMA has targeted $1.4 million of the county share of TFCA funds for the BRT project.

8.3 Funding for Operations and Maintenance Costs

Operations and maintenance (O&M) costs for No-Build Alternative bus service in the project corridor in 2025 would total $30.6 million ($24.1 million net of fares; both figures in 2005 dollars). With the implementation of BRT service, corridor operations and maintenance costs would increase to between $35.5 million and $39.4 million ($25.4 million and $31.3 million net of fares), as shown in Table 8.3-1. The amount depends on the Build Alternative selected, as detailed below. Total costs are between $4.9 million and $8.8 million higher than the No-Build Alternative. The increase in fare revenue would partially offset the increased operations and maintenance costs, reducing the operating subsidy required to operate the system to between $1.2 million and $7.1 million. Alt 3: Combined BRT and Local Service to BayFair BART is estimated to have the lowest O&M costs, highest fare revenue and therefore requires the lowest operating subsidy among the four Build Alternatives. Alt 2: Separate BRT and Local Service to San Leandro BART is estimated to have the highest O&M costs, lowest fare revenue and require the highest operating subsidy among the Build Alternatives. Alt 1: Separate BRT and Local Service to BayFair BART and Alt 4: Combined BRT and Local Service to

San Leandro BART would fall between these two limits, with Alternative 4 requiring less of an operating subsidy than Alternative 1.

It should be noted that the additional operating subsidy for any of the Build Alternatives is a small percentage of AC Transit's total annual O&M costs, which were approximately $254 million in fiscal year 2005-2006.

Table 8.3-1: Annual Operations and Maintenance Costs of Build Alternatives in 2025 ($2005 in millions)

	No-Build	Build Alternatives			
	Rapid Bus Service to BayFair BART	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
Total O&M Costs	$30.6	$38.1	$39.4	$35.5	$36.7
Fare Revenue (Net)[1]	$6.4	$8.6	$8.1	$10.1	$9.6
Net Annual O&M Costs	$24.1	$29.5	$31.3	$25.4	$27.1
Change in Annual Operating Subsidy (compared to No-Build)	N/A	$5.4	$7.1	$1.2	$3.0

Notes:
Figures in the table are rounded and will not necessarily add or subtract to the Net and Change figures shown.
[1] Net fare revenue includes adjustments for changes in systemwide ridership and fare revenue resulting from implementation of an alternative.
Source: Parsons, 2006

8.3.1 Identified Funding

Three million dollars in additional committed O&M funding has been identified. To operate Rapid Bus service in the project corridor, AC Transit has received $3 million in RM-2 funds to offset annual operating costs. The RM-2 funding program is described in Section 8.2.1.1, above. AC Transit anticipates it would receive $3 million per year from RM-2 in the future to offset the operating costs of initially Rapid Bus and then East Bay BRT service. The $3 million in funding does not escalate over time and sunsets in 2040. No other committed sources of operating funds have yet been identified to cover the additional costs associated with BRT service.

8.3.2 Potential Sources of Funding

Potential sources for the remaining operating funds required include:

8.3.2.1 VEHICLE LICENSE FEE

The MTC and ACCMA are considering implementation of vehicle licensing fee (VLF) surcharge. The state legislature must approve legislation allowing local governments to change the VLF, which is set by the state. Funding from this fee would help cover the cost of traffic signal maintenance.

8.3.2.2 LOCAL STREETS AND ROADS PROGRAM

This state funding program helps pay for the maintenance of local roadways. Funding from this program could assist with maintenance of the BRT transitway.

8.3.2.3 PRIVATE SECTOR FUNDING

A number of opportunities exist for private sector funding. For example, private sector providers currently maintain, repair and clean the majority of AC Transit's bus shelters in exchange for advertising space. A similar program could be used to maintain BRT stations.

8.4 Cash Flow Analysis

A cash flow analysis is used to determine AC Transit's financial capacity to implement and operate the proposed East Bay BRT Project. A 25-year cash flow is included in the AC Transit 2003-2012 Short Range Transit Plan (SRTP). The cash flow incorporated operating and capital revenues and expenditures that AC Transit is likely to incur in maintaining existing transit services and as a result of increasing service as specified in the SRTP. AC Transit does not show a deficit (inadequate revenues to meet projected expenditures) in any future year, demonstrating AC Transit's financial capacity to operate and maintain existing service and fund existing capital programs other than the East Bay BRT Project.

The SRTP cash flow analysis does not incorporate costs of the proposed East Bay BRT Project. If the remainder of the required capital and operating funds for the proposed project is identified and secured, AC Transit's financial capacity to build the proposed project and operate the BRT and existing services will be demonstrated.

AC Transit's revenue streams were severely affected by the last downturn in the nation's economy (2001-2002), as historically much of the system's operating revenues originated from taxes levied on sales of goods and fuel, and from fare collection. The recession particularly affected the regional economy, causing a severe decline in both the level of tax collections and ridership. Recent trends appear to be reversing the decline.

Following is a list of key assumptions regarding the most important variables in the financial forecasts:

- Bus Service. 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. Planned service increases have been placed on hold until the agency's financial situation improves.

AC Transit's rebuilding efforts have focused on improving service levels along its most heavily used trunk routes. The recently implemented Rapid Bus service has helped speed up travel and increase ridership along San Pablo Avenue, for example. However, under the Service Rebuilding Operating Program presented in AC Transit's SRTP, total annual vehicle hours would not return to pre-cut levels until the 2007-2008 fiscal year.

- Paratransit Service. The fiscally constrained operating program presented in AC Transit's SRTP indicates a 27 percent cut in annual revenue service miles provided between the 2002-2003 and 2003-2004 fiscal years. Paratransit service increases by 3 percent per year thereafter. Paratransit funding is expected to increase from $10.0 million in fiscal year 2004-2005 to $12.7 million in fiscal year 2013-2014, which represents an average annual increase of 2.7 percent.

