
EXECUTIVE SUMMARY

An Alternatives Analysis (AA) study evaluates appropriate transportation service mode and alignment options to address mobility issues in a particular transportation corridor. The study provides information to local officials on the benefits, costs, and impacts of the alternative transportation investments developed to address needs identified within the corridor. An AA is also required if a project is to qualify for federal Section 5309 New Starts capital funding. The study process is complete only when a locally preferred alternative (LPA) is selected by local and regional decision makers. This Executive Summary reflects the most currently available results of the *Monterey Peninsula Fixed Guideway: Alternatives Analysis* study.

The study area covered by this report is, in general, the entire Monterey Peninsula/Salinas/Castroville area, but affects residents of and visitors to Monterey County, as a whole. The transportation corridor within the study area is predominately centered on the old Union Pacific Railroad line (also known as the Monterey Branch Line (MBL) corridor). The Monterey Branch Line right-of-way associated with this study stretches approximately 16 miles between Downtown Monterey and Castroville, and also passes through the cities of Seaside and Sand City (see Figure ES-1). For purposes of this study, “the corridor” refers to the Monterey Branch Line corridor as defined above.

Several major transportation problems were identified while considering the project’s purpose and need—each requiring solutions ensuring that mobility, environmental quality and economic vitality are maintained along the Monterey Peninsula Corridor. The corridor’s transportation problems include significant congestion and deteriorating roadway operations, a lack of competitive alternatives to the private automobile, physical constraints on existing transit operating speeds and capacity, the need for general improvement in providing efficient mobility for low-income residents, and the need for transportation infrastructure to serve areas of growth and development through a transit-oriented development process. In short, transportation improvements have failed to keep pace with the area’s demonstrated likelihood for future growth. Given expected growth and corresponding increase in traffic volumes, it is crucial that any approved project carry a reliable certainty that it will successfully address this growth in an efficient and cost-effective manner. The Monterey Peninsula Fixed Guideway Study can be thought of as establishing a proactive effort to foresee and respond to future needs, as opposed to responding reactively later, in response to a given transportation mobility crisis.

Purpose and Need

The purpose of this project is to establish a balanced array of transportation facilities and services which will accommodate both intra- and inter-county travel for residents of Monterey County; and secondarily, for visitors to Monterey County.

Figure ES-1
Monterey Peninsula Fixed Guideway Study Area



These transportation facilities and services must be provided in a cost effective manner so that limited financial resources can be utilized to their greatest potential.

Transportation service provision within northern Monterey County and beyond, particularly in the direction of major commuting patterns, is at a critical juncture. The demand for additional transportation facilities is growing in response to increasing population, housing, and an expanding job market, while the ability to provide these facilities is severely hamstrung due to a lack of available funding. There are currently more than \$1.2 billion in highway projects planned through the year 2030 as part of the Transportation Agency for Monterey County’s (TAMC) long-range Regional Transportation Plan (RTP). These high-cost highway projects are intended to provide extra roadway capacity which could be addressed in part by benefits arising from the proposed fixed guideway system. Most of the funding for the highway projects has been programmed to come from the allocation of State Transportation Improvement Program (STIP) funding and from local sales tax revenues. The current climate with respect to the State’s budget crisis leaves funding for these projects uncertain.

In addition, the relationship between environmental impacts and the availability of federal funding must also be considered in light of the governor's September, 2008 signing of Senate Bill (SB)375. SB375 requires that regional governing bodies in each of the state's metropolitan areas, as part of their regional transportation plan, adopt a "sustainable community strategy" which will meet the region's target for reducing greenhouse gas (GHG) emissions. These strategies are intended to get people out of their cars by promoting smart growth principles such as: focusing land development near public transit; building projects that include a mix of residential and commercial use; and encouraging projects that include affordable housing to help reduce new housing developments in outlying areas with cheaper land. The bill also creates incentives for implementing the sustainable community strategies by allocating federal and state transportation funds only to projects that are consistent with the emissions reductions.

As such, the purpose of this project is two-fold. First, public transportation improvements are needed to accommodate a higher proportion of intra-county travel (Monterey Peninsula Corridor Element), such as local commute, business, educational, and shopping trips. Trips of this type occur predominately between Monterey Peninsula cities and between the Monterey Peninsula and Salinas. These intra-county trips occur on already congested roadways and opportunities to expand highway capacity are limited by environmental constraints and scarce funding resources. Suitable public transportation investments are needed to facilitate intra-county trips in a more cost-effective manner when compared to some of the highway-only options considered thus far by the Monterey County Regional Transportation Plan.

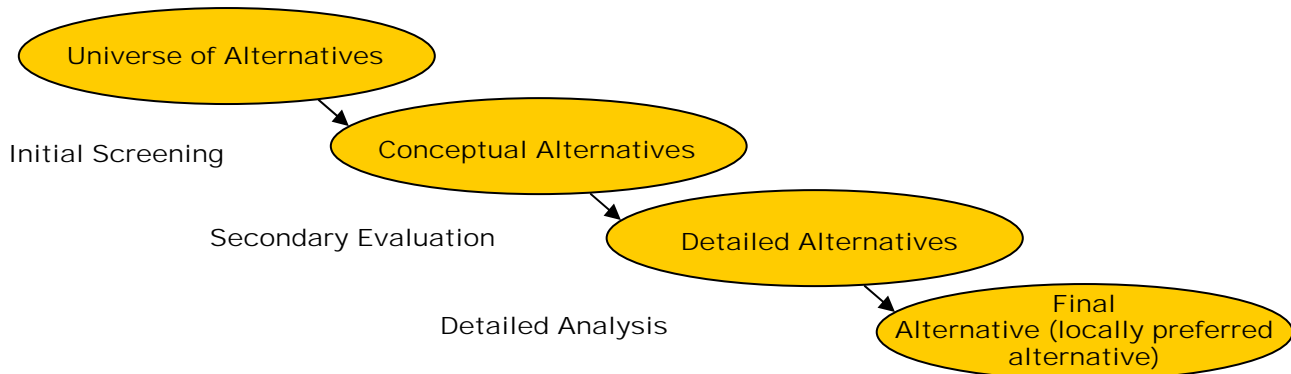
Second, public transportation improvements are sought that will accommodate a portion of existing volumes of inter-county, commute-oriented traffic (U.S. 101 Corridor Element) and provide residual capacity for future travel demand increases, while at the same time reducing green house gas emissions. Relatively heavy volumes of commuter traffic to and from Monterey, Santa Cruz and San Benito Counties and the San Francisco Bay Area (Santa Clara County, San Francisco County, and San Mateo County) and associated traffic congestion is currently experienced. In the face of limited funding for large-scale investment projects, solutions must be found to provide safe, effective, and efficient transportation facilities for serving commuters, visitors, and through traffic. They must, at the same time, reduce current and projected congestion, particularly on Highway 1, such that the cost of improvements to this facility, at least beyond currently programmed projects, is avoided or minimized.

