3.2 MASTER RESPONSES

Numerous comments raised common concerns or questions that are most appropriately answered or clarified in one comprehensive or "master" response. For this Final EIR, the issues listed in Table 3-1 are addressed in master responses, lettered A through W. Master Responses A through I are related to transportation issues Master Responses J through W address other concerns. Many of the individual responses refer back to these master responses.

TABLE 3-1
MASTER RESPONSE LIST

Master Response	Title	Issues Addressed	Page Number
A	Transportation Model		3.2-3
A.1	Existing Conditions & ABAG Projections	• Year 2000 baseline • ABAG projections	3.2-3
A.2	Model Corrections and Clarifications to Highway 101 Lane Configurations	• Number of lanes • HOV lane assumptions • Assumptions about land use around stations	3.2-4
A.3	Other Proposed Project Assumptions	• Differences between 2001 and 2005 RTPs • Mid-day train service assumptions • Transit services assumed • Future ferry service • Choice of stations with park-and-ride (rationale)	3.2-5
A.4	No-Project Alternative Assumptions	• Traffic model assumptions	3.2-8
B	Project Shuttles	• Assumptions regarding routes, schedules, locations, ridership	3.2-8
C	Ridership Clarifications and Results	• Trip terminology • Start-up ridership (2010) • 2025 ridership • Mid-day ridership • Station to station ridership	3.2-10
D	Express Bus Alternative Assumptions	• Bus routes, destinations • Frequency • Destination • Infrastructure	3.2-13
E	Transportation Impact Analysis Results		3.2-15
E.1	Change in LOS and VMT	• Highway 101	3.2-17
E.2	Local Street Network Impacts	• Local street network (including downtown San Rafael)	3.2-20
E.3	Crossing Delays	• Impacts (delays) at railroad crossings • Emergency response delays	3.2-23
F	Sensitivity Analysis of Not Widening Novato Narrows	• Ridership changes	3.2-24
G	Sensitivity Analysis of Gasoline Price Increases	• Ridership changes	3.2-25
H	Impacts on GGT	• Ridership and service	3.2-25

TABLE 3-1, *continued*

I	TOD Impacts on Ridership	• Estimated effects of TOD on ridership	3.2-26
J	Train Reliability	• Service reliability	3.2-28
K	Appendix C Clarification and Station Refinement	• Appendix C purpose • Station designs	3.2-29
L	Ability to Model Bike/ Pedestrian Travel	• Estimates of overall pathway use	3.2-31
M	Alternatives to the Project Not Fully Analyzed	• Alternate routes • Alternative vehicles	3.2-33
N	Project Costs	• Expenditure plan update process	3.2-35
O	Freight Operations	• Schedule, agreement, interaction • Cumulative impacts	3.2-36
P	Public Safety and Emergency Preparedness	• Bike safety and others • Interaction of bikes/pedestrians and train – crossings, proximity of path to rail line • Single-track Issues – rail operations and freight considerations • Security responsibility	3.2-38
Q	Quiet Zones	• Process, feasibility, requirements • Costs and implementation	3.2-44
R	Larkspur Station	• Access, design, alternatives • Impacts on Marin Airporter • Access to ferry terminal • Parking issues • Visual impacts	3.2-45
S	Andersen Drive Crossing	• Realignment of crossing	3.2-48
T	Property Values	• Project impacts on property values	3.2-50
U	Bike Access and Parking at Stations	• Station design and access • Bicycle storage	3.2-51
V	Pathway Crossings	• Crossings design • Safety considerations	3.2-53
W	Other Station Alternatives	• Station sites eliminated from analysis	3.2-60

TRANSPORTATION ANALYSIS

Many comments were related to the transportation analysis contained in Section 3.6 of the DEIR. Comments questioned the rail ridership projections, with some commentors expressing concern that the ridership number was either too high or too low. Comments also raised concerns about:

- assumptions used in the transportation model, including Highway 101 lane configurations (A)
- proposed SMART feeder shuttles (B)
- SMART ridership assumptions and start-up ridership (C)
- Express Bus Alternative assumptions and analysis (D)
- highway level of service estimates (E1)
- impacts on local roads around stations (E2)
- traffic impacts in downtown San Rafael (E2)
- delays at railroad crossings (E3)
- ridership if the Novato Narrows is not widened (F)
- ridership if inflation-adjusted gasoline prices rise (G)

- impacts on existing bus service (H)
- ridership impacts of transit-oriented development (I)
- reliability of bus vs. rail (J)
- clarifications to Appendix C (station concept plans) (K)
- ability of the model to forecast bicycle/pedestrian travel (L)
- use of NWP right-of-way as a busway (M)

To address these issues, master responses were developed. (The master response is shown in the letter following the topic area in the above list.) The transportation analysis and modeling effort were carefully reviewed by a transportation planning firm, Dowling Associates, Inc., a different firm from the one that prepared the original DEIR travel forecasts, and the travel-forecasting model was re-run with corrected information. (See Master Response A.2 below.) In addition to re-running the model for the proposed project and Express Bus Alternative, a sensitivity analysis was conducted to assess ridership and highway level of service changes that may occur if several of the assumptions about future conditions changed (i.e., if the Novato Narrows highway expansion did not occur or gasoline prices continue to rise). Also, impacts on local streets around the proposed rail stations were analyzed in greater detail, in consultation with local agencies, to clarify potential impacts identified in the DEIR.

As a result of the comprehensive evaluation, some revisions and minor corrections were made to the transportation section, but no new impacts were identified. Adjustments to traffic volumes and VMT and VHT are reflected in revised tables, but the findings remain generally the same as in the DEIR. See further discussion in Master Response E.1.

The following Master Responses A through I address the various components of the transportation analysis that received substantive comments, followed by Master Responses J through W. Portions of DEIR Section 3.6, Transportation, have been revised in accordance with responses to these comments and are provided in Chapter 4 of this Final EIR, with revisions indicated in strikeout and underline.

MASTER RESPONSE A – TRANSPORTATION MODEL ASSUMPTIONS

Model assumptions and transportation impact analysis methodology are descrfibed in DEIR Section 3.6.3, with further details about travel demand forecasting in DEIR Appendix I. The following subsections provide additional clarification.

A.1. Existing Conditions and ABAG Projections

Year 2000 Baseline

As described in DEIR Section 3.6.3 (pages 3-92, -93), the year 2000 was used as the "existing conditions" year for purposes of identifying the proposed project's impacts. Some comments questioned why the year 2000 was chosen as the baseline year rather than a more recent year (e.g., 2005). There were two important reasons:

1) Data availability—2000 was a decennial census year. The Metropolitan Transportation Commission (MTC) also conducted its decennial *Bay Area Travel Survey* (BATS) in 2000, and will not conduct another such survey until at least 2010. At the time that work commenced on the DEIR in 2002, an updated travel demand model with a more recent base year, based on the latest Regional Transportation Plan (RTP) was not yet available. Although there may be more current baseline information available on local roadways, the most recent regional highway level of service (LOS) information is year 2000.

2) Standard practice—Most travel models are updated only every five to ten years, due to the costs involved (see for example, Caltrans' *Travel Forecasting Guidelines*, 1992, also available from the National Transportation Library at http://ntl.bts.gov/DOCS/TF.html). The year 2000 is still a standard base year in transportation planning practice. For example, Sonoma County's recent *Draft General Plan 2020 DEIR* also uses 2000 as its base year.

ABAG Projections

The transportation analysis uses Association of Bay Area Governments (ABAG) *Projections 2000* for assessing future conditions, against which to compare the proposed project. (See DEIR Appendix I, Section 3 (Demographics) for a discussion of population and employment projections.) *Projections 2000* contained the most recent projections available in a format suitable for travel forecasting (*Projections 2002* was not yet available at the travel analysis zone level needed for modeling). Although ABAG has released three newer sets of *Projections* (2002, 2003, and 2005), it does not necessarily follow that the more recent *Projections* are better predictors of what the socio-economic future of Marin and Sonoma Counties will be in 2025. Beginning with the 2003 series, ABAG made a fundamental policy shift. Appendix E of the Draft EIR on the MTC *Transportation 2030 Plan* (MTC 2004) provides a detailed comparison of *Projections 2002* (which are similar to *Projections 2000*) versus *Projections 2003*. That comparison states "ABAG Projections 2003 (P-2003) is based on a very different set of policy assumptions than previous series of the long-run economic-demographic forecasts, which ABAG has been producing since 1973. Unlike previous projections, such as *Projections 2002*, which are based on adopted land use plans from cities, counties, and agencies in the region, *P-2003* is based on ABAG's Regional Smart Growth Strategy/Regional Livability Footprint Project." Thus, more recent projections reflect future conditions desired by regional policy, and are not entirely consistent with existing local general plans. In numerous locations, in order for projected "smart" growth to occur, amendments to general plans would be necessary. These more recent projections represent the strategy of how the nine-county Bay Area can grow smarter and become more sustainable over the next 20 years and beyond. The projections also serve as a guide for infrastructure investment decisions to direct "smart" growth in the future.

Therefore, the EIR authors believe that the use of *Projections 2000* is reasonable and consistent with local general plans. The practical effect of concentrating growth within cities as a result of using later policy-driven *Projections* (as noted in MTC comment 22-1) would be a greater concentration of people within central urban areas and greater transit ridership, meaning that the ridership projections noted in the DEIR may be conservative (i.e., less than the true value in 2025).

A.2 Model Corrections and Clarifications to Highway 101 Lane Configurations

Comments noted that the number of lanes shown in DEIR Tables 3.6-7, 3.6-8, 4.2-2, and 4.2-3 were not correct. Independent evaluation confirmed that there were several errors in the highway configuration. This resulted in the capacity, volume/capacity ratio, and level of service in some locations being incorrect. Also, the Marin County HOV lanes were shown as operating in both directions during peak hours, when in fact they operate only in the peak direction (although the modeling was done with the correct assumptions—only the post-model interpretation and analysis of the model results was incorrect). This corrected information is reflected in the revised travel demand forecasts and in updated tables (see FEIR Chapter 4). Basic freeway lanes continue to be given a capacity of 2,000 vehicles per hour (vph), but auxiliary lanes were given a capacity of 1,000 vph (half the capacity) since they only serve "weaving" traffic between interchanges. Part of the reason for this confusion is that until recently MTC treated auxiliary lanes as if they were the same as basic freeway lanes for purposes of estimating capacity, which is an overstatement.

Specific model corrections and clarifications include the following for existing Highway 101 level of service (2000):

Segment 3 (Third Street, Santa Rosa to Rohnert Park Expressway)
- Add auxiliary lanes in both directions (auxiliary lanes cover many but not all interchanges in this segment).
- Delete HOV lanes (both NB and SB), which did not exist in 2000.

Segment 8 (State Route 37 interchange to N. San Pedro Road, San Rafael)
- Add auxiliary lanes in both directions; NB lanes should be 4 in AM but 3 in PM. SB lanes should be 3 in AM but 4 in PM.

Segment 9 (N. San Pedro Road to Sir Francis Drake Blvd., Larkspur)
- Northbound lanes should be three plus one auxiliary lane, in both directions.

For 2025, the following changes were made:

Segment 1 (Citrus Fair Drive, Cloverdale to Shiloh Road, Windsor)
- Delete HOV lanes in both directions.

Segment 2 (Shiloh Road to Route 12, Santa Rosa)
- Change mixed flow lanes to 2 plus auxiliary lane, in both directions (3 is shown in table).

Segment 3 (Third Street, Santa Rosa to Rohnert Park Expressway)
- Add auxiliary lanes in both directions (auxiliary lanes will be between all interchanges in this segment by 2025).

Segment 4 (Rohnert Park Expressway to Corona Road, Petaluma)
- Change mixed flow lanes to 2 (3 were shown in table).

Segment 5 (Corona Road to Route 116E, Petaluma)
- Add auxiliary lanes in both directions.

Segment 6 (Route 116 E to Atherton Avenue, Novato)
- Change mixed flow lanes to 2 (3 was shown in table).

Segment 7 (Atherton Avenue to Route 37, Novato)
- Change NB AM and SB PM mixed flow lanes to 4 (3 was shown in table).
- Delete northbound HOV lane in AM peak.
- Delete southbound HOV lane in PM peak.

Segment 8 (Route 37 to N. San Pedro Road, San Rafael)
- Change number of northbound mixed flow lanes to 4 (5 shown in table).
- Change AM southbound and PM northbound mixed flow lanes to 3 (5 shown in table).
- Delete northbound HOV lane in AM peak.
- Delete southbound HOV lane in PM peak.

Segment 9 (N. San Pedro Road to Sir Francis Drake Blvd., Larkspur)
- Change southbound mixed flow lanes in AM peak to 3 (table showed 4).
- Change northbound mixed flow lanes in PM peak to 3 (table showed 4).
- Delete northbound HOV lane in AM peak.
- Delete southbound HOV lane in PM peak.

These model corrections for both the base year and future conditions apply to all alternatives. The model was re-run with the corrected network and the results are presented in Master Response E.

A.3 Other Proposed Project Assumptions

Additional clarification of the assumptions used in the transportation analysis is provided in the following subsections.

Differences between 2001 and 2005 Regional Transportation Plans (RTP)

The transportation model assumptions for future highway and roadway improvements were based on the MTC 2001 RTP. The differences between the transportation network improvements in the Highway 101 corridor in the 2001 and 2005 RTP updates are minor, and would not result in difference in the traffic modeling or in the conclusions reached in the DEIR. This was confirmed with Doug Kimsey, MTC's

Planning Manager. As explained on page 3-93 (section 3.6.3) of the DEIR, the 2001 RTP was the most up-to-date RTP available at the time the travel forecasting work began. The differences with the current (2005) RTP are minor in the Marin/Sonoma Highway 101 corridor. An example of the type of changes made is a new interchange proposed for Bellevue Avenue in south Santa Rosa. That project did not appear in the 2001 RTP, and is unlikely to affect the ridership projections of any of the transit alternatives analyzed in this EIR,

Growth Projections/TOD

The ABAG/MTC data used for the travel forecasts for year 2025 generally did not take into account the effect of transit-oriented development (TOD) around stations. The data was based on *Projections 2000* and was not detailed enough to factor in TOD. An explanation of how the travel forecasting model works was provided in Chapter 2 of DEIR Appendix I, Travel Demand Forecasting Report. In response to comments, the potential ridership effects of TOD around the stations have been estimated independent of the model. This TOD estimate and the limitations of the data used in the transportation modeling effort are discussed in Master Response I.

Mid-Day Train Service

The single mid-day train is intended primarily to serve as a “backup” for those who might need to return home in the mid-day. It could also serve commuters who work a half-day (morning or afternoon) shift, and potentially some college students, and visitors. The Altamont Commuter Express (ACE) rail line is currently expanding their service to add a mid-day train for this reason. There is no shuttle service proposed to serve the mid-day train, because the cost would be too high to serve one single train.

The mid-day train ridership was initially based on results from the model analysis conducted for the DEIR. As part of the peer review of the modeling undertaken after comments were received on the DEIR, Dowling Associates concluded that this model is not adapted to predicting off-peak transit ridership, and cannot accurately deal with a single mid-day train service, as proposed by the SMART project. Consequently, the approach of looking at the ratio of mid-day train ridership to daily ridership per train in other existing commuter rail services was used. This ratio was then applied to the forecast number of peak trips predicted by the MTC/VTA model.

The southern California Metrolink’s Ventura County line was selected because it has limited mid-day train service. *Each* Ventura County line mid-day train carries approximately 3% of the daily ridership. Because SMART proposes only one mid-day train, the 3% figure was applied to the peak ridership to get an estimated ridership for the single mid-day train of 146 boarding passengers. The original mid-day ridership was projected at approximately 900 per weekday; this value would be valid if multiple trains were operated throughout the mid-day period, but is incorrect given the capacity of a single mid-day train. An origin-destination matrix for this train was also developed (by factoring the peak matrix and making the assumption that most people would be headed home on the mid-day train). This matrix and a summary of mid-day train ridership under this methodology are in Master Response C.

This mid-day train ridership estimate is reasonably conservative. For example, the authors also examined data from the line between Riverside and Orange County (known as the ‘IEOC line’); it has four mid-day trains, each of which carry about 5% of the ridership of an average peak-period train.

Projected Increases in Transit Services

Several comments requested more information about assumptions made about future transit service levels provided by the existing transit operators in the study area. The DEIR discussed transit service changes in the future in Section 3.6.3, page 3-95. In the re-run of the transportation model, all of the alternatives, including the No Project alternative, assumed a modest level of improvement in frequency of existing bus routes, including Sonoma County Transit (SCT) and Golden Gate Transit (GGT) routes. The transit service levels assumed are the same as in the 2001 RTP, with modest frequency improvements, documented in the table below, (this is a revision of Table 4.2-1 in DEIR Appendix I). The reasoning behind this assumption was that over time, as retail sales (and sales tax) revenues increase, there would be somewhat more revenue to modestly increase services on existing bus routes. Most California transit operators, including SCT and GGT, rely on an existing ¼ cent sales tax enacted by the state legislature (called 'TDA funds') to offset operating losses. Over time, these revenues have tended to rise faster than inflation, due to population growth and increases in real spending power of local residents.

The No Project alternative was originally modeled with the 2001 RTP levels shown in parentheses in Table 4.2-1, that is, without the frequency improvements assumed for the other alternatives. Based on the comments, the re-run of the model included the same frequency improvements in the No Project alternative; this provides a consistent "baseline" future transit system for purposes of comparing the No Project and the "build" alternatives (proposed project, Minimum Operable Segment [MOS], and Express Bus alternatives).

Larkspur Ferry Services

A number of comments expressed concern that the proposed project would result in so many passengers transferring at Larkspur to ferries that it could result in overcrowding on the ferries. The DEIR (page 3-99) describes the modeling assumption that San Francisco Bay ferry service is assumed to remain at year 2000 levels. This assumption is consistent with the 2001 RTP update and was confirmed by Golden Gate Transit (GGT). (Personal communication, Maurice Palumbo, Principal Planner, GGT, April 25, 2006.) In addition, the 2004 Golden Gate Transit Short Range Transit Plan, (page 2-40) noted that no new service is proposed for the Larkspur Ferry system from 2005 thru 2014. At the present time, the average morning peak period ferry demand does not exceed capacity on an average weekday, as shown in the following table:

Departure Time from Larkspur	Vessel Name	Average Passengers Per Departure		Vessel Capacity	Average Load Factor
		FY 04/05	FY 05/06		
5:50 AM	*Mendocino*	173	161	450	38%
6:40 AM	*Del Norte*	254	263	390	67%
7:10 AM	*Mendocino*	366	388	450	86%
7:50 AM	*Del Norte*	321	357	390	92%
8:20 AM	*Mendocino*	370	377	450	84%

Source: Compiled by Dowling Associates from data received from Maurice Palumbo, Principal Planner, Golden Gate Transit, April 12, 2006.
Notes: FY = fiscal year; '05/06 figures represent year-to-date data (i.e., are not for the complete year, which does not end until June 30, 2006). Average load factor = average passengers for the given departure divided by the vessel's capacity.

The impact of the project on Golden Gate Ferry (GGF) ridership in Larkspur is less than significant because the existing ferry services have available capacity to accommodate potential SMART passengers at present, and in the future GGF may replace the existing fleet with one or more larger vessels, as the existing vessels reach the end of their useful life.

Based on this model forecast, approximately 182 daily passengers are projected to get off the train on an average weekday at Larkspur, and it is expected that there would be between 40 and 55 daily transfers to the ferry. This would be distributed over five AM ferry departures. The largest addition to any single ferry departure is likely to be no more than 20 passengers. This is only about five percent of the capacity of the smaller 390-passenger ferries, and therefore is not expected to have a significant impact on ferry operations. Further, as many of these rail passengers may formerly have driven to the ferry, the impact may be less than five percent.

Choice of Stations with Park-and-Ride Lots

Information on this topic was included in DEIR Appendix I, Section 4.0 – Study Alternatives. New rail stations selected for park-and-ride lots were generally those with land available to provide parking. For purposes of modeling, this included all stations except downtown Santa Rosa, San Rafael and Larkspur. The downtown Santa Rosa station does not have station parking for several reasons: land is in short supply in this historic area; the area is slated for transit-oriented development, and having a large surface parking area near the station is philosophically contrary to that goal; the area is served with several transit routes within walking distance; and auto drop-off spaces will be provided. Comments on the DEIR noted that riders using the downtown San Rafael station could make use of an existing, underutilized Caltrans park-and-ride lot 3 blocks away (underneath US 101) that has sufficient parking available for the number of rail patrons likely to use the station. No new construction would be required for this lot. Use of this lot was assumed in the re-run of the travel-forecasting model. See Master Response R regarding parking at Larkspur Station.

A.4 No Project Alternative Assumptions

The No Project Alternative represents future baseline conditions in year 2025, without the proposed SMART project. The transportation conditions of this future scenario are described in detail in DEIR Section 3.6.4. Pursuant to comments on the DEIR, the transportation model was re-run, using the same bus transit operation assumptions as the proposed project. (See discussion under A.3 – Projected Increases in Transit Services, above.) Other assumptions for the No Project Alternative are outlined in DEIR Section 3.6.4. Recent sales tax measures – Measure A in Marin County and Measure M in Sonoma County – were not factored into the model for any of the alternatives, as definitive data was not available on which lines would receive increased service. Furthermore, it is anticipated that most of the funds from these measures would be allocated to local services as opposed to regional travel along the 101 corridor. For example, Marin County Transit District's 2006 Short Range Transit Plan, adopted in March 2006, focuses primarily on local transit within Marin County.

MASTER RESPONSE B – PROPOSED PROJECT SHUTTLES

Comments about the proposed shuttle system included questions about the details of the proposed rail shuttle feeder/distributor system to SMART rail stations, including ridership, sources of funding, routes, and other operating details. The proposed shuttle services were discussed in several places in the DEIR, including Section 2.5.5 and most extensively in Appendix I, Section 4.3.1.

Shuttle services to the rail stations were developed with criteria noted in Section 2.5.5 of the DEIR, i.e., to serve areas with substantial job concentrations either outside a reasonable walking distance (1/2 mile) or divided from the station by hills, highways, or other walking impediments. In addition, shuttles provide transit services to the stations in areas that generally lack existing local public transit services. The stations where shuttles are proposed and the major employment and activity centers that would be served by each route are listed in DEIR Table 2.5-6.

The proposed shuttle system would be operated under contract to SMART. SMART would be responsible for developing a request for bids for the service, and would be responsible for planning routes and schedules, monitoring service quality, and related contract management issues. This managerial structure has successfully been used at other transit operations (for example, Sonoma County Transit). It is assumed that the selected contractor(s) would own and maintain the shuttle vehicles.

The vehicles used could range from a nine-passenger van to a small 25-passenger bus. Most likely the fleet would consist of a mix of vehicles, ranging from 9-12 passenger vans to small buses carrying 20-25 passengers. The size of the vehicles would be adjusted to accommodate the loads so that passengers would not have to stand.

Although it has not been assumed in the travel modeling, it is possible that some shuttles could be operated by large employers or large business parks. These shuttles, being privately operated, may be restricted only to certain employees (or clients). Caltrain has private shuttles that serve their stations similar to this scenario, operated by employers such as Google, Genentech and Stanford University. Similarly, the Altamont Commuter Express (ACE) between Stockton and San Jose provides shuttles at key stations. In addition, some cities have required shuttles to be operated from a major employment center, as a condition of approval of a conditional use. Shuttles have been successfully operated by some transportation management associations (TMAs), which are groups of employers who have formed an organization to help promote transit and carpooling in a given area. An example is the successful Emery-Go-Round Shuttle service, operated by a local TMA, which connects to both the Emeryville Amtrak Station and the MacArthur BART Station. Another example is the highly successful, San Francisco State University shuttle that connects to the Daly City BART Station.

The shuttle ridership was re-evaluated, and a revised estimate of 500-600 passenger trips per weekday developed for 2025. The original shuttle ridership estimate was developed on the assumption that passengers could ride the shuttle without using the rail system, which erroneously overstated the amount of shuttle usage. As a fraction of total daily rail ridership, the revised shuttle ridership estimate reflects MetroLink's experience with its southern California commuter rail system.

The costs of shuttle operation are included in SMART's 2006 Draft Expenditure Plan. The SMART shuttles would be free to SMART passengers and are not intended to be used by non-rail passengers. The routing and scheduling of shuttles would be such that a complete circuit (loop), from departure at a rail station to return, would be approximately 25 minutes. (DEIR Appendix I incorrectly referred to 6-minute headways in the a.m. and 10-minute headways in the p.m.) This would permit a timed transfer at the rail station of five minutes or less. Because northbound and southbound trains will often arrive at different times at a station, the shuttles would generally be timed to meet the peak direction train, i.e., southbound in the morning, and northbound in the evening. This also makes sense because the current operating plan calls for more service in the peak than the reverse-peak direction. The EIR developed preliminary shuttle routes that could be operated within the 25 minute "cycle" required by the train schedules. One shuttle route would also make a stop near the Larkspur Ferry, to facilitate transfers between the SMART rail and the ferries. GGT's experience with free shuttles to the Larkspur ferries was that modest numbers of passengers used the shuttles; however, they were cut primarily as a response to the District's financial crisis, rather than due to lack of ridership.[1]

The shuttle system is intended to be flexible and may be subject to change as ridership and future changes in job locations warrant. If passenger loads are more (or less) than expected, larger (or smaller) vehicles can be substituted. If traffic congestion increases the shuttles' cycle times, the route can be adjusted to fit within the required timing. It is possible to add shuttles, subject to budget constraints, at other stations in the future, beyond those tested in the model; however no additional routes are planned at this time. The precise routings of the shuttles has not been shown in the DEIR because general alignments are sufficient for modeling and environmental review purposes. Detailed routing plans will be prepared in advance of selecting a provider Shuttle routes would be developed in consultation with bus transit service providers and municipal governments.

No shuttles are proposed to meet mid-day trains, because of the high cost of providing this service for a single train. Passengers riding mid-day trains could get to a station by walking, cycling, catching a ride with a friend/co-worker, taxi, or bus.

One shuttle bus waiting area ("bus bay") is provided per shuttle vehicle at each station. These were shown in the diagrams in Section 2.5.4 of the DEIR. The stations having shuttles were shown in Table 2.5-6; five stations have one shuttle, and two stations have two shuttles. Each shuttle route is served by one vehicle. This permits a shuttle to meet each train in the major direction of travel (southbound in the morning, northbound in the evening). Passengers traveling in the reverse peak direction would not have a timed transfer, but generally the waits should be reasonable (less than 15 minutes) between shuttle and train.

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[1] Telecommunication between Maurice Palumbo, Golden Gate Transit, and Steve Colman, Dowling Associates, April 5, 2006.

MASTER RESPONSE C – RIDERSHIP CLARIFICATIONS AND RESULTS

Terminology Used for Describing Ridership (passenger trips vs. passengers)

Several comments requested clarification of DEIR terminology used to describe passenger usage of the alternatives analyzed and the total number of individuals who would use the service. It is standard practice in transportation planning to express the number of passenger-trips made in terms of one-way trips. If, for example, one wishes to compare the ridership of the proposed SMART system with other rail transit systems (such as those summarized annually in the Federal Transit Administration's (FTA) Section 15 reports), the measure consistently used is passenger-trips.

