Comments On DRFEIR, San Fernando Valley East-West Transit Corridor **Page 72**
November 22, 2004

such as: park-and-ride lots, transit vehicles with multiple doors for passenger loading, bicycle parking, and designated kiss-and-ride drop off locations. In comparison, RB stops do not include any of these amenities."

273. As to the last – "RB stops do not include any of these amenities" – this is, at least to some extent, a MTA design decision. I have previously commented – page 8-3-16 – that several of the proposed Orange Line Park & Ride lots could very easily, and effectively, be utilized for Rapid Bus lines, this being almost entirely a matter of MTA making a decision to take that action – in fact, MTA has already done a great deal of work to construct many of these Park & Ride lots, which would appear to have very little purpose if the decision was made to go with Rapid Bus. Kiss-and-ride is often not difficult to provide for, particularly at Park & Ride lots, and, in at least certain Rapid Bus locations, some of the other amenities, such as bicycle parking, may be possible (certainly bicycle parking would be simple at Park & Ride lots).

274. Why cannot at least some Rapid Bus stations have some of the amenities that are above allocated solely to "full" BRT? Has MTA considered such improvements?

275. Page 8-4.1-42 *et seq.*, Los Angeles General Plan Framework (All Alternatives) – This section discusses the *Framework* and, in particular, how the development of transit corridors, "Targeted growth areas," etc. ties together transportation and land use planning.

276. These urban planning concepts and elements – which appear to fit into what is often referred to as "smart growth" and/or "new urbanism" – are currently some of the most hotly debated topic in the field. While I will not attempt to resolve the associated issues in this comment letter, I will point out that Portland, the city and urbanized area that has been the national "leader" in implementation of such things, has virtually the absolute worst trend record among metropolitan areas of its size in traffic congestion trend, as measured by the Texas Transportation Institute in their regular periodic reports. It also has close to the least affordable housing in the nation.

277. In the military, there is a very-well know old saying, "No plan survives first contact with the enemy." In urban planning, there is a variation on this, "No city plan survives first contact with a developer or a neighborhood group."

278. Such plans are subject to change and such change is generally frequent and continual. Even assuming that the general underlying elements of the *Framework* are retained, change of specific corridors is certainly a possibility. If other transit modes and options provide superior transportation, then such change is not only possible, but beneficial. If it is transportation that drives development, and vice versa, then the best possible transportation solutions should be provided for in such plans, not plans developed that force suboptimal transportation choices.

20-171

20-172

Some park-and-ride lots on the Full BRT Alternative could be utilized by some of the RB alternatives. However, the alternatives were not defined with this parking as it currently is not MTA's policy to include major acquisition of land (for park-and-ride lots), and construction improvements associated with these alternatives.

Comment 20-172

It is noted that the commenter does not agree with the land use concepts in the City's *Framework* and the planning process behind it. This plan was not prepared by MTA. The *Framework* is a part of the City's General Plan and had extensive community input. The transportation section was later updated by the City's Transportation Element, which included additional public input. As mentioned on page RS-16, Table RS-2: Summary of Operation Impacts, "Amending these numerous plans would severely alter their objectives without any substitute objective that will curtail widespread growth."

In reference to the contention that the Orange Line could be replaced with another corridor or transit option, MTA believes that the type of high-capacity transit service provided by the BRT best meets the goals of the *Framework*.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor **Page 73**
November 22, 2004

279. I expect MTA, of course, to argue that the Orange Line *is* the best possible transportation solution in this corridor. For all the reasons I discuss in this comment letter, I respectfully disagree with that conclusion. 20-172

280. Page 8-4.1-45, Transportation Element Policies – This section includes two "bullet" points from the *Transportation Element*: 20-173

- "Establish a high-capacity transit priority corridor prior to 2010 in the San Fernando Valley between North Hollywood and Warner Center." – As I point out in my comments on page RS-16, the ridership on Victory Boulevard, including both Rapid Bus and local service, exceeds the ridership projection for the Orange Line Upper Bound (even after all the various things detailed in this comment letter that MTA has done to make the Orange Line unfairly look better and the Victory Rapid Bus service perform inferiorly, MTA's own Transportation Planning Model runs show Victory victorious). Therefore, by definition, if the Orange Line Upper Bound is a "high-capacity transit priority corridor," and if Rapid Bus service on Victory receives traffic signal priority, then Victory with such bus service must be a "high-capacity transit priority corridor."
- "Establish the Burbank/Chandler corridor as a priority corridor for Alternative Rail Technology or a busway utilizing publicly owned railway right-of-way." – Contained in a plan of a public body, such a statement can only have one of two implications: (a) Approval of such a project is dependent upon a fair and impartial planning and evaluation that shows that such a transportation plan element is the best, or at least a good, alternative, which is a rebuttable contention – which we are now engaged in, or (b) Such a project will be approved without regard to its affectivity, productivity, cost-effectiveness, public input, and other factors, which is improper and deplorable public decision making practice and should not be allowed.