It should be noted that this study addresses only the four build alternatives and enhanced bus alternative associated with the Monterey Peninsula Corridor Element (intra-county travel) and as fully assessed in *Monterey Peninsula Fixed Guideway Study: Alternatives Analysis*. The remaining alternatives were either rejected or addressed by analysis associated with the U.S. 101 Corridor Element (inter-county travel), as separately released in *Cal-train Extension to Monterey County: Alternatives Analysis*.

Alternatives Analysis Study Process

The proposed project alternatives were developed during a selection process lasting well over four years and are an outgrowth of a recently completed alternatives analysis. The process followed is generally consistent with guidelines provided by the Federal Transit Administration, and culminates in the selection of the Locally Preferred Alternative as the ultimate choice over all others proposed (see Figure ES-2).

Figure ES-2
Locally Preferred Alternative Selection Process



As part of this process, a candidate pool of initial conceptual alternatives was developed to address mobility problems and other concerns in the study area. This initial set of conceptual alternatives was structured to provide a range of multi-modal transportation infrastructure and service improvements. The transportation alternatives emphasized candidate alignments and levels of investment and thus address different aspects of the study purpose and need. Included in the initial set of alternatives were baseline alternatives which assumed no new major transit capital investment, and various build alternatives which included major investments in bus and/or rail transit technologies. For the Monterey County Fixed Guideway Study¹, the conceptual alternatives considered included:

- No Build Rail Service
- Caltrain to Salinas Rail Service
- Monterey Peninsula to San Francisco Intercity Rail Service
- Monterey Peninsula to San Francisco Intercity Rail Service plus Caltrain to Salinas and Monterey Peninsula
- Monterey Peninsula Passenger Rail Shuttle to Castroville Caltrain Service
- Local Monterey Peninsula LRT (light rail transit) or BRT (bus rapid transit) Service
- Salinas to Monterey Local Rail Service

¹ Combined study of the Monterey Peninsula and U.S. 101 Corridor elements.

- Monterey Peninsula to San Francisco Intercity Rail plus Salinas to Monterey Local Rail Service
- Enhanced Local Bus plus Monterey County to San Francisco Peninsula Express Bus Service (transportation system management (TSM)).

See Figure ES-1 for the study area location.

Detailed Definition of Alternatives

The eight alternatives presented above were originally defined for capital cost estimating purposes and further qualitative analysis. Following a “short-listing” of the conceptual alternatives for further refinement and evaluation, two bus alternatives and two rail alternatives emerged as candidates for further refinement and testing. The four preferred build alternatives and an enhanced bus alternative were then further defined to address the intra-county travel market along the Monterey Peninsula.

The Monterey Peninsula Fixed Guideway project would restore fixed guideway public transportation service along the existing Monterey Branch Line (MBL) rail right-of-way from Castroville to downtown Monterey. New station platforms would be constructed in the cities of Monterey, Seaside, Sand City and Marina, and parking expanded at the planned intercity rail station in Castroville. The project consists of four build alternatives and an enhanced bus alternative. The five alternatives are (also see Figures ES-3 through ES-7):

- **Bus Guideway Alternative—Phase I (BRT-1):** Bus Rapid Transit (BRT) service would be operated along a fixed guideway, mostly along the Monterey Branch Line, from downtown Monterey to northern Marina. BRT service would also occur on surface roadways between Marina and intercity rail stations at Castroville and Salinas.
- **Bus Guideway Alternative—Phase II (BRT-2):** Bus Rapid Transit (BRT) service would be extended on the Monterey Branch Line between Marina and the intercity station at Castroville. BRT service would also occur on surface roadways between Marina and the intercity rail station at Salinas.
- **Rail Guideway Alternative—Phase I (LRT-1):** Light Rail Transit (LRT) service would be operated along a fixed guideway, mostly along the Monterey Branch Line, from downtown Monterey to northern Marina. Standard bus service would connect with the LRT, and would run on surface roadways between Marina and the intercity rail stations at Castroville and Salinas.
- **Rail Guideway Alternative—Phase II (LRT-2):** Light Rail Transit (LRT) service would be extended on the Monterey Branch Line between Marina and the intercity rail station at Castroville. Standard bus service would connect with the LRT, and would run on surface roadways between Marina and the intercity rail station at Salinas.

Figure ES-3
Rail Guideway Alternative—Phase I (LRT-1)

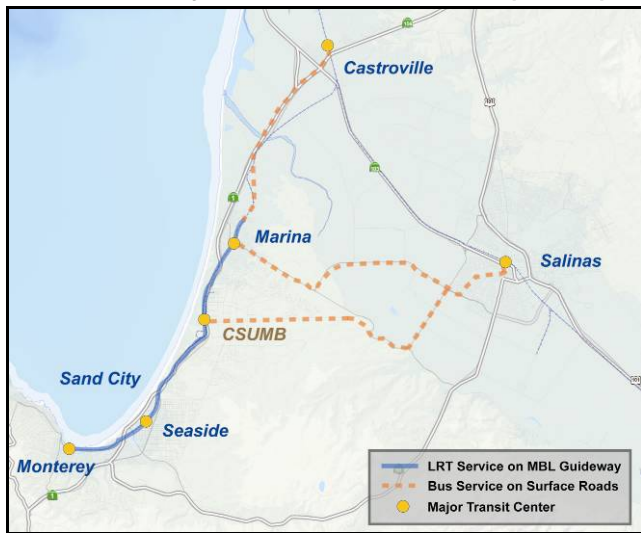


Figure ES-4
Rail Guideway Alternative—Phase II (LRT-2)

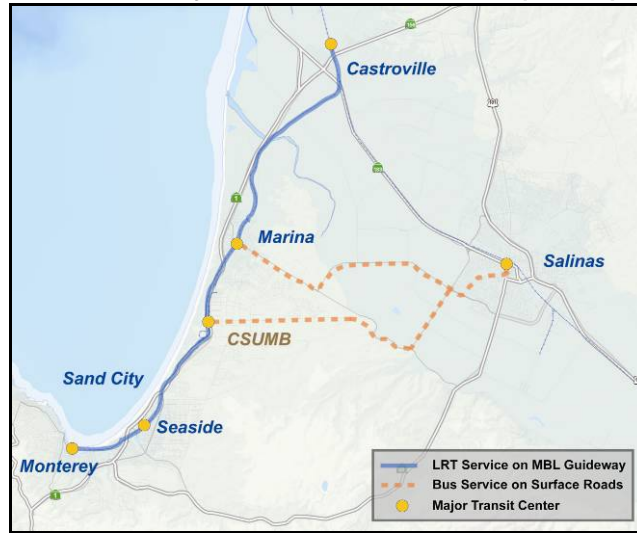


Figure ES-5
Bus Guideway Alternative—Phase I (BRT-1)