The terms 'trips,' 'passengers,' 'boardings,' 'boarding passengers' and 'ridership' are all synonymous with one-way passenger trips. If every passenger made a return trip, and rode every working day of the year, then the number of individuals using the system would be half the number of boarding passengers. However, there is considerable evidence that many people will occasionally use transit for a portion of their trip (perhaps catching a ride home with a friend), or may ride less than five days per week. This means that the actual number of people benefiting from the proposed service would be more than taking the number of boarding passengers and dividing by 2. BART's most recent Customer Satisfaction Study (2004) found that only 56% of its passengers rode five (or more) days a week, with 10% responding that they use BART less than once a month. Therefore, the number of individuals using the proposed project is likely to be considerably greater than one half the revised daily ridership of 5,050.

"Linked trips" refer to a complete trip between an origin and destination, regardless of how many transit vehicles are used (boarded). Unlinked trips are synonymous with boardings; they count (i.e., include) how many vehicles and transfers are required to get from a trip origin to a trip destination.

Start-Up Ridership (2010)

A qualitative discussion of 2010 ridership was provided on page 3-115 of the DEIR. In response to comments on the DEIR, the travel forecasting model was run for 2010, which is the estimated opening year of the proposed project.

The model used to forecast ridership has a number of strengths, including the fact that it includes the entire 9-county Bay Area and all public transit lines. It has a sophisticated component that considers how people select between alternative modes of travel, such as carpool, drive alone, and transit. However, the model also has a number of inherent limitations. Because it covers such a large area (more than 5,000 square miles), the size of the analysis zones is large and the model is more geared to assessing large-scale impacts, such as changes in VMT. Although the model does an adequate job of predicting transit ridership for purposes of the DEIR, its scale must be considered in analyzing results. The appropriate interpretation of the tables provided here is that they represent the relative ridership between a pair of stations. Actual ridership fluctuates from day to day, and no model can make exact forecasts, even if all of the input data to the model were exactly correct.

The analysis indicated that the 2010 rail ridership would be approximately 5,300 per average weekday, consisting of 5,200 passenger trips on peak period trains and 100 on the single mid-day train. This ridership is slightly higher than the 2025 ridership, primarily due to the fact that many highway improvements would not be completed by 2010. The effect of adding HOV lanes to US 101 tends to depress transit ridership when the 2025 scenario is modeled. There are also changes in trip distribution patterns (caused by the relative locations of jobs and housing) in 2010 vs. 2025. The DEIR Transportation Section (3.6) has been amended to include information on the 2010 start-up year results. Both the 2010 and 2025 forecasts assumed the same rail operating plan (i.e., frequency of trains).

The 2010 Highway 101 LOS tables are shown in revised Section 3.6 in Chapter 4 of this FEIR, for the proposed project and No Project Alternative. The freeway improvements include the "Gap Closure" Project (HOV lanes between the Greenbrae Interchange and N. San Pedro Road) in Marin; and in Sonoma, HOV lanes from Rohnert Park Expressway to Wilfred Avenue, and from Highway 12 to Windsor. These projects were selected by the county transportation agencies as likely to be completed by 2010.

The only substantive improvements that are in the 2025 assumptions, but not in the 2010 scenario, are the U.S. 101 widening projects at Novato Narrows and Petaluma to Rohnert Park Expressway. A comparison of the tables shows that there are still some segments that are deficient (LOS E or F) during peak periods. The freeway volumes are generally similar between alternatives, which is common in congested corridors where demand exceeds available capacity. As some auto drivers switch to rail, the available capacity "freed up" is used by other drivers who otherwise would use parallel routes (e.g., Stony Point Rd. or Petaluma Hill Rd. in Sonoma County; Lincoln Avenue in San Rafael), or who would switch the timing of their trip from non-peak "shoulder periods" to the peak hour. "Shoulder" periods are generally the hour or so before and after the peak hour, e.g., 6:30-7:30 AM and 8:30-9:30 AM.

Not unexpectedly, traffic volumes are higher in 2010 than at present. Because of committed improvements, level of service improves in some areas, but in areas without improvements, it generally worsens. Some areas continue to operate unacceptably (LOS E or F) in 2010, e.g., southbound segments 8 and 9 in Marin County in the AM peak. HOV lanes in these segments are projected to carry a considerable number of vehicles, perhaps exceeding their maximum desirable capacity of 1,750 vph (the maximum capacity is 2,000 vph, but to provide a time advantage to HOVs, it is usually considered more desirable to keep HOV lane volumes at less than 1,750 vph). Although the proposed project provides reduction in 2010 volumes in certain areas, the oversaturation of demand in the corridor often causes freeway volume to fill back up to the original level. Much of the traffic congestion relief would be found on surface streets paralleling Highway 101, rather than on the freeway itself. Despite the fact that the freeway speeds and LOS might see little improvement, this is still a benefit to surface streets.

Year 2025 Ridership

The "horizon year" 2025 ridership has also been revised, with a projected average weekday ridership of 5,050 passengers, consisting of 4,900 peak period passengers and approximately 150 passengers on the mid-day train. This projection is based on the corrected model inputs (see Master Response A.2). This forecast assumes the addition of HOV lanes through the Novato Narrows (Highway 101 segments #6 and 7), consistent with the roadway improvement assumptions in the DEIR. The ridership would be greater than this if the Novato Narrows project is not completed by 2025, as discussed in Master Response F below.

Projected rail ridership between Sonoma and Marin counties has been incorrectly described as "only 191 people will ride the train." The 191 number was taken from Figure 5.4-1 of Appendix I of the DEIR (which has since been revised and updated) and included *only* riders traveling southbound between the Downtown Petaluma Station and the Novato North Station – an 8-mile segment out of the entire 70-mile corridor – during the 2-hour a.m. peak period only. The actual number of total daily passenger trips is 5,050, which converts to over 10,000 boardings and alightings each day.

Mid-Day Train Ridership Results

Mid-day train ridership is expected to start at approximately 100 passengers in 2010, and increase to 150 passengers in 2025. The mid-day ridership does not have the same trend as the peak period trains, because the mid-day highway speeds are expected to remain relatively stable between 2010 and 2025, regardless of improvements such as the widening of Highway 101 through the Novato Narrows; rather, the modest growth in mid-day ridership reflects population and job growth in the corridor rather than mid-day highway conditions.

For information of the sources of ridership on the proposed rail system, see Master Response H.

Station to Station Ridership

Several comments requested information on station-to-station ridership. A station-to-station ridership matrix is shown in Table C-1 for the proposed project in 2025. The table at the top of the page shows the combined morning and afternoon peak period. The middle table shows the expected mid-day train ridership, with the presumption that the northbound direction would predominate. The third table shows the total of the peak period and the mid-day trip tables. The row and column totals show the number of alighting and boarding passengers at that station (respectively) over the course of an average workday in 2025.

TABLE C-1. 2025 Average Weekday Ridership of Project Rail System

AM & PM PEAK PERIODS Station	Cloverdale	Healdsburg	Windsor	Santa Rosa–Jennings Ave	Downtown Santa Rosa	Rohnert Park	Cotati	Peta luma–Corona Road	Downtown Petaluma	North Novato	South Novato	Marin Co. Civic Center	San Rafael	Larkspur	Total
Cloverdale	0	6	3	7	36	9	2	0	30	1	0	1	2	1	98
Healdsburg	6	0	172	44	77	41	16	2	35	2	1	3	4	2	405
Windsor	3	172	0	77	195	75	28	2	50	3	1	7	9	6	628
Santa Rosa–Jennings Av.	7	44	77	0	184	107	58	15	52	10	3	10	13	9	589
Downtown Santa Rosa	36	77	195	184	0	75	96	65	27	17	5	14	13	6	810
Rohnert Park	9	41	75	107	75	0	48	38	18	11	3	13	12	8	458
Cotati	2	16	28	58	96	48	0	14	79	15	4	14	12	10	396
Petaluma–Corona Road	0	2	2	15	65	38	14	0	14	11	2	13	15	12	203
Downtown Petaluma	30	35	50	52	27	18	79	14	0	23	5	20	12	9	374
North Novato	1	2	3	10	17	11	15	11	23	0	4	34	27	17	175
South Novato	0	1	1	3	5	3	4	2	5	4	0	22	25	17	92
Marin Co. Civic Center	1	3	7	10	14	13	14	13	20	34	22	0	59	72	282
San Rafael	2	4	9	13	13	12	12	15	12	27	25	59	0	9	212
Larkspur	1	2	6	9	6	8	10	12	9	17	17	72	9	0	178
Total	98	405	628	589	810	458	396	203	374	175	92	282	212	178	4900

MID-DAY TRAIN only Station	Cloverdale	Healdsburg	Windsor	Santa Rosa–Jennings Ave	Downtown Santa Rosa	Rohnert Park	Cotati	Peta luma–Corona Road	Downtown Petaluma	North Novato	South Novato	Marin Co. Civic Center	San Rafael	Larkspur	Total
Cloverdale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Healdsburg	0	0	6	1	1	0	0	0	0	0	0	0	0	0	8
Windsor	0	5	0	1	2	1	0	0	0	0	0	0	0	0	9
Santa Rosa–Jennings Av.	0	2	5	0	3	2	2	0	1	0	0	0	0	0	16
Downtown Santa Rosa	0	5	11	11	0	1	6	0	2	0	0	0	0	0	37
Rohnert Park	0	2	4	2	2	0	0	0	0	0	0	0	0	0	11
Cotati	0	1	1	1	1	1	0	0	1	0	0	0	0	0	5
Petaluma–Corona Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Downtown Petaluma	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3
North Novato	0	0	1	1	1	0	2	0	9	0	0	1	0	0	14
South Novato	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
Marin Co. Civic Center	0	0	0	0	0	0	0	0	0	0	0	0	7	4	13
San Rafael	0	0	0	0	0	0	0	0	1	0	1	21	0	0	23
Larkspur	0	0	0	0	0	0	0	0	0	0	0	2	0	0	4
Total	0	15	29	17	10	7	13	1	14	0	1	26	8	5	146

TOTAL DAILY Station	Cloverdale	Healdsburg	Windsor	Santa Rosa–Jennings Ave	Downtown Santa Rosa	Rohnert Park	Cotati	Peta luma–Corona Road	Downtown Petaluma	North Novato	South Novato	Marin Co. Civic Center	San Rafael	Larkspur	Total
Cloverdale	0	6	3	7	36	9	2	0	30	1	0	1	2	1	98
Healdsburg	6	0	178	45	78	41	16	2	35	2	1	3	4	2	413
Windsor	3	177	0	78	197	76	28	2	50	3	1	7	9	6	637
Santa Rosa–Jennings Av.	7	46	82	0	187	109	60	15	53	10	3	10	13	9	605
Downtown Santa Rosa	36	82	206	195	0	76	102	65	29	17	5	14	13	6	847
Rohnert Park	9	43	79	109	77	0	48	38	18	11	3	13	12	8	469
Cotati	2	17	29	59	97	49	0	14	80	15	4	14	12	10	401
Petaluma–Corona Road	0	2	2	15	65	38	14	0	14	11	2	13	15	12	204
Downtown Petaluma	30	35	50	52	27	18	80	14	0	23	5	20	12	9	377
North Novato	1	2	4	11	18	11	17	11	32	0	4	35	27	17	189
South Novato	0	1	1	3	5	3	4	2	5	4	0	23	25	17	94
Marin Co. Civic Center	1	3	7	10	14	13	14	13	20	34	22	0	66	76	295
San Rafael	2	4	9	13	13	12	12	15	13	27	26	80	0	9	235
Larkspur	1	2	6	9	6	8	10	12	9	17	17	74	9	0	182
Total	98	420	657	606	820	465	409	204	388	175	93	308	220	183	5,046

MASTER RESPONSE D – EXPRESS BUS ALTERNATIVE DESCRIPTION AND ASSUMPTIONS

Several comments requested clarification of the Express Bus Alternative and some comments requested specific revisions of the assumptions used to formulate and analyze this alternative. This master response provides additional details on the reasoning behind this alternative, some revisions to assumptions, and overall modeling results.

Express Bus Description and Assumptions

DEIR Appendix I, Sections 4.2 and 5.3 describe the Express Bus Alternative and the ridership results. The Express Bus Alternative was designed to stress some of the key advantages of this mode, such as the ability to provide transferless pick up and distribution functions in neighborhoods and work areas. The basis for developing the Express Bus Alternative was the *Marin/Sonoma Express Bus Study*, prepared for the Marin County Congestion Management Agency, June 2002. Strategy D, which was called "Direct Area-to-Area Express Bus Services" was chosen as the basis for the Express Bus Alternative. As noted on page 3-2 of that report, the key "theme" of Strategy D is to directly link major residential "commute sheds" with major employment centers. The report also notes that this strategy "requires a large number of routes to cover all major pairs of residential areas with all employment areas." The report further notes on page 3-4:

> *The strategies described above [A, B and C] rely largely on commuters' willingness to make transfers. Strategy D proposes to directly link residential catchment areas in Sonoma County and northern Marin County to Marin County employment sites. Buses would run on major arterial streets in the residential areas and thereby directly link them with Marin County employment sites. Two commute trips are envisioned for each route during the peak commuter periods. Routes 80 and 101 would continue to provide background service for these special commuter bus routes. Area-to-area bus routes are envisioned to consist of the following…*

In order to permit a more direct comparison of the rail and Express Bus Alternative, this FEIR revises the express bus service to reflect peak bus service in both directions, not just the peak direction, and increases the frequency of service to 4 trips per peak commute period, rather than 2.

For modeling purposes, Strategy D and the DEIR had assumed that the express buses would operate similar to GGT's existing "commute" services, i.e., unidirectionally—southbound in the AM peak period, and northbound in the PM peak period. In the revised forecast, the Express Bus travel times were also adjusted to reflect more realistic schedules. For example, several of the area-to-area routes in the original model run were coded with schedule speeds (including stops) of more than 40 mph, which is not realistic even with the addition of HOV lanes to many areas of US 101. By comparison, the first AM departure of the existing GGT Route 72 commute express from Santa Rosa (which occurs at 3:52 AM, and therefore encounters minimal street or freeway congestion) has a scheduled operating speed of approximately 36 mph. The service was also re-coded with each new route operating at 60 minute headways during the peak periods, rather than at 120 minute headways, as in the original model run; however, in many locations, the routes would overlap, providing 30 minute headways, and sometimes even 15 minute or shorter headways.

It is important to note that because the 14 "new" Express Bus routes are like the trunk and branches of a tree, there are many locations where routes overlap, providing 30 minute or even shorter headways. Although precise schedules are not required for modeling purposes, in general it can be said that Santa Rosa and points south would have buses at least every 30 minutes. Between Rohnert Park and Novato, all 14 lines converge and would provide very frequent service. South of the Novato, because some of the buses reach their destination, service tends to become less frequent, but would at least provide 30 minute headways to San Rafael.

In summary, the changes to the Express Bus Alterative were to:

- Improve headways from 120 to 60 minutes on each route, resulting in combined headways in many areas of 30 minutes or less;
- Adjust schedule speeds to reflect realistic operating schedules; based on existing GGT off-peak and shoulder travel times;
- Add reverse-peak direction service; and
- Add the park-and-ride lot at Roblar Drive in south Novato proposed in MCTD's Strategic Plan

Most of the new bus service was designed to provide point-to-point service, with a minimum of transfers. Therefore new park-and-ride lots were considered only at the proposed Roblar Drive (Novato) site, because it was recommended in MCTD's Strategic Plan The total Express Bus parking demand would be for about 800 spaces). The Express Bus Alternative assumed park-and-ride lots that are consistent with MTC's transit network coding, at the following sites:

- North Novato (Atherton Avenue)
- South Novato (Alameda del Prado, Rowland Boulevard)
- Downtown San Rafael (4th and Hetherton)
- North San Rafael (Lucas Valley Road)
- Petaluma (Fairgrounds Drive)
- Cotati (US 101 and Highway 116W-Gravenstein Highway)
- Rohnert Park (Roberts Lake/Golf Course; Rohnert Park Expressway)
- Santa Rosa (Highway 12/Brookwood; Piner & Industrial)

No feeder shuttle services were coded, as buses generally circulate through areas providing the distribution function that shuttles provide in the rail service. That is, the buses circulate through residential areas, travel as express services to employment areas, and circulate through the employment areas. The Express Bus Alternative was coded with the same transit and highway networks, the same mode choice model[2] and the same demographic data as all other alternatives for 2025.

The Express Bus Alternative assumed that the Novato Narrows HOV lanes on Highway 101 would be completed and used by all buses traveling between south Petaluma and north Novato. The express buses, especially the super expresses, were designed with a minimum of stops to maximize the use of HOV lanes and minimize weaving across the outer mixed flow lanes.

Express Bus Infrastructure Costs

Some comments requested that the Express Bus Alternative be developed to a level representing the same cost investment as the proposed project. Although there is no requirement under CEQA to develop and analyze an alternative with a comparable infrastructure investment level to the proposed project, in reality, the Novato Narrows widening would cost at least as much to build as the proposed rail project, according to recent estimates ($400 to $500 million). An estimate of $400 million is contained in MTC's 2005 RTP update, *Transportation 2030 Plan for the San Francisco Bay Area, Final,* February 2005, Appendix One. The Narrows Project is an integral part of the Express Bus Alternative, because otherwise express buses would get caught in stop-and-go traffic for the 12-mile length of the Narrows, adding an estimated 24 minutes each way in 2025. In addition, without the Narrows improvement, the Express Bus Alternative would likely need 11-12 more buses to maintain the same headways as with the Novato Narrows widening, because of the longer time it would take for the bus to make a roundtrip.

Other Express Bus Alternative Assumptions

Some comments asked for an explanation of the references to a 15% increase in transit service. This was an average increase over the entire system modeled. The best description of the service changes

[2] A mode choice model represents, in a mathematical way, how people choose to travel among various available alternatives. Important factors usually include characteristics of the trip (e.g., trip purpose), characteristics of the modes available (e.g., travel time and travel cost), and characteristics of the traveler (e.g., income).

embodied in the Express Bus Alternative is in section 4.2 of Appendix I, Travel Forecasting Report. For consistency between alternatives, this assumption was included in all alternatives in the revised modeling, as described in Master Response A.3 above. The background transit level assumed for the Express Bus Alternative is consistent with all other alternatives.

The travel times projected for the Express Bus Alternative were also questioned in some comments. Table 5.1-2 in DEIR Appendix I has been revised. This table did not show travel time improvements resulting from the Express Bus Alternative because of the particular zone pairs chosen. Also, the previous modeling included only peak-direction Express Bus service, so naturally there was no improvement in the reverse-peak direction. This assumption has been modified, so the Express Buses now are assumed to run in both directions during the peak periods.

Scope of Express Bus Alternative

Some comments questioned whether the Express Bus Alternative meets FTA criteria for its "New Starts" program. When the environmental review process began, SMART had considered preparing a joint EIR/EIS to meet both CEQA and NEPA requirements. However, when it became clear that the federal process would take significantly longer, the SMART Board of Directors directed staff to prepare a separate CEQA document to allow the proposed project to go forward. This EIR is not intended for federal use and the FTA plays no role in reviewing or approving this document; thus, the FTA's requirements are inapplicable to the DEIR alternatives. SMART will prepare an EIS at a later time that meets requirements for federal funding.

Some comments suggested that the Express Bus Alternative presented in the DEIR should have been designed to serve other geographic areas besides Marin and Sonoma Counties, particularly San Francisco. However, the Express Bus Alternative was designed to parallel both the geographic location of the proposed project and its transportation functions in order to provide a useful comparison of their respective environmental impacts. As described in DEIR Section 2.1, the proposed project is not principally intended to serve San Francisco-bound trips. Rather, it is intended to provide an alternative mode of transportation within and between Marin and Sonoma Counties, as well as a connection to regional bus and ferry service.

As noted in the DEIR page 2-4, the majority of home-based work trips in the two counties are to other destinations within the two counties, with a smaller portion traveling to San Francisco. It is worth noting that the MTC regional travel model (Baycast-90) indicates that the largest growth in commuting in the next 20-25 years will take place within and between Marin and Sonoma County travel markets, not in the commute to San Francisco.

An Express Bus Alternative that provides direct transit service to other counties may indeed be worthwhile, but does not represent a comparable alternative to the proposed project for purposes of CEQA. It should be noted that SMART's development of the proposed project would not preclude expanded express bus service by other transit providers to provide further relief from congestion in the Highway 101 corridor.

MASTER RESPONSE E – RESULTS OF REVISED TRAVEL FORECASTING

The transportation model was "re-run" with the corrections noted in Master Response A. The results are incorporated into DEIR Section 3.6 (see FEIR Chapter 4 for text changes) and summarized in the following sections.

Summary of Changes in Model. Dowling Associates was requested to conduct a review of the modeling done for the DEIR. During their review, they recommended and made the following modifications to correct and clarify the travel forecasts provided in the DEIR:

For the proposed project and all alternatives (including existing conditions):

- The Highway 101 lane configurations and capacity were corrected.

- Auxiliary lanes were assumed to have ½ the capacity of a 'basic' freeway lane.
- The same bus frequencies on existing bus routes were assumed for all alternatives—the proposed project, MOS, No Project, and Express Bus.
- Because Marin and Sonoma County HOV lanes now operate differently (Sonoma operates lanes in both directions during peak periods, whereas Marin operates them only in the peak direction, i.e., morning southbound and evening northbound), it was assumed that the peak-direction HOV lanes would extend as far north as Atherton Avenue (i.e., through segment 7), but that north of there the Sonoma-style of operation (HOV lane restriction in both directions) would prevail in segment 6.

For the proposed project:

- The walk and drive access links to rail stations were checked and adjusted as needed to better reflect local station access conditions. Travel analysis zones whose centers were within ½ mile of a station were coded with walk links, considering barriers (e.g., Highway 101) that might make the walking distance longer. Zones farther than ½ mile were coded as drive access connectors according to rules developed by MTC for the entire regional model.
- Park-and-ride access from the existing Caltrans lot underneath Highway 101 was added at downtown San Rafael, as noted in Master Response A.3, to more accurately reflect the possibility of local drive access at this station.
- SMART free shuttles were restricted to rail patrons.
- A revised methodology for better forecasting mid-day train ridership was developed.
- An analysis of the impacts of transit-oriented development was added (off-model).
- Sensitivity analyses to address higher gas prices and if the Novato Narrows widening is not completed were added.
- 2010 ridership projections were developed.

For the Express Bus Alternative (see Master Response D for details):

- A park-and-ride lot was added in south Novato (Roblar Drive).
- Express bus routes were coded to operate in both directions (peak and reverse peak).
- The average schedule speeds of new routes were adjusted to reflect existing GGT experience.
- The headways were increased to more closely replicate the proposed project's headways.

The table below summarizes the revised weekday ridership, along with the impact of several key assumptions on ridership:

2025 Proposed Project Average Weekday Ridership

Baseline Rail System	5,050	
And with this assumption:	Added riders	Total riders
No Novato Narrows widening	350	5,400
Gasoline price $5/gallon*	650–750	5,700–5,800
Gasoline price $6/gallon*	750–950	5,800–6,000
Transit-oriented development build-out	400–1,000	5,450–6,050

*Gasoline price expressed in 2005 dollars.
Source: Dowling Associates (April 2006).

Note: Impacts of these sensitivity analyses on projected rail ridership would be additive. In other words, a scenario of no Novato Narrows widening, $5/gallon gasoline, and transit-oriented development would produce projected daily weekday rail ridership of 6.450–7,150. The same assumption with $6/gallon would produce projected daily weekday rail ridership of 6,550–7,350. See Master Responses F and G.

E.1 Changes in Highway 101 LOS and VMT/VHT– summary

Many comments questioned the number of lanes and level of service (LOS) calculated for Highway 101, as shown in DEIR Tables 3.6-7A and B and 3.6-8 A and B. Some of these values have been corrected in the FEIR; these corrections are enumerated in Master Response A.2 above. These modifications affected the volume/capacity ratios, and in turn, LOS. The corrections resulted in adjustments to VMT and VHT as well. The model re-runs also factored in revised assumptions about the Express Bus Alternative, as described in Master Response D.

LOS Results

After correction, traffic volumes and LOS changed in some areas. In most areas, the Highway 101 LOS for future baseline (No Project) conditions as well as all alternatives was forecasted to be worse in 2025 than shown in the DEIR. For example, whereas the original modeling showed one AM and no PM segment at LOS E or F in the peak hour under proposed project conditions, the revised modeling showed ten AM and ten PM directional segments (out of 18 studied) at LOS E or F. (For each time period (AM and PM) there were nine segments of Highway 101 studied, times two directions (north/south); equaling 18 directional segments.) This data is shown in revised Tables 3.6-7 and 3.6-8 in Chapter 4 of this FEIR.

The LOS changed for two reasons:

- The number of lanes was corrected, and this generally reduced the capacity and worsened the future baseline LOS on many highway segments studied. In the re-run of the model, auxiliary lanes were given half the capacity of basic lanes, because they only serve weaving traffic between interchanges. This is a more realistic estimate of their capacity.
- The revised modeling used volumes on segments *between* interchanges, which represents a reasonable worst case analysis; the DEIR tables showed volumes *within* interchanges, which are generally lower. ‘Between interchanges’ means after an on-ramp and before the next off-ramp. This is where congestion usually begins, so is more relevant to the analysis of LOS. ‘Within interchanges’ means after an off-ramp but before the next on-ramp; volumes are usually lower there.

There were several comments that asked why the “build” alternatives (i.e., any project alternative except No Project), despite the transit improvements they embody, resulted in little or no reduction in the segment volumes and little improvement in LOS. This result commonly occurs in studies of oversaturated corridors (ones in which travel demand greatly exceeds capacity) using the type of model employed for the EIR. When a transit improvement such as the proposed project is introduced into the model, any resulting reduction in the number of vehicles on a highly-congested highway such as 101 is likely to lead to both spatial and temporal shifting of modeled traffic. *Spatial* shifts occur when traffic that travels on parallel routes (e.g., Lincoln Avenue or Stony Point Road) finds, after project implementation, that it is faster to travel on Highway 101. *Temporal* shifting occurs when traffic that formerly traveled before or after the peak hour, chooses to travel during the peak hour.

These shifts can be seen as a benefit of the transit improvement, because they indicate that people are able to choose a time and route for travel that better suits their needs. This is beneficial because more travel occurs on the freeway rather than local roads, that is, travelers are not using local streets to avoid congestion on the freeway. These diverted travelers are also benefiting from better travel speeds (and shorter travel time) than their prior route, or they would not have switched to the freeway. Examining the highway volumes on US 101 in isolation masks this effect, because it appears that there is no reduction in travel volume, when in fact there is an overall “system” benefit to all routes being considered. Therefore, compared to LOS, the change in vehicle miles traveled (VMT) and vehicle hours traveled (VHT) that would occur with implementation of a transit improvement such as the proposed project provides a better measure of the project's likely system-wide benefit.