- Sales Tax Based Revenue. AC Transit receives funding from several sales-tax based subsidies, including the Transportation Development Act (TDA), AB 1107, Measure B, State Transit Assistance (STA), and Measure C. The combined income from these taxes is forecast to grow by 1.8 percent between the 2004-2005 and 2005-2006 fiscal years. The average annual growth forecast over the next 10 years is 3.5 percent per year, increasing from $102.7 million in fiscal year 2004-2005 to $140.3 million in fiscal year 2013-2014.

- Property Tax Based Revenue. AC Transit receives funding from Measure AA and Measure BB. This funding is anticipated to remain static at $7 million per measure per year over the next 10 years. AC Transit also receives funding directly from property taxes, which accounted for $53.8 million in fiscal year 2004-2005. This is forecast to increase to $73.3 million over the next 10 years, representing an average annual increase of 3.5 percent.

- Operating Revenues. The total farebox collection in fiscal year 2004-2005 was $44.5 million, and is forecast to increase to $58.6 million in fiscal year 2013-2014. This represents an average growth of 3.1 percent per year. Other revenue sources include BART transfers, interest income, and advertising, which totaled $14.4 million in fiscal year 2004-2005. They are expected to increase to $22.7 million over the next 10 years, representing an average annual growth of 5.1 percent.

- Other Federal, State, and Local Grant Subsidies. Additional funding is derived from supplemental service revenues, welfare to work funding, bus engine and transmission grants, Federal Assistance Section 5307 Capital Funding, and TFCA Grants. The combined total value of these revenues was $7.1 million in fiscal year 2004-2005. This is forecast to decrease to $6.2 million by fiscal year 2007-2008, where it will remain for the remainder of the ten-year period. This decrease is due to a large reduction in the amount of Welfare-to-Work funding, but is offset in part by the increase in Section 5307 funding.

- Operating Costs. AC Transit's labor costs, including salary and wages, fringe benefits, and pensions, will increase from $184.7 million in fiscal year 2004-2005 to $243.7 million in fiscal year 2013-2014. This represents an average annual increase of 3.1 percent. Materials and other

service costs are expected to increase from $64.9 million in fiscal year 2004-2005 to $86.8 million in fiscal year 2013-2014, representing an average increase of 3.3 percent per year.

- Capital Costs. AC Transit is undertaking a number of other capital projects, including the expansion of its maintenance and operating facilities; information system replacement and upgrades; installation of security video cameras at transit centers; ADA pedestrian enhancements at transit centers; construction of the new Transbay Terminal in Downtown San Francisco; and scheduled replacement of fixed assets.

8.5 Risk Analysis

A risk analysis takes the cash flow analysis one step further by accounting for variations in the key underlying assumptions. Even if AC Transit identifies committed funding for the construction, and operations and maintenance of the East Bay BRT Project, the financial plan is not without risk. The financial feasibility of building and operating the East Bay BRT Project is dependent upon several significant revenue assumptions:

- Funding sources for the remaining approximately $250 million to $340 required to construct the East Bay BRT Project need to be identified and secured.
- Funding for the remaining $1.2 million to $7.1 million (2005 dollars) required to operate and maintain the BRT system need to be identified and secured annually.
- A significant source of potential construction funding would be from state infrastructure bonds, recently approved and under consideration. AC Transit must propose and qualify a project for funding under recently approved Proposition 1B. There is a possibility the project would not be approved or receive only a portion of the funds requested. Future infrastructure bonds face two major hurdles: approval by the state legislature to place new bond measures on the ballot, and approval by the voters. Because neither outcome is assured, project funding from future bonds would be considered high risk.
- AC Transit will need to balance investment in the East Bay BRT Project with ongoing efforts to re-grow base bus service operations. While new funding streams may be secured for BRT operations, the implementation of the new service should not lead to further curtailment of either existing bus routes or existing growth plans.
- Much of the assumed non-federal funding for the East Bay BRT Project would be derived from sales taxes and bridge tolls. The revenue from these sources is highly dependent on economic conditions and could fall short of expectations.
- The recession in 2001-2002 that led to funding shortfalls also resulted in a significant decrease in ridership. While farebox revenue for existing routes is expected to increase, this is not a certainty. Should ridership fall short of predicted levels, additional funding would be required to cover the funding gap.
- MTC is responsible for the disbursement of the RM-2 funds and oversees all associated bonding activities. AC Transit is able to request RM-2 money from MTC as needed, with MTC bonding if

necessary in order to fulfill the request. As such, there would be no debt-associated risk with this funding source.

Should the above assumptions about operating and capital funding 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 in order to avoid 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 should take steps to ensure that the implementation of the East Bay BRT Project does not hinder plans for re-growth of regular bus operations.

8.6 Financial Analysis Conclusions

The analysis presents preliminary information to determine if AC Transit has the ability to fund the construction and subsequent operation of the East Bay BRT Project while continuing to operate and maintain existing bus service. At this early stage in the project, AC Transit lacks the explicit commitments from sufficient sources to fund both the construction, and operations and maintenance of the service. AC Transit would not, therefore, have the financial capacity to implement the project at this time and must secure additional funding commitments. As the project progresses, however, it is anticipated AC Transit would be able to secure these remaining funds, given the various potential sources of transportation funding in the San Francisco Bay region, and thereby demonstrate financial capacity. (See Section S.10, Areas of Potential Controversy and Issues to Be Resolved, in the document Summary for additional information on funding considerations.)

8.7 Evaluation of Alternatives

The following sections compare the four Build Alternatives with respect to the project purpose and need defined in Chapter 1 of this environmental document. Sections 8.7.1 through 8.7.5 present a quantitative comparison of each Build Alternative with the No-Build Alternative for various performance measures and for two major environmental impacts—traffic and parking. Conditions are for the horizon year 2025. The comparison is a summary evaluation of detailed information presented in previous chapters. Table 8.7-1 lists the performance measures and impact areas that are compared.