281. In short, if there is a plan, and then there is a concept that proves to provide superior results than could be achieved by retaining consistency with the plan, the proper action would appear to be to consider changes to the plan.

282. These same comments apply to sections following, including Table 8-4.1-4: Consistency of the Rapid Bus Alternatives with SCAG Regional Comprehensive Plan and Guide and Table 8-4.1-5: City of Los Angeles Community and Specific Plan Policy Impact Analysis.

283. Does MTA concur with the points I have made above? If not, why not?

284. Page 8-4.3-12, Table 8-4.3-2: Population and Employment Projections (1990-2020) – As has been discussed in multiple comments above, this data appears to be based on the same old, too-high projections and MTA should conform to the most recent best projections. 20-174

Comment 20-173

Please see response to comments 20-136 and 20-137 regarding ridership of Full BRT and Rapid Bus alternatives.

The planning process with which the City of Los Angeles developed its recommendations for transportation improvements included extensive public input. MTA does not direct the City's plans but participates in their preparation as an outside agency. MTA concurs that transportation and land use planning must be considered together if the serious mobility and growth issues facing the city are to be addressed. The *Framework* and the

The City's Transportation Element recognizes these important connections.

Comment 20-174

The information in this table was used to maintain a consistent approach in the Revised FEIR to that used in the Final EIR. Utilizing 2000 Census data would not allow for reliably consistent conclusions between the documents.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor **Page 74**
November 22, 2004

285. Page 8-4.8-2, Tables 8-4.8-1: Annual Direct Energy Consumption – Year 2020, Table 8-4.8-2: Changes in VMT of Each Alternative Compared to No Build Alternative – The comments here also apply to the four tables on the following two pages.

286. There appears to be some inconsistencies between data on these tables and information provided elsewhere in the DRFEIR and there are some other data that requires explanation.

20-175

287. First, to make sure that I have a proper understanding of these tables, a few questions. There are four vehicle classes shown in these tables, "Passenger Vehicle," CNG Bus," "Light or Heavy Rail," and "Commuter Rail." Am I correctly stating the following?

- In 2020, all MTA buses will be CNG (compressed natural gas)-powered?
- There are no differences in the types of vehicles and other characteristics important to these tables between Alternatives – for example, the energy usage profile of the passenger vehicles in the "No Build" Alternative is identical to that for the "Full BRT" Alternative?

20-176

288. In Table 8-4.8-1, the "CNG Bus" energy usage for "Full BRT" is higher than that of the "No Build," which is as expected. The energy usage for each of the three Rapid Bus Alternatives is higher than that of the No Build, but lower than that of the "Full BRT," and is closer to that of the "Full BRT" than that of the "No Build." This would generally be understood to mean that the buses in the three Rapid Bus Alternatives were traveling fewer miles than the buses in the "Full BRT" Alternative. The data presented in Table 8-4.8.2: Change in VMT[34] of Each Alternatives Compared to No Build Alternative) appears to be consistent with the data in the previous table, with the "Full BRT" showing .94% more CNG VMT than the "No Build," while the three Rapid Buses Alternatives come in at .66%, .67%, and .74% more VMT than the "No Build."

20-177

289. I now refer you to page 8-6-6, Table 8-6.3: Incremental Annual Operating and Maintenance Costs (2001 dollars, in millions). Note here that, generally speaking, the added operating costs for the three Rapid Bus Alternatives are somewhat higher than that of BRT, which implies that the Rapid Bus Alternatives have, generally, more CNG Bus VMT than the BRT Alternative.

290. Since the operating cost increases for the three Rapid Bus Alternatives are presented as ranges of costs, vs. the same identical point projections for both the BRT Upper and Lower Bound, it is useful to be more specific. The Costs Over No Build for these are:

RB-3:	$21.2-23.1
RB-5:	$22.2-24.2

[34] Vehicle Miles Traveled.