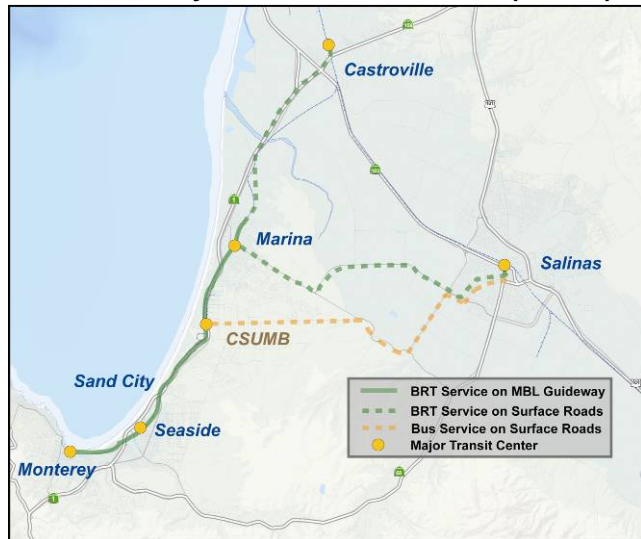
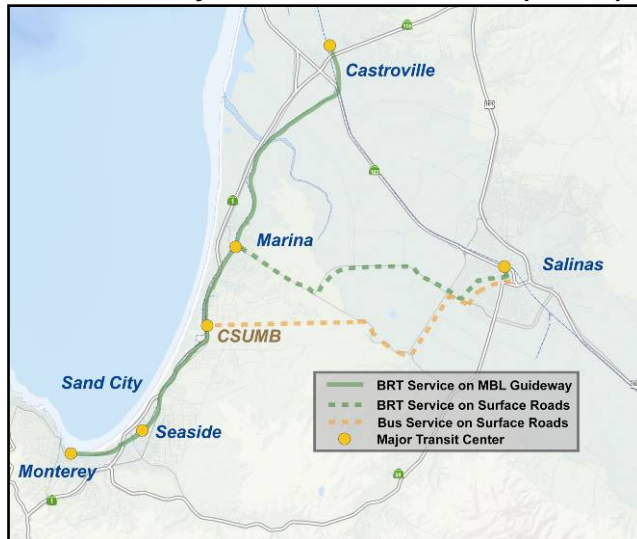


Figure ES-6
Bus Guideway Alternative—Phase II (BRT-2)



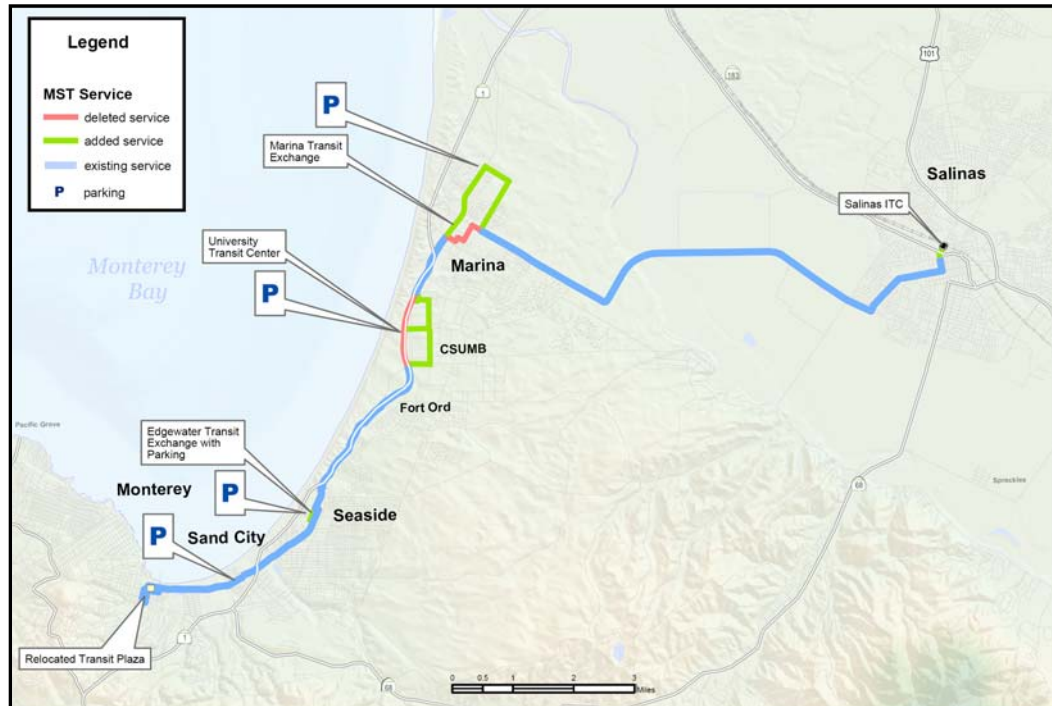
- Monterey-Salinas Transit Line 20 Alignment (Enhanced Bus Alternative):** This alternative is defined to emulate the light rail transit, bus rapid transit, and the intercity rail service connections offered by the other alternatives, without the benefit of a fixed guideway dedicated for transit use.

Additionally, and commonly assumed in all Build Alternatives, is the completion of an extension of Caltrain service to Monterey County.

Detailed Evaluation of Alternatives

In order to assess and aid in the identification of a locally preferred alternative which meets the project’s stated purpose and need, an evaluation methodology was

Figure ES-7
Monterey-Salinas Transit Line 20 Alignment (Enhanced Bus Alternative)



developed to assess and compare each of the five final alternatives. These results provide the technical assessments available for consideration by citizens, stakeholder groups, and policy makers.

The evaluation followed several areas of interest identified in the short-listing of the alternatives carried forward as subjects of the alternatives analysis process. Inputs regarding these issues were obtained from representatives of various agencies, businesses, neighborhood groups, and the general public. These areas of local interest include the following:

- Access to and from activity centers
- Service quality
- Safety
- Linkages to the entire county
- Future expandability of the system
- Community support
- Noise
- Capital Costs
- Operating Costs
- Traffic impacts

In addition to local interests, the evaluation of detailed alternatives has been prepared so that much of the informational requirements for any future federal funding application will be at least partially satisfied. It should be noted, however, that the current federal transportation funding legislation expires in 2009, and the exact direction of new legislation and accompanying requirements and standards is unclear at this time. Table ES-1 presents evaluation criteria that address issues important to local residents, officials, and stakeholders, and the Federal Transit Administration.