Section 8.7.6 complements the information presented in Sections 8.7.1 through 8.7.5 by providing a qualitative assessment of the Build Alternatives relative to the No-Build Alternative. The assessment covers both the measures and impacts presented in Table 8.7-1 and other areas that in some instances are not readily quantifiable but are important for assessing the benefits and disbenefits (disadvantages or adverse impacts) of the proposed project improvements.

Chapter 1, Purpose of and Need for Project, identified four major purposes for the East Bay BRT Project. Performance measures were established to assess how well each Build Alternative would meet these objectives.

8.7.1 Improve Transit Service in the Project Corridor and Better Accommodate High Existing Bus Ridership

As shown in Table 8.7-1, improvement in bus service is measured by service characteristics such as bus trips per hour (service frequency); bus seat miles operated daily along the project alignment (bus capacity); average express bus speeds and travel times (passenger in-vehicle trip times); and average express bus boarding times (passenger convenience and trip times). Under each of the Build Alternatives all of these service characteristics improve substantially compared to the No-build condition in 2025, that is service frequencies and transit capacity increase and travel speeds and times decrease.

8.7.1.1 IMPROVEMENT IN SERVICE FREQUENCY

Proposed East Bay BRT service would operate at frequencies averaging between 16 buses per hour each direction (Alternatives 3 and 4) and 12 buses per hour each direction (Alternatives 1 and 2) during peak periods. Table 8.7-1 shows the change in the number of express bus trips in each direction by time period between Downtown Berkeley and San Leandro (either the BayFair or San Leandro BART Station). An increase in trips equates to an improvement in service frequencies—the number of vehicles passing a specific location each hour. The higher service frequencies are most evident under Alt 3: Combined BRT and Local Service to BayFair BART and Alt 4: Combined BRT and Local Service to San Leandro BART. (It should be noted that the express service frequencies between San Leandro BART and BayFair BART under Alternative 4 would be less than that for Alternative 3 and be a separate service from BRT.) Over 11 additional express bus trips would be provided each hour in each direction along the BRT alignment during peak periods, resulting in an average service headway, or time between buses, of 3.6 minutes. Eight additional trips would be provided each hour during midday periods, resulting in an average service headway of five minutes. The improvements in service frequencies on weekday evenings and on weekends would be less than the peak but would nonetheless substantially reduce the wait time between buses compared to the No-Build Alternative.

Alt 1: Separate BRT and Local Service to BayFair BART and Alt 2: Separate BRT and Local Service to San Leandro BART would provide seven additional express trips per hour each direction during peak periods and four additional trips during the midday but would not improve express service frequencies during weekday evenings and on weekends.

Although Alternatives 3 and 4 would provide higher express bus frequencies compared to Alternatives 1 and 2, when local bus service frequencies are combined with express bus frequencies under the Alternatives 1 and 2, the overall level of service would be essentially the same as under the Alternatives 3 and 4.

Combined with high capacity buses, the increased frequency would increase service capacity and reduce passenger wait times compared to the No-Build Alternative. Because BRT is both faster and attracts more riders, it can support higher frequencies cost effectively.

Table 8.7-1: Comparison of Build Alternatives with the No-Build Alternative

Measures of Effectiveness	Change from No-Build When Implementing East Bay BRT Project (2025)			
	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**
Improve Transit Service in the Project Corridor				
Number of express buses per hour	Change in Bus Trips *(each direction)*			
Weekday				
Peak	+7	+7	+11.5	+11.5
Midday	+4	+4	+8	+8
Evening	0	0	+3	+3
Weekend				
Peak	0	0	+3.5	+3.5
Midday	0	0	+3.5	+3.5
Evening	0	0	+3	+3
Bus seat-miles operated	Change in Bus Seat-Miles (%)			
Daily	+136,000 (56%)	+118,000 (48%)	+168,000 (69%)	+144,000 (59%)
Downtown Berkeley to BayFair BART express bus travel time	Change in Travel Time *(minutes)*			
Peak	- 19	-12	-12	-6
Midday	- 17	-12	-11	-6
Evening	- 6	-3	-1	+2
Express bus average speed	Change in Speed *(mph)*			
Peak	+ 4.0	+2.2	+2.3	+1.0
Midday	+ 4.0	+2.6	+2.2	+1.1
Evening	+ 2.0	+0.9	+0.3	-0.6
Express bus average boarding time	Change in Boarding Time *(seconds per boarding)*			
Per rider	- 2 to - 3	-2 to -3	- 2 to - 3	-2 to -3
Increase Transit Ridership by Providing Transit Alternative to Automobile				
Weekday boardings	Change in Boardings			
AC Transit systemwide	+9,600	+7,300	+16,100	+13,900
Along project alignment	+15,700	+14,000	+21,200	+19,500
New transit trips	+ 5,300	+4,600	+ 9,300	+8,000
Weekday automobile travel	Change in VMT			
Alameda County	-11,800	-10,200	-20,700	-17,800