VMT and VHT Results

As described above, measuring LOS in areas with congested corridors sometimes does not provide a meaningful comparison of alternatives. Another method to compare the performance of alternatives is VMT/VHT.

Modeled VMT/VHT Results

The correction to the number of lanes and capacity on Highway 101 affected the model's estimates of total VMT and VHT for the system of roads and highways in the two counties, including the existing conditions (year 2000). In fact, the existing conditions were the most affected: the VMT estimate increased 3.2% and the VHT estimate increased 7.9% in the AM peak over what was described in the DEIR. Therefore, the change in future VMT/VHT estimates compared to existing conditions was generally smaller than reported in the DEIR analysis. The revised values for the No Project (future baseline) and proposed project in 2025 are shown in revised Table 3.6-6 (see FEIR Chapter 4). Table 4.2-1 in Chapter 4 of this FEIR shows the revised VMT and VHT values for all alternatives compared to existing conditions.

Consistent with the analysis in the DEIR, under No Project conditions, VMT and VHT increases from 2000 to 2025 during both peak hours, due to projected growth and increased numbers of vehicles in the two counties. Also consistent with the DEIR, the proposed project in the AM peak hour in 2025 shows a reduction in both VMT and VHT compared to No Project. However, in the PM peak hour, the model indicates that the reduction in VMT as a result of the proposed project would be more modest, with little change in VHT. The daily reduction in VMT and VHT (combining the AM and PM peak hours) for the proposed project in 2025 would be 43,000 VMT and 200 VHT.

The modeled VMT/VHT results for the Express Bus Alternative are counter-intuitive, i.e., in 2025, both VMT and VHT increase over future No Project conditions in both the AM and PM peak hours, resulting in a daily (combined AM and PM peak hours) increase of 13,900 in VMT and 1,550 in VHT. (See revised Table 4.2-1 in Chapter 4 of this FEIR.) This result appears to be an anomaly in the model.

As noted above, the modeled VMT/VHT results show some anomalies, particularly in the PM peak hours for the proposed project and in both the AM and PM peak hours for the Express Bus Alternative. The model used for the VMT and VHT forecasts was originally developed by MTC. It includes a "capacity restrained" traffic assignment step, whereby traffic is assigned to the shortest path between each origin and destination, taking into account congestion on the route. If there were no congestion on the network, the assignment could be done in one step: all traffic would travel from its origin to its destination using the roads that provided the fastest trip. However, congestion on the network adds a layer of complexity, especially when there are multiple competitive paths that can be taken between an origin and destination point.

Because of this, the model uses an iterative (repetitive) process in which traffic volumes are assigned to their shortest paths and the ratio of traffic volume to capacity is calculated, which in turn determines the speed on the link. The speed on a link determines its attractiveness relative to other routes and modes, and that in turn determines its volume. This process is repeated 50 times, and the 50 iterations are averaged together to get the final result.

When changes occur, due to the introduction of the proposed rail or express bus system, for example, it will decrease overall traffic volumes. That reduces volume to capacity (v/c) ratios and increases speeds, making the link relatively more attractive to travelers, leading to the spatial and temporal shifts described earlier. This causes the volume to go up, which in turn makes the route less attractive. The model seeks to find an "equilibrium point" at which these two opposing forces are balanced.

Unfortunately, the size and complexity of the modeled network is such that this "equilibrium point" is not always stable. On certain links, the volumes may "oscillate" back and forth as these two factors are balanced. Consequently, the results can be somewhat unstable, and may not fully reflect all of the benefits inherent in a transportation improvement, as measured by VMT and VHT. Accordingly, an "off-model" analysis was also done to estimate potential changes in VMT and VHT and evaluate the relative differences among the alternatives.

"Off-Model" VMT/VHT Results

The alternative methodology for estimating VMT/VHT is a "direct" approach that involves multiplying the ridership of each alternative by the average trip length, to yield a VMT estimate. For example, if the model shows that an alternative causes a reduction of 1,000 auto trips in the peak hour, and the average trip length is 12 miles, then the VMT reduction would be 12,000 VMT. The methodology for this direct approach is as follows:

1. The VMT and VHT were unadjusted outputs by the travel model for 2025 No Project (future baseline) conditions.
2. The number of peak passenger-trips for each alternative is taken directly from the model (e.g., 5,050 total proposed project trips minus the 150 mid-day trips equals 4,900 AM & PM peak period trips for the proposed project).
3. The peak hour ridership was estimated to be 25% of the total peak period ridership (e.g., .25 X 4,900= 1,225). This is based on data from other commuter rail systems; it is equivalent to assuming that the two AM peak *hour* trains will carry half of the AM peak *period* ridership. (Likewise, the two PM peak hour trains carry half the PM peak period ridership.)
4. 60% of trips are estimated to be from the auto mode, based on Metrolink survey data (Metrolink 2004 On-Board Survey) provided by Schiermeyer Consulting Services (e.g., 60% of 1,225 = 735 trips).
5. Because some passengers are attracted (diverted) from carpools, the number above is adjusted by the average commute vehicle occupancy, which is 1.1 person/vehicle. (735/1.1 = 668 auto vehicle trips).
6. The average one-way trip length is taken directly from the model: it is 13 miles for the proposed project, 12 miles for the MOS, and 12.1 miles for the Express Bus. (668 one-way trips X 13 mi. one-way trip distance = 8,686 VMT in each peak hour). In general these estimates would be considered conservative (i.e., low) values; Caltrain's one-way average trip length is about 23 miles and BART's average trip length is about 13 miles. SMART's actual average trip length will more likely be in the 20-30 mile range.
7 This value is then subtracted from the future "baseline" VMT for the relevant year; e.g., for 2025 AM peak hour, future baseline (No Project) VMT is 1,584,210. Subtracting 8,686 VMT from that yields 1,575,524, which is rounded to 1,575,500.
8. The VHT is calculated by dividing the VMT by the average highway speed output by the model [(miles)/(miles/hour) = hours]. The vehicular speeds vary by time period; for the proposed project AM peak hour speed, it is 20.7 mph, 24.0 mph in the PM peak hour, and 28.3 mph for the 4-hour AM peak.
9. The AM peak *4-hour period* (6-10 AM) was estimated to have 2.8 times the *1-hour* VMT/VHT of the AM peak, because that is the same relationship that is true for the baseline (No Project) alternative. If trips were distributed evenly among all 4 hours, the multiplier would be 4, but in fact, the peak hour has more than ¼ of the 4-hour peak VMT and VHT.

This approach results in the following VMT and VHT estimates:

AM Peak Hour

Scenario	Year	AM Peak Hour VMT	AM Peak Hour VHT
Future Baseline (No-Project)	2025	1,584,200	76,400
Proposed Passenger Rail Project	2025	1,575,500	76,000
Passenger Rail Minimum Operable Segment (MOS) Alternative: Windsor to San Rafael	2025	1,579,700	76,200
Express Bus- 60 min. Headway	2025	1,576,500	76,050

PM Peak Hour

Scenario	Year	PM Peak Hour VMT	PM Peak Hour VHT
Future Baseline (No-Project)	2025	1,539,300	64,000
Proposed Passenger Rail Project	2025	1,530,600	63,650
Passenger Rail Minimum Operable Segment (MOS) Alternative: Windsor to San Rafael	2025	1,534,700	63,850
Express Bus- 60 min. Headway	2025	1,531,500	63,700

Source: Dowling Associates, MTC travel demand forecasting model, April 2006
Values are rounded (VMT to nearest hundred; VHT to nearest 50).

The results of the off-model direct approach indicate that in 2025, the proposed project would reduce the daily VMT/VHT over No Project conditions by 17,400 VMT and 750 VHT. The Express Bus alternative would likewise reduce daily VMT/VHT over No Project conditions in 2025 (by 15,500 VMT and 650 VHT), although not by as great an amount as the proposed project; the same is true for the MOS alternative.

To consider the relative benefits of the various alternatives over the course of a year, one can add the AM and PM peak hour differences together and multiply by 255 working days of the year. For example, looking at the reduction in VMT in 2025 of the proposed project and Express Bus alternative compared to 2025 No Project, the annual VMT reduction for the project would be approximately 4.44 million VMT [(8,700 + 8,700) x 255] and the annual VMT reduction for the Express Bus Alternative would be approximately 3.95 million [(7,700 + 7,800) x 255]. Both of these values are conservative in that they only account for the reduction in VMT during the two peak hours; actual annual reductions in VMT for both alternatives would be greater.

In sum, depending on the approach used for estimation, the combined AM and PM peak hour benefit in 2025 of the proposed project, compared to the No Project alternative, is 17,400 to 39,200 VMT and 200 to 750 VHT. The total proposed project benefit compared to the Express Bus Alternative, is 1,900 to 49,100 VMT and 100 to 1,850 VHT. Regardless of the method chosen for estimating VMT or VHT, the proposed project has the least vehicle miles or hours of travel compared to the No Project and other "build" alternatives.

E.2 Local Street Network Impacts (including downtown San Rafael)

Increased Traffic Near Proposed Rail Stations

Comments raised concerns about impacts on local streets around the proposed stations due to increased vehicular traffic accessing the stations. Local roadway and arterial operations were discussed on DEIR pages 3-101 through 3-108. This information was reviewed by Dowling Associates in response to comments. The DEIR calculated intersection levels of service in downtown San Rafael, based on the *2000 Highway Capacity Manual* (see DEIR Table 3.6-10). As stated in the DEIR (page 3-94), the San Rafael street network around the station is particularly sensitive and constrained and therefore warranted a more detailed analysis. That analysis has not changed as a result of the review. At the request of the City of San Rafael's Traffic Engineer, a simulation of downtown San Rafael traffic in 2025 was also done using a simulation program recommended by the Traffic Engineer. This simulation generally confirmed the conclusions in the DEIR; see response 14-4 for additional information regarding San Rafael.

In areas other than downtown San Rafael, the DEIR applied a screenline level of service analysis technique based on volume/capacity (v/c) ratios. (See DEIR, page 3-101 and Impact T-5.) This is a method that utilizes the regional model to establish an overall capacity for a roadway segment, and then uses that as a basis for developing a volume to capacity (v/c) ratio. However, this regional model approach did not reflect the nuances of the local street network functions. In other words, the model was not fine-tuned enough to factor in information about signal timing and spacing, and conflicting turning movements that may occur at intersections.

Based on comments requesting that the more detailed intersection analysis done for San Rafael also be conducted for other station areas, the EIR consultant prepared a revised analysis of intersection levels of service near stations. The DEIR screenline analysis in Impact T-5 was replaced with a finer grain intersection analysis around the stations factoring in local network detail not captured by the screenline analysis (see revised text in Chapter 4 of this FEIR). To conduct this analysis, information about traffic volumes and station-generated traffic was developed and analyzed. Each jurisdiction with a proposed rail station was contacted to obtain the latest available traffic count data for nearby intersections likely to be affected by proposed project traffic (the DEIR had relied on model outputs for the baseline analysis). These were used as the basis for assessing the existing level of service. Future traffic volumes were obtained from the city/town's general plan traffic analysis wherever possible; wherever this data was not available, Dowling Associates applied a growth factor equivalent to ABAG's projected growth in the city between 2000 and 2025. The results of this intersection analysis are summarized below and included in revised Section 3.6, in place of the screenline analysis. This intersection analysis clarifies and better reflects future conditions and the potential impacts of the project on local transportation networks.

Thirty-eight intersections were analyzed (excluding the downtown San Rafael intersections already analyzed in the DEIR). These intersections and the results of the analysis are shown in Table 3.6-9 in Chapter 4 of this FEIR. In summary, 26 of the 38 intersections would operate at acceptable levels of service in 2025 both with and without the proposed project. At each of these intersections, the project-generated traffic would not alter the LOS 'grade' to a level that represents a significant project impact, and at most locations would add less than three seconds of average delay to the intersection.

Twelve intersections do not meet their respective cities' LOS standard in 2025 in at least one peak hour, with or without the proposed project. This means that even without the proposed project, the intersection would be LOS E or F in year 2025. These intersections are (with peak hour LOS in parenthesis):

Healdsburg: Healdsburg Avenue/Exchange Avenue (F)
Windsor: Windsor River Road/Old Redwood Highway (E)
Windsor: Windsor River Road/US 101 Northbound (F)
Santa Rosa: N. Dutton Avenue/W. College Avenue (F)
Rohnert Park: Commerce Blvd/Golf Course Dr. (F)
Rohnert Park: Commerce Blvd/US 101 Northbound (F)
Rohnert Park: Wilfred Avenue-Redwood Dr./Highway 101 Southbound (F)
Petaluma: McDowell Blvd/Corona Road (F)
Petaluma: Petaluma Blvd. North Corona Road (F)
Novato: Redwood Blvd./San Marin Drive (F)
Larkspur: Sir Francisco Drake Blvd./US 101 Northbound (F)
Larkspur: Sir Francis Drake Blvd./Larkspur Landing Circle E (F)

As noted in the table, for some of these intersections traffic count data from the local jurisdiction were not available for a particular peak period; in addition, where delays at an intersection in the year 2025 without the project would already be substantial, the model cannot reliably calculate the increased delay from project-generated traffic. Although none of the affected jurisdictions has a project-specific significance criterion when the intersection would already be operating unacceptably in the future, it should be noted that the project's contribution to additional traffic delays is generally very small (less than 5 seconds of delay). Although the "step" sizes between A and B, B and C, etc., vary, 5 seconds at most represents a half-grade change in the LOS, and in most cases less than that.

Impact T-5 on DEIR page 3-118 noted that implementation of the proposed project may lower the service levels on several local streets by introducing additional traffic near proposed stations; Mitigation Measure T-1 proposed improvements to minimize delays due to project-generated traffic. However, because the degree of improvement cannot be quantified, this was deemed a significant and unavoidable impact; that conclusion has not changed with the intersection analysis described above.

Station Operation Impacts

Impact T-8 on DEIR page 3-119 considered the traffic impacts that might occur at intersections on local streets near the downtown San Rafael station as a result of both increased traffic and train operations at the station (e.g., delays at nearby intersections when a train is present in the station). The analysis also considered other urban stations where train operations at the station might have an effect on nearby intersections, notably Santa Rosa Railroad Square and downtown Petaluma. Impact T-8 concluded that traffic operations and level of service would decline at some intersections in downtown San Rafael, as well as Santa Rosa Railroad Square and downtown Petaluma; this was deemed a significant but mitigable impact with implementation of the proposed environmental compliance measure for San Rafael and with implementation of Mitigation Measure T-2 for Santa Rosa Railroad Square and downtown Petaluma. Although no significant impact was identified at other downtown stations, the DEIR included an environmental compliance measure to consider the application of Mitigation Measure T-2 at other downtown stations in consultation with each city/town's traffic engineer to further minimize delays. In response to comments, the environmental compliance measures and Mitigation Measure T-2 have been revised to provide greater clarity regarding the interconnected and adaptive traffic signal sequencing and coordination system proposed only in downtown San Rafael, as well as the traffic signal timing and sequencing and grade crossing protection system that would be applied in downtown Petaluma and Santa Rosa Railroad Square and considered at other downtown stations. The details of the proposed systems are described below:

Downtown San Rafael (Environmental Compliance Measure, DEIR p. 2-69):*

The proposed interconnected and adaptive traffic signal sequencing and coordination system would include the following:

- Hardware interconnection of the train detection system (i.e., track circuitry that identifies the location of the train and triggers the railroad crossing gates and flashers) with the City of San Rafael's centralized traffic signal control. This would provide a communication link from the train detection system to the City's centralized traffic signal control system to minimize delays, pre-empt conflicting traffic movements, provide progression (on-going flow) of non-conflicting traffic movements, and allow faster recovery of the traffic signal system after a train has passed.
- Development of a signal timing plan in consultation with the City of San Rafael's traffic engineer to accommodate the longer crossing time of trains (as compared to motor vehicle traffic). This would also provide an extended "green time" for north/south traffic movements that do not conflict with the train travel.
- Installation and interconnection of a special train signal at the station, in both directions, which would indicate when trains can leave the station and be within the progression of the coordinated traffic signal system.

*It should be noted that although the above environmental compliance measure is proposed as part of the project, it was *not* assumed in the modeling of downtown San Rafael traffic, as the traffic model was not capable of taking account of it; therefore the values in Table 3.6-10 in DEIR Section 3.6 represent a worst case result without the recommended mitigation.

Downtown Petaluma and Santa Rosa Railroad Square (Mitigation Measure T-2, DEIR p. 3-120):

- Traffic signal timing and sequencing adjacent to stations to provide coordination and integration of the train detection system with adjacent traffic signals to minimize delays and allow for progression of other non-conflicting traffic movements.
- Grade crossing protection system would include hardware interconnection of train detection system to the railroad crossing gates that allows the gates to stay up while the train is stopped at a station; train operator can activate crossing gates and flashers when train is ready to leave station.

Other Downtown Stations (Environmental Compliance Measure, DEIR p. 2-69):

SMART would work with each city/town's traffic engineer to evaluate the need for traffic signal timing and sequencing and grade crossing protection system at intersections adjacent to proposed rail stations to minimize delays, and implement if warranted.

E.3 Delays at At-Grade Crossings

At-grade crossings were described on pages 2-54 through 2-56 of the DEIR and the impact associated with delays at these crossings was identified in Impact T-9 (DEIR page 3-121). Federal and state regulations[3] require that 'passive' warning (lights) begin flashing at least 20 seconds before the arrival of a train, and that gate arms, "shall reach horizontal position at least five seconds before the arrival of a train, and shall remain in the down position as long as the train occupies the highway-rail grade crossing." The passage time of the train depends upon its length and speed, and the width of the crossing; a single car train at maximum speed can traverse a two-lane road in less than a second; whereas a two-car train slowing to a stop at 15 mph across a road with 6 vehicle lanes might take 11 seconds of traversal time. It is typically 3-5 seconds after the train crosses the street for the gates to go upright, yielding a total delay under service conditions of no more than 35 seconds. (The DEIR noted a blockage time of approximately 40 seconds, but subsequent analysis indicated that 35 seconds was probably a more reasonable value for most grade crossing locations and likely train lengths.)

For major roads adjacent to stations (other than San Rafael), traffic signal timing and sequencing would coordinate and integrate the train detection system with adjacent traffic signals to minimize delays and allow for progression of other non-conflicting traffic movements. In addition, a grade crossing protection system interconnecting the train detection system to the railroad crossing gates would allow the gates to stay up while the train is stopped at a station until the train operator activates the crossing gates and flashers when the train is ready to leave the station. This means that the downstream[4] automatic gates would not have to close until the train is ready to depart the station. This technology is proven and has been used on the Caltrain line for some years. This would be used where stations are located less than 20 seconds travel time from the nearest adjacent major intersection, and has been identified as a mitigation measure in the DEIR (Mitigation Measure T-2) to minimize the impact on downstream grade crossings in downtown Petaluma and Santa Rosa (see discussion in E.2, above). In addition, evaluation of the need for this system is recommended for other downtown stations in consultation with the city or town's traffic engineer (see discussion in E.2, above.) A special system is proposed to address downtown San Rafael's unique street network, which is also described in E.2 above.

As described in Impact T-9, the delay at crossings would be a less than significant impact, because the blockage is relatively brief (approximately 35 seconds or less) and would not occur more than once every 15 minutes during peak hours. (This is equivalent to a traffic signal operating at LOS C/D (35 seconds of average delay over a whole hour is the breakpoint between LOS C and D).) The delays at intersections near rail stations was also determined to be less than significant, as described in Impact T-8 with implementation of the special controls described in Impact T-8 and clarified in these master responses.

[3] For example, US Department of Transportation, Federal Highway Administration, *Manual on Uniform Traffic Control Devices for Streets and Highways,* chapter 8, section D. This document was adopted (with supplemental information) in California, effective 5/20/04.
[4] "Downstream" means ahead, in the direction the train is traveling.

A number of comments expressed concern about the additional delay that might occur at grade crossings if freight service is resumed on the NWP north of the Ignacio Wye in Novato. As discussed in Master Response O, freight service would be far less frequent than passenger service (no more than 3 to 6 trains per week) and would occur during off-peak hours (train dispatching would be controlled by SMART). Freight train lengths are not expected to exceed 12 cars in length. Accordingly, the additional delay at grade crossings due to freight service would be negligible, occurring no more than once a day during off-peak hours and not at all south of the Ignacio Wye.

Delays for emergency vehicles were also evaluated. SMART's operating plan, outlined in the DEIR on page 2-13, calls for 28 trains per day, with not all of those trains running the full distance from Cloverdale to Larkspur. The maximum number of trains passing any given location is 24, between Petaluma and Larkspur. Since SMART service would not operate on weekends and late on weeknights, there would be no potential for delays during those periods. Moreover, the potential for delay would only apply to those vehicles that needed to cross over the rail corridor and were not using a grade-separated crossing.

In response to concerns about the implications of potential emergency vehicle delays at grade-crossings, SMART interviewed operations professionals with other agencies in the Bay Area that provide passenger/ commuter rail service. Persons contacted included: Robert Doty, Director of Rail Transportation at Caltrain, Brian Schmidt, Director of Rail Services at Altamont Commuter Express (ACE), David Kutrosky, Deputy Director of Finance and Planning with the Capitol Corridor, and Bill Capps, Service Planning Manager with the Valley Transportation Authority (VTA). (Note: While VTA does not operate commuter rail service, it does operate light rail service on freight tracks on its Vasona line. This service involves signals and gates at grade crossings.)

All four agency representatives stated that emergency vehicle delays created by passenger rail service had not presented significant issues or problems in the jurisdictions through which they operate. All four also confirmed that there is currently no mechanism that would allow passenger trains to yield to emergency vehicles at grade crossings.

These agency representatives, however, did suggest that a key step to minimize the possibility of delay was to ensure, through station design, that trains "fit" and do not block existing streets when they dwell at stations. For the proposed project, there will be no such blockages of existing through streets, given that trains can fit into all station sites without extending into a street crossing.

With respect to emergency vehicles dispatched from fire stations, the major cities along the SMART right-of-way, including San Rafael, Novato, Petaluma and Santa Rosa, all have multiple (ranging from three to eight) fire stations with at least one on each side of the railroad tracks. This distributed approach to fire service coverage, and in some cases paramedic services as well, minimizes the probability of these emergency responders needing to cross tracks and potentially encountering a grade-crossing delay.

MASTER RESPONSE F – SENSITIVITY ANALYSIS OF NOT WIDENING NOVATO NARROWS

Because there is uncertainty about the timing of the Novato Narrows widening, SMART conducted an analysis of the impacts on the rail project if the Novato Narrows widening were not completed by 2025. Also, the Express Bus Alternative was analyzed both with and without the Novato Narrows widening project. Although included in both the 2001 and 2005 RTPs, the Novato Narrows project is dependent upon full funding, which has not yet been programmed.

The Novato Narrows Project would consist of adding an HOV lane in each direction on US 101, between State Route 37 in Novato and Highway 116 East (Lakeville Highway) in Petaluma, a distance of approximately 12.2 miles. The project limits are from the current northern terminus of the HOV lanes in Marin County (near Highway 37/South Novato Boulevard) and the proposed HOV lanes in Sonoma County (at the junction with Highway 116 East/Lakeville Highway).

Without widening, highway levels of service within the Novato Narrows would be worse by one level (e.g., E would become F). For example, in segment 6 between Highway 116 (Petaluma) and Atherton Avenue (Novato), the AM peak hour mixed-flow LOS in 2025 would be E with widening, and F without widening. In the PM peak, the LOS would be F with or without the widening; however, the volume/capacity ratio (in the mixed-flow lanes) would be 5% less with the widening, indicating a shorter duration of congestion.

Because of increased congestion in the Novato Narrows segment of Highway 101 without widening, the proposed project rail ridership would be approximately 5,400 passengers per weekday, in contrast to 5,050 passengers with the widening. The added congestion in the Novato Narrows would increase ridership by some 7% over conditions with the Novato Narrows widening. This is probably a somewhat conservative estimate of the increased ridership, given the model's relative insensitivity to highway congestion and a tendency to underpredict longer inter-county trips. This issue is not unique to the SMART study. The VTA's BART extension study also found a tendency to underpredict transit trip lengths.[5]

MASTER RESPONSE G – SENSITIVITY ANALYSIS OF GASOLINE PRICE INCREASES

Given the recent sharp increases in gasoline prices, SMART conducted a sensitivity analysis of the rail project to higher gas prices. Within the original model run, these prices were set when the price of gasoline was very low. In fact, the value assumed in the forecasting model was $1.343 per gallon; this is equivalent to $1.54 per gallon in 2005 dollars. As current gas prices are well over $3/gallon in the Bay Area, commenters requested that the EIR look at the impact of a higher gasoline price.

Gasoline prices are incorporated in the travel forecasting model as one part of the auto operating cost. Higher gasoline costs tend to encourage greater carpooling and transit usage. However, it is not enough for gasoline prices to increase; they must do so at a faster rate than other goods and services in the economy for there to be an effect. This is why throughout these responses the gasoline prices are discussed relative to a specific year (e.g., 2005 dollars). If the price of all goods and services (including gasoline) go up by 10%, as do incomes, then there is no "real" increase in gasoline price. Alternatively, if gasoline prices double, and other costs go up by 10%, then the "real" price of gasoline has increased by 82% (2.0 divided by 1.1).

Part of the impact of gasoline price increases occurs in the short-term, as people change the number of trips, how they combine trips (i.e., link together trips with multiple purposes), and their choice of mode. In the longer term, of course, people also have the option of purchasing more fuel-efficient cars. As the vehicle fleet turns over, it tends to mitigate the impact of gas price increases—particularly when the increase is large. Assuming that the long term relationship between average fuel economy and gas prices is such that each 10% increase in fuel price ultimately leads to a 3% increase in fuel economy, then the total rail ridership would likely be 5,700 to 5,800 daily riders, assuming long term adjustment to higher fuel prices ($5/gallon in 2005 dollars). This would occur assuming a fairly modest, steady increase in gasoline prices to this level over time. If gasoline were to reach $6/gallon (in 2005 dollars), the projected 2025 ridership would be 5,800 to 6,000 passengers per average weekday. This alternative included the proposed Novato Narrows HOV lanes. Although not explicitly modeled, the combined impact with No Novato Narrows widening is likely to be additive, i.e., the combined effect would result in over 6,000 passengers per day with $5/gallon gasoline.