Table ES-1
Alternative Analysis Evaluation Criteria and Measures

EVALUATION CRITERIA	MEASURES
Demographic and Equity Issues	<ul style="list-style-type: none"> Existing and projected population Existing and projected employment Existing and projected housing Existing and projected number of low-income households
Transit-Oriented Land Use	<ul style="list-style-type: none"> Subjective rating based on: Existing and future land use, transit supportive corridor policies and supportive zoning
Environmental Concerns	<ul style="list-style-type: none"> Assessment of potential health, biological, and cultural “fatal flaws” associated with each alternative Potential noise, vibration, traffic safety, and visual impacts
Capital and Operating Expense	<ul style="list-style-type: none"> Total operating and maintenance cost per rider Net operating and maintenance cost per new rider Annualized capital costs per rider
Improved Mobility	<ul style="list-style-type: none"> Annual hours and dollar costs Total forecasted ridership Change in transit ridership Reduction in auto trips using congested roadways
Cost Effectiveness	<ul style="list-style-type: none"> Transit user system benefit Travel time savings Cost savings Safety benefits

In order to identify and ensure the identification of a locally preferred alternative that meets the project’s stated purpose and need, an evaluation methodology was developed to assess and compare each of the five final alternatives, and to provide technical recommendations for consideration by citizens, stakeholder groups, and policy makers. Summaries of alternatives analysis and assessment results as detailed in individual chapters of the *Monterey Peninsula Fixed Guideway: Alternatives Analysis* report are provided below.

Detailed Alternatives/Constructability Issues

Chapter 2 of the *Monterey Peninsula Fixed Guideway: Alternatives Analysis* provides information regarding the five project alternatives and a summary of findings related to the detailed definition of those alternatives and to the restoration of the Monterey Branch Line to active service. It also indicates constructability issues that could affect implementation of the proposed build alternatives and therefore, selection of a locally preferred alternative. Identified as potential areas of issue include:

Trackwork/Guideway. Most all of the trackwork required between Downtown Monterey and Castroville would take place on existing right-of-way, owned by the Transportation Agency for Monterey County. As such, construction would occur in a relatively defined area with an existing base.

Between Blackie Road and the proposed Castroville intercity rail station, the fixed guideway would travel within the Union Pacific Railroad (UPRR) right-of-way and

be subject to terms and conditions as negotiated by and agreed upon by the project sponsor and the UPRR.

The dunes area just north of the Naval Postgraduate School provides a potential challenge in that alternatives requiring a double-lane busway (BRT-1 and BRT-2) would utilize right-of-way width to the extent that the existing recreation trail would have to be relocated horizontally and vertically to a point somewhere along the side slope of these dunes. Alternately, the existing grove of eucalyptus trees alongside the trail would need to be diminished.

Street/Grade Crossings. Because no grade separations are proposed as part of this project, all points where the proposed guideway will intersect local roadways will be at-grade. At grade intersections are subject to rigorous safety, warning, and operational requirements to ensure smooth and safe operations. Though at least partially significant with any mode, the rail option is deemed more significant due to the nature, size, and stopping distances required of rail vehicles. While at least partially significant, these issues can be fully mitigated. It should be further noted that while neither Caltrans nor the Public Utilities Commission (PUC) have raised any issues thus far, potential traffic/transit conflict issues could be raised concerning the Canyon del Rey (SR 218) and California Avenue (Highway 1 ramps) crossings.

Structures. The placement and construction of structures required for the proposed project is not deemed to be particularly significant for option LRT-1 or BRT-1. In the case of LRT-2 and BRT-2, more significant restoration must be completed on a number of small structures, with significant construction needed in the case of LRT-2 to replace the Salinas River bridge.

Systems. There are no significant problems seen regarding the infrastructure, which will be required to support transportation service operations, except that a separate maintenance facility would need to be constructed east of Highway 1 on TAMC/MST lands formerly used for Fort Ord quartermaster warehousing, in the case of the rail options. Due to scheduling and coordination considerations, all alternatives that feature a single track will likely be limited to headways of no less than 10 minutes.

Demographic Projections and Land Use Characteristics

Chapter 3 of the *Monterey Peninsula Fixed Guideway: Alternatives Analysis* documents the existing and projected future setting for the proposed fixed guideway in terms of the demographic characteristics and proximity to major land use trip attractors and generators along the Monterey Branch Line Corridor. The chapter also provides an overview of specific current and future land use developments found along the Monterey Branch Line, which can be served by direct or easy access to proposed transit stations. Finally, formally enacted and proposed local land use policies and zoning regulations are surveyed with respect to how they support transit-related land use development.

Table ES-3 provides a summary of the demographic projections and land use findings detailed in the AA report. The table indicates that the corridor served by BRT-1 and LRT-1, between downtown Monterey and north Marina, is more conducive to fixed guideway transit service compared with the extension of the corridor segment between north Marina and Castroville.

Table ES-3
Demographic and Land Use Significance of Build Alternatives

IMPACT	ALTERNATIVES			
	BRT-1	BRT-2	LRT-1	LRT-2
Population	●	◐	●	◐
Households	●	◐	●	◐
Low-Income Households	●	●	●	●
Employment	●	◐	●	◐
Current Land Uses	●	◐	●	◐
Future Land Uses	●	◐	●	◐
Transit-Supportive Policies	●	◐	●	◐

- Least Supportive
- ◐ Partially Supportive
- Most Supportive

Table ES-4 summarizes the growth in housing units and employment forecast by Association of Monterey Bay Area Governments (AMBAG) for the four Monterey Peninsula cities most directly served by the proposed fixed guideway project. Analysis shows that not only is the potential for significant future growth relatively certain over both the near- and far-term, but the distribution of existing housing, jobs, and low-income residents and projected future growth in these areas occurs in very close proximity to the proposed fixed guideway corridor. The prospects for a reasonably-sized transit market, especially between Monterey and Marina appears viable. Lack of population, households, and expected future development or land use changes in the general area between Marina and Castroville limits the market for transit in this segment. The prospect for in-fill development in this area is virtually non-existent because lands are used for agricultural and are subject to California Coastal Commission development constraints. It is thus expected that ridership levels between Castroville and Marina, not associated with making connections to commuter rail service, would be lower than along the peninsula.

Table ES-4
Monterey Peninsula Housing and Employment Growth

CITY	HOUSING UNIT GROWTH		EMPLOYMENT GROWTH	
	2006–2015	2016–2035	2006–2015	2016–2035
Marina	2,027	2,900	400	1,043
Seaside	327	741	952	3,056
Sand City	564	0	410	1,294
Monterey	186	372	1,882	6,487
Total	3,104	4,013	3,644	11,880

Source: AMBAG

A significant concentration of local land uses, both existing and future, are located along the proposed project corridor and constitute potentially powerful transit trip generators and attractors. In addition, transit-oriented zoning designations and planning policies are in place and many transit-oriented housing and mixed-use projects are planned along the corridor. These projects also support increased ridership along the corridor. The proposed project is intended to accommodate enough new trips associated with future development that added pressure to already congested roadways will be alleviated.

Each of the four Peninsula cities, Marina; Seaside; Sand City; and Monterey have statutory and administrative tools, in place, to promote and achieve transit-oriented development goals.