Table 8.7-1: Comparison of Build Alternatives with the No-Build Alternative

Measures of Effectiveness	Change from No-Build When Implementing East Bay BRT Project (2025)			
	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**
Improve and Maintain Efficiency of Transit Service Delivery				
Net operating cost[4] ($2005)	Change in Cost			
Per boarding[5]	-$0.26	+$0.07	-$0.96	-$0.71
Total project annualized cost ($2005)	Total Cost			
Per New Linked Transit Trip)	$21.85	$23.44	$12.41	$13.10
Support Local and Regional Planning Goals for Transit-Oriented Residential and Commercial Development of the Corridor				
Weekday express buses operated between key activity centers (each direction)[1]	Change in Bus Trips (%)			
• Shattuck/Center and Telegraph/Alcatraz	+80 (98%)	+80 (98%)	+163 (199%)	+163 (199%)
• Telegraph/Alcatraz and Telegraph/40th	+80 (98%)	+80 (98%)	+163 (199%)	+163 (199%)
• Telegraph/40th and Broadway/12th	+80 (98%)	+80 (98%)	+163 (199%)	+163 (188%)
• Broadway/12th and International/23rd	+80 (98%)	+80 (98%)	+163 (199%)	+163 (199%)
• International/23rd and International/Seminary	+80 (98%)	+80 (98%)	+163 (199%)	+163 (199%)
• International/Seminary and International/98th	+80 (98%)	+80 (98%)	+163 (199%)	+163 (199%)
• International/98th and East 14th/Davis	+80 (98%)	+80 (98%)	+163 (199%)	+163 (199%)
• East 14th/Davis and BayFair BART	+80 (98%)	0 (0%)	+163 (199%)	0 (0%)
Point-to-point peak-period express bus travel time between key activity centers	Change in Travel time *(minutes)*			
• Shattuck/Center and Telegraph/Alcatraz	-2.8	-2.8	-2.2	-2.2
• Telegraph/Alcatraz and Telegraph/40th	-1.6	-1.6	-0.7	-0.7
• Telegraph/40th and Broadway/12th	-2.3	-2.3	-1.7	-1.7
• Broadway/12th and International/23rd	-2.3	-2.3	-1.1	-1.1
• International/23rd and International/Seminary	-3.6	-3.6	-2.6	-2.6
• International/Seminary and International/98th	-2.2	-2.2	-1.2	-1.2
• International/98th and East 14th/Davis	-1.6	-1.6	-1.2	-1.2
• East 14th/Davis and BayFair BART	-2.0	N/A	-1.1	N/A

Table 8.7-1: Comparison of Build Alternatives with the No-Build Alternative

Measures of Effectiveness	Change from No-Build When Implementing East Bay BRT Project (2025)			
	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**
Other Environmental Impacts: Parking and Intersection Operations				
Parking displacements / Intersection operations	Change in Number			
On-street parking spaces (before mitigations)	-1,164 to -1,299	-981 to -1,116	-1,109 to -1,255	-945 to -1,091
Intersections experiencing traffic impacts (operating below accepted local standards)	Total Number			
• Before mitigation of impacts • After mitigation	26 to 27 3 to 4	22 to 23 3 to 4	26 to 27 3 to 4	22 to 23 3 to 4
Intersections at Level-of-Service (LOS) E or F[2]	Change in Number			
• Before mitigation of impacts • After mitigation[3]	+11 to +13 -1 to 0	+10 to +12 0 to +1	+11 to +13 -1 to 0	+10 to +12 0 to +1

Notes:
[1] Activity centers along corridor include: UC Berkeley; Downtown Berkeley; Berkeley City College, Laney College; Downtown Oakland; nine public high schools, six public junior high schools, and six public middle schools; neighborhood retail and commercial districts such as Temescal and Fruitvale in Oakland; and Downtown San Leandro.
[2] LOS is indicated for worst case time period (AM peak hour for College/ Claremont, PM peak hour for all others). See Section 3.2.4.2, Mitigation of Intersection Impacts under the Build Alternatives, for details. Under the No-Build Alternative, 18 intersections in the corridor would operate at LOS E or worse.
[3] A negative number indicates that after mitigation of impacts, fewer intersections would operate at LOS E or worse under the Build Alternatives than the No-Build Alternative.
[4.] Net Operating Cost accounts for fare revenue on BRT service and change in fare revenue on other AC Transit bus routes.
[5.] Net of change in boardings from other AC services.
Source: Parsons, 2006

8.7.1.2 BUS CAPACITY IN PROJECT CORRIDOR

Compared to the No-Build Alternative, transit capacity, measured in terms of bus seat miles operated along the project alignment over the course of the average weekday, increase under each of the Build Alternatives. The increase compared to the No-Build would be greatest under Alt 3: Combined BRT and Local Service to BayFair BART (69 percent). Alt 2: Separate BRT and Local Service to San Leandro provides the lowest increase in bus seat miles although it would still represent a 48 percent increase in bus seat capacity along the alignment between Berkeley and BayFair BART.

8.7.1.3 EXPRESS BUS AVERAGE SPEEDS, BOARDING TIMES, AND TRAVEL TIMES

The average speed of express buses along the project alignment would improve (i.e., increase) substantially under all Build Alternatives, by 1 to 4 mph during the peak, for example. Alt 1: Separate BRT and Local Service to BayFair would increase the most. Alt 4: Combined BRT and Local Service to San Leandro BART would experience the lowest increase due to the additional stops under the combined service operating plan and the added time to transfer to and ride on a separate, slower Rapid Bus service to BayFair BART. Speeds improve due to buses not having to operate in congested mixed-flow travel lanes, fewer station stops than under the No-build Alternative, and faster boarding and alighting passengers. In all cases, the boarding time per BRT passenger is anticipated to lessen by two to three seconds compared to the No-Build Alternative due to level bus-platform boarding and self-service fare payment, which allows boarding and alighting through any bus door.

As a benefit of faster bus speeds, express bus travel times, shown in Table 8.7-1 from Downtown Berkeley to BayFair BART, also improve substantially under the Build Alternatives. Travel times during the peak would decrease by 6 to 19 minutes compared to the No-Build Alternative. BRT bus travel times would be shortest under Alt 1: Separate BRT and Local Service to BayFair BART, followed by Alt 2: Separate BRT and Local Service to San Leandro BART and Alt 3: Combined BRT and Local Service to BayFair BART. This advantage of Alternative 1 is, however, offset by increased time spent walking to and waiting at the BRT station because of longer average distance between stations and lower service frequency compared to the Alternative 3. A similar relationship applies to Alt 2: Separate BRT and Local Service to San Leandro BART and Alt 4: Combined BRT and Local Service to San Leandro BART.