MASTER RESPONSE H – IMPACT ON OTHER TRANSIT SERVICES

Numerous comments requested additional information regarding the likely impacts of the proposed project on other transit services, particularly in comparison to the Express Bus Alternative. The DEIR discussed impacts on other transit operators in Section 3.6.5, pages 3-111 through 3-113. For further clari-

[5] Telecommunication from George Naylor, Santa Clara County VTA, to Steve Colman, Dowling Associates, January 31, 2006.

fication, the following information is provided based on the re-run of the model. While the proposed project would reduce ridership on inter-county GGT services by perhaps 8% during peak hours, the Express Bus Alternative would reduce ridership by almost 19%. This is based on a comparison with key lines in the same corridor, namely, GGT Routes 8, 50, 54, 56, 70, 72, 74, 75, 76, 80, 93, 97. These routes are based on the numbering system in effect in 2000; some route numbers have changed since then, or were discontinued (but assumed to be restored under all alternatives). The reduction occurs because the types of services provided with the Express Bus more closely mirror the operating characteristics (service area, travel times, etc.) of the existing GGT services. This impact is also true of impacts on Sonoma County transit services (County transit and city lines), where the Express Bus Alternative attracts approximately 1,000 more transit trips per day from existing bus services than the proposed project does. As noted in the DEIR, the bus route most affected by the diverted trips (up to 450 daily boarding passengers) would be GGT Route 75, which provides peak period express service between Santa Rosa and central San Rafael and thus most closely parallels the proposed rail service.

An important conclusion is that the rail project diverts more of its travel from the auto than does the Express Bus. This is because of the generally higher speeds the rail project achieves, and the fact that it tends to better serve home and/or work locations north of Santa Rosa than existing bus routes do. On-board survey data of similar commuter rail operations confirms this conclusion: information from ACE and Metrolink passenger rail systems indicated that as much as 80% of new rail passengers formerly drove alone. (Schiermeyer, 2002).

It should be noted that, according to the model results, the proposed rail project, compared to the Express Bus Alternative, increases the number of boarding passengers (peak period) by approximately 1,000 on Sonoma County transit lines (county and cities), and by 4,000 on GGT lines (all types – local, basic,and express). SMART will work with GGT, MCTD, SCT, and other local transit providers to coordinate services at SMART stations during the final design of the project. This coordination will include the routing and assignment of stop locations for bus lines serving the bus bay locations identified for each potential SMART station in this Final EIR.

Some comments expressed concern about financial impacts of the proposed project on bus transit services. The proposed project will seek its own dedicated revenue source in the form of ¼ cent sales tax increment, which will greatly minimize financial competition with any other local transit providers. There may be circumstances in which the proposed project could compete for regional, state or federal grants, but these would most likely be sought for capital, rather than operating, funds. Thus, the project is not likely to result in fewer funds being available for other local transit projects.

MASTER RESPONSE I – TODS & IMPACT ON RIDERSHIP

Several comments asked what effect transit-oriented development (TOD) within a half-mile of stations might have on ridership projections. ABAG's *Projections 2000*, which were used in the travel forecasting analysis, assumed "current trends" and did not incorporate the "smart growth" policies and TODs that have been incorporated in later *Projections* (i.e., *2003* and *2005*) (see Master Response A.1). Also, the MTC/VTA model was not a useful tool to perform this analysis. That model uses geographic aggregations (Transportation Analysis Zones or TAZs) that are generally larger than the ½ mile station areas, so it is not possible to assess the benefits of greater development density near proposed rail stations. Therefore, a separate TOD analysis was done with a different process than the travel forecasting model used to develop the future baseline ridership. This approach avoids double-counting potential development by analyzing the incremental transit mode share due to TOD. As noted below, the development estimates would be consistent with local general plans, and therefore do not represent a growth inducement.

Based on a conservative analysis (discussed below), Dowling Associates estimated that the future TOD around stations could increase the future baseline ridership by some 400 to 1,000 riders per day. That is, the future ridership with TODs in 2025 could be 5,450 to 6,050 boarding passengers per weekday. This is shown below for each station. The methodology used for this analysis includes the following components and assumptions.

Transit Oriented Development Ridership Potential, by Station

Station/ Station Area	Existing Units	Pipeline Units	Mid-Range Capacity: Anticipated Develop-ment @ Build-out	ABAG Analysis Increment 2000 to 2030	CD+A Increment based on Mid-Range Capacity	Increased Transit Mode Share due to TOD	Super-district Work-place Fctr	Potential Added Trips due to TOD-Low End - Daily *	Potential Added Trips due to TOD-High End - Daily **
Cloverdale	614	97	1,216	551	602	0.08	0.64	76	83
Healdsburg	866	0	967	426	101	0.08	0.64	14	59
Windsor	754	339	1,546	377	792	0.08	0.64	52	109
Santa Rosa–Jennings	1,909	396	2,510	1,190	578	0.08	0.23	29	59
Santa Rosa–Downtown	1,643	141	2,242	1,389	599	0.08	0.23	30	69
Rohnert Park	403	0	569	515	166	0.08	0.45	16	50
Cotati	2,895	93	3,309	591	414	0.08	0.45	40	57
Petaluma–Corona Rd.	804	71	1,464	295	195	0.08	0.45	19	29
Petaluma–Downtown	1,246	595	3,829	632	2,583	0.08	0.45	61	251
Novato North	374	19	393	233	19	0.08	0.43	2	22
Novato South	1,287	0	1,322	612	9	0.08	0.43	1	57
Civic Center	1,056	0	1,178	433	122	0.08	0.32	8	30
San Rafael	2,444	0	2,678	552	234	0.08	0.32	16	38
Larkspur	1,354	149	1,514	795	160	0.08	0.32	11	55
Corridor Total	17,649	1,900	24,735	8,591[6]	7,086			376	968

Source: Dowling Associates, based on data provided by CD+A and ABAG, 2006.
* Low end is the calculation based on the lower of the two estimates in the ABAG and CD+A columns.
** High end is the calculation based on the higher of the two estimates in the ABAG and CD+A columns.

The number of potentially developable dwelling units (DUs) within a half-mile radius of stations was determined from two sources, which results in a range for each station in the number of units and ridership. The first source was Community Design+Architecture (CD+A), which developed estimates of the mid-range capacity (i.e., buildout assuming densities at the mid-point of designated land use densities rather than maximum densities) of the station area based on conversations with each jurisdiction about potential development sites. These estimates apply existing development policies and would not require changes in the local general plans. The CD+A increment noted in the table is the difference between the general plan capacity and the existing units, less half of the “pipeline units” in process. Half of the pipeline units were subtracted because it is difficult to determine the number of DUs assumed in the station areas by *Projections 2000*. The census tract level is the smallest geographic unit used by ABAG *Projections*. Census tracts can be fairly large geographically, especially in lower density areas, and the boundaries do not correspond with the ½ mile station area boundaries. Overall, the CD+A analysis indicates the potential for a little more than 7,000 new dwelling units in station areas along the rail corridor at buildout.

The number of trips added by TOD was developed as follows:

[6] ABAG has also done its own analysis of potential development between 2000 and 2030 (2025 was not available) in the 14 station areas, and arrives at a slightly greater increment: the potential for approximately 8,600 new dwelling units by 2030. Memorandum from Hing Wong, Regional Planner, ABAG, dated May 10, 2006 and entitled “Data Methodology for Station Areas.”

- The number of dwelling units projected by CDA was multiplied by 2.7 to get the number of one-way commute (home based work) trip ends per dwelling unit. This was based on an average of 1.5 workers per dwelling unit (per ABAG data), and assumes on any given day 10 percent of workers are absent from their job (sick, on vacation, not reporting to their regular workplace, etc.). As an example, 100 new DUs would generate 270 commute person-trips per day—135 to work, and 135 returning home.
- An 8 percent increase in overall transit usage was estimated due to the TOD. This was developed based on survey work done by Dowling Associates, and adjusted for conditions in the Transit-Oriented Redevelopment Project Area EIR done for Santa Rosa (EIP, 2004). This represents an increment in modal share due to the TODs proximity to transit and higher densities.
- Because not all of the new transit trips would be by rail (some could be by bus services), a SMART capture factor was applied to each station. This factor was based on superdistrict data from the MTC/VTA model. There are three superdistricts in each county (34 in the entire 9-county Bay Area). The factor eliminates trips where both the home and workplace location are in the same superdistrict, because such trips would be too short to make use of the proposed project. Conversely, trips were eliminated that were not in a Marin or Sonoma workplace, so a resident who works in any of the other Bay Area counties was assumed not to be likely to ride the project rail. This capture rate varies from 23% in Santa Rosa, to 64% at the northern end of the line (Cloverdale, Healdsburg, and Windsor).

Using the example noted above, if the 100 new units were at Healdsburg, the additional transit trips generated by the TOD would be (270) x (.08) = 22 trips. Because only 64% of these trips are considered suitable for the area SMART serves, the net additional ridership would be (with this hypothetical example) 14 new one-way trips. The discussion above has been presented for informational purposes to respond to comments regarding the potential for land use development around stations. As acknowledged in the DEIR, the proposed project would provide the transportation infrastructure to support transit-oriented, pedestrian-friendly mixed use development in station areas. This type of development could have the benefit of reducing the cumulative environmental impacts of less compact growth, by reducing per capita VMT, traffic congestion, parking demand, air emissions, water quality impacts, and conversion of open space to urban uses. Although the proposed project would be supportive of transit-oriented development, SMART is not proposing any development as part of the proposed project. The DEIR analyzed whether the project would be growth-inducing (Section 5.3.2), and concluded that it would not lead to significant growth, but could induce a shift in population and housing growth to greater concentrations in urban areas with stations. The TOD potential noted in the above discussion could provide greater transit ridership, for SMART and other transit operators, as a result of more transit friendly development occurring near stations in the future. However, the ridership increment is modest and would not likely require a change in SMART's proposed operating plans or result in significantly greater impacts than those already identified and analyzed in the DEIR.

MASTER RESPONSE J – TRAIN RELIABILITY

Several comments inquired about the reliability of commuter rail transit. To address these comments, research was conducted using national maintenance record statistics. The following assessment provides additional information but does not change any of the conclusions in the DEIR.

Commuter rail operations in the United States are generally highly reliable, with relatively few mechanical system failures. According to the 2004 National Transit Database (NTD), published by the Federal Transit Administration (FTA), the average number of revenue service train miles between breakdowns was 21,401 for commuter rail systems in the United States; 2,143 breakdowns for 45,861,500 train revenue miles of service. By comparison, transit bus service experienced breakdowns every 4,716 miles on average; 399,606 breakdowns and 1,884,540,000 vehicle revenue service miles. The breakdown category in the National Transit Database includes minor mechanical breakdowns that create revenue service interruptions, as well as "major mechanical breakdowns" that require the assistance of someone other than the vehicle operator.[7,8]

This means that commuter rail trains in the United States are approximately 4.5 times less likely to experience mechanical disruptions on a per mile basis than transit bus vehicles. In the Bay Area, the service provided by Golden Gate Transit performs better than nationwide average for bus systems, experiencing a mechanical failure only every 14,725 miles, based on FY 05/06 data though February. Still, that is a higher failure rate than commuter rail systems in the Bay Area like the Altamont Commuter Express (ACE) which, for example, experienced one mechanical failure in calendar year 2005 and ran 131,000 miles during the same period.

SMART is expected to operate approximately 1,368 train miles per day, based on the service plan outlined in the DEIR. The proposed Diesel Multiple Unit (DMU) train cars come equipped with a power source. As a result, one car would be able to propel an unpowered, disabled car back to the maintenance facility. Thus, only those problems which affect both cars will require a service call. This is a major reliability advantage over rail technology in which failure of the single train engine can mean a service call and a longer disruption to revenue service.

The impact of a mechanical breakdown on other scheduled train runs would depend upon a number of factors including, the location, timing, and specific nature of the failure. Breakdowns at the end of the day or close to the maintenance facility for example might not have an impact on other runs. SMART's one-track system with double tracking in certain locations, would pose greater risk to schedule disruption, all things being equal, than continuous double trackage. However, the proposed frequencies (30-minute headways) allow a fairly generous amount of recovery time.

MASTER RESPONSE K – DEIR APPENDIX C AND STATION DESIGN REFINEMENT

Numerous comments pointed out station design and description inconsistencies between DEIR Appendix C and DEIR Chapter 2, Project Description. Some reviewers used information in Appendix C (rather than in the Project Description) as the basis for commenting on the potential impacts of the proposed project. This master response clarifies the purpose and intent of DEIR Appendix C. In addition, during the course of reviewing comments on specific station designs, several corrections and clarifications to the figures in DEIR Chapter 2 were made. These refinements are outlined in this master response.

Appendix C

The rail station planning process included consideration of numerous alternative station concepts over a two year period, prior to initiation of the Draft EIR. The preliminary alternatives were summarized in station design reports and these draft reports were included in the DEIR as Appendix C. This information was provided as background material, in part to document the extensive alternatives review that took place prior to selecting the proposed project stations. As stated on the cover page of Appendix C, the station concepts selected for the proposed project are contained in Chapter 2 of the DEIR. The plans in Chapter 2 of the DEIR updated several of the station plans depicted in Appendix C and therefore, some of the station descriptions in Appendix C are not current. Also, numerous alternative station designs or locations identified in Appendix C were screened from further consideration in the DEIR as described on DEIR pages 4-6 and 4-7. The station designs contained in Chapter 2 are those used in the environmental impact analysis in DEIR Chapter 3.

Station Design Refinement

In the process of responding to comments, several minor modifications were made to the station concept drawings contained in Chapter 2 of the DEIR. These minor refinements to station descriptions and dia-

[7] National Transit Database: http://www.ntdprogram.com/ntd/NTDData.nsf/2004+TOC/Table20/ $File/Table+20++Transit+Operating+Statistics+-+Service+Supplied+and+Consumed+-+Train+Statistics+-+Rail+Modes.xls.
[8] National Transit Database: http://www.ntdprogram.com/ntd/NTDData.nsf/2004+TOC/Table16/$File/Table+16++RVI+Maintenance+Performance.xls.

grams (listed in the following table) are now included in FEIR Chapter 4. These modifications do not alter the findings of the impact analysis in the DEIR. However, the slight adjustment of the Larkspur Station platforms and pathway to accommodate the CalPark Hill Tunnel project results in improved compatibility with surrounding land uses (e.g. Marin Airporter). This station site and modifications to its design are described in detail in Master Response R.

Rail Stations – Station Design Revisions

Station	Location	Station Design Revisions
Cloverdale (MP 84.6)*	Existing station located at Asti Road just south of Citrus Fair Drive	None
Healdsburg (MP 68.0)**	Historic Depot located at Harmon Drive	• Diagram clarified to show second track and west side platform • Diagram clarified to add bike parking label
Windsor (MP 63.0)****	Transit Center at Windsor Road and Windsor River Road	• Diagram clarified to show Multi-Modal station (to be built by Sonoma County Transit) • Diagram clarified to show single-track, east side platform configuration
Santa Rosa – Jennings Avenue (MP 54.9)***	Jennings Avenue and Herbert Street	• Diagram clarified by removal of "Ground Floor Retail/Community" label from industrial property adjacent to SMART site • Diagram clarified to add bike parking label
Santa Rosa Railroad Square (MP 53.8)**	Historic Depot at Railroad Square	None
Rohnert Park (MP 48.7)***	North of Golf Course Drive at Roberts Lake Road	• Diagram clarified to show single-track east side platform configuration • Labels added to bus stops on Roberts Lake Road
Cotati (MP 46.0)****	Cotati Avenue and Industrial Road	None
Petaluma – Corona Road (MP 41.0)***	Option 1: Corona Road and North McDowell Boulevard with surface parking	None
	Option 2: North of Corona Road (east of SMART right-of-way)	None
Downtown Petaluma (MP 38.5)**	Historic Depot adjacent to Lakeville Highway	• Diagram clarified to show circulation as built by City of Petaluma • Diagram clarified to show SMART property and Copeland Street transit mall (to be built by Sonoma County Transit) • Diagram clarified to show single-track, west side platform station and relationship to Lakeville Highway
Novato North (MP 28.7)***	Atherton Avenue Drive and Redwood Boulevard	• Diagram revised to modify conflicts between bus drop-off and park-and-ride per GGT comments • Diagram revised to modify parking access and expand park-and-ride capacity from 66 to 75 spaces • Diagram revised to clarify bicycle/pedestrian pathway route • Diagram clarified to add bike parking label
Novato South (MP 24.6)***	Adjacent to Highway 101/Ignacio Avenue Interchange	• Diagram clarified to correctly label bus and auto drop-off • Diagram clarified to Indicate bicycle parking areas
Marin County Civic Center (MP 19.6)***	Civic Center Drive and McInnis Parkway	None
Downtown San Rafael (MP 17.0)***	Option 1: Tamalpais between Third and Fourth Streets	• Label corrected on Whistlestop drop-off area • Lane layout clarified on Hetherton Street

Station	Location	Station Design Revisions
	Option 2: Tamalpais between Third and Fourth Streets using bank property and creating a pedestrian underpass	• Diagram clarified to show Tamalpais Avenue two-way between 3rd and 4th Streets • Label corrected on Whistlestop drop-off area • Lane layout clarified on Hetherton Street
Larkspur Ferry Station (MP 14.8)***	SMART Right-of-Way Site near Marin Airporter	• Diagram revised to show modified platform locations (See Master Response R and revised project description text) • Diagram clarified to show relationship to CalPark tunnel bike path (to be built by Marin County)

Source: Community Design + Architecture, 2006.
Note: * Existing station with no improvements required
** Existing historic station with improvements required
*** New station
**** Station incorporated into transit center built by others

MASTER RESPONSE L – ABILITY OF MODEL TO FORECAST BICYCLE AND PEDESTRIAN TRAVEL

There are two issues addressed in this master response: 1) estimating the number of SMART riders who will access the stations by either bicycle or walking; and 2) estimating the amount of future use of the proposed bicycle/pedestrian pathway. Additional clarification is presented below to provide a reasonable estimate of both pedestrian/bicycle commuter mode share to SMART trains and overall usage of the bicycle/pedestrian pathway. This information does not alter the DEIR findings.

Bicycle/Pedestrian Access to SMART Stations

To address the question of how many rail riders will access the proposed stations via the proposed pathway, both the transportation model and other similar studies were reviewed. The BART Station Profile Study (1999) evaluated an existing facility (BART's Concord Station) that is similar to the proposed project. This study found that 11% of BART riders walked (9%) or bicycled (2%) to the station. This study was based on extensive surveys of BART users and represents a reasonably comparable location similar to many SMART stations. Based on the findings of this study, it can be estimated that 11% of the 5,050 SMART users in 2025 (or 555 person trips) would access SMART stations by walking or bicycling. These users represent both saved vehicle trips in the station areas, and reduced demand for parking.

Bicycle/Pedestrian Pathway Use

DEIR Section 3.6, Impact T-7 considered the beneficial impacts of the bicycle/pedestrian pathway, concluding that it would provide another mode of regional transportation in the project corridor and could ease demand on local streets for both vehicle and non-motorized use. Several comments asked for quantification of the pathway use. There are no reliable models for predicting the number of bicycle or pedestrians using the pathway. Although some SMART riders may use the pathway to access the stations and some commuters may use the pathway to access jobs or schools, many of the bicycle and pedestrian trips using the path are likely to be recreational. From a modeling standpoint, it is considerably easier to predict home-to-work trips than recreational trips because 1) both home and work locations of people are known quantities; and 2) the trip must be made on a regular basis. It is much more difficult to predict bicycle and pedestrian trips, especially for non-commute purposes. The model, being conservative in its assumptions, did not factor in any percentage of commuters who would convert from either transit or auto use to the pathway.

Despite these difficulties in projecting pathway use, an analysis was conducted to address DEIR comments. Projecting usage of the SMART bicycle/pedestrian pathway is based on available studies of comparable facilities, published data such as the U.S. Census, and other sources. This analysis consists of two distinct approaches that are used to help corroborate the estimates independently. Those approaches are:

(1) Commuter Use/U.S. Census. Use the existing bicycle/pedestrian commute mode from the U.S. Census; project future commute mode split based on U.S. DOT policy and an independent study; apply existing and future mode split to residences within walking/riding distance to SMART stations.

(2) Overall Use. Estimate total path annual recreational and commuter use through a comparison with similar multi-use paths in the area, and extensive user surveys conducted by the East Bay Regional Park District.

Commuter Use/U.S. Census

Bicyclists and pedestrians make up about 4% of all commuter trips (13,741 people, or, 27,482 commute trips per day) in Sonoma and Marin Counties (2000 U.S. Census, Means of Travel to Work). The U.S. Department of Transportation (Federal Highway Administration, U.S. Department of Transportation, National Walking and Bicycling Study, 1992) has a goal to double the percent of work trips by transportation mode of pedestrians and bicyclist commute trips. The validity of this assumption was verified in a study conducted by the Los Angeles Metropolitan Transportation Agency (MTA) in 2000 (MTA, Off-Model Analysis, Estimating Bicycle Trips, 2000) found that bicycling rates increased 172% on average after new or improved facilities were constructed in four U.S. cities. Therefore, doubling the Marin-Sonoma bicycle/pedestrian commuter rates to 8% is reasonable and applying it to the estimates of transit-oriented households near future SMART stations provides another method of estimating potential SMART arrival mode rates and pathway usage.

According to the MTC, (MTC TOD Estimates, May 6, 2006), there will be about 24,735 households near SMART stations with an average household rate of between 2.34 and 2.6 persons per household (2000 U.S. Census for Marin and Sonoma Counties), resulting in a population of between 28,828 and 31,512 employed adults living within walking or bicycling distance of the stations. Using the 8% future commute mode split rate for this population results in between 2,306 and 2,520 people walking or bicycling to work daily within these TOD areas. Some percentage of these people would utilize the proposed pathway, but it is not possible to accurately predict this amount. These figures do not include non-work related trips, utilitarian, or recreational trips that account for a large percentage of overall pathway use.

Overall Use

Estimates of overall commuter and recreational usage of the pathway on a daily and annual basis can be made based on available studies. Studies of bike paths have shown that commuter usage constitutes about 4% of all pathway trips (East Bay Regional Park District Pathway Surveys, 2004). If 50% of the 555 daily walk/bicycle commuter trips (or 278 trips) use the SMART pathway, than the total number of daily weekday trips on the pathway would be approximately 6,950 trips (278/.04 = 6,950 trips). Weekend use levels are typically 30% higher than weekday use (National Bicycle & Pedestrian Documentation Study, 2005). This would put the average weekend use levels at 10,200 trips (6,950 x 1.3 = 9,035 trips). These figures translate into approximately 2,743,000 user trips annually. This is a very conservative estimate since the base commuter numbers do not include any non-SMART commuters such as those commuting to local schools and employers. Given the length of the SMART bicycle/pedestrian pathway and its accessibility to so many cities and towns, this estimate falls within the range of other facilities in California on a use per mile basis. For example, the Tiburon Bike Path has 324,000 annual user trips (County of Marin, Central Marin Ferry Connector Report, 2002) and is about two miles long, equating to 162,000 trips per mile. The SMART pathway, with over 53 miles in Class I bike path, would average 52,100 user trips per mile annually, which is reasonable given the location of much of this path compared to the Tiburon path.

Of the bicycle/pedestrian pathway users, an estimated 69% will be pedestrians, 25% will be bicyclists, and the remaining 6% are classified as ‘other’ (rollerbladers, etc.) (National Bicycle & Pedestrian Documentation Study, 2005).

MASTER RESPONSE M – ALTERNATIVES TO THE PROPOSED PROJECT

Project alternatives, including alternatives not carried forward for full analysis, are described in DEIR Chapter 4. DEIR Section 4.1.3 specifically addresses alternatives screened from further analysis and additional background information is provided in DEIR Section 2.4. This master response provides additional clarification of the reasoning behind the elimination of certain alternatives from full consideration in the EIR, including Port Sonoma (as a destination), paving the NWP right-of-way south of the Ignacio Wye for bus use, light rail transit (LRT), light DMUs, Monorail, Sonoma Only Rail Alternative, and the Cloverdale to San Rafael Alternative.

Port Sonoma and San Quentin

As discussed in the DEIR (pages 2-10 and 4-6), SMART initially considered two additional alternative ferry terminal stations: Port Sonoma and San Quentin. Both were eliminated from further analysis in the DEIR following an evaluation of their feasibility. This evaluation included not only an analysis of the technical feasibility of extending the rail tracks to these potential terminal sites, but also an analysis of whether development of ferry terminals at either site was likely to occur. The DEIR concluded that because the Water Transit Authority (WTA), which is the regional agency authorized by the State to plan and operate a comprehensive San Francisco Bay Area public water transit system, has not committed to developing either site, it was too speculative to assume that there would be a ferry terminal at these sites to which the rail project could connect. Accordingly, these sites were determined to be infeasible alternatives for purposes of a rail/ferry connection for SMART's proposed rail project.

Another factor that argues against inclusion of the Port Sonoma alternative in the DEIR is the likelihood that it could have significant and unavoidable adverse impacts on biological resources. As noted in the comment letter from the San Francisco Bay Conservation and Development Commission (BCDC, Comment Letter #7), the land surrounding Port Sonoma has been the site of a number of significant habitat restoration projects and provides habitat for some endangered species. The BCDC notes that there is little opportunity to develop transit-supportive land uses and non-motorized transportation connections to the site without eliminating or degrading these important habitats. In contrast, the proposed project would be implemented on an existing rail line and would avoid most significant biological impacts.

It should be noted that the subsequent authorization of $20 million in SAFETEA-LU transportation funding for the Port Sonoma ferry concept may influence WTA's planning, environmental and feasibility analysis of Port Sonoma. However, as of this time, WTA still has not made any commitment to developing a ferry terminal at Port Sonoma. That decision would have to precede SMART's future consideration of the site. Conversely, the Larkspur Ferry Terminal is an operating ferry terminal that will continue to operate in the foreseeable future and remains the largest single transit facility in the North Bay. Furthermore, the Larkspur Ferry Terminal is the focus of WTA's planning and funding efforts for the North Bay and provides a ferry terminal connection to San Francisco for rail riders.

Paving of NWP Right-of-Way for Bus Operations

Several comments suggested paving over the NWP rail right-of-way for use as an express bus route rather than developing the proposed project. The DEIR provides an explanation on page 4-6 of why that is considered an infeasible alternative, in part due to its incompatibility with freight service on the NWP. However, some comments suggested that the EIR consider paving over the NWP rail right-of-way south of the Ignacio Wye, since the freight easement held by the North Coast Railroad Authority does not extend south of the Wye. That alternative is also considered infeasible for several reasons.

First, SMART's enabling legislation (AB 2224), mandates SMART to own, operate, manage, and maintain a passenger rail system within Marin and Sonoma. SMART is a rail transit district only, and has no authority to own, operate, manage, or maintain bus service, other than to contract for shuttle services necessary or convenient for rail transit. An alternative that involved using the right-of-way south of the Ignacio Wye for bus service would require SMART's formal abandonment of that right-of-way for rail use (which would require the approval of the federal Surface Transit Board) and turning it over to another transit agency with authority to operate bus service. Abandonment of the right-of-way for rail service would be inconsistent with the majority of the general plans of the local jurisdictions along the corridor, including most Marin jurisdictions, as well as the plans of regional planning agencies, which call for maintaining the NWP right-of-way for passenger rail service (see discussion in the DEIR at pages 3-196 through 3-200).