At the state level, Assembly Bill No. 1937 (Dutra), enacted in February 2002, pertains directly to the implementation of projects resulting from the Monterey Peninsula Fixed Guideway Study. The bill allows transit operators to enter into agreements with a public agency, public utility or person or entity for the purpose of joint development. This legislation gives an agency like MST the authority to develop and manage real property for transit-oriented development (TOD), and to retain ownership of that property as an ongoing source of revenue for the agency. The Transportation Agency and MST both own property along the corridor that is planned for a transit-oriented development that will generate revenue for the project.

The assessment concludes that there are land use policies plans and guidelines in place which highly encourage transit-oriented development along the corridor.

Environmental Considerations

Table ES-5 provides a summary of the environmental impact findings as discussed in Chapter 4 of the *Monterey Peninsula Fixed Guideway: Alternatives Analysis* report. Areas of potential or significant impact which could affect implementation of the proposed build alternatives and therefore selection of a locally preferred alternative are briefly summarized below.

Table ES-5
Environmental Significance of Build Alternatives

IMPACT	ALTERNATIVES			
	BRT-1	BRT-2	LRT-1	LRT-2
Water Quality	○	○	○	○
Coastal Zone	◐	◐	◐	◐
Floodplain	○	○	○	○
Biology	●	●	○	◐
Wetlands	◐	◐	◐	◐
Hazardous Materials	◐	◐	◐	◐
Parklands (4f)	◐	◐	◐	◐
Visual Impacts	○	○	○	○
Relocations	○	○	○	○
Traffic	◐	◐	◐	◐
Cultural Resources	○	○	○	○
State Lands Encroachment	○	○	○	○
Noise and Vibration	○	○	◐	◐
Air Quality	○	○	○	○
Consistency with Community Plans	○	○	○	○

- Not Significant
- ◐ Potentially Significant
- Significant

Water Quality. Two of the four alternatives (BRT-2 and LRT-2) would require five timber trestle bridges to be rebuilt or replaced. The LRT-2 alternative would also likely require the construction of a new, 715-foot long bridge over the Salinas River.

Coastal Zone. A portion of the project is located within the Coastal Zone. Compliance with California Coastal Commission and Local Coastal Program Goals would therefore be required. Possible conflicts include potential biological impacts.

Biology. The possible presence of steelhead trout in the Salinas River would need to be determined in consultation with the U.S. Fish and Wildlife Service. This

coordination would be required for the LRT-2 alternative. The BRT-1 and BRT-2 alternatives would remove the existing railroad track passing through the former Fort Ord area, and replace this track with a 32-foot wide roadway. This construction would impact the Monterey Bay Dunes complex, which is an environmentally sensitive habitat area. Coast buckwheat plants have been observed growing in the TAMC right-of-way within the past 20 years. Coast buckwheat are host plants to the Smith's blue butterfly, a federally protected animal species listed as endangered by the U.S. Fish and Wildlife Service. Additionally, the dunes (in general) provide habitat for the snowy plover and the Monterey spineflower.

Wetlands. Wetlands are present adjacent to the Monterey Branch Line railroad right-of-way at the Salinas River, Locke-Paddon Park, and Roberts Lake. The four build alternatives construct bus guideway or reconstruct rail track adjacent to these water features.

Hazardous Materials. Phase I and Phase II Environmental Site Assessments have been conducted for the portion of the project located between Contra Costa Street and Castroville. Three boring locations were found to contain contaminated soil. Six sites within the alignment area handled or used hazardous materials or waste. These conditions are typical for railroad rights-of-way, and while potentially significant, should not inhibit construction of a fixed guideway project on the MBL.

Parklands. The project alignment runs through or alongside three public parks that have been developed subsequent to the construction of the Monterey Branch Line by Southern Pacific Railroad in 1879. Agreements between the California Department of Transportation and the cities of Monterey and Seaside retain the use of the MBL right-of-way for future fixed guideway transit service.

Traffic. Traffic impacts at highway-rail (busway) crossings are potentially significantly at five locations, all of which may be mitigated through use of partial transit priority traffic signal control. The five potentially significant locations are:

- Del Monte Boulevard and Reservation Road
- Monterey Road at Fremont Boulevard and California Avenue
- Del Monte Boulevard and Tioga Avenue
- Del Monte Boulevard and Canyon del Rey Boulevard
- Del Monte Avenue at Washington Street and Lighthouse Avenue.

Caltrans and the California Public Utilities Commission would need to be consulted with respect to the Highway 1/Fremont Boulevard interchange ramp terminals and operations at the Canyon del Rey (SR 218) crossing adjacent to Del Monte Boulevard.

Noise and Vibration. Ten single-family residences and three multi-family residences would experience operational noise impact due to operation of LRT vehicles in Alternatives LRT-1 and LRT-2. These impacts could be mitigated with relatively low soundwalls.

Capital and Operations and Maintenance Costs

Chapter 5 of *Monterey Peninsula Fixed Guideway: Alternatives Analysis* report presents capital and operations and maintenance (O&M) costs and assumptions for the proposed alternatives. Capital and O&M costs were estimated for each of the project alternatives. Note that each alternative includes local bus service components for connecting the Monterey Peninsula with Salinas.

Table ES-6 provides a summary of the capital and operation and maintenance findings associated with the Monterey Peninsula Fixed Guideway Study. Total costs for all build alternatives meet the parameters of FTA Small Starts guidelines and are within the budget that was deemed appropriate at the outset of the study.

Cost Effectiveness Criteria

Major new transit corridor investments require significant financial expenditures and must be cost effective, especially in light of current economic conditions. Cost effectiveness measures the extent to which the estimated costs of the alternatives are offset by their estimated benefits.

Measures of the cost effectiveness associated with alternatives assessed for the proposed Monterey Peninsula Fixed Guideway project include:

- Annualized capital costs
- Passenger fare revenues
- Net public operating costs
- Cost per rider.

Table ES-6 indicates that the BRT and LRT modal alternatives are nearly identical in terms of implementation costs. Nevertheless, both modal alternatives would require significant public investments in transit service over and above the no build or enhanced bus alternatives.

Table ES-6
Summary of Capital and O&M Cost Estimates

ALTERNATIVES	SERVICE FEATURES	EQUIPMENT ASSUMPTIONS	CAPITAL COSTS	O&M COSTS
Bus Rapid Transit service	<ul style="list-style-type: none"> • Monterey to Marina • Marina to Castroville 	<ul style="list-style-type: none"> • Articulated buses • Low-floor, advanced design • Hybrid diesel electric vehicles 	BRT-1—\$162M BRT-2—\$195M	BRT-1—\$31.58M BRT-2—\$31.91M
Light Rail Transit service	<ul style="list-style-type: none"> • Monterey to Marina • Marina to Castroville 	<ul style="list-style-type: none"> • Hybrid diesel electric 	LRT-1—\$168M LRT-2—\$211M	LRT-1—\$29.75M LRT-2—\$32.61M
Enhanced bus	Enhanced MST Line 20: <ul style="list-style-type: none"> • Monterey to Marina • Marina to Castroville 	<ul style="list-style-type: none"> • Diesel or natural gas powered • Articulated, low-floor buses 	\$46M	\$27.92M

Annualized Capital Costs. Table ES-7 provides estimates of annualized capital costs for the enhanced bus and build alternatives. These costs are based on a 7 percent discount rate and FTA assumptions regarding the number of useful years of each component.