Alt 3: Combined BRT and Local Service to BayFair and Alt: 4 Combined BRT and Local Service to San Leandro BART perform best in terms of express bus frequencies and capacities operated while Alt 1: Separate BRT and Local Service to BayFair BART and Alt 2: Separate BRT and Local Service to San Leandro BART perform best in terms of express bus travel times and speeds.[3]

8.7.2 Increase Transit Ridership by Providing a Viable and Competitive Transit Alternative to the Private Automobile

8.7.2.1 BOARDINGS AND NEW TRANSIT TRIPS

Faster, more frequent operations under the Build Alternatives would lead to an increase in transit ridership when compared to the No-Build Alternative. In 2025, Alt 3: Combined BRT and Local

[3] Performance is relative to other Build Alternatives as well as to the No-Build Alternative.

Service to BayFair BART would attract about 21,200 more transit boardings along the project alignment on an average weekday, followed by Alt 4: Combined BRT and Local Service to San Leandro BART with about 19,500 more transit boardings. The decrease in boardings results from terminating BRT service at San Leandro BART and requiring a transfer, which discourages transit use, for passengers going to or from destinations farther south, including Bayfair Center and BayFair BART. Alt 1: Separate BRT and Local Service to BayFair BART would attract about 15,700 more boardings than the No-Build Alternative and Alt 2: Separate BRT and Local Service to San Leandro BART about 14,000 more boardings.

AC Transit systemwide weekday boardings would increase by somewhat lesser amounts than the increases projected for each of the Build Alternatives, ranging from 16,100 boardings on the high end (Alternative 3) to 7,300 boardings on the low end (Alternative 2) in 2025. The lower systemwide boardings result because some riders shift from parallel bus routes to the new BRT service, decreasing boardings on those parallel routes.

In terms of new transit trips ("new riders" formerly using autos or other non-transit modes) that would be generated by the Build Alternatives, Alternative 3 would perform best, increasing transit system ridership in the region by 9,300 per weekday, followed by Alternative 4 (8,000 new trips), Alternative 1 (5,300), and Alternative 2 (4,600 new trips).

8.7.2.2 DAILY AUTOMOBILE TRAVEL

Improved transit service along the project corridor helps to provide a viable and competitive alternative to the automobile, resulting in 4,600 to 9,300 new transit trips on an average weekday. An increase in total transit trips implies a related decrease in auto trips.

Table 8.7-1 illustrates the projected reduction in automobile use with more people switching to transit. As compared to the No-Build Alternative, weekday vehicle miles traveled (VMT) by automobiles in Alameda County would decrease by about 20,700 miles under Alt 3: Combined BRT and Local Service to BayFair BART, to 10,200 miles under Alt 2: Separate BRT and Local Service to San Leandro BART.

8.7.3 Improve and Maintain Efficiency of Transit Service Delivery and Lower AC Transit's Operating Costs per Rider

The greater efficiency of proposed East Bay BRT service is illustrated by the change in the estimated net operations and maintenance (O&M) cost per boarding, which ranges from a decrease of $0.96 for Alt 3: Combined BRT and Local Service to BayFair BART to an increase of $0.07 for Alt 2: Separate BRT and Local Service to San Leandro BART. Net costs account for the fare revenue from users that offset a portion of total operating costs. Fare revenue is calculated to include revenue gained or lost on all bus transit services operated by AC Transit systemwide.

Table 8.7-1 also lists the cost per new linked transit trip, which is also referred to as the cost per new rider. This measure had been used by the FTA to formally rank the effectiveness of transit projects. While it no longer does so, this measure is still suggestive of the relative effectiveness of East Bay BRT service in attracting and serving new riders. Alt 3: Combined BRT and Local Service to

BayFair BART would perform best, with a cost of $12.41 per new rider, which suggests that the project would have likely achieved a good effectiveness rating. Alt 2: Separate BRT and Local Service to San Leandro BART would have the highest cost of the Build Alternatives, approximately $23.44. A higher cost suggests lower effectiveness or greater costs per new rider. For comparison, transit projects included in the FTA's fiscal year 2004 New Starts Report to Congress have costs per new rider ranging from $3.07 to $121.49, with a median cost per new rider of $20.03.[4]

8.7.4 Support Local and Regional Planning Goals to Organize Development along Transit Corridors and around Transit Stations

The East Bay BRT Project would construct infrastructure, including distinctive stations, which would support transit-oriented residential and commercial development of the corridor by providing a sense of permanence and nodes for new activity. The project would further support transit-oriented development by expanding the transportation system capacity and reducing transit travel times between key activity centers. This would also encourage transit-oriented development by enhancing urban mobility. Improvements in transit service would also better serve low income and transit-dependent populations in the project corridor. Approximately 22 percent of the corridor population lives in households with income below the federal poverty level. Approximately 20 percent of household in the corridor do not have direct access to private transportation.

The project would improve transit access to job and activity centers, and support transit-oriented residential and commercial development by providing faster, safer, and more convenient service to local and regional jobs, services, education institutions, and entertainment venues in the cities of Berkeley, Oakland, and San Leandro.

The expanded transportation capacity between key activity centers is measured in terms of the change in number of express buses between selected activity centers, as shown in Table 8.7-1. When compared to the No-Build Alternative, the Build Alternatives would provide 100 to 200 percent more express bus capacity between these key activity centers with the possible exception of activity centers between San Leandro BART and BayFair BART, which are not provided direct BRT service under Alternatives 2 and 4. Table 8.7-1 also illustrates the improvement in express transit travel times between the key activity centers. In most instances, Alt 1: Separate BRT and Local Service to BayFair BART and Alt 2: Separate BRT and Local Service to San Leandro BART would reduce travel times between centers by somewhat more than the Alt 3: Combined BRT and Local Service to BayFair BART and Alt 4: Combined BRT and Local Service to San Leandro BART. This is because of the extra station stops for Alternatives 3 and 4.