Comment 20-175

It is correct to state that in 2020, all MTA buses will be CNG-powered be powered by CNG or other appropriate, available, environmentally-sound technology, and that there are no differences in the types of vehicles and other characteristics important to the tables between alternatives. It is also correct to assume that energy consumption factors for passenger vehicles are not affected by the transit alternatives under consideration.

Comment 20-176

It is correct to state that CNG buses for the three RB alternatives would result in less VMT than the Full BRT. The statement regarding the change in CNG bus VMT for each alternative compared to the "No Build" is correct and is presented in Table 8-4.8-2.

Comment 20-177

Operating and maintenance (O&M) costs are determined through a number of inputs, not just revenue vehicle miles traveled (VMT). Inputs are described in Table 6-2 of the February 2002 FEIR. VMT used in the O&M cost model was generated independently from what is reported in Table 8-4.8-1. The VMT inputs for the rapid bus alternatives were provided to the commenter as a summary of backup statistics for the O&M cost model. The annual VMT input for BRT was 97.45 million and 97.48 million for the lower and upper bound BRT respectively, which is lower than the rapid bus alternatives.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 75
November 22, 2004

RB-Network:	$30.6-34.4
BRT Lower Bound:	$22.5
BRT Upper Bound:	$22.5

20-177

291. The RB-3 range sits on top of the BRT point projection, with the BRT projection closer to the "high" end. The RB-5 range also sits on top of the BRT point projection, but the BRT projection is closer to the "low" end of the range. The RB-Network range is higher than the BRT point projection.

292. How can the Rapid Bus Alternatives operating costs be generally higher than those of the BRT, but the Full BRT operate more VMT of bus service?

20-178

293. In Table 8-6.3, the operating cost increment for the BRT Upper and Lower Bounds are identical, at $22.5 million Cost Over No Build, but in Table 8-4.8-1, there are different values for CNG Bus energy consumption. How can the operating cost for BRT Upper and Lower Bound be identical, which implies an identical CNG Bus VMT, but the energy usage be different? There is only a point projection for CNG Bus in table 8-4.8.2, which is inconsistent with the range of energy consumption in Table 8-4.8.1. Is there an explanation for this difference, or is it an error of some type?

20-179

20-180

294. If these internally inconsistent representations are due to inconsistencies in the methodologies utilized to produce one or both of these sets of tables, or error or some type, please disclose the problem(s) and correct them.

20-181

295. Table 8-6.3 shows a range of cost increments for the three BRT, but there are point projections for energy use in Table 8-4.8.1 and VMT in Table 8-4.8.2. Please correct this inconsistence and provide the full and correct data. Tables 8-4.8-1 and 8-4.8-2 both show that "Light or Heavy Rail" and "Commuter Rail" energy usage and VMT varying significantly between Alternatives with a number of evident inconsistencies. In general, one would assume that energy usage is closely correlated to VMT, but this does not appear to be the case from the data presented. For example, Table 8-4.8-1 shows that Commuter Rail energy usage for Full BRT going up .48%, while Table 8-4.8-2, we see VMT going up 1.2%, over twice as much.

20-182

Please explain why the rates of change in energy usage and VMT in these two tables vary so widely.

20-183

296. Finally, regarding Table 8-4.8-2, what are the actual CNG Bus 2020 VMT data for the various Alternatives?

20-184

297. Page 8-4.13-1, 8-4.13 SAFETY AND SECURITY – The following summarizes the conditions, results, and situation at the Miami-Dade Transit South Miami Busway. This Busway was the first such Busway in the U.S. and, at the time of the FEIR, was the only busway of this

Comment 20-178

When estimating regional energy consumption, the MTA transportation demand model supplies the regional VMT totals. When estimating MTA's O&M costs, VMT is one of numerous inputs for MTA's O&M cost model. In estimating MTA O&M costs, MTA's total VMT is provided through the transportation demand model. MTA's VMT was higher for the upper-bound BRT alternative as compared to the lower-bound BRT alternative; other measures used in the calculation of MTA's O&M cost also had changes which overall resulted in minor differences in the calculated MTA O&M cost for the lower-bound and upper-bound BRT alternatives. For LADOT's O&M costs, vehicle hours are used rather than vehicle miles. Note that while there is no net difference in the total O&M costs for the BRT lower and upper bound estimates, there are slight differences in the calculated MTA O&M cost and LADOT O&M cost.

Comment 20-179

See response to Comment 20-182.

Comment 20-180

See response to Comment 20-182.

Comment 20-181
Please see Response 20-178.