Passenger Fare Revenues. Passenger trips and fare revenues for the no build, enhanced bus and build alternatives are summarized in Table ES-8. The following observations are relevant for understanding these forecasts:

- Increases in population and employment between 2006 and 2015 result in a 15 percent increase in ridership (2006 No-Build and 2015 No-Build).
- The increased frequency of service on Line 20, offered by the Enhanced Bus alternative, increases the number of transit riders (boardings) on Line 20 by 32 percent. Overall system ridership would increase by 4.6 percent (2015 No-Build vs. 2015 Enhanced Bus).
- Ridership differences among the four build alternatives (BRT-1, BRT-2, LRT-1, LRT-2) are relatively minor (\pm 100 daily system boardings).
- The four build alternatives increase overall system ridership (total daily system boardings) by 18 percent compared to the 2015 No-Build alternative, and over 13 percent compared with the Enhanced Bus alternative. In the Line 20 corridor, the build alternatives increase ridership by 82 percent compared to the No-Build alternative, and 37 percent compared to the Enhanced Bus alternative.
- Reduced travel time on the BRT/LRT guideway portion of the Line 20 route alignment is partially offset by a reduction in walk accessibility, as there are fewer guideway stations compared to local bus stops. Increases in BRT/LRT ridership are due to the attractiveness of the vehicles, stations, branding, and exclusive transit guideway.
- Little difference in ridership is forecast between BRT and LRT. The ridership model treats these modes as being equal. The transfer inconvenience between LRT and local bus in Marina is across the platform with minor time delay, and is not significant for the trip market captured by transit. For transit trips between Salinas and Marina, no travel time advantage exists between the alternatives (No-Build, Enhanced Bus, BRT or LRT).
- Ridership forecasts do not reflect the extension of Caltrain commuter rail service between Santa Clara County and Monterey County (Watsonville/Pajaro, Castroville, and Salinas). This Caltrain extension service awaits the approval of funding assistance from the Federal Transit Administration, and cannot therefore be assumed as a given.
- The ridership forecasts do not fully reflect the potential of bicycle access to the fixed guideway stations, as the bike access mode is not specifically modeled. The provision of bicycle lockers at stations and bicycle-on-board transport would likely increase the accessibility of fixed guideway transit service to this potential user group.

Table ES-7
Annualized Cost (2007 \$ in millions)

COST COMPONENT	ENHANCED BUS	BRT-1	BRT-2	LRT-1	LRT-2
Guideway and track elements	n/a	4.48	6.56	2.57	3.88
Stations and stops	2.44	3.86	3.93	3.54	3.68
Civil Work	n/a	0.63	0.79	0.28	0.29
Structures	n/a	0.01	0.22	0.03	1.14
Grade crossings	0.14	1.94	2.19	2.25	2.56
Systems	n/a	0.02	0.02	0.62	0.62
Construction Subtotal	2.58	\$10.94	\$13.71	\$9.29	\$12.17
ROW, land, existing improvements	n/a	0.34	0.34	0.34	0.34
Vehicles	1.15	2.43	2.43	3.88	3.88
Total	\$3.73	\$13.70	\$16.47	\$13.50	\$16.39

Source: Parsons

Table ES-8
Year 2015 Forecast Passengers and Fare Box Revenues (2007 \$)

	NO BUILD	ENHANCED BUS	BRT-1	BRT-2	LRT-1	LRT-2
Daily transit trips	13,698	14,249	15,616	15,699	15,343	15,422
Daily transit boardings	16,645	17,417	19,645	19,739	19,649	19,642
Annual transit trips	4,417,400	4,595,089	5,035,926	5,062,692	4,947,887	4,973,364
Annual transit boardings	5,367,763	5,616,721	6,335,218	6,365,531	6,336,508	6,334,250
Annual passenger revenue	\$7.02M	\$7.31M	\$8.01M	\$8.05M	\$7.87M	\$7.91M
Net increase	\$0	\$0.29M	\$0.99M	\$1.03M	\$0.85M	\$0.89M

Source: Parsons

MST typically reports transit riders (boardings) and passenger revenues. Based on FY 2007 financial data, the average fare per fixed-route trip was computed to be \$1.29. Based on this statistic, the average fare per linked transit trip was computed to be \$1.59 for the no build alternative. This fare of \$1.59 per linked trip was used to compute the annual fare box revenues reported in Table ES-8.

Net Public Operating Costs. The estimated increase in net public operating costs for the enhanced bus and build alternatives are summarized in Table ES-9.

Table ES-9
Net Public Cost Increment over No Build (2007 \$ in millions)

PARAMETER	ENHANCED BUS	BRT-1	BRT-2	LRT-1	LRT-2
Annual operating and maintenance cost	\$27.92	\$31.58	\$31.91	\$29.75	\$32.61
Annual passenger revenue	\$ 7.31	\$ 8.01	\$ 8.05	\$ 7.87	\$ 7.91
Net public cost	(\$20.61)	(\$23.57)	(\$23.87)	(\$21.88)	(\$24.70)

Source: Parsons

When viewed on an annualized cost basis, there is virtually no difference in cost between the Bus Rapid Transit and the Light Rail Transit modes, based on the definition of the alternatives. The shorter segment options between downtown Monterey and north Marina (BRT-1 and LRT-1) are clearly less expensive—and both could be considered as “minimum operating segments.”

Transportation and Mobility Impacts

Chapter 6 of the *Monterey Peninsula Fixed Guideway: Alternatives Analysis* report documents the existing and projected future roadway and transit networks along the Monterey Branch Line Corridor and between the Monterey Peninsula and Salinas. It also provides an overview of current transportation and mobility issues which will be effectively addressed to varying degrees by the proposed project alternatives. The transportation and mobility issue concerns that will be alleviated by the proposed services are mainly concentrated in the following areas.

- Existing and future roadway congestion
- Travel time performance
- Home and work trip making
- Underserved and potential future transit markets
- On-time and frequency of service
- Transit dependent riders
- MST Line 20 service improvements

Congestion Relief. Chapter 6 analysis identified level of service conditions that are deficient on a number of local and regional roadways. It is expected that the proposed fixed guideway service will help to alleviate congestion on the following roadways by drawing riders away from automobiles and toward transit.