Further, this alternative would likely be both operationally and financially infeasible as well. In the absence of an effective signaling system to close gates at grade crossings, buses would be required to stop at every grade crossing, greatly diminishing travel times. Moreover, there is likely not enough space in the right-of-way for two continuous and separate travel lanes for buses. While there are systems and technologies that can ensure safe rail operations with a single track and sidings, there are no such systems designed for buses. Regarding financial infeasibility, SMART's proposed operating budget for rail service depends on passage, by a 2/3 vote, of a district-wide sales tax measure to be submitted to the voters of the two counties. Pursuant to SMART's enabling legislation, the use of the proceeds of such a tax would be limited to providing passenger rail service and associated facilities, ancillary shuttle service, and a bicycle/pedestrian pathway; it could not be used to fund express bus service on the NWP right-of-way south of the Ignacio Wye. It is unlikely that district voters, particularly in Marin, would support a sales tax measure for passenger rail service that served only Sonoma and a very small portion of northern Marin; accordingly, the potential lack of sales tax revenues would render this alternative financially infeasible.

In sum, paving over the portion of the rail right-of-way south of the Ignacio Wye for express bus service would be inconsistent with SMART's legislative mandate and the majority of the general plans in the district that call for passenger rail service along the NWP, and would likely be operationally and financially infeasible. Accordingly, its analysis in the EIR is not warranted.

Light Rail Transit and Light DMUs

With regard to light rail transit (LRT), page 4-5 of the DEIR notes that although LRT was considered on the NWP, it was ultimately determined to be infeasible due to the high cost of implementation. LRT is generally used in much shorter corridors; i.e. less than 20 miles. The cost of electric infrastructure, overhead pantograph wires and electrical substations contribute to costs generally in the range of $25-30 million/mile. Applied to the SMART corridor, the cost of electric infrastructure alone would approach $2 billion.

Light DMU vehicles were not selected for further study due to the FRA's restriction on their operation with freight service. Although time separation would allow light DMUs to operate on the NWP along with night-time freight service, the SMART Board recommended heavy DMUs as the preferred vehicle. Heavy DMUs allow the greatest possible flexibility in scheduling passenger rail and freight rail service on a single track system; given the long life of rail vehicles, the decision was made to select a vehicle that could continue to operate safely even with increased freight service. Positive Train Control (PTC) signaling has been suggested as a means to allow light DMUs to operate along with freight at any time of the day. However, to date, the FRA has not approved the operation of light DMUs with PTC in any system in the United States. SMART will continue to monitor the development of PTC and will formally reassess its viability prior to developing bid documents for the final engineering on the project.

Monorail Alternative

As stated in the DEIR (page 4-5) monorail was eliminated from further consideration in the SMART corridor due to the requirement of an extensive new concrete infrastructure and the associated impacts of such an investment. The costs of monorail are roughly five times that of commuter rail, would require elevated stations in small cities and towns designated as station sites and would have a significant visual impact. Further, over the last twenty years of transportation planning work in the North Bay, a monorail alternative has consistently been eliminated from further consideration, largely based on the factors noted here.

Sonoma County Only Rail Alternative

As noted in DEIR Section 4.1.3, several alternatives for operation of rail within Sonoma County only (including Cloverdale to Petaluma and Healdsburg to Petaluma) have been considered in planning studies over the years, but were rejected as infeasible for further analysis in the DEIR. While these shorter segments would have a lower capital cost, they were considered financially infeasible in terms of revenue and operating costs per train mile and lower fare box recovery due to lower ridership. (See also the discussion under Paving NWP Right-of-Way for Bus Operations, above, regarding the infeasibility of sales tax funding if the project did not serve Marin.) It should be noted that the environmental impacts of operating passenger rail within Sonoma County are analyzed in the DEIR.

Cloverdale to San Rafael Alternative

Although the SMART Commission had designated the Cloverdale to San Rafael alternative as its preferred commuter rail alignment in 2000, subsequent developments and new transportation planning efforts convinced the SMART Board of Directors to extend the commuter rail corridor to Larkspur. First, Marin County was successful in obtaining funding to rehabilitate the CalPark Hill railroad tunnel. By rehabilitating the tunnel for rail and pedestrian/bicycle use, the project provides a much-needed pedestrian/bicycle connection from San Rafael to Larkspur. The completion of this portion of the rail extension removed a significant impediment to extending rail service to Larkspur. In addition, scoping meetings held by the SMART Board for this CEQA process (2002) noted numerous public requests that SMART include a connection to the only existing regional ferry terminal within the North Bay. As a result, the Board included Larkspur, not San Rafael, as the southern terminus of the proposed project description as the DEIR analysis was initiated. This decision was largely based on the fact that the Larkspur Ferry Terminal is the largest single transit facility in the North Bay, serving approximately 5,000 daily passengers.

A San Rafael terminus would not provide transfers with the San Francisco bound ferry system, would not utilize the rehabilitated CalPark Hill Tunnel, would not provide transfer opportunities to Marin Airporter patrons, would not provide northbound rail connections for inbound ferry patrons, would require longer shuttle routes serving Marin County employment centers such as Marin General or College of Marin, and would not utilize the rail right of way that has been preserved over time to provide connections between two regional systems – rail and ferry. Finally, pursuant to requests from the Larkspur City Council (2004), development of a station site adjacent to the NWP right of way resulted in significantly lower capital costs and impacts as compared to two previously considered station alternatives that would have required at-grade crossings of Sir Francis Drake Boulevard or alterations to Larkspur Landing building configurations.

Further, the DEIR analyzed two rail alternatives: Cloverdale to Larkspur and Windsor to San Rafael (Minimum Operating Segment). A Cloverdale to San Rafael alternative is not substantially different from those analyzed in the DEIR, the impacts of which are found in Chapter 3 and Section 4.5.1.

MASTER RESPONSE N – PROJECT COSTS

Although analysis of project costs are not required as part of the CEQA process, many comments were received regarding proposed project costs. This master response addresses cost issues and refers the reader to the 2006 Draft Expenditure Plan.

SMART has updated project capital and operating costs previously developed in 2004 as part of the recent process to update the SMART Expenditure Plan. An Expenditure Plan, which outlines how revenues will be expended, would be included in any sales tax measure placed before the voters to fund the proposed project. Revised cost estimates were presented to the SMART Board of Directors in June 2006. The capital cost updates reflect recent escalation information, by line item, including updates to the following project components: track and bridge rehabilitation, bicycle/pedestrian pathway, signals, grade crossings, tunnels, bridge replacement, stations, maintenance facility, vehicles, right of way, start-up and testing, environmental mitigation, final engineering, project reserves and construction management. Operating cost updates include revised estimates for rail service, shuttle service, maintenance, and ongoing administrative costs.

The updated cost estimates show that capital costs have risen 14% from $338 million in 2004 to $387 million in 2006. Capital costs increased over the last two years as a result of national and international increases in the cost of steel, concrete and asphalt; as well as a doubling of environmental mitigation costs and recommendations of the independent Blue Ribbon Panel of rail construction experts. Annual operating costs for the project grew 20% from $14.7 million ($12 million to operate and maintain the rail system, $1 million for supporting shuttle service, and $1.7 million to maintain the bicycle/pedestrian pathway) to $16.25 million, which includes $14.2 million for the rail system, $1.3 million for the shuttle service, and $750,000 annually for maintenance of the bicycle/pedestrian pathway. The operating costs include a cost savings related to the insurance costs of the pathway, increases in annual environmental mitigation costs, route-specific costs for shuttle services and an annual security/emergency set-aside. Additional details on project costs and funding are provided in the updated 2006 Draft Expenditure Plan, which will be available on SMART's website (www.sonomamarintrain.org) and at the SMART District office (4040 Civic Center Drive, Suite 200, San Rafael, CA) after June 21, 2006.

MASTER RESPONSE O – FREIGHT OPERATIONS

This master response addresses concerns about future freight service on the SMART right-of-way and any associated cumulative impacts. In addition, it provides clarification regarding the freight assumptions in the DEIR, the Operating Agreement between SMART and NCRA, freight sidings, freight vehicle assumptions, and freight air quality and noise impacts.

Freight Assumptions

Assumptions about future freight service, based on information that was available at the time, are provided in DEIR Chapter 2 and are considered in the cumulative analysis in DEIR Section 2.3.3. More recent information (see below) indicates that future operations will be substantially less than those analyzed in the DEIR. It is important to note that freight operations can occur with or without the proposed SMART project; freight services are not dependent on improvements being made by the SMART District, but rather are under the jurisdiction of a separate governmental agency, the North Coast Railroad Authority (NCRA).

As described in the DEIR on pages 2-6 and 2-7, NCRA owns the NWP right-of-way north of Healdsburg and also holds a permanent, exclusive easement for freight service on the NWP right-of-way owned by SMART from Healdsburg south to the Ignacio Wye in Novato (at Highway 37 junction) and then east through Schellville to Lombard in Napa County, where it connects to the national railroad network. NCRA does not hold a freight easement south of the Ignacio Wye and no freight operations will occur in Marin south of Novato.

As noted in the DEIR (page 2-6), based on information provided in September 2005 by Mitch Stogner, NCRA's Executive Director, freight service was estimated at four northbound and four southbound trains per day, operating five to six days per week; this was the basis for the analysis of cumulative impacts of passenger and freight service in the DEIR. To respond to comments on the DEIR, SMART staff met with Mr. Stogner again in May 2006, and were provided with revised freight service assumptions. These new assumptions have been informed by the recent request for proposals for freight service that NCRA released in January 2006. Mr. Stogner stated that freight service will likely involve no more than three to six 12-car trains per week, and not more than one roundtrip per day – a service level that is substantially less than the frequency assumed in the DEIR. According to Mr. Stogner, that service level is sufficient to meet freight shipping needs for the foreseeable future, including hauling all of Sonoma County's municipal solid waste out-of-state, if such an arrangement were negotiated with NCRA and approved by Sonoma County.

Some comments referred to planning documents by NCRA (South End Alternative, NCRA, Final Programmatic Environmental Assessment, March 2004; Report to CTC, October, 2004) that have indicated much higher levels of service and questioned whether those levels of service should have been assumed in SMART's DEIR. Over the last six years, NCRA has sought to acquire sufficient funding to restore freight service along the NWP corridor. This effort has involved the preparation of several long-range freight plans for Caltrans and FEMA. These plans were based on a long-range vision of the theoretical capacity of freight service to substantially expanded Humboldt Bay port operations. The revised freight service assumptions provided by Mr. Stogner in May 2006 are NCRA's best current estimate of likely freight service on the NWP corridor for the foreseeable future, which is substantially less than the long-term vision.

SMART/NCRA Operating Agreement

As part of SMART's acquisition of the NWP right-of-way from NWPRA (Northwestern Pacific Railroad Authority, the previous owner of the line north and east of the Ignacio Wye), SMART assumed NWPRA's rights and obligations with respect to the 1996 Operating Agreement between NWPRA and NCRA regarding joint use of the NWP rail line. That Operating Agreement provides that passenger rail service would have priority over freight and that SMART would be responsible for dispatching both freight and passenger trains. Accordingly, freight train operations will be scheduled to avoid conflicts with passenger rail operations; this can likely occur during daytime, non-peak hours when passenger rail service is minimal. See Master Response P for additional information on single track operations. Although SMART will be negotiating a new Operating Agreement with NCRA pursuant to AB 2224, it is not anticipated that the priority of passenger over freight service or SMART's responsibility for dispatch will change.

Freight Sidings

The sidings SMART is adding to the rail corridor as part of the proposed project are for the sole use of passenger trains; the locations of these sidings are listed in the DEIR on page 2-54 and described in the rail corridor description on pages 2-18 through 2-24. On rare occasions, and at off-peak periods, NCRA's freight train could be directed into one of the passenger rail sidings if SMART's train dispatcher determines this would not affect SMART operations. Existing freight sidings north of the Ignacio Wye would likely continue to be used for freight service. These existing sidings, which are also described in the DEIR's description of the rail corridor on pages 2-18 through 2-24, will not be used by SMART, with the exception of the small pocket siding at the Healdsburg Station which will rarely be used for freight as a second, longer freight siding is available at that site. All sidings, including freight sidings, will be controlled by SMART's dispatcher; accordingly, there will be no conflict between SMART and freight operations using passing sidings.

Potential future freight sidings were identified during initial passenger rail project design in 2003, based on preliminary discussions with the former contract operator of the NCRA freight service. SMART incorporated the sidings into drawings in Working Paper #5, Volume 2, in order to avoid planning the bicycle/pedestrian pathway in areas where a future freight siding might be needed. These siding locations are not part of the proposed project that SMART would implement. NCRA would be responsible for building freight sidings. Given the fact that that the freight operator has changed since 2003 and a new freight operation plan is being developed, it is likely that these sidings will not be implemented; however, no new information is yet available regarding any changes in freight siding locations. Any new freight sidings proposed by the new freight operator would be subject to a separate environmental review process.

Freight Vehicles

As freight service is not currently operating on the NWP, NCRA does not have a list of rail freight vehicles that would be used if freight service is reinstituted. However, for purposes of the cumulative impact analysis in the DEIR and the additional cumulative air quality impact analysis prepared for this FEIR, it was assumed that freight vehicles used in the future would be traditional general purpose diesel locomotives, manufactured prior to 2002, with 4 axles, and having a range of 1,500 to 2,000 horsepower. Non-propelled rail cars are expected to be either box cars, flat bed cars and/or cross beam cars.

Freight Cumulative Analysis

Given the revised service level estimate for future freight operations (one train per day), the cumulative environmental impacts identified in the DEIR are overstated and represent a conservative worst case scenario. The air quality cumulative impact analysis was clarified to include the updated information about freight operations; the cumulative impact to air quality from future development and passenger and freight operations would not be significant (see revised Impact AQ-7 in Chapter 4 of this FEIR). Cumulative effects on biological resources from one freight train per day, operating on the same track as passenger rail, would be negligible. The noise analysis determined that the combination of freight and passenger rail noise would not create a significant impact, based on eight freight train pass-bys per day. With the revised estimate of one roundtrip train per day likely occurring during daytime off-peak hours, the cumulative noise impact would be even less than stated in the DEIR (page 3-140). Cumulative transportation impacts related to vehicle delays at railway crossings from the addition of freight service would also be negligible, given the relative infrequency of freight train operations, occurring during off-peak hours, and the length of the trains (not more than 12 cars).

MASTER RESPONSE P – PUBLIC SAFETY

Numerous comments requested clarification of public safety issues associated with passenger rail. This master response provides additional information regarding the safety issues of single track rail operations, accident rates for commuter systems, freight safety, security, and emergency preparedness. The reader should note that safety measures have been incorporated into the proposed project design and additional system-wide safety measures will be developed, as outlined in DEIR Section 2.9, Environmental Compliance Measures. FEIR Chapter 4 lists the complete set of environmental compliance measures.

Single Track Operations

It is not uncommon for rail systems to be based principally on a single track design. Such systems involving commuter rail services include the *Coaster* that links San Diego to areas to the north, the Altamont Commuter Express (ACE) in Bay Area, portions of the Metrolink system in the Los Angeles metro area, Sounder in the Seattle Area, Trinity Railroad Express in the Dallas/Forth Worth area, and Tri-Rail in South Florida.

Well-placed "passing sidings", which consist of short stretches of double track, are generally provided along the rail line to allow trains to travel in opposite directions and safely pass each other. The limitation of single tracking is that it cannot easily accommodate a large volume of rail traffic. The proposed project, even with the addition of potential future freight service, does not constitute a large volume of rail traffic; there is ample capacity to maintain safe operations. When railways are upgraded from a single track with sidings to a fully double-tracked system, the chief benefit is to capacity and operation flexibility, with safety being a more minor advantage.

In addition, the “sharing” of trackage by commuter and freight rails is not uncommon or unmanageable. Large commuter rail systems, such as Metrolink in the L.A. metro area, and Metra in the Chicago area, share some portion of their lines with freight service. Many systems, such as the Virginia Railway Express in the Washington D.C. metro area, and Sounder, ACE and Capitol Corridor (which links San Jose to Sacramento) in the Bay Area, not only share trackage with freight service but operate on lines owned by freight companies.

There have not been any recent incidents involving commuter rail trains colliding with one another (data since 1990 examined). There has only been one incident in the past ten years in which passengers on a commuter rail were killed due to a collision with another train. In 2002, a Metrolink train was struck by a Burlington Northern Santa Fe freight train, resulting in three passenger deaths. Investigations concluded that human error on the part of the freight train operators was responsible, not rail equipment or signaling systems. It should be noted that even with incidents like the aforementioned one, passenger rail is still considerably safer for vehicle occupants on a per passenger mile basis than automobiles and trucks. (See information in following section.)

Comparative Safety Statistics

The DEIR presents statistical information about commuter rail safety, including grade crossing accidents and fatalities in one given year. The following data adds to that presented in the DEIR and analyzes commuter rail fatalities over a five year period, broken out into four distinct categories.

The categories include: 1) the safety of train passengers, with comparisons to bus passengers and other motor vehicle occupants; 2) the risks posed by commuter rail for bicyclists and pedestrians at grade-crossings, with comparisons to the risks to bicyclists and pedestrians posed by all motor vehicles; 3) incidents along the right-of-way involving trespassers, including suicides; and 4) commuter rail/motor-vehicle incidents at grade-crossings.

Passengers / Occupants Safety

Commuter Rail. Generally speaking, commuter rail service in the United States is extremely safe for passengers. According to the Federal Railroad Administration (FRA), the number of passenger fatalities on commuter rail systems in the most recent five year period was as follows:[9]

Year	2000	2001	2002	2003	2004	5-year average
Passenger Fatalities	0	1	3	1	1	1.2

The 2001 incident occurred in Essex County, MA when a Massachusetts Bay Transit Authority (MBTA) passenger disembarked and was struck by a train. The 2002 fatalities all stemmed from one incident in which a Burlington Northern Santa Fe freight train struck a Metrolink passenger train in Orange County, California. The 2003 incident occurred in Los Angeles County and involved a truck that drove around the barrier gates and was struck by a Metrolink train. And lastly, the 2004 incident involved a passenger in Montgomery County, Pennsylvania, who disembarked from a SEPTA passenger train and was struck by a train.

According to the Bureau of Transportation Statistics, the average annual passenger miles for commuter rail systems from the years 2000 to 2004 was 9.5 billion per year (data not yet available for 2005).[10] Consequently, the total number of passenger fatalities per billion passenger miles was 0.126.

Motor Vehicles. Safety statistics indicate that roadways are considerably more dangerous for drivers and passengers on a per passenger mile basis than commuter rail. According to the National Highway Transportation Safety Administration (NHTSA), the number of motor vehicle fatalities (excluding buses and tractor-trailers) for vehicle occupants in the last five years was as follows:

Year	2000	2001	2002	2003	2004	5-year average
Occupant Fatalities	35,572	35,698	36,641	36,574	36,340	36,165

According to the Bureau of Transportation Statistics, the average annual passenger miles for autos, trucks & motorcycles from the years 2000 to 2004 was 4.28 trillion per year.[11] Consequently, the total number of passenger fatalities per billion passenger miles was 8.45. This means that over the given five year period, for vehicle occupants on a per passenger mile basis, commuter rail has been 67 times safer than cars, light trucks and motorcycles.

[9] FRA, Safety Data, Table 3-2, Years 2000-2004, http://safetydata/fra.dot.gov/OfficeofSafety/Forms/Default.asp. FRA, Safety Data, 4.06 Casualty Report, Years 2000-2004, http//safetydata.fra.dot.gov/OfficeofSafety
[10] Federal Bureau of Transportation Statistics, http://www.bts.gov/publications/national_transportation_statistics//html_01_37
[11] Federal Bureau of Transportation Statistics, http://www.bts.gov/publications/national_transportation_statistics/.../html_01_37

Transit Buses. Bus transportation, including transit buses and school buses, are slightly more dangerous for occupants than commuter rail but still much safer than other types of roadway transportation. According to the NHTSA, the number of bus fatalities in the last five years was as follows:[12]

Year	2000	2001	2002	2003	2004	5-year average
Passenger Fatalities	22	34	45	41	41	36.6

According to the Bureau of Transportation Statistics, the average annual passenger miles for transit buses from the year 2000 to 2004 was 148,120,400,000. [2] Consequently, the total number of passenger fatalities per billion passenger miles was .247. This means that over the given five year period, for vehicle occupants on a per passenger mile basis, buses were approximately twice as dangerous for passengers as commuter rail. However, they were more than 35 times safer than cars, light trucks and motorcycles.[13]

In summary, the following table compares the annual fatality rate for passengers/occupants for three different modes, per billion passenger miles:

Summary of Fatality Rates

	Commuter Rail 5 Year Average	Buses 5 Year Average	Motor Vehicles 5 Year Average
Annual Fatalities (2000-2004 average)	1.2	36.6	36,165
Passenger Miles	9,503,250,000	148,120,400,000	4,280,674,000,000
Fatality rate per billion passenger miles	0.13	0.25	8.45

Pedestrian & Bicyclist Fatal Accidents by Type

Commuter Rail. The following figures represent the annual numbers of pedestrians and bicyclists fatally struck by commuter rail trains at grade crossings.[14] Altogether, the rate of such incidents, per billion passenger miles, is very similar to the rate for pedestrians and bicyclists being fatally struck by motor vehicles on roadways.

Year	2000	2001	2002	2003	2004	5-year average
Fatalities	11	19	12	7	12	12.2

As mentioned previously, based on the average annual passenger miles for commuter rail systems of 9,503,250,000, the total number of pedestrian and bicycle fatalities per billion passenger miles was 1.28.

Motor Vehicle Accidents. According to the National Highway Transportation Safety Administration (NHTSA), the number of pedestrians and bicyclists killed by motor vehicles (including autos, trucks and buses) in the last five years was as follows:[15]

Year	2000	2001	2002	2003	2004	5-year average
Fatalities	5,597	5,756	5,630	5,543	5,494	5,604

Based on the average annual passenger miles for all motor vehicles of 4,651,035,000,000, the total number of pedestrian and bike fatalities per billion passenger miles was 1.20, slightly less than for commuter rail systems.

[12] National Highway Transportation Safety Administration, http://www-nrd.nhtsa.dot.gov/pd/nrd-30/NCRA/TSF2004/809911.pdf
[13] Federal Bureau of Transportation Statistics, http://www.bts.gov/publications/national_transportation_statistics/.../html_01_37
[14] 2000-2004, Table 7-8 Railroad Safety Statistics Annual Reports, http://safetydata.fra.dot.gov/OfficeofSafety/Forms/Default.asp
[15] National Highway Transportation Safety Administration, http://www-nrd.nhtsa.dot.gov/pd/nrd-30/NCRA/TSF2004/809911.pdf

Rail Trespassers & Suicides

In addition to incidents at grade crossings, there are also some commuter rail incidents that involve what the FRA refers to as "trespassers." These individuals are not walking or riding their bicycles across the tracks at a formal road or bikepath crossing, but instead are somewhere else along the right-of-way.

The following figures show the number of fatal incidents over a five year period involving trespassers on rail lines:[16]

Year	2000	2001	2002	2003	2004	5-year average
Trespasser Fatalities	58	68	60	38	41	53

According to the NHTSA, 34% of pedestrians involved in fatal incidents (all, not just rail-related) have a blood alcohol count (BAC) greater than .08 g/dL.[17] This rate could be lower or higher for rail incidents, but it is impossible to determine from the available statistics.

In addition, a substantial portion of fatal incidents involving trespassers is suicides. The FRA does not keep statistics that separate suicide incidents from other types of incidents. However, the casualty reports are replete with examples of individuals standing still on the tracks and waiting for the train to approach. Estimates by commuter rail agencies based on police reports have determined that over half of all trespasser deaths are probable suicides.[18]

Characteristically, given the high number of incidents that involve alcohol or suicide, there are not a large number of children involved in commuter rail / trespasser fatalities. In fact, over the last five-year period, there were no incidents involving anyone under 11 years old. By contrast, nearly 1 in 5 (19%) bicyclists killed by motor vehicles are between the ages of 5 and 15.[19] Most rail trespassing victims are in their thirties and forties. The following table shows the age distribution of those fatally struck by commuter rail trains over a five year period from 2000 to 2004.

Age Distribution of Rail Fatalities

Age Cohorts	Commuter Rail Trespasser Fatalities 2000-2004
0-10	0
11-13	3
14-18	20
19-29	34
30-39	53
40-49	44
50-59	20
60-69	13
70-79	7
80-89	4
Unknown	67

Although it is impossible to completely eliminate the risk of trespasser casualties on a rail line, there are steps that an agency can take to try to reduce these types of injuries. Fencing in certain locations can discourage people from wandering into the right-of-way, and signage can reinforce the trespassing danger. The proposed safety structure along the pedestrian/bicycle pathway is intended to keep people away from the tracks.

[16] FRA, Safety Data, Table 3-2, Years 2000-2004, http://safetydata/fra.dot.gov/OfficeofSafety/Forms/Default.asp. FRA, Safety Data, 4.06 Casualty Report, Years 2000-2004, http//safetydata.fra.dot.gov/OfficeofSafety
[17] NHTSA Traffic Safety Facts 2004, page 12, http://www-nrd.nhtsa.dot.gov/pd/nrd-30/NCRA/TSF2004/809911.pdf
[18] San Francisco Chronicle, http://www.sfate.com/cgi-bin/article.cgi?file=/c/a/2006/04/22/BAG2SIDAK61.DTL. American Public Transit, http://www.apta.com/government_affairs/aptatest/sadtalk.cfm
[19] FRA, Safety Data, 5.09 Hwy/Rail Detail Report, Years 2000-2004, http://safetydata.fra.dot.gov/OfficeofSafety

Along the Caltrain right-of-way, signage has been posted at key locations in an effort to diminish suicide attempts. Law enforcement patrols of the rail line may also encounter trespassers and can, at a minimum, warn of the danger of being too near the rail tracks. In Los Angeles, citations can carry fines to act as a disincentive for trespassing. Lastly, education and outreach efforts, like the Operation Lifesaver Program proposed for SMART's project, can help to ensure that people are aware of the rail line, and know how to stay safe around it.

Commuter Rail and Motor Vehicle Incidents

On occasion, there are fatal incidents involving commuter rail and motor vehicle collisions at grade crossings. The following figures show the number of annual fatalities nationwide.[20]

Year	2000	2001	2002	2003	2004	5-year avg.
Motor Vehicle Fatalities	5	11	11	16	14	11.4

Most of these incidents involved vehicles that drove around or through barrier gates onto the rail tracks and/or ignored warning signals. The following table shows a breakdown of motor vehicle fatalities by type.[21]

Commuter Rail / Motor Vehicle Fatalities, 2000-2004

Incident Type	Number
Drove around or through gates	40
Drove through stops signs and signals	14
U-turn on tracks	1
Motor vehicle accident, pushed onto tracks	1
Drove through locked private gate after vehicle theft	1

Freight Safety

Since 1990, there has only been one fatal commuter rail incident that involved freight. As mentioned previously, in 2002 a Metrolink train was struck by a Burlington Northern Santa Fe freight train, resulting in three passenger deaths.