8.7.5 Other Environmental Impacts: Parking and Intersection Operations

The two major areas where the East Bay BRT Project would potentially have adverse impacts on the environment are parking and traffic, specifically intersection operations. The assessment of parking impacts focused on the displacement of on-street parking resulting from the Build Alternatives and possible alignment variations to the Build Alternatives in Berkeley and East Oakland.

[4] Values converted to 2005 dollars.

As shown in Table 8.7-1, the East Bay BRT Project would displace between 945 to 1,300 parking spaces, depending on the Build Alternative and alignment variation selected. Build Alternatives extending to BayFair BART would displace somewhat more curb spaces than alternatives terminating at San Leandro BART; however the differences among the four Build Alternatives are not large relative to the estimated total number of displacements and the total on-street parking supply that was surveyed in the project corridor. Displacements would range from 13 percent to 18 percent of total supply (7,056 spaces). About 16 percent to 29 percent of spaces displaced would either be replaced or their loss as parking for commercial enterprises offset by converting (for instance through metering) other available spaces for comparable use.

Intersections in the project corridor would operate under more delay with the East Bay BRT Project in place than under the No-Build Alternative. The primary source of impacts to intersections along the proposed project alignment would be the loss of capacity from the dedication of one lane of traffic in each direction exclusively to transit.

Table 8.7-1 presents two measures evaluating the effect of the East Bay BRT Project on intersection operations. The first is the number of intersections experiencing traffic impacts under each of the Build Alternatives. Impacts are defined in terms of LOS or average vehicle delay that do not meet locally established standards—the change in performance resulting from the project exceeds established thresholds (see Chapter 3, Section 3.2.3.2, Intersection Impacts: Build Alternatives). For Build Alternatives extending to BayFair BART, 26 to 27 intersections would experience impacts prior to implementing any mitigation measures. The range in values covers the alignments variations in Berkeley and East Oakland. In most cases, the degradation in performance could be mitigated to meet locally established standards. Mitigation measures considered included signal timing improvements, lane reconfigurations, and lane additions. The measures would not require major right-of-way acquisitions, such as the displacement of existing structures, to implement. After mitigation to improve operations of Alternatives 1 and 3, only three to four intersections would continue to experience traffic impacts.

For Build Alternatives 2 and 4 that extend to San Leandro BART, from 22 to 23 intersections would experience impacts. The number could be reduced to three to four following implementation of reasonable mitigation measures. See Section 3.2.4.2, Mitigation of Intersection Impacts under the Build Alternatives, for additional detail.

The second intersection operations measure shown in Table 8.7-1 is the change in the number of intersections performing at LOS E or F as a result of implementing the East Bay BRT Project. LOS D is typically considered acceptable intersection performance in urban areas whereas LOS E or worse is considered poor intersection performance. For Build Alternatives 1 and 3 that terminate at BayFair BART, the number of intersections operating at LOS E or worse would increase by 11 to 13 compared to the No-Build Alternative. The range depends on the alignment selected through Downtown Berkeley and Berkeley Southside. With mitigation, the number operating at LOS E or worse would decrease by one or remain the same compared to the No-Build Alternative. For Build Alternatives 2 and 4 that terminate at San Leandro BART, the increase in the number of intersections operating at LOS E or worse would range from 10 to 12. When allowing for measures proposed

under the East Bay BRT Project that would mitigate impacts to the extent reasonably possible, the number would be reduced to zero or one.

8.7.6 Overall Assessment of Build Alternatives

An overall qualitative assessment (or non-numerical ranking) was made of the four Build Alternatives, incorporating the measures described above and several other key project attributes and environmental impacts. The assessment is relative to the No-Build condition but allows comparisons of each Build Alternative against the other Build Alternatives. The assessment provides a more comprehensive evaluation of how Build Alternatives perform in meeting the project purpose and need by including attributes and impacts that are not easily quantifiable but may nonetheless be important to the public and decision-makers when choosing a preferred project alternative, if any.

Results of the qualitative assessment are shown in Figure 8.7-1. The assessment is for 24 measures, categorized under the four basic purposes established for the East Bay BRT Project and a fifth category covering environment impacts, as was done in Table 8.7-1.

8.7.6.1 IMPROVE TRANSIT SERVICE IN PROJECT CORRIDOR

- All Build Alternatives show improvement in corridor **transit service frequency, capacity, speed and travel time**, as quantified in Table 8.7-1. The best performing alternatives for express bus frequency and capacity would be Alternatives 3 and 4; the best performing alternatives in terms of bus speed and transit travel time would be Alternatives 1 and 2.

- Build Alternatives would, however, result in a decrease in **roadway auto capacity** as a result of converting traffic lanes to transit-only lanes. Each Build Alternative would have the same order of magnitude impact. The total **person-trip capacity** of arterials along the alignment for the East Bay BRT Project, however, would be approximately the same after implementation of the project as before implementation due to the substantially higher vehicle capacity of buses versus autos. The “carrying capacity” of BRT roadways would not change.

- The **average speed of autos** would degrade somewhat and to the same extent under each of the Build Alternatives. This would be due to increased congestion in mixed-traffic lanes and at intersections resulting from the project.

- Improved **travel time** and improved **reliability** are two of the most important factors that attract transit riders. Primary causes of unreliability in bus service, as in the case of the No-Build Alternative, are buses operating in mixed-flow traffic and delays occurring during passenger boarding, fare collection, and alighting. Because BRT buses would operate along exclusive transitways and have transit signal priority along with self-service, proof-of-payment fare collection, BRT service would be more reliable compared with the No-Build Alternative.