- Highway 1
- SR 68
- Blanco Road
- Del Monte Boulevard
- Reservation Road
- Del Monte Avenue
- Lighthouse Avenue
- Camino Aguajito

It is further expected that the proposed fixed guideway service will draw ridership in numbers that will contribute toward road congestion relief and/or provide alternative means of transport to the point where level of service operations can be improved or maintained at existing levels as an alternative to constructing several expensive roadway projects that have been proposed, specifically along Highway 1 and SR 68.

Travel Time Performance/Marina to Monterey Service. Monterey-Salinas Transit (MST) Line 20 covers 38.6 miles as it travels between Salinas and Marina, along the Peninsula to Downtown Monterey, and back again. In that distance, there are 87 bus stops, or less than one-half mile between stops, and the round trip running time is currently about 105 minutes, yielding an average speed of 22 mph. This speed is relatively high overall and results from the relative long segments between Salinas and Marina, and Marina and Seaside, where the line runs nonstop. In spite of this

relatively high speed, MST Route 20 has had issues with on-time performance, particularly for eastbound trips during the PM peak travel time, where late bus arrivals frequently result in missed transfers due to delays caused by traffic congestion.

The proposed fixed guideway service, by contrast, would consist of 13 stops in each direction between Monterey and Marina, along the MBL line corridor, and an additional 8 stops in each direction between Marina and Salinas on limited stop local bus or BRT service operating on existing roadways. Due to the reduced number of stops and ease of travel on the fixed guideway, riders would take approximately 15 minutes less time to make a one-way trip between downtown Marina and downtown Monterey. Line 20 currently serves 2,070 riders on an average weekday. It is expected that average daily ridership on the proposed service route will total $\pm 4,400$ riders in Year 2015.

Home and Work Trips. Over 50 percent of all MST riders began their transit trip from home (with 28 percent traveling to work), while 78 percent indicated that they walked to access the bus. Fully 63 percent of riders indicated walking less than five minutes to access the bus and 67 percent walked less than five minutes after they got off the bus. This data would seem to indicate that a large number of existing riders live and/or work near existing transit service lines. It is expected that service improvements resulting from the implementation of the proposed alternatives with respect to travel time, service frequency, and on-time performance will result in increased transit usage by residents, especially those living and working near the proposed fixed guideway corridor. Moreover, the significant amount of entitled residential, commercial, and educational facilities that will be constructed in close proximity to the fixed guideway corridor present a yet to be tapped transit market.

College and School Riders. The percentage of riders who listed school or college as a destination (8 percent) seems significantly low given the proximity to transit routes available to the Naval Postgraduate School, Monterey Peninsula College, the Presidio of Monterey, California State University Monterey Bay (CSUMB), and various local high schools. Because the proposed fixed guideway transit service would directly serve these institutions and provide a more attractive travel alternative than currently provided, it is expected that a significant number of students would be attracted to the proposed transit service.

Frequency and Connectivity of Service. The existing MST Line 20 operates at 30 minute headways during peak travel periods with an occasional “tripper” added to produce 15 minute service. In addition, trips between Monterey and Salinas on other lines often require a vehicle transfer somewhere along the route. It is expected that the proposed fixed guideway service will operate on 10 to 12 minute headways and the schedule will operate on a more consistent basis due to the exclusive nature of the fixed guideway. In addition, a one seat ride (no transfers) could be provided in the case of the BRT (bus) alternatives for Salinas to Monterey Peninsula origin-destination pairs.

Transit Dependent Riders. Fully 68 percent of all MST riders pay cash fares (not monthly passes). In addition, 64 percent of riders indicated that they were from one-vehicle households, 49 percent lived alone, and 68 percent had annual incomes of \$30,000, or less. All of these factors are indicators of transit dependence and it appears that a large percentage of MST riders are transit dependent and/or transit reliant. The proposed fixed guideway alternatives are expected to better serve not only those currently dependent on transit, but also current auto users and those living in future entitled projects to be built in close proximity to the fixed guideway corridor and who may also be transit dependent. Further, since the existing MST ridership is composed largely of the transit dependent or transit reliant patrons, an untapped market exists with respect to riders who have the choice of whether to use transit and are currently located, or will be located, near the fixed guideway corridor in the future.

Line 20 Service Improvements. As part of the on-board bus rider survey taken in early 2006, four potential service improvements were given top priority ratings by at least half of the MST Line 20 riders.

- More frequent service
- Later evening service
- More lines
- Reduced travel times

The proposed fixed guideway service is particularly well-equipped to address these service improvements. It will provide more frequent service during peak periods (maximum 10 to 12 minute headways) and could provide later evening service as demand warrants. More frequent service (shorter headways) will also effectively create more “lines” available for service. A service with more direct and efficient connections, less stops, and reduced travel time, travelling on a fixed guideway system will provide reduced overall travel times (for transit users and roadway users) and greater convenience.

Public Evaluations

Numerous public meetings, stakeholder workshops, and media outreach events were held during the course of the Monterey Peninsula Fixed Guideway project development process. Input was solicited from a wide variety of sources regarding facility design, station locations, service characteristics, potential funding, and environmental impact mitigation. This public involvement focused and will continue to focus on the type and quality of the services to be provided and on bus and rail fixed guideway alternative facilities (stations, park-and-ride, layover bases, etc.) within the context of the Monterey Peninsula Fixed Guideway Study. Extensive public input over the course of over four years was received regarding this alignment and is expected to remain crucial as the Locally Preferred Alternative (LPA) is both selected and refined. A summary of public and stakeholder input to the Monterey Peninsula Fixed Guideway Study is provided below:

- Monterey Peninsula communities support local service along the Monterey Peninsula, connecting to Caltrain service at Castroville.

- Public agencies internal to Monterey County support the Monterey Peninsula Fixed Guideway proposed projects. These include TAMC, Monterey–Salinas Transit, the Monterey County Resource Management Agency, and the Peninsula cities.
- No significant public opposition to the shortlisted Monterey Peninsula Fixed Guideway alternatives has arisen in four years of project development, informational meetings, or circulation of individual project reports.

Insofar as mode selection, the public participation outreach effort has surfaced proponents for both the BRT and LRT options with no real consensus of public opinion favoring one mode or the other.

Financial Plan

Chapter 8 of the *Monterey Peninsula Fixed Guideway: Alternatives Analysis* report details potential funding sources for costs associated with the Monterey Peninsula Fixed Guideway project. As currently planned, sufficient funding for the proposed Monterey Peninsula Fixed Guideway project is expected and will be obtained from a mix of revenue sources including:

- State of California, Proposition 116 rail bond funds
- State Transportation Improvement Program–Public Transportation Account funds
- Local transportation impact fees
- Contributions from local partner agencies
- Transportation Agency for Monterey County land lease revenues
- State and local sales tax revenues
- Federal grant funding.