It is difficult to determine how the presence of freight rail service on a commuter rail line adds to the risks for pedestrians, bicyclists and cars at grade crossings or for trespassers. FRA statistics break out information by railroad. However, with freight incidents, it is difficult to determine whether an incident occurred within a commuter rail service zone or outside of it.

The table on DEIR page 3-218 indicates that freight accident rates are higher than commuter rail accident rates. However, given the stronger safety measures that are often present in commuter rail systems, it is likely that freight rail incident rates are closer to commuter rail incident rates in commuter rail service areas. Consequently, the addition of freight service will probably add risks in proportion to its service levels.

Nevertheless, freight rail is a considerably safer means of transporting goods than trucks. In 2001, for example, large trucks were involved in 429,823 reported accidents, according to the National Highway Safety Administration.[22] At the same time trucks hauled 1,051,000,000,000 ton miles of goods.[23] This means that trucks had .41 accidents for every million ton miles traveled.

[20] FRA, Safety Data, Table 3-2, Years 2000-2004, http://safetydata/fra.dot.gov/OfficeofSafety/Forms/Default.asp. FRA, Safety Data, 4.06 Casualty Report, Years 2000-2004, http//safetydata.fra.dot.gov/OfficeofSafety
[21] FRA, Safety Data, 5.09 Hwy/Rail Detail Report, Years 2000-2004, http://safetydata.fra.dot.gov/OfficeofSafety
[22] Traffic Safety Facts 2004, NHTSA, http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSF2004.pdf
[23] Bureau of Transportation Statistics, Oct. 2005 Report, http://www.bts.gov/publications/white_house_economic_statistics_briefing_room/October/2005

All rail services combined (include commuter, intercity and freight) had 16,086 accidents and incidents in 2001. At the same freight rail hauled 1,474,000,000,000 ton miles of goods. Consequently, freight rail has an accident rate approximately .01 accidents per ton mile. Factoring out commuter and intercity rail, although difficult to do with available data, would show a slightly better performance. This means that as a distributor of goods, freight rail is at least 40 times safer than truck transportation, according to available statistics. Should freight rail service be implemented by NCRA in the NWP rail corridor north of the Ignacio Wye in Novato, any corresponding reduction in truck traffic could have a positive effect on roadway safety.

Security Responsibilities

As noted on DEIR page 2-62, security services for the proposed project can be provided by in-house personal, contracted local law enforcement, contracted security firms, or some combination. Personnel working in rail operations often provide a primary level of security. The conductor and assistant conductor on Virginia Railway Express trains, for example, in addition to their regular duties, check the trains during the trip for suspicious activity or packages. These personnel can also summon local law enforcement officers in the event of an incident or emergency.

Security is often supplemented with contracted personnel that patrol and monitor station facilities and may also inspect tracks, as well. Sounder, for example, which serves the Seattle area, contracts with a private firm to provide security personnel to patrol and monitor stations, platforms, parking facilities, and administrative buildings. The Capitol Corridor system has uniformed security guards posted at selected stations. Many commuter rail systems also incorporate security cameras to monitor stations and station parking lots.

There are some systems that contract with local law enforcement agencies to provide an array of security services. Metrolink, for example, contracts with the Los Angeles County Sheriff's Office to provide fare enforcement, on-board security, and supervision of other security guard contracts.

As noted on DEIR page 2-66, SMART will provide rail system security, either in-house or by contract. SMART's 2006 Draft Expenditure Plan includes a line item for the costs of providing security services. The precise details of security service contracts will be established in the future in consultation with local jurisdictions and first responders.

Bicycle/Pedestrian Pathway Security

It is anticipated that SMART would be responsible for security and monitoring of the majority of the bicycle/pedestrian pathway. In some locations, where the pathway would be an integrated part of the local bikeway and pathway system, adjacent local agencies, in coordination with SMART, would provide monitoring and enforcement. A consistent set of operations and maintenance (including monitoring and enforcement) standards and practices would be developed for the entire SMART pathway.

Since the proposed pathway will be wide enough to accommodate most types of emergency vehicles, the presence of the pathway itself will provide fire and safety responders with access along the right-of-way in responding to emergencies. These emergencies may include incidents involving cyclists or pedestrians, incidents on board trains, or other incidents requiring an emergency response.

Emergency Preparedness

In order to be fully prepared for various types of emergencies, SMART will develop a detailed Emergency Preparedness Plan prior to beginning operations. As stated in the DEIR (page 3-211), "Prior to rail start-up, SMART is required to prepare and submit an Emergency Preparedness Plan to the Federal Railroad Administration (FRA). The Plan must be developed in concert with local emergency responders and submitted to FRA for approval prior to initiation of passenger rail service." DEIR Section 2.9 (Environmental Compliance Measures) includes a list of the Plan requirements.

MASTER RESPONSE Q – QUIET ZONES

Pursuant to DEIR Section 2.9 (Environmental Compliance Measures), SMART will work with local jurisdictions to implement Quiet Zones. The 2006 Draft Expenditure Plan has incorporated additional funding for implementation. Quiet Zones are defined as specific crossing locations where the Federal Railroad Administration (FRA) and the California Public Utilities Commission (CPUC) allow trains to pass without sounding the train's horn. Quiet Zones are recommended as a mitigation measure for train horn noise in the DEIR (Mitigation Measure N-5); however, the DEIR acknowledges that SMART cannot ensure implementation of Quiet Zones and accordingly concludes that train horn noise could be significant and unavoidable. This master response addresses issues associated with the process and requirements related to requesting Quiet Zones, safety and accident rates in existing Quiet Zones, and implementation and cost assumptions for the SMART proposed project. If Quiet Zones are established, freight trains would also be subject to their requirements.

Quiet Zone Process and Requirements

The FRA has developed guidelines and regulations for the implementation of Quiet Zones (www.fra.dot.gov/us/content/1318). Applications for Quiet Zones must be submitted to the FRA by local jurisdictions as the "Public Authority" acting as the lead agency.

The Public Authority applying for a Quiet Zone is required to follow the steps outlined in the Final Rule on Use of Locomotive Horns at Highway-Rail Grade Crossings, which was published by the FRA on April 27, 2005 and went into effect June 2005. That rule calls for the following steps:

1. Notice of Intent. The Public Authority applying for a Quiet Zone must provide public notice of at least 60 days that a Quiet Zone is being considered along the rail line.

2. Identify Crossings. The specific crossings to be designed as Quiet Zones must be identified as well as a determination as to whether the Quiet Zone is to be partial or full. Partial Quiet Zones include areas where the "no horn" rule only applies at specific times, such as early morning hours.

3. Length of the Proposed Quiet Zone. The length of the Quiet Zone has to be determined. Quiet Zones are allowed to be ½ mile in length or greater.

4. Inventory. An inventory of the physical conditions of the crossing and the safety record of the crossing for the previous five years (unless SSMs are proposed or waived by FRA**)** must be compiled. Following the FRA guidelines, the Public Authority must provide the following information:

- Current roadway traffic volumes and percent of trucks,
- Posted speed limits on all street approaches,
- Maximum allowable train speeds, both passenger and freight,
- Accident history for each crossing under consideration,
- School bus or transit bus use at the crossing(s).

In addition, the Public Authority must document the presence of the following at each of the crossings in question:

- U.S. DOT grade crossing inventory numbers clearly posted.
- Gates and flashers.

Based on the inventory, it is the Public Authority's responsibility to assess the possible implementation of Supplementary Safety Measures (SSMs) and/or Alternative Safety Measures (ASMs). SSMs can include improvements such as median barriers and four quadrant gates, while ASMs would include public education and other non-standard SSMs. ASMs require monitoring and reporting to the FRA to assess their effectiveness.

5. Risk Assessment. A risk assessment is conducted using the FRA Quiet Zone calculator. The FRA Quiet Zone calculator uses three indexes to measure a grade crossing's relative safety. The three indexes are:

- *Quiet Zone Risk Index (QZRI)*: represents the average severity-weighted collision risk for all public highway-rail grade crossings that are part of a Quiet Zone. It includes added risk caused by the lack of a train horn and risk reductions caused by the implementation of SSMs.
- *Risk Index with Horn (RIWH):* represents the level of risk that would exist if train horns were sounded at every public crossing in the proposed Quiet Zone.
- *Nationwide Significant Risk Threshold (NSRT):* represents the average severity-weighted collision risk for all public highway-rail grade crossings equipped with lights and gates nationwide where train horns are routinely sounded. FRA developed the NSRT to serve as a threshold of permissible risk for Quiet Zones.

6. Signage. Appropriate signage indicating the crossing is part of a Quiet Zone must be provided.

FRA will review this application and notify the local jurisdiction of their approval status. In general, crossings that are fully upgraded and have the appropriate sight distances, public notifications, and SSMs will be approved. SMART is proposing full SSM upgrades for Quiet Zones.

Quiet Zone Safety

The FRA released a Notice of Proposed Rule Making on train horn noise in 2000. Subsequently, the FRA released an FEIS on the Interim Final Rule in December 2003. That document determined that according to FRA's 1995 Nationwide Study, crossings with horn bans had significantly higher average collision frequencies (66%) as opposed to non-horn ban crossings when the only SSM used was standard automatic gates and flashing lights. As a result of this determination, the final rule issued by FRA in April 2005 required much more extensive SSMs for Quiet Zone approval. That final rule went into effect in June 2005. At the time that this master response was being prepared, there were no subsequent safety studies on the final rule on Quiet Zones. *SMART is proposing full SSM treatment at all proposed Quiet Zones, consistent with the provisions of the final rule.* Until additional safety analysis is done on Quiet Zones with full SSM treatments, the FRA has assumed that the implementation of full SSM upgrades provides substantially the same level of safety as train horns, based on their risk assessment. (See Federal Register, Vol. 70, 4/27/05/Rules and Regulations 222.39).

Quiet Zone Costs and Implementation

As noted above, the FRA Quiet Zone application must be submitted by the local jurisdiction. SMART is recommending that Quiet Zones only be considered with full SSM upgrades. SMART has budgeted for full SSM upgrades for Quiet Zones in its 2006 updated cost estimate. (See 2006 Draft Expenditure Plan.) SMART is proposing that during final design, a list of proposed Quiet Zones be prepared by SMART and submitted to the local jurisdictions for their consideration and subsequent application to FRA.

MASTER RESPONSE R – LARKSPUR STATION

This master response addresses comments about the proposed Larkspur Station, including alternative locations, design, impacts on Marin Airporter, access to the Larkspur Ferry Terminal, and parking considerations.

Larkspur Station Alternatives

Two additional alternative station locations were originally developed for consideration in Larkspur. The first site was located in the Larkspur Landing Shopping Center and would have required the demolition and reconstruction of two single-story buildings and construction of a replacement three to four story building (containing the platform) connected to a new replacement aerial pedestrian overcrossing of Sir Francis Drake Boulevard. The second station site was within the ferry terminal site, necessitating a grade separated crossing of Sir Francis Drake Boulevard and extension of the rail line into the ferry terminal site.

Both of these station concepts were presented to the Larkspur City Council in public presentations in July 2003. The Larkspur City Council expressed their concern that any changes to buildings located in the Larkspur Landing Shopping Center would require an amendment to the Planned Unit Development Agreement governing the site, an action the Council did not wish to pursue. Further, the Council expressed concern that any rail crossing of Sir Francis Drake Boulevard would have significant impacts related to interference with views of the Bay and high construction costs. At that public session, members of the City Council asked that SMART consider a third station site within the NWP right of way, south of the CalPark Hill Tunnel, with pedestrian access to Larkspur Landing Circle. Based on this request, a third station site was recommended as the preferred station site and is the proposed station location analyzed in the DEIR. The previous two station sites were eliminated from further review based on the concerns raised by the Larkspur City Council and the projected impacts of both alternatives, described above.

Modifications to Larkspur Station Site and Impacts on Marin Airporter

The proposed Larkspur Station site has been modified to utilize either one of the two bicycle/pedestrian pathway alternatives that have been developed as part of the proposed CalPark Hill Tunnel Rehabilitation Project. The CalPark Hill Tunnel is being reconstructed to provide bicycle/pedestrian access from San Rafael to Larkspur. The reconstructed tunnel will include divided access for bicycle/pedestrian use, as well as a single track rail line. The tunnel rehabilitation project will provide access to the Larkspur Ferry Terminal via a new pathway adjacent either to the Larkspur Theater site or adjacent to Larkspur Landing Office Park, with connections to Larkspur Landing Circle and Larkspur Landing Shopping Center, and linking to the existing pedestrian overcrossing of Sir Francis Drake Boulevard. These new pathway alignment options were developed following the release of SMART's DEIR, which had included a pathway along the southern edge of the Marin Airporter site, necessitating acquisition of additional right-of-way and a redesign of the Airporter's parking lot. To accommodate either of the new pathway alignments, SMART proposes shifting the passenger loading platforms at the proposed Larkspur Station to the north, along with the pullouts for shuttles and drop offs along Larkspur Landing Circle. (See revised Figure 2.5-27 in Chapter 4 of this FEIR.) With this change, the need to acquire additional right-of-way for the pathway and redesign the Airporter's parking lot is eliminated, as the project would only use existing NWP rail right-of-way and share the pathway recommended as part of the CalPark Hill Tunnel Rehabilitation Project.

The revised platform location will require less vertical circulation because the grade differential to the adjacent parking lot is considerably less than in the original location. The grade difference to the adjacent parking lot in the new location is approximately 4 to 8 feet, as opposed to 18 to 20 feet in the original location.

The Marin Airporter currently leases property from SMART along the rail line as an overflow parking lot. This upper tier parking lot was designed as a temporary lot; it is unpaved and unstriped and the terms of the lease for this site reflect its temporary status. Under terms of an extended lease (signed in April 2006), Marin Airporter agreed to a 180-day notice of termination and waived any rights to relocation costs. With implementation of the proposed SMART project, this upper tier of overflow parking would no longer be available to the Marin Airporter, as the tracks would be reconstructed and the right-of-way utilized by passenger rail vehicles and rail station facilities. However, the remainder of the Airporter site would not be impacted, including over 160 permanent spaces. The primary parking areas and building would remain and it is SMART's intention that the Airporter remain in its current location to maximize transfer capabilities from rail to the Airporter. To make up for the loss of the temporary lot, the roadway extending up to the upper tier could be redesigned, graded and used for parking. In addition, there is no impact to the property that the Golden Gate Bridge, Highway and Transportation District (GGBHTD) owns and currently leases to the Marin Airporter as paved parking. Pullouts for shuttle buses and drop offs would still be located on Larkspur Landing Circle, although shifted further north to accommodate the pathway realignment described above. This relocation would avoid any potential conflicts with the Marin Airporter's buses entering or leaving the Airporter site.

Pursuant to a license agreement with SMART, the GGBHTD also uses the upper tier parking lot, rent free, for special event ferry service; i.e., sports events. The license agreement is revocable with 30 days notice. SMART would work with both the Marin Airporter and GGBHTD to maximize any available NWP right-of-way for overflow and special even parking in the final design process.

Access from the Larkspur Station to the Larkspur Ferry Terminal

As noted above, the bicycle/pedestrian access to the Larkspur Station has been slightly modified to utilize either one of the two pathway alternatives still being considered for the CalPark Hill Tunnel rehabilitation project. The relocated pathway would be ADA accessible and would provide rail patrons with access to the Larkspur Landing shopping center, as well as the Larkspur Ferry Terminal via the existing pedestrian overcrossing of Sir Francis Drake Boulevard. With the corresponding relocation of the rail platform (see above), the distance between the rail platform and the Larkspur Ferry Terminal would be approximately 1,900 feet and is estimated to take approximately 8 minutes to walk. By utilizing this new pathway connection, the distance between the station platform and the ferry terminal has increased (from 1,500 feet) however, the time required to transfer has not increased. This is because the new pathway alternative avoids the use of two pedestrian-actuated signals at Larkspur Landing Circle and Sir Francis Drake Boulevard. Further, no delays to Sir Francis Drake Boulevard, resulting from increased pedestrian traffic, would be experienced. Shuttle service will also be provided to the Larkspur Ferry terminal. It should be noted that the largest ferry terminal in the Bay Area, the San Francisco Ferry Terminal, requires similar transfer walking distances to access the Embarcadero BART station and Muni Metro.

Larkspur Parking Issues

No new park-and-ride spaces are recommended for the Larkspur Station site based on constraints at the site. The Larkspur Station site is between Highway 101 and the Larkspur Landing development, with no available, vacant land for new parking spaces. Access to the station would be by rail, shuttle buses, walk/bike, drop offs or Golden Gate Transit fixed route bus service. SMART has not assumed shared use of the Larkspur Ferry Terminal park-and-ride lot. The travel forecasting model did not assume any shared parking at Larkspur. SMART would work with the City, adjacent property owners, and GGBHTD to closely monitor illegal parking and would respond with appropriate parking management actions, if warranted.

As stated in the DEIR, page 3-113, provision of rail service to the Larkspur Ferry Terminal is assumed to reduce parking demand at the ferry terminal via the provision of an additional mode of access. For southern Marin residents wishing to access a park-and-ride lot for northbound rail service, Master Response M notes that the existing, unrestricted commuter park-and-ride lots in downtown San Rafael could be used. Caltrans has three commuter park-and-ride lots under Highway 101 located at Irwin and Hetherton, Third and Hetherton and Lincoln and Highway 101 with over 213 spaces. Currently the northern Lincoln and Highway 101 lot regularly has excess capacity and could be used by rail patrons.

With regard to short-term construction-related parking issues at Larkspur, the environmental compliance measures described on pages 2-67 and 3-116 of the DEIR require a construction phasing/sequencing and traffic management plan to minimize traffic and parking impacts during construction. In addition, SMART will pursue with Caltrans the possibility of a temporary freeway side access to the Larkspur Station site to minimize impacts to Larkspur Landing during construction. Temporary freeway side access from Highway 101 would allow SMART construction vehicles to access the site west of the NWP tracks.

Visual Impacts

The proposed Larkspur Ferry Station, as currently designed, would not block or obstruct views and is not anticipated to have impacts on view corridors in the vicinity. The station platforms are located entirely within the SMART right-of-way. The grade of the right-of-way ranges from 2 feet higher than the adjacent office development at the north end of the station to approximately 18 feet higher at the south end of the station. However, Highway 101 is between 36 feet higher than the SMART right-of-way at the north end of station and 16 feet higher than the SMART right-of-way at the south end of the station. Highway

101 is between 38 feet higher than the properties on the east side of the SMART right-of-way at the north end of the station and 34 feet higher than the properties adjacent to the east side of the SMART right-of-way at the south end of the station.

While the final design of station canopies and other elements has not been determined, it is not anticipated that these elements would be high enough to impact views across the site. The steepness of the grade between the SMART right-of-way and Highway 101 means that any station canopies or other features would likely be below the highway grade and would be blocked from view from the west by Highway 101. Because of this alignment, the facility would not extend into the line of sight from the west and would not impact views from the east to the west. Bicycle/pedestrian pathway lighting would be designed in consultation with the City to ensure that glare is avoided.

Another concern was the trackway facility, since the Larkspur Station would be the southern terminus of the SMART system. The southern terminus would be within the SMART right-of-way, approximately at the level of the existing right-of-way grade. There is a steep embankment from Sir Francis Drake Boulevard to the SMART right of way, and the southern terminus of the rail line is approximately 20 feet above the Sir Francis Drake Boulevard grade. The presence of the trains at this location is not expected to obstruct any views.

MASTER RESPONSE S – ANDERSEN DRIVE CROSSING

This response addresses comments regarding the replacement of the currently blocked railroad crossing at Andersen Drive, south of San Rafael. In 1997, the CPUC granted the City of San Rafael's application (Application 95-08-020) to construct a blockaded crossing at Andersen Drive to be left in place only until rail service was initiated. The CPUC order concluded that building a grade-separated crossing was not warranted as long as no regular train service was scheduled along the tracks; however, once train service was resumed, the City would be responsible for modifying the crossing to accommodate rail service.

Earlier in 1993 the City of San Rafael released the Andersen Drive FEIR (SCH #88091307). That document analyzed two grade-separated crossings and one at-grade crossing. The FEIR concluded that an at-grade crossing was unsafe, given the large skew of the NWP alignment with the proposed extension of Andersen Drive. The FEIR concluded that the Andersen Drive extension would be designed "to facilitate compatibility with future transit plans" via the construction of a grade-separated crossing at a later date.

SMART's DEIR noted the key conclusions of the CPUC ruling on Andersen Drive (p. 2-55), but suggested a lower impact alternative to a full grade-separated crossing. The DEIR recommended consideration of a realignment of Andersen Drive to the east, parallel to the railroad, as it runs northward through the intersection with Francisco Boulevard West (see Figure S-1). This would result in Andersen Drive crossing the tracks at a 45-degree angle and connecting back to the current roadway alignment. Subsequent to the release of SMART's DEIR, SMART has pursued this proposal with San Rafael's Public Works Director who concurs that this approach should be examined further in SMART's final engineering design phase. The feasibility of the proposed realignment can only be determined with more detailed engineering work. Following the development of that engineering work, it will be determined if a more expensive grade-separated crossing can be avoided at Andersen Drive. If the alternative proves feasible, appropriate supplemental environmental review may be required.

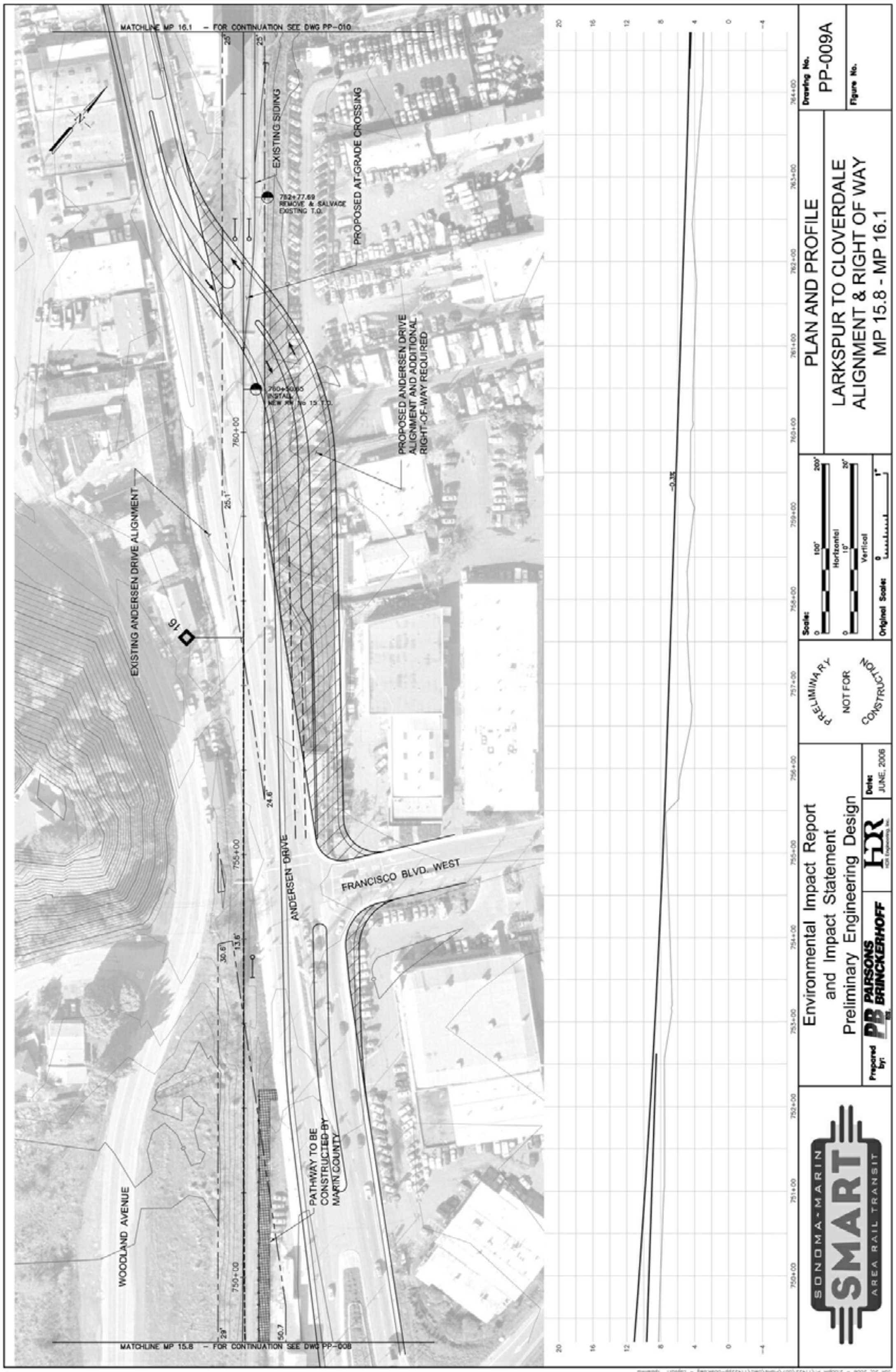


Figure S-1. Andersen Drive Realignment

MASTER RESPONSE T – PROPERTY VALUES

Several comments inquired about the potential impact of the proposed project on property values. Although this issue is outside the scope of the environmental review required by CEQA, SMART staff conducted research at the U.C. Berkeley Institute of Transportation Studies to provide the requested information.

There have been a number of studies conducted on the impact of transit facilities and systems on nearby property values. The most apt comparisons to the proposed project are studies that are both recent and specifically examine impacts of commuter rail systems in the United States, with a setting that bears some similarity to that of the proposed project.

Three recent California studies best fit these criteria. All three were sponsored by the National Association of Realtors and the Urban Land Institute, and conducted by U.C. Berkeley professors, Robert Cervero and Michael Duncan. They include a 2001 study which focused on the impact of transit on commercial property in Santa Clara County, and two 2002 studies that evaluated the impact of transit on both commercial and residential property in Los Angeles County and San Diego County.

The commuter rail systems examined include Caltrain, which operates between Gilroy and San Francisco, Metrolink which operates several lines in the L.A. metropolitan area, and lastly the Coaster in the San Diego metropolitan area.

The studies used hedonic property models to determine the premium (added value) or discount (reduced value) on different type of property within a one-half mile of rail stations. A hedonic model uses regression analysis, a statistical tool, to determine the importance of individual variables. The results for different types of residential property are found in the following table. A plus sign indicates a premium (positive effect) on property values and a minus sign indicates a discount (negative effect).

Rail System and Line	Single Family Homes	Condominiums	Multi-Family
Metrolink Antelope Line	+6.6%	+12.6%	-3.5%
Metrolink Riverside Line	+7.1%	+8.6%	+3.7%
Metrolink San Bernardino Line	+1.6%	+14.2%	-3.4%
Metrolink Ventura Line	+0.6%	+1.3%	+0.5%
Coaster	+17.0%	+46.1%	-7.1%

Generally speaking, the impact of commuter rail stations on the value of multi-family apartment complexes was small and in some cases registered a small negative. However, there was a positive impact in all cases for both single family homes and for condominiums, with condos experiencing the greater impact of the two. There was also variation in the impact of stations in different areas. While some rail lines show significant property value premiums, others do not. The Los Angeles study also analyzed the impact of Bus Rapid Transit (BRT) systems on residential property values using the same methodology as used for the rail stations. The BRT service appeared to have a slightly negative impact on residential property values as shown in the following table.