- Service characteristics such as **security, comfort and cleanliness** are those aspects of transit directly experienced by the passengers. The ticket vending machines, real-time arrival

Figure 8.7-1: Comparison of Build Alternatives

Measure	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
Improve Transit Service in the Project Corridor				
Express buses per hour (frequency)	+	+	++	++
Capacity - Bus seat-miles operated	++	++	+++	+++
- Roadway auto capacity	–	–	–	–
- Roadway person-trip capacity	O	O	O	O
Speed - BRT bus average speed	++	++	+	+
- Auto average speed	–	–	–	–
Express bus travel time (Berkeley to BayFair BART)	+++	++	++	+
Express bus boarding time	+	+	+	+
Reliability	+	+	++	++
Security, comfort and cleanliness	+	+	+	+
Increase Transit Ridership by Providing Transit Alternative to Automobile				
Weekday boardings - New trips and total corridor/system	++	+	++++	+++
- Auto vehicle VMT/trips	+	+	+	+
Improve and Maintain Efficiency of Transit Service Delivery				
Capital costs--total	– – –	–	– – – –	– –
Net operating costs--total[1]	– – –	– – – –	–	– –
Net operating costs--per trip[1]	+	O	+++	++
Annualized total cost--per new transit trip[2]	+	+	++	++
Support Local and Regional Planning Goals				
Weekday express buses between key activitiy centers (trips)	+	+	++	++
Point-to-point peak-period express bus travel time between key activity centers	++	++	+	+
Potential for transit-oriented development	+	+	++	++
Environmental Impacts				
Parking displaced	– –	– –	– –	– –
Intersection and roadway LOS	–	–	–	–
Construction impacts (traffic,utilities)	–	–	–	–
Environmental Justice (effect on low-income/ transit dependent)	+	+	+	+
Other environmental effects (air quality,land use,hazardous materials)	O	O	O	O

Notes:

[1] Net Operating Cost accounts for fare revenue on BRT service and change in fare revenue on other AC Transit bus routes.

[2] A measure of cost-effectiveness. Comparison is among build alternatives rather than relative to No-Build.

Legend

–	O	+
Worse / Greater Impact than No-Build	*No Change / Similar Impact as No-Build*	*Better / Lesser Impact than No-Build*

information, shelters, benches, security features, boarding platforms, and other amenities that would be included in BRT station areas would ensure a higher degree of security and comfort when compared to standard bus service under the No-Build Alternative. Under the Build Alternatives, modern, aesthetically pleasing, low-floor buses with multiple doors would stop at low-level boarding platforms and thereby offer easy entry and exit for all transit riders, including persons with disabilities. Compared to the No-Build Alternative, all Build Alternatives are expected to lead to favorable improvement in these areas.

8.7.6.2 INCREASE TRANSIT RIDERSHIP

- All Build Alternatives would increase **transit boardings**, along the project alignment, in the project corridor, and systemwide for AC Transit. Alternative 3 performs best, followed by Alternative 4. A number of passengers would tend to find highly frequent express operations with convenient spacing of full BRT stations preferable to a combination of express and local operations as proposed under Alternatives 1 and 2.

  In terms of **new transit trips** ("new riders" formerly using autos or other non-transit modes) that would be generated by the Build Alternatives, Alternative 3 would perform best, followed by Alternative 4, Alternative 1, and Alternative 2.

- As transit ridership goes up, auto use, reflected in **auto VMT**, tends to go down. This would occur under all Build Alternatives. The decrease in auto VMT would be proportional to the increase in (new) riders on the East Bay BRT Project. However, the decrease in VMT, measured within Alameda County, is not likely to be large compared to total VMT generated on an average weekday. Therefore, the improvement in this measure, as shown in Figure 8.7-1, is moderate under all Build Alternatives.

8.7.6.3 IMPROVE AND MAINTAIN EFFICIENCY OF TRANSIT

- Implementation of the East Bay BRT Project would require a major capital investment to obtain the benefits described. Alternative 3 would have the highest **capital cost** to implement and therefore ranks lowest among the alternatives. Alternative 2 would have the lowest cost to implement and ranks best by this measure.

- **Net operating costs** to AC Transit would also increase as a result of implementing the East Bay BRT Project. However, in contrast to capital costs, operating costs would be lowest among the four Build Alternatives for Alternative 3 and highest for Alternative 2.

- **Net operating costs per trip** (or per boarding) for most of the Build Alternatives would improve relative to the No-Build Alternative, decreasing most under Alternative 3 followed by Alternative 4. Alternative 2 performs least well on this measure of the four Build Alternatives.

- The **annualized cost per new transit trip** is comparable for Alternatives 3 and 4, which perform better than Alternatives 1 and 2 on this measure.

8.7.6.4 SUPPORT LOCAL AND REGIONAL PLANNING GOALS

- **Express buses operated between key activity centers** and **point-to-point travel times** were quantified, relative to the No-Build Alternative, in Table 8.7-1. All Build Alternatives would increase the number of express bus trips operated between key activity centers. However, the increase is greater for Alternatives 3 and 4. Alternatives 1 and 2 would offer somewhat better (i.e., faster) in-vehicle express bus travel time as a consequence of making fewer BRT station stops.

- Facilitation of **transit oriented development** is difficult to quantify but a very key measure for many policy makers and individuals when deciding whether or not to make major investments in transportation infrastructure. Cities along the project alignment, in particular Berkeley and Oakland, have adopted transit-supportive land use policies. The East Bay BRT Project could provide one means by which to further these objectives. BRT infrastructure would provide transit a strong identity, with stations offering locations for organizing development. All Build Alternatives have more potential than the No-Build Alternative to facilitate development. Due to the importance of stations for transit oriented development, Alternatives 3 and 4, because they have more BRT stations, would be viewed as having more potential to facilitate this type of development as compared to Alternatives 1 and 2.

8.7.6.5 ENVIRONMENTAL IMPACTS

- All Build Alternatives would degrade **intersection and roadway performance**, measured in terms of level of service. However, as reported in Table 8.7-1, mitigation can reduce the number of adversely affected locations substantially. All Build Alternatives would be comparable in their impacts.