Insofar as capital costs, a proposed application for Federal Transit Administration Small Starts funding grant in the amount of \$75 million is intended to fill the gap between the available state and local funding and the estimated total project cost. It is further anticipated that net public operating costs (transit operations and maintenance expense subsidization) will be met by three major funding sources including State Transportation Development Act funding, Transportation Agency for Monterey County land lease revenues from the future transit-oriented development, and local sales tax revenues.

Table ES-10 outlines a potential financing plan for capital cost elements which appears viable absent the passage of a future local sales tax measure. Cost items on Lines 1 and 2 include both the cost of the project as defined and the cost the original Monterey Branch Line purchase and the cost of the project as initially defined. Cost savings reductions were later identified such that a “net project capital cost” was obtained (Line 4). With respect to revenues, Line 5 provides the expected federal funding, while Line 6 proved expected local and state funding. The sum of lines 5 and 6 equal total project revenues.

The Capital Cost Financial Plan proposed for the Monterey Peninsula Fixed Guideway project would be sufficient to address the Enhanced Bus, BRT-1, and LRT-1 alternatives. The BRT-2 and LRT-2 alternatives require significantly higher funding, most of which would come from STIP funding.

Funding the net public operating costs, the difference between passenger revenues and total operating and maintenance costs, assumes the availability of the above mentioned revenue sources which include the passage of a future sales tax or similar measure.

Evaluation Conclusions

Public transportation improvements are needed to accommodate a higher proportion of commuting, business, educational, and shopping trips made by residents of and visitors to the Monterey Peninsula. These trips occur predominately between Monterey Peninsula cities and between the Monterey Peninsula and Salinas. Such intra-county trips also occur on already congested roadways and the opportunities to expand highway capacity are limited by environmental constraints and scarce funding resources. Suitable public transportation investments are needed to facilitate intra-county trips in a more cost-effective manner, especially when compared to some of the highway-only options considered thus far.

The recently completed *Monterey Peninsula Fixed Guideway: Alternative Analysis* examined the feasibility of either bus or rail fixed guideway service, located mostly long the existing Monterey Branch Line right-of-way. Findings in six major areas are provided below:

Demographics and Equity. Future growth is relatively certain along the Monterey Peninsula over both the near- and far-term. Further, the distribution of existing and expected future housing, jobs, low-income, and transit-dependent residents in this area occurs in very close proximity to the proposed fixed guideway corridor. The prospects for a reasonably sized transit market, especially between Monterey and Marina appears viable. Lack of population, households, and expected future development or land use changes in the general area between north Marina and Castroville reduces the market for transit in this segment, except for growth generated in Castroville as a result of the Castroville Community plan, connections to existing Amtrak passenger rail service, and planned future services (Coast Daylight and the extension of Caltrain to Salinas).

Table ES-10
FY 2007 MST Operating Expense Summary (\$ in thousands)

	ALTERNATIVE				
	BRT-1	BRT-2	LRT-1	LRT-2	Enhanced Bus
Cost Items					
1. Purchase of Branch Line	\$ 9,238,475	\$ 9,238,475	\$ 9,238,475	\$ 9,238,475	—
2. Project as defined	162,000,597	195,242,693	168,304,412	210,886,506	45,600,287
3. Minimum operating segment cost reductions					
a. Terminate west end of alignment at Washington Street	(3,060,000)	(3,060,000)	(4,530,000)	(4,530,000)	—
b. Utilize existing hardstand for Eighth Street park-and-ride	(6,079,840)	(6,079,840)	(6,079,840)	(6,079,840)	—
c. Defer park-and-ride at Casa Verde	(9,379,659)	(9,379,659)	(9,379,659)	(9,379,659)	—
4. Net project capital cost	\$152,719,573	\$185,961,669	\$157,553,388	\$200,135,482	\$45,600,287
Revenue Sources					
5. FTA Section 5309 Small Starts	\$75,000,000	\$ 75,000,000	\$75,000,000	\$ 75,000,000	
6. Local and State funding	\$77,719,573	\$110,961,669	\$82,553,388	\$125,135,482	\$54,838,762
a. State Proposition 116	14,141,525	14,141,525	14,141,525	14,141,525	(9,238,475)
b. Regional Transportation Impact Fee	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
c. FORA FY 2008–2022 CIP (Transit Element)					
Eighth Street Transit Center (FTA match)	2,360,000	2,360,000	2,360,000	2,360,000	2,360,000
Transit vehicle purchase (partial FTA match)	7,175,054	7,175,054	7,175,054	7,175,054	4,763,769
d. FORA & Other Regional Development Fees	21,089,075	21,089,075	21,089,075	21,089,075	—
e. State Transportation funds (secured)	10,256,000	10,256,000	10,256,000	10,256,000	3,000,000
State Transportation funds (unsecured)	21,697,919	54,940,015	26,531,734	69,113,828	43,714,993

Notes:

- 6a. \$9,238,475 expended for Branch Line right-of-way purchase. Eligible for Federal matching funds. For Enhanced Bus, repayment of right-of-way purchase grant is assumed.
- 6b. TAMC assessed Regional Impact Fees
- 6c. Fort Ord Reuse Authority Capital Improvement Program, fiscal year 2008/2009 through 2021/2022, approved June 13, 2008, Table 2, page 11 and Table 5, page 22. For Enhanced Bus, 50 percent of vehicle cost is assumed.
- 6d. Future STIP allocation (secured and unsecured).

Transit-Oriented Land Use. Adequate regulations, requirements, and guidelines are in place in each of the four Peninsula cities such that transit-oriented development is not only supported but highly encouraged. Public and private agencies possess the statutory and administrative tools to achieve transit-oriented development goals. There is also support in this regard from county and state agencies. Transit-oriented zoning designations and planning policies which can be used to shape and direct future growth along the proposed project corridor are crucial to the project's ultimate effectiveness and flexibility.

Environmental Concerns. No major issues were found with respect to environmental concerns. In the event that any biological or habitat issues are found to exist, they would likely be more extensive in the case of the bus alternatives where the required guideway width is significantly wider. Minor and readily solvable traffic impact and noise issues were identified and addressed.

Capital and Operating Expenses. The capital expense and on-going operations and maintenance costs are nearly identical for both rail and bus guideway alternatives. On an overall cost basis, the BRT-1 and LRT-1 alternatives are lower in cost than the alternatives which continue between Marina and Castroville, but alternatives BRT-2 and LRT-2 are also near equal in terms of additional, incremental costs.

Improved Mobility. Transportation and mobility issue concerns alleviated by the proposed services include:

- Existing and future roadway congestion
- Travel time performance
- Home and work trip making
- Underserved and potential transit markets
- On-time and frequency of service
- Transit dependent riders
- Low-Income riders
- MST Line 20 improvements.

Cost Effectiveness. From the standpoint of annualized capital and operating costs, the bus and rail alternatives are nearly identical. On a per rider basis, the build alternatives cost more when compared to the no-build or enhanced bus mode. It should be noted that benefits derived from the project will eliminate the need for at least some expenditures on congested-related highway construction.