Bus System and Line	Single Family Homes	Condominiums	Multi-Family
Ventura BRT Line	-6.6%	-5.1%	-6.0%
Wilshire-Whittier BRT Line	-15.2%	-8.4%	-1.6%

The studies of commuter rail impacts on commercial property produced highly variable results. The Santa Clara County study showed a 120% premium on commercial properties within one-half mile of Caltrain stations. In other words, proximity to the Caltrain station adds significant value to retail and office properties. The San Diego County study showed a similarly large 90% premium for downtown commercial properties within one-quarter mile of Coaster stations, but slightly negative impacts for commercial areas outside downtown.

The impact on commercial property values along the Los Angeles Metrolink system was mixed. There were positive impacts of 10.3% and 16.4% for the Antelope Valley and San Bernardino Lines. However, the Ventura line showed a 3.4% discount and the Riverside line a 29.8% discount. Cervero and Duncan speculate the Riverside line traverses through economically disadvantaged redevelopment zones, a variable that was not fully screened out in the analysis.

Beyond the three studies conducted by Cervero and Duncan, there was a relevant meta-review published in 1999 by Roderick Diaz of Booz, Allen & Hamilton. The Diaz paper examined eleven other studies published in the 1990s on the impacts of transit on property values.

Only one of those eleven studies was chiefly focused on commuter rail, a 1991 study by Voith in the Philadelphia metropolitan area. He found +3.8% premiums for homes in census tracts served by the rail line in suburban Pennsylvania and +10% premiums for homes in suburban New Jersey. This is generally consistent with the conclusions of the Cervero / Duncan studies showing single digit to small double digit premiums.

The paper also concluded that the degree of impact on property values depends greatly on the degree to which people in a given location value and use those transportation services. Diaz cites a 1994 study by John Landis et al, and notes that “the extent of property value increase appears to be affected by the market penetration of transit in the respective area.” The Landis study showed much higher station area premiums for the heavily-utilized BART systems, than for smaller commuter rail and light rail systems.

The Diaz meta-study also concluded that outside of the one-half mile radius, the impact of a transit station on property value tend to decline substantially. It notes that “beyond this zone the effect on property values is negligible.”

MASTER RESPONSE U – BIKE ACCESS/PARKING AT STATIONS

DEIR comments requested additional information on bicycle access to proposed rail stations and bicycle facilities that would be provided at the stations and on trains. Bicycle access to each station was considered during the development of the station concept designs. There were several issues to consider at each station: (1) the alignment of the bicycle/pedestrian pathway and providing safe and convenient access to the station from the surrounding community; (2) the alignment of the pathway and providing safe and convenient access *through* the station site; and (3) providing adequate bicycle parking for train patrons. The proposed bicycle access to each station is described in the DEIR text on pages 2-35 through 2-51 and is shown in Figures 2.5-11 through 2.5-27 accompanying the text.

In some locations (e.g. the Rohnert Park Station, the Healdsburg Station, and the South Novato Station), constrained right-of-way, existing development, or the bicycle/pedestrian pathway alignment necessitated routing the bicycle/pedestrian pathway around other station functions, such as park-and-ride areas and bus bays. In these locations, a pedestrian walkway will provide access to station platforms from the closest location of the pathway.

In other locations (e.g., the Corona Road Station, the Larkspur Ferry Station, and the Cloverdale Station), constrained right-of-way, existing development, or the bicycle/pedestrian pathway alignment necessitated routing the bicycle/pedestrian pathway as close to the rail platforms as possible. In these locations, marked pedestrian crossings will be provided in order to reduce potential conflicts between through bicycle riders and pedestrians accessing the station platforms.

As indicated on DEIR page 2-32, bicycle parking will be provided at all stations. Locations for bicycle parking are indicated in the station concept diagrams (Figures 2.5-11 through 2.5-27 [see FEIR Chapter

4 for revisions to several figures]), except for Cloverdale Station (existing bike parking to be augmented as necessary); Santa Rosa Railroad Square Station (bike station to be incorporated into joint development and bike parking to be located in collaboration with joint development partner); Cotati Station (bike parking in Multi-Modal Center to be augmented as necessary); and Petaluma–Corona Road Station options (bike parking to be located in final engineering). However, the detailed design and layout of these facilities will be determined in the final design phase of the project. All stations will have at least the minimum number of bicycle racks and bicycle lockers necessary to meet projected demand, which could be increased if future demand warrants. The bicycle parking minimum is based on the projected rail ridership and the desire to have a minimum level of parking available at each station. Projected demand for bicycle racks and locker also reflects SMART's commitment to allow bicycles on board trains for passengers who wish to use their bicycles upon disembarking the train, although the number of racks per car has not been finalized. The following table, which compiles information from the DEIR, indicates the minimum level of bicycle parking assumed for each station. Attended bicycle parking facilities ("bike stations") have been planned for the Downtown San Rafael and Santa Rosa Railroad Square stations at project startup. However, the station concept diagrams include potential locations for bike stations at numerous other station sites.

Rail Stations – Bicycle Facilities

		Bicycle Parking [1]		
Station	**Location**	**Racks**	**Lockers**	**Bike Station [2]**
Cloverdale (MP 84.6)*	Existing station located at Asti Road just south of Citrus Fair Drive	6	8	No
Healdsburg (MP 68.0)**	Historic Depot located at Harmon Drive	6	16	Potential Future
Windsor (MP 63.0)****	Transit Center at Windsor Road and Windsor River Road	6	8	Potential Future
Santa Rosa–Jennings Avenue (MP 54.9)***	Jennings Avenue and Herbert Street	6	8	Potential Future
Santa Rosa Railroad Square (MP 53.8)**	Historic Depot at Railroad Square	6	8	Yes [3]
Rohnert Park (MP 48.7)***	North of Golf Course Drive at Roberts Lake Road	6	8	No
Cotati (MP 46.0)****	Cotati Avenue and Industrial Road	6	8	No
Petaluma – Corona Road (MP 41.0)***	Option 1: Corona Road and North McDowell Boulevard with surface parking	6	8	Potential Future
	Option 2: North of Corona Road (east of SMART right-of-way)	6	8	Potential Future
Downtown Petaluma (MP 38.5)**	Historic Depot adjacent to Lakeville Highway	6	8	Potential Future
North Novato (MP 28.7)***	Atherton Avenue Drive and Redwood Boulevard	6	8	No
South Novato (MP 24.6)***	Adjacent to Highway 101/Ignacio Avenue Interchange	6	8	Potential Future
Marin County Civic Center (MP 19.6)***	Civic Center Drive and McInnis Parkway	6	8	No
Downtown San Rafael (MP 17.0)***	Option 1: Tamalpais between Third and Fourth Streets	6	8	Yes (600 sq. ft.)
	Option 2: Tamalpais between Third and Fourth Streets using bank property and creating a pedestrian underpass	6	8	Yes
Larkspur Ferry Station (MP 14.8)***	SMART Right-of-Way Site near Marin Airporter	6	8	No

Source: Community Design + Architecture, 2006.
Note: * Existing station with no improvements required
** Existing historic station with improvements required

*** New station
**** Station incorporated into transit center built by others

Additional Notes: [1] 6 racks and 8 bicycle lockers per station is a recommended minimum (each rack and locker provides 2 bicycle parking spaces). This number can be increased during final design of the stations in consultation with local jurisdictions. Additional bicycle racks can be incorporated into all station designs if demand warrants.

[2] Unless otherwise noted, all bike stations in the SMART system are anticipated to be roughly 1,500 square feet. This dimension is consistent with other bike stations in the Bay Area, including the Palo Alto bike station in the Caltrain system, as well as the Fruitvale bike station and the planned expansion to the Downtown Berkeley bike station in the BART system.

[3] A 1,500 square foot bicycle station is one of the program elements to be built by SMART's Joint Development partner at the Railroad Square station site.

As noted above, SMART intends for bicycles to be allowed on board trains for passengers who wish to use their bicycles upon disembarking the train. The number of racks per car would be determined in the final project design process.

MASTER RESPONSE V – ROADWAY AND BICYCLE/PEDESTRIAN PATHWAY CROSSINGS

Numerous comments expressed concerns about the safety of bicyclists and pedestrians at existing or new grade crossings, and about crossing configurations. While general safety issues are addressed in DEIR Section 3.12 and Master Response P, this master response focuses on bicycle/pedestrian safety measures and crossings. This information clarifies the proposed project, described in DEIR Chapter 2.

The bicycle/pedestrian pathway grade crossings of the SMART railroad tracks will primarily be at existing at-grade roadway crossings. Crossing equipment at new or existing roadway crossing locations will have appropriate warning devices including flashing lights and gates across the roadways. At grade crossings, standard CPUC and Caltrans treatments are designed to accommodate the variety of user groups in California. All roadway crossings of the pathway would be designed to conform to Caltrans Chapter 1000 of the Highway Design manual (Planning and Design of Bikeways), AASHTO Guide for the Development of Bikeways, the MUTCD California Supplement and the FHWA '*Rails-with-Trails: Lessons Learned'* (2005) document. Prototype crossing diagrams in Figures V-1 through V-7 (see below) show typical crossing treatments at mid-block locations and intersections. Final design of all crossings would be conducted by licensed traffic engineers and bikeway design specialists experienced with these types of facilities. Roadway and railroad crossings can be designed to provide an acceptable level of safety for pathway users by using accepted design standards and practices. For example, there is an existing pathway crossing of the SMART tracks in Novato that operated successfully when trains were operated on the tracks. Other pathway crossings of active railroad tracks exist throughout the State, including Dixon, Davis, Irvine, and San Diego. Virtually all major cities in the United States with active railroads have sidewalk crossings of active tracks as well.

The bicycle/pedestrian pathway will cross the SMART tracks in 28 locations over its 70-mile length. While these crossings represent potential conflicts between pathway users and trains, the pathway still represents a significant net reduction in potential conflicts for bicyclists and pedestrians, who would otherwise have to negotiate busy roadways, intersections, and railroad crossings.

One of the planning objectives of the bicycle/pedestrian pathway was to utilize existing roadway crossings rather than new crossings. Of the 28 crossings of the SMART mainline tracks, two new crossings are proposed in the DEIR: Mile Post 20.4 near the Civic Center in San Rafael, and Mile Post 53.4 immediately south of the Santa Rosa station. As part of the CPUC approval process for the proposed project, all proposed crossings including the use of existing roadway crossings and grade separation will be evaluated. Evaluation criteria will include safety and visibility, and trade-offs between function, cost, right-of-way, and environmental impacts. All bicycle/pedestrian pathway setbacks will conform to CPUC GO 26-D. (See DEIR page 2-16 to 2-17).

DEIR Section 3.12 includes a description of the legal and regulatory aspects of railroad crossings that directly relates to the proposed bicycle/pedestrian pathway at-grade crossings. These regulations, including requirements of the CPUC, are designed to ensure a minimum level of safety at public crossings. In addition to these regulations, research performed by agencies and organizations such as the Federal Railroad Administration, Operation Lifesaver, and others are integrated into facility plans, designs, and operations. With proper design and maintenance, new or upgraded railroad crossings would provide an acceptable level of safety for vehicles, bicyclists, and pedestrians.

The bicycle/pedestrian pathway includes roadway crossings at both signalized and uncontrolled locations. With proper design and signage, users of the bicycle/pedestrian pathway would experience minimal traffic conflicts with trains and cars at the proposed stations and uncontrolled intersections. Bicyclists and pedestrians would be required to stop at all pathway intersections with roadways and at access points to station boarding platforms. All track crossings of the pathway would be posted with active warning devices (flashers and/or gates) and other warning signage, as required by law.

The issue of safety for pedestrians, children, non-English speaking persons, and others associated with day care, schools, parks, playgrounds, and other recreational facilities are addressed by conforming to established CPUC and FRA requirements, and also through the proposed safety fencing and signage on and along the bicycle/pedestrian pathway. Critical messages about safety and trespassing can be bilingual. Fencing will delineate areas for pedestrians and separate them from the tracks. While no improvement can guarantee complete safety for any group, the proposed treatments have been evaluated and adopted by the appropriate permitting agency based on their research and analysis of collision and fatality data. Based on national grade crossing and trespassing information compiled by the Federal Railroad Administration and Federal Transit Administration, SMART is not expected to experience a significant deviation from those existing rates. See Master Response P for additional details.

FIGURE V-1
Typical Bike Lane or
Route at RR Xing

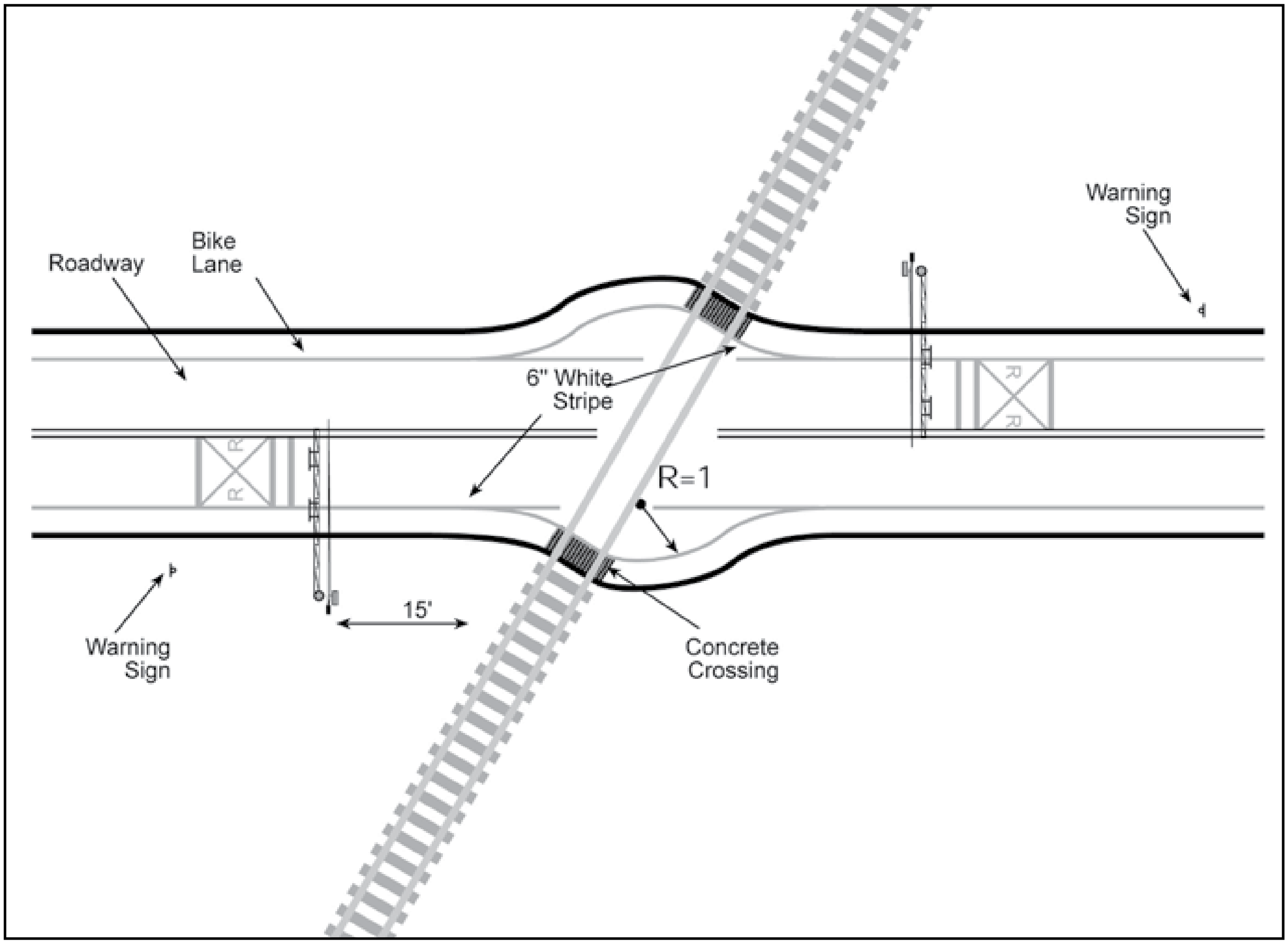


FIGURE V-2

Typical 90° Pathway-Rail Crossing

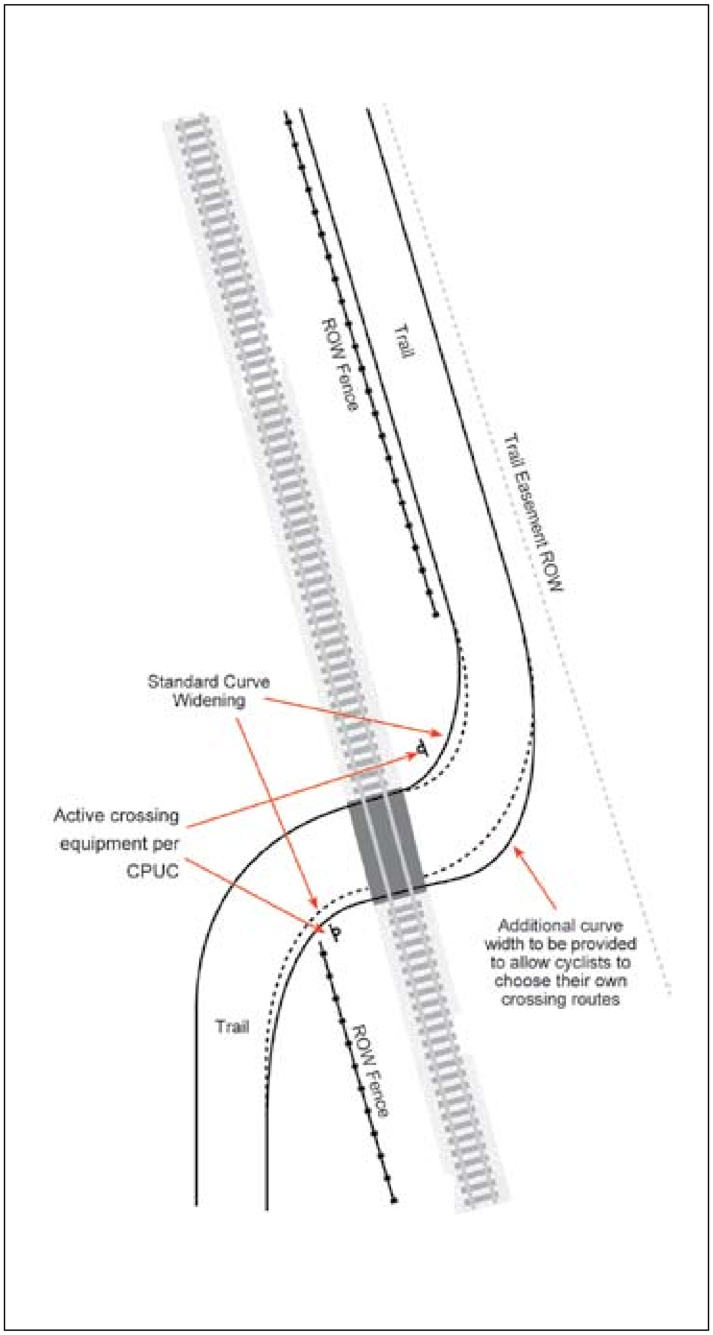


FIGURE V-3
Typical Pathway-Rail Crossing Equipped with Active Warning Devices and Fencing

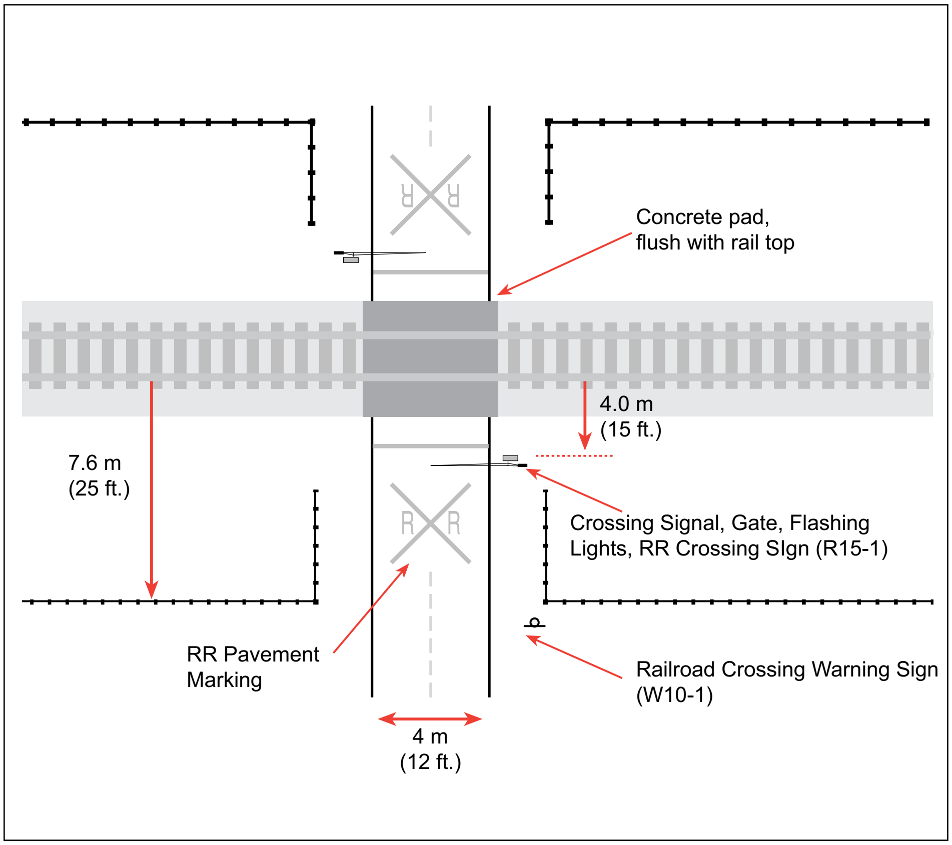
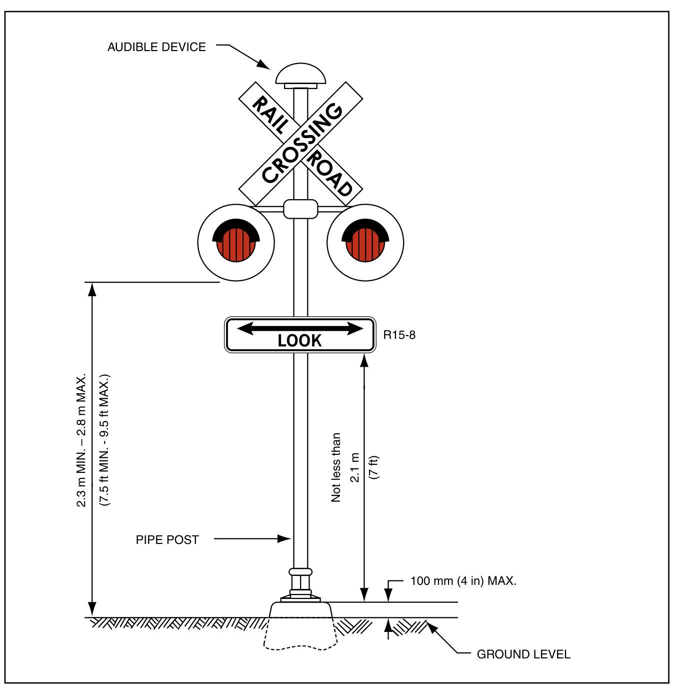
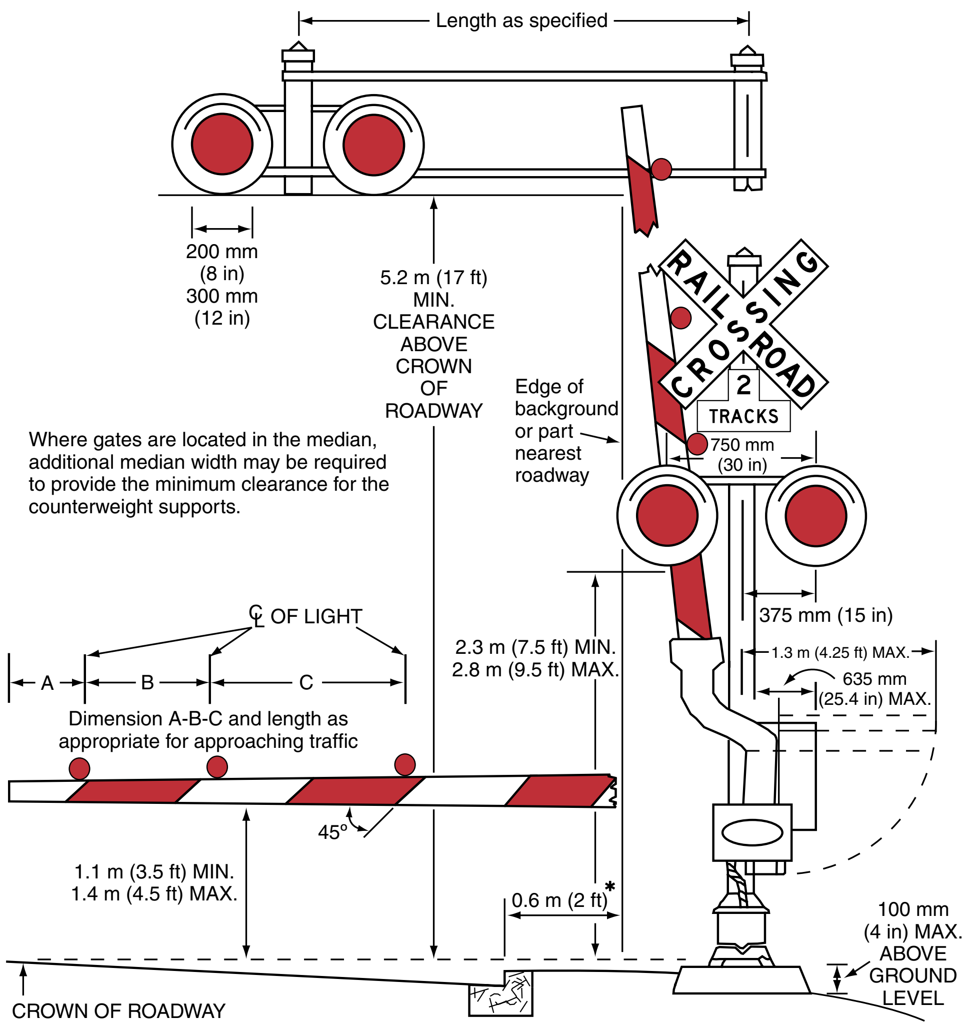


FIGURE V-4
Typical Light Rail Transit Flashing-Light Signal Assembly for Pedestrian Crossings (MUTCD Fig 10D-2)



* CPUC designation for light rail equipment also applicable to passenger rail systems

FIGURE V-5
Composite Drawing Showing Clearances for Active Traffic Control Devices at Highway-Rail Grade Crossings



* For locating this reference line at other than curb section installation, see Section 8D.01.