- All Build Alternatives would result in **displacements of on-street parking**. Parking loss is possibly the most evident long-term impact of the East Bay BRT Project. The loss is comparable across each of the Build Alternatives. However, because corridor automobile use would decrease and transit boardings would increase, demand for parking along the project alignment would decrease with the East Bay BRT Project in place.

- **Construction impacts** would be temporary but include roadway closures in limited segments, traffic disruption, and access restrictions. Utilities would be relocated if in conflict with proposed improvements although no major interruption in services is anticipated. All Build Alternatives would have comparable effects relative to the No-Build Alternative.

- The project corridor has large populations of low-income and transit dependent individuals. The East Bay BRT Project would substantially improve transit access and mobility for disadvantaged populations. From an **environmental justice** standpoint, the project would have many benefits relative to the No-Build condition. All Build Alternatives would offer comparable mobility benefits.

- **Other environments impacts**, as described in Chapter 4, would be minor to non-existent. The Build Alternatives are not viewed as resulting in permanent, adverse environmental effects after

implementation in such areas as air quality, noise, energy, habitat, cultural resources, and other areas.

8.7.7 Overall Assessment of Alignment Variations

Alignment variations were noted in previous chapters to not substantially affect the performance of the Build Alternatives. There are, however, certain considerations that may be important in selecting one variation over others.

Figure 8.7-2 compares the alignment variations across several measures, including ridership, costs, transportation system impacts in terms of traffic and parking, and expandability. Expandability refers to the ability to extend the service, which may be important for future improvements to the proposed East Bay BRT Project.

Whereas Build Alternatives were compared to the No-Build condition, and where appropriate, then among themselves, alignment variations are compared only to other alignments and these are geographically limited. That is, Downtown Berkeley alignments are compared to one another, Berkeley Southside to one another, and East Oakland to one another. The selection of alignment in one area does not limit, and thereby affect, the selection in another. Alignment variations in one area are independent from the others.

As shown in Figure 8.7-2, the differences among alignment variations are typically not large. There are several considerations, however, that distinguish variations between each other..

8.7.7.1 DOWNTOWN BERKELEY

Of the two alignment variations under consideration, Two-way Transitway on Shattuck Avenue is considered the base against which to compare the One-Way Transitway via Shattuck Avenue-Oxford Street Loop. As shown, the Loop would generate slightly less ridership due to station locations, but the difference is small. It would be difficult to extend because it ends in a one-way loop. Redesign of the terminus would be necessary to extend the BRT project to the north or west. The Shattuck Avenue-Oxford Street Loop would also have an additional intersection impact, at the intersection of Bancroft Way and Oxford/Fulton Street.

8.7.7.2 BERKELEY SOUTHSIDE

Of the four Southside alignments, compared to Two-Way Transitway via Bancroft Way and Telegraph Avenue, ridership is slightly less on the Two-Way Transitway via Bancroft Way and One-Way Transitway via Telegraph Avenue-Dana Street variation and somewhat less on the One-Way Transitway via Bancroft Way-Durant Street Couplet and Telegraph Avenue-Dana Street Couplet variation.

Parking displacements would be higher on the Two-Way Transitway via Bancroft Way and One-Way Transitway via Telegraph Avenue-Dana Street Couplet variation. The least parking displaced is on the One-Way Transitway via Bancroft Way-Durant Avenue Couplet and Two-Way Transitway via Telegraph Avenue variation. The One-Way Transitway via Bancroft Way-Durant Avenue Couplet

and Telegraph Avenue-Dana Street Couplet variation would have parking impacts similar to the Two-Way Transitway via Bancroft Way and Telegraph Avenue variation.

8.7.7.3 EAST OAKLAND

The two variations under consideration through the Eastlake District of East Oakland would be very similar in effects. The One-Way Transitway via International Boulevard-12th Street Couplet would generate slightly less ridership due to the location of stations, with northbound stations on International and southbound stations on 12th Street.

Figure 8.7-2: Comparison of Alignment Variations

Alignment Variations	Ridership	Costs (Capital & Operating)	Traffic Impacts	Parking Displaced	Expandability[1]
Downtown Berkeley					
Two-Way Transitway via Shattuck Ave.	O	O	O	O	O
One-Way Transitway via Shattuck Ave.-Oxford St.	–	O	–	O	–

Notes
The assessment is based on Two-Way Transitway via Shattuck Ave. variation as the base case against where comparisons are made.
[1] Ability to extend beyond proposed termini.

Alignment Variations	Ridership	Costs (Capital & Operating)	Traffic Impacts	Parking Displaced	Expandability[1]
Berkeley Southside					
Two-Way Transitway via Bancroft Way and Telegraph Ave.	O	O	O	O	O
Two-Way Transitway via Bancroft Way and One-Way Transitway via Telegraph Ave.-Dana st.	–	O	O	–	O
One-Way Transitway via Bancroft Way-Durant Ave. Couplet and Two-Way Transitway via Telegraph Ave.	O	O	O	+	O
One-Way Transitway via Bancroft Way-Durant Ave. Couplet and Telegraph Ave.-Dana St. Couplet	– –	O	O	O	O

Notes
The assessment is based on Two-Way Transitway via Bancroft Way and Telegraph Ave. variation as the base case against where comparisons are made.
[1] Ability to extend beyond proposed termini.

Alignment Variations	Ridership	Costs (Capital & Operating)	Traffic Impacts	Parking Displaced	Expandability[1]
East Oakland					
Two-Way Transitway via International Blvd.	O	O	O	O	O
One-Way Transitway via International Blvd.-12th St. Couplet	–	O	O	O	O

Notes
The assessment is based on Two-Way Transitway via International Blvd. variation as the base case against where comparisons are made.
[1] Ability to extend beyond proposed termini.

Legend:
O = Base case or no change from base case
+ = Performs better than base case
– = Performs worse than base case