FIGURE V-6
Typical Pedestrian Gate Placement Behind the Sidewalk (MUTCD Fig 10D-3)

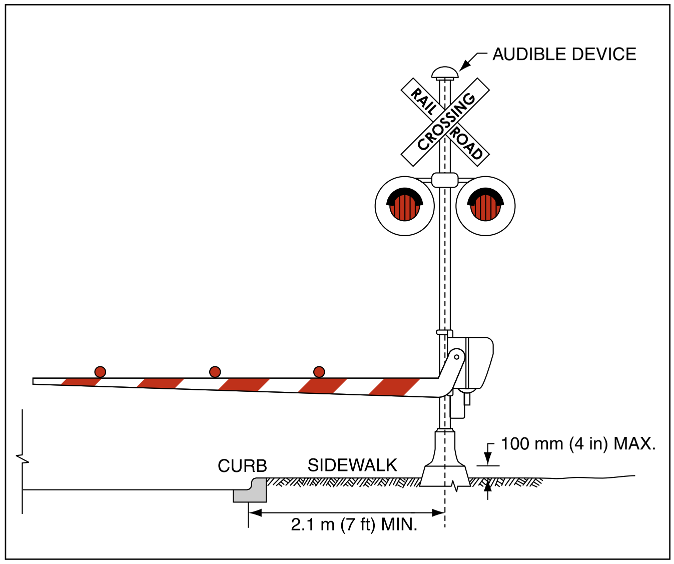
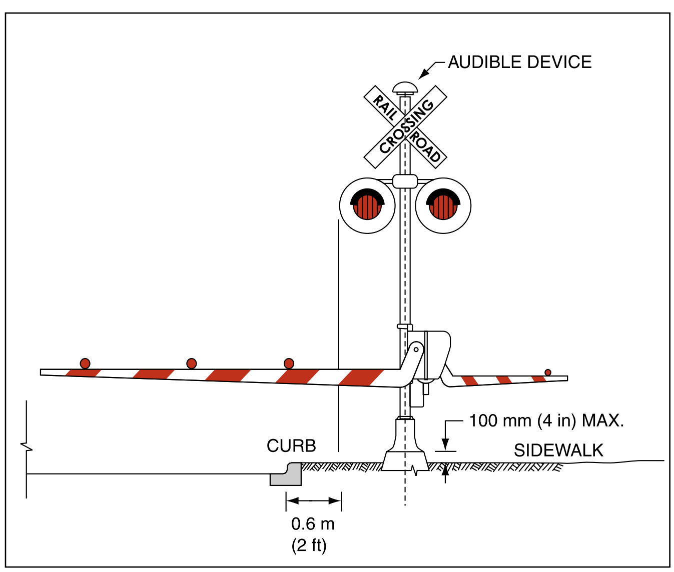


FIGURE V-7
Typical Pedestrian Gate Placement with Pedestrian Gate Arm (MUTCD Fig 10D-4)



MASTER RESPONSE W – OTHER STATION SITE ALTERNATIVES

Comments were received asking why certain station sites were selected and whether additional stations could be added "piecemeal" at a later date. DEIR Section 2.4.6 describes the rail station planning and selection process for the proposed project, followed by descriptions of the 14 selected stations on pages 2-32 through 2-52. DEIR Chapter 4, Project Alternatives, pages 4-6 and 4-7, lists 12 alternative station sites that were also considered and provides the reasons each was eliminated from further review in the DEIR. Those sites include: Sonoma Airport and Bellevue Avenue in Santa Rosa; Rohnert Park Expressway; Rainier Avenue and Caulfield Lane in Petaluma; Olive Avenue, Rowland Avenue, Downtown Novato, and Hamilton AFB in Novato; Downtown Rafael between Second and Third Streets; and Larkspur Landing Shopping Center and the Larkspur Ferry Terminal. (See also Master Response R regarding the alternative sites in Larkspur.)

Station site selection for the proposed project has been a process that has evolved over many years. The station locations contained in the DEIR were selected based on a combination of factors, including recommendations contained in previous planning studies, local jurisdiction planning documents, general plan designations, available land for park-and-ride facilities, coordination with on-going multimodal improvement projects, historic rail station designations, and consultation with local jurisdiction staff, elected officials, and the public. Public meetings were conducted in each jurisdiction where alterative station sites were considered, in addition to the scoping meetings held for this EIR process

It should be noted that impacts associated with the selected stations were evaluated based on 30 percent engineering, which is a typical level of design for environmental review and provides a reasonable basis for the identification of impacts and appropriate mitigation measures; accordingly, substantial modification of station designs during final engineering is not anticipated. If substantial design modification were required that might result in different or more severe environmental impacts than analyzed in this EIR, appropriate environmental review would be undertaken as necessary to comply with CEQA.

Similarly, if, after the start-up of passenger rail service, it were determined that additional stations were warranted and would enhance rather than detract from efficient rail operations, the decision to add stations would be subject to appropriate environmental review under CEQA. Contrary to the assertion in some comments, this would not be "piecemealing" within the meaning of CEQA. A good faith effort has been made to identify and select stations for inclusion in the proposed project that would best serve the needs of the communities, consistent with efficient rail operations. No new stations are planned or reasonably foreseeable at this time, and it would be speculative to analyze station sites that may be considered in the future.

3.3 COMMENTS AND RESPONSES

Reproductions of the DEIR comment letters and detailed responses are included in this section. Table 3-2 lists the comment letters received on the DEIR, grouped by category (agencies, organizations, individuals). Within each category, letters are listed alphabetically. Each comment letter is numbered consecutively. Comments have been delineated and numbered consecutively within each letter. Each individual comment is marked in the right-hand margin with the number of the response; for example, Responses 1-1 and 1-2 address the first two points raised in Comment Letter 1. The page number in the table refers to the beginning of the comment letter.

The comment letters appear first, followed by a comprehensive set of responses. The hearing comments and responses are combined and follow the set of individual responses. Where an individual comment is addressed by information in one or more Master Responses, the response refers to the Master Response(s). Where an individual comment is addressed by a previous response, the reader is referred to that previous response to avoid duplication.

Letters received in direct support of the proposed project but that did not comment on the DEIR did not receive responses. Persons submitting letters of support during the DEIR comment period are listed collectively as Comment Letter 133 in the table.

TABLE 3-2
COMMENTS RECEIVED ON THE DRAFT EIR

Comment Letter No.	Agency / Organization	Name & Title	Date of Comment	Page No.
WRITTEN COMMENTS – STATE AGENCIES				
1	California Department of Fish and Game	Floerke, Robert – Regional Manager	1/23/2006	3.3-9
2	California Department of Toxic Substances Control	Piros, Mark – Unit Chief	1/24/2006	3.3-12
3	California Department of Transportation	Sable, Timothy – District Branch Chief	1/23/2006	3.3-22
4	California Public Utilities Commission (CPUC)	Stewart, David – Utilities Engineer	1/23/2006	3.3-24
5	California Regional Water Quality Control Board	Hunt, Colleen – Environmental Specialist	1/20/2006	3.3-27
6	State Water Resources Control Board	Maughan, James – Chief, Regulatory Section	1/13/2006	3.3-28
WRITTEN COMMENTS – LOCAL & REGIONAL AGENCIES				
7	Bay Conservation and Development Commission (BCDC)	Lowe, Lindy – Coastal Planner	1/13/2006	3.3-55
8	City of Cotati	Stubbings, Terry – City Manager	1/23/2006	3.3-58
9	City of Larkspur	Bonander, Jean – City Manager	1/19/2006	3.3-60
10	City of Novato Planning Commission	Wallace, David – Community Development Director	1/19/2006	3.3-85
11	City of Novato Bicycle/Pedestrian Advisory Committee	Creason, Emmett – Principal Engineering Technician	1/20/2006	3.3-93
12	City of Petaluma	Bierman, Michael – City Manager	1/23/2006	3.3-97
13	City of Rohnert Park	Bendorff, Ron – Director of Community Development	1/11/2006	3.3-102
14	City of San Rafael	Brown, Bob – Community Development Director	1/23/2006	3.3-105
15	City of Santa Rosa Department of Community Development	MacNab, Kenneth – City Planner	1/23/2006	3.3-111
16	County of Marin, Community Development Agency	Warner, Rachel – Environmental Planner	1/23/2006	3.3-123
17	County of Marin, Department of Public Works	Mansourian, Farhad – Director	1/20/2006	3.3-132

Comment Letter No.	Agency/Organization	Name & Title	Date of Comment	Page No.
WRITTEN COMMENTS – LOCAL & REGIONAL AGENCIES, *continued*				
18	County of Marin, Department of Public Works	Tackabery, Craig – Assistant Director	1/23/2006	3.3-139
19	County of Marin, Office of Administrator	Speer, David – Facilities Planning and Development Manager	1/19/2006	3.3-141
20	Golden Gate Bridge Highway & Transportation District (GGBHTD)	Zahradnik, Alan – Planning Director	1/23/2006	3.3-143
21	Las Gallinas Valley Sanitary District	Petrie, Al – District Manager	1/16/2006	3.3-152
22	Metropolitan Transportation Commission (MTC)	Kimsey, Doug – Planning Director	1/23/2006	3.3-153
23	Northern Sonoma County Air Pollution Control District	Lee, Barbara – Air Pollution Control Officer	1/23/2006	3.3-155
24	Sonoma County Permit and Resource Management Department	Helfrich, Gary – Planner 1	1/23/2006	3.3-162
25	Sonoma County Regional Parks	Tam, Kenneth – Park Planner II	1/26/2006	3.3-164
26	Sonoma County Transit	Schmitz, Steven – Senior Planner	1/23/2006	3.3-168
27	Town of Windsor	Freitas, Steve – Chief of Police	11/29/2005	3.3-170
28	Town of Windsor	Salmon, Sam – Mayor	1/12/2006	3.3-171
29	Transportation Authority of Marin (TAM)	Steinhauser, Dianne – Executive Director	1/23/2006	3.3-179
WRITTEN COMMENTS – ORGANIZATIONS				
30	Bel Marin Keys Community Services District (BMK-CSD)	Foley, Bob – President Swartz, Madeline – Chairman	1/17/2006	3.3-183
31	COST 2	Brown, Dennis	1/23/2006	3.3-184
32	Federation of San Rafael Neighborhoods	Cavasian, Tymber – Steering Committee Member	1/22/2006	3.3-185
33	Foss Creek Community Restoration Project	Hahn, Harold	1/26/2006	3.3-193
34	Friends of SMART	Birdlebough, Steve	1/20/2006	3.3-194
35	Friends of SMART	Taylor, Valerie	1/17/2006	3.3-199
36	Gerstle Park Residents (same letter was submitted by separate individuals)	Bartone, Launer; Bohny, Koachim; Dremonte, Ridan; Eneidi, Andrea; Hazelton-Leech, Kathleen; Jennings, Bill; Kirst, Tracy; Larde, James; Lordeu, Katherul; Lynel, Marilyn; Meeslin, Maynard & Kimberley; Mittendorf, William; Neslon Esq., Jason; Peluis, Maria; Phoenix, Jay; Zeuss, M; Kemy; AMP	1/5/2006	3.3-201
37	Greenbelt Alliance	Pistey-Lyhne, Daisy – Sonoma/Marin Field Representative	1/20/2006	3.3-202
38	Kaiser Permanente Medical Center, San Rafael	Kendall, Patricia –	12/30/2005	3.3-205
39	League of Women Voters of Marin County and for Sonoma County	Newman, Perry – President Cary, Corol ann Fontana – President	1/17/2006	3.3-206
40	Lincoln–San Rafael Hill Neighborhood Assn. "Soundwall Noise Abatement Committee"	Murphy, Patrick – Chairman	1/21/2006	3.3-207
41	Marin Audubon Society	Salzman, Barbara – Co-Chair Peterson, Phil – Co-Chair	1/23/2006	3.3-221
42	Marin Citizens for Effective Transportation	Arnold, Mike – Co-Chair Dahlgren, Joy – Co-Chair	1/20/2006	3.3-232
43	Marin Conservation League	Haehl, Jana – President	1/20/2006	3.3-252
44	Marin County Bicycle Coalition	Anderson, Eric	1/23/2006	3.3-280

Comment Letter No.	Agency/Organization	Name & Title	Date of Comment	Page No.
WRITTEN COMMENTS – ORGANIZATIONS, *continued*				
45	MarinInfo.org	MarinInfo.org	1/21/2006, 1/22/2006	3.3-319
46	Mendocino County Railway Society	Burkhardt, Johanna – MCRS Secretary/Treasurer	1/21/2006	3.3-322
47	Montecito Area Resident Assoc. (MARA)	Board of Directors	1/21/2006	3.3-324
48	North Bay Council	Montoya, Dawn – Executive Director	1/20/2006	3.3-326
49	Novato Chamber of Commerce	Peters, Jerry – Past President	1/23/2006	3.3-327
50	Petaluma Area Chamber of Commerce	King, David – President	1/17/2006	3.3-328
51	Rail Passenger Association of California		1/16/2006	3.3-332
52	San Francisco Bay Trail	Gaffney, Maureen – Bay Trail Planner	1/23/2006	3.3-333
53	San Rafael Chamber of Commerce	Hart, Tallia – President/CEO	1/20/2006	3.3-340
54	San Rafael Meadows Improvement Association	Andrew, Gregory	1/23/2006	3.3-341
55	Santa Rosa Chamber of Commerce	Lynch, Chris – Executive Vice-President	1/18/2006	3.3-347
56	Sierra Club Marin Group	Bennett, Gordon – Chairman Nygren, Karen – Transportation Committee Chair	1/17/2006	3.3-349
57	Sierra Club Marin Group	Nygren, Karen	1/21/2006	3.3-376
58	Sonoma County Bicycle Coalition (SCBC)	Culver, Christine – Executive Director	1/22/2006	3.3-379
59	Sonoma County Fire Chief's Association	Albertson, Chris – Chief and President	1/23/2006	3.3-383
60	Sonoma County Law Enforcement Chiefs Association	Hood, Steven – President	1/23/2006	3.3-386
61	St. Vincent's School for Boys	Stark, James – Urban Planning/Urban Economics	1/23/2006	3.3-389
62	Threshold International Center for Environmental Renewal	Diamante, John – West Coast Office	1/23/2006	3.3-396
63	TRANSDEF	Schonbrunn, David – President	1/22/2006	3.3-400
64	Transportation Alternatives for Marin (TAM)	Seidler, Patrick – President	1/23/2006	3.3-419
65	Watershed Preservation Network	Nuyens III, Louis – President Belsky, Elena – Director	1/22/2006	3.3-425
WRITTEN COMMENTS – INDIVIDUALS				
66		Abbasi, Mousa	1/23/2006	3.3-437
67		Adams, Susan	1/21/2006	3.3-438
68		Bath, Ron	1/21/2006	3.3-446
69		Betty	1/23/2006	3.3-447
70		Birmbaum, Mark	1/21/2006	3.3-448
71		Blancett, Gerald	11/22/2005	3.3-449
72		Bob	12/26/2005	3.3-450
73		Boro, Al	1/23/2006	3.3-451
74		Brand, Stewart	12/8/2005	3.3-452
75		Brandt, Carol	1/11/2006	3.3-453
76		Buckley, Barry	1/23/2006	3.3-454
77		Caddell, Wesley – Marin Sales Executive. Bay Area Biofuel	1/15/2006	3.3-457
78		Cameron, Chris	1/12/2006	3.3-458
79		Clemons, Robert	1/20/2006	3.3-459
80		Cohn, Jeanne Emmons	1/18/2006	3.3-461
81		Culver, Christine	1/22/2006	3.3-462

Comment Letter No.	Agency/Organization	Name & Title	Date of Comment	Page No.
WRITTEN COMMENTS – INDIVIDUALS, *continued*				
82		Dahlgren, Joy	1/23/2006	3.3-463
83		Davis, Hal	1/19/2006	3.3-464
84		Drew, Larry and Robin	1/17/2006	3.3-465
85		Eklund, Pat – City Council	1/21/2006	3.3-466
86		Erickson, Philip – President CDA	1/18/2006	3.3-476
87		Fonio, Marcello	1/21/2006	3.3-477
88		Fontes, Al	11/27/2005	3.3-478
89		Ford, Robert	1/23/2006	3.3-479
90		Garay, Mark – Owner, Garay Interest LLC	1/17/2006	3.3-482
91		Gow, Clinton & Patricia	1/19/2006	3.3-488
92		Hoch, Marie	1/23/2006	3.3-489
93		Holroyd-Sills, Jean	11/27/2005	3.3-490
94		Horn, Stanford	11/26/2005	3.3-491
95		Johnson, Rick	1/19/2006	3.3-493
96		Kallins, Wendi	1/17/2006	3.3-497
97		Kambe, Tom – Director, Centex Homes	1/16/2006	3.3-498
98		Kettunen-Zebart, Margaret	1/23/2006	3.3-499
99		Koch, Gene	11/22/2005	3.3-503
100		Kradjan, Lana	1/21/2006	3.3-504
101		Lamoreaux, Brian	1/23/2006	3.3-505
102		Landecker, Hugo	1/18/2006	3.3-509
103		Macy, Jack	1/16/2006	3.3-511
104		Massaro, Chance; Martin, Irene; Present, Martin; Lessin, Vicki; Hogue, Bonnie; Rashti, Joan	1/19/2006	3.3-512
105		McCaughrin, Eric	1/23/2006	3.3-513
106		McFadden, Larry	11/27/2005	3.3-516
107		Miller, Christian	1/11/2006	3.3-517
108		Leihy, Bob	1/20/2006	3.3-518
109		Murray, Cynthia – Supervisor	1/17/2006	3.3-519
110		Pogorzelski, Stacey	1/23/2006	3.3-520
111		Prokop, P.	1/19/2006	3.3-521
112		Reeves, Pamela	1/23/2006	3.3-522
113		Richards, Willard	1/17/2006	3.3-523
114		Roberts, Roger	1/17/2006	3.3-526
115		Rose, David	11/22/2005	3.3-527
116		Rothman, William, M.D.	12/18/2005	3.3-528
117		Salinger, Michael	11/28/2005	3.3-529
118		Salmon, Sam	1/23/2006	3.3-530
119		Sandler, Mike	1/12/2006	3.3-533
120		Sarsfield, Steve	11/27, 12/16 (2), 12/21/05	3.3-536
121		Schmidt, James	1/23/2006	3.3-541
122		Schoop, Jack	12/20/2005	3.3-546

Comment Letter No.	Agency/Organization	Name & Title	Date of Comment	Page No.
WRITTEN COMMENTS – INDIVIDUALS, *continued*				
123		Scotch, Alan	12/22/2005	3.3-547
124		Seter, Dave	1/18/2006	3.3-549
125		Sites, Kenneth	1/23/2006	3.3-550
126		Snyder, Stuart	12/17/2005	3.3-551
127		Strakosch, Walter	1/22/2006	3.3-552
128		Stublarec, Jim	11/23/2005	3.3-554
129		Tuttle Sr., George	1/23/2006	3.3-555
130		Wick, J. T. – Principal, Berg Holdings	1/23/2006	3.3-558
131		Wilhelm, Don – P.E.	1/23/2006	3.3-560
132		Faibisch, Art	1/15/2006	3.3-562
LETTERS OF SUPPORT RECEIVED DURING THE COMMENT PERIOD THAT DID NOT RECOMMEND CHANGES TO THE EIR				
133		Allen, Lee	11/28/2005	3.3-565
133		Brinkerhoff, Aaron	12/8/2005	3.3-565
133		Cook, Mark	11/27/2005	3.3-565
133		de los Reyes, John	11/27/2005	3.3-565
133		Galloway, Brian		3.3-566
133		Galloway, Bronwyn	1/16/2006	3.3-566
133		Haugsten, Chris	11/28/2005	3.3-566
133		Hendrickx, Judith	12/5/2005	3.3-567
133		Hill, Robert	11/30/2005	3.3-567
133		Martin, Harry	11/28/2005	3.3-568
133		Mason, Josh	11/27/2005	3.3-568
133		Miles, Nancy	11/22/2005	3.3-568
133		Munyon, Beverly	1/23/2006	3.3-569
133		Reynolds, Marilyn	12/2/2005	3.3-569
133		Speel, Richard	11/27/2005	3.3-570
133		Teuscher, Marcia	11/27/05	3.3-571
ORAL COMMENTS – 1/17/06 HEARING				
134	Rail Passenger Association of California	Silver, Richard	1/17/2006	3.3-745
135	Marin United Tax Payers	Crane, Basia	1/17/2006	3.3-745
136	Cost2	Brown, Dennis	1/17/2006	3.3-746
137	Santa Rosa Chamber	Abbasi, Mousa	1/17/2006	3.3-747
138	Friends of SMART	Birdlebough, Steve	1/17/2006	3.3-747
139	Sonoma County Bicycle Coalition	Culver, Christine	1/17/2006	3.3-748
140	League of Women Voters	Cary, Corol Ann	1/17/2006	3.3-748
141	Transportation Alliance	Caston, Nick	1/17/2006	3.3-749
142	Petaluma Chamber	Wick, J.T.	1/17/2006	3.3-750
143	Foss Creek Restoration	Iverson, Jon	1/17/2006	3.3-750
144	Sonoma State University	Grogan, Joel	1/17/2006	3.3-750
145		Tscherneff, Peter	1/17/2006	3.3-750
146		Levin, Fred	1/17/2006	3.3-751
147		Atkin, Jack	1/17/2006	3.3-752
148		Burroughs, Jack	1/17/2006	3.3-753
149		Graham, Laura	1/17/2006	3.3-753
150		Linch, Don	1/17/2006	3.3-754

Comment Letter No.	Agency/Organization	Name & Title	Date of Comment	Page No.
ORAL COMMENTS – 1/17/06 HEARING, *continued*				
151		Swerengen, Jack	1/17/2006	3.3-755
152		Canavan, Sue	1/17/2006	3.3-755
153		Sandler, Mike	1/17/2006	3.3-756
154		Ronchelli, Bill	1/17/2006	3.3-757
155		Klein, Jason	1/17/2006	3.3-757
156		Stull-Otto, Jessica	1/17/2006	3.3-759
157		Zirgenhagen, David	1/17/2006	3.3-759
158	Transbay Transit Riders	DeWitt, Duane	1/17/2006	3.3-760
159		Schubert, John	1/17/2006	3.3-761
160		Murphy, Christopher	1/17/2006	3.3-762
161	Sonoma Conservation Action	Kortum, Bill	1/17/2006	3.3-762
ORAL COMMENTS – 1/21/06 HEARING				
162	City of Larkspur	Chu, Larry	1/21/2006	3.3-765
163	North Bay Council	Montoya, Dawn	1/21/2006	3.3-767
164	Sierra Club	Bennett, Gordon	1/21/2006	3.3-767
165	Marin County Bike Coalition	Anderson, Eric	1/21/2006	3.3-769
166	Trio Now	Hoover, Carol	1/21/2006	3.3-770
167		Crane, Basia	1/21/2006	3.3-771
168	Lincoln-San Rafael Hill Neighborhood	Lilienthal-Murphy, Nina	1/21/2006	3.3-772
169	Trains & Pathways in Marin	Nichol, Allan	1/21/2006	3.3-775
170	Threshold Environmental Center	Diamante, John	1/21/2006	3.3-775
171		Gambill, Lionel	1/21/2006	3.3-776
172	Gerstle Park	Cavasian, Tymber	1/21/2006	3.3-777
173	MCET	Arnold, Mike	1/21/2006	3.3-780
174	Sonoma County Conservation Action	Bill KortUm	1/21/2006	3.3-783
175	Marin Conservation League	Haehl, Jana	1/21/2006	3.3-774
176	Sonoma County Taxpayers Association	Levin, Fred	1/21/2006	3.3-774
177	Novato Chamber of Commerce	Peters, Jerry	1/21/2006	3.3-775
178	League of Women Voters	Beitiel, Sue – speaking for Perry Newman	1/21/2006	3.3-775
179	Friends of SMART	Birdlebough, Steve	1/21/2006	3.3-776
180	Transit Rider	DeWitt, Duane	1/21/2006	3.3-776
181	Mahone Creek Flood Group in San Rafael	Nardo, Mary Ann	1/21/2006	3.3-787
182	Marin County Committee on Disabilities	Yates, Craig Thomas	1/21/2006	3.3-788
183	TRANSDEF	Schonbrunn, David	1/21/2006	3.3-789
184	Transportation Alliance	Grubb, John	1/21/2006	3.3-790
185	Marin Audubon Society	Salzman, Barbara	1/21/2006	3.3-790
186	Transportation Alternatives for Marin	Seidler, Patrick	1/21/2006	3.3-791
187	Marin United Taxpayers Association	Ford, Gary	1/21/2006	3.3-792
188	San Juan Noise Abatement Committee	Murphy, Patrick	1/21/2006	3.3-795
189	Friends of SMART	Albright, Gary	1/21/2006	3.3-796
190		Adams, Susan	1/21/2006	3.3-796
191		Schmidt, Jackie	1/21/2006	3.3-796
192		Roberts, Roger	1/21/2006	3.3-797
193		Bajema, Bruce	1/21/2006	3.3-797

Comment Letter No.	Agency / Organization	Name & Title	Date of Comment	Page No.
ORAL COMMENTS – 1/21/06 HEARING, *continued*				
194		Narath, Tanya	1/21/2006	3.3-797
195		Palmer, Peter	1/21/2006	3.3-798
196		Kalins, Wendi	1/21/2006	3.3-798
197		Baird, Mariah	1/21/2006	3.3-798
198		Richards, Willard	1/21/2006	3.3-799
199		Nuyens, Louis	1/21/2006	3.3-799
200		Thomas, Ann	1/21/2006	3.3-800
201		Laferty, Ellen	1/21/2006	3.3-801
202		O'Reilly, Lilly	1/21/2006	3.3-801
203		Lemon, Bob	1/21/2006	3.3-801
204		Stomp, Susan, on behalf of Joy Dahlgren	1/21/2006	3.3-802
205		Brown, Dennis	1/21/2006	3.3-802
206		Neufeld, Joe	1/21/2006	3.3-803
207		Scotch, Alan	1/21/2006	3.3-803
208		Wilhelm, Don	1/21/2006	3.3-803
209		Cole, Kingston	1/21/2006	3.3-803
210		Bull, Priscilla	1/21/2006	3.3-803
211		Buckley, Barry	1/21/2006	3.3-805
212		McCarty, Georgiana	1/21/2006	3.3-805
213		Strakoscott	1/21/2006	3.3-805
214		Taylor, Valerie	1/21/2006	3.3-806
215		Schmidt, Jim	1/21/2006	3.3-806
216		Gundersheim, Jack	1/21/2006	3.3-807
217		Clark, Cynthia	1/21/2006	3.3-807
218		Andrew, Gregory	1/21/2006	3.3-808