Comment 20-182
Table 8-4.8-2 would be revised to indicate the correct change in VMT per year for the Full BRT when compared to the No Build. The revised table is shown on the following page.

Comment 20-183
The CNG bus 2020 VMT data for the various alternatives are presented in Table 8-4.8-1. As shown, No Build would result in approximately 235,507,550 CNG bus VMT, the Full BRT would result in CNG bus VMT that range from 237,730,082 to 237,789841, RB-3 would result in approximately 237,066,410 CNG bus VMT, RB-5 would result in approximately 237,089,539 CNG bus VMT, and RB-Network would result in approximately 237,258,276 bus VMT.

Comment 20-184
The design of the Orange Line has incorporated additional safety features not present in the Miami system. Please refer to response to comment C9-66 in the Draft Final EIS/EIR. There are 34 crossing along the Orange Line alternative and at 11 of the stations are located adjacent to the crossings. Therefore at 11 of the 34 crossings, buses will be accelerating from a stop at a station platform or will be decelerating to stop at a station, and will therefore be traveling at well below the 45 MPH speed referenced in the description of the Miami system.

Table 4.8-2: Change in VMT of Each Alternative Compared to No Build Alternative

Vehicle Class	Change in VMT/Year							
	Full BRT vs. No Build		RB-3 vs. No Build		RB-5 vs. No Build		RB-Network vs. No Build	
	Change in VMT/Year	Percent Change	Change in VMT/Year	Percent Change	Change in VMT/Year	Percent Change	Change in VMT/Year	Percent Change
Passenger Vehicle	-34,221,628 to -25,560,321	-0.02%	-22,628,310	-0.02%	-20,507,700	-0.01%	-23,075,691	-0.02%
CNG Bus	2,222,532 to 2,382,291	0.94% to 0.97%	1,558,859	0.66%	1,581,989	0.67%	1,750,726	0.74%
Light or Heavy Rail	142,172	1.32%	70,079	0.70%	13,725	0.14%	17,390	0.17%
Commuter Rail	58,512	0.48%	-13,697	-0.28%	-15,981	-0.33%	2,444	-0.05%
VMT = vehicle miles traveled.								

Source: Terry A. Hayes Associates, 2000; see FTA New Start Worksheets.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 76
November 22, 2004

type operational in the U.S. More important, it is the *only* such facility that is remotely close to the proposed Orange Line BRT, with the following shared features:

A. Busway located on a former rail right-of-way
B. Numerous at-grade crossings where there is the danger of Busway buses and street traffic vehicles colliding
C. Busway buses proceeding through grade crossings at 45 mph

298. The short version of the extensive factual presentation and analysis below is, the MTA claims that the MDT South Miami Busway, and its limited traffic signal priority system, demonstrates that the Orange Line, with a similar limited signal priority system, designed and operated with Busway buses going through grade crossings at 45 mph (the same speed planned for MTA buses at most Orange Line grade crossings) will be a very safe transportation guideway. However, Miami-Dade Transit, which operates the South Miami Busway, turned off its limited signal priority system – for the second time – in 1999 *and it has not been turned on since and there are no plans to turn it back on.* Since 1999, every South Miami Busway approaches each intersection at no more than 15 mph, comes to a complete stop, even if it has a "green signal," checks traffic in all directions, and then proceeds through the intersection at no more than 15 mph. Although MDT had hired safety consultants to advise them on how to get the limited signal priority back operational, and MDT has implemented almost all of their recommendations on the original Busway, and though the recommended safety improvements *were designed for a maximum Busway bus speed of 15 mph through the intersections, not the original 45 mph*, the limited signal priority system is still off. Finally, in two new extensions of the South Miami Busway that will likely open for revenue service within weeks, even though every one of the safety consultants recommendations was incorporated into its design and construction, *these extensions will open with the Busway buses stopping at each and every grade crossing.* There is absolutely *no* schedule for every operating the South Miami Busway through grade crossings without stopping for every one.

299. Therefore, MTA says that the South Miami Busway experiences with limited traffic signal priority allowing buses to speed through intersections without stopping at 45 mph proves that the Orange Line will be a safe guideway transit system doing exactly the same thing.

300. But the people who operate the South Miami Busway shut down the limited traffic signal priority system as an extreme safety hazard in 1999, have never turned it back on, and have no current plans to ever do so.

301. And the Orange Line has many very significant safety concerns that are far over and above anything that has ever been seen in Miami.

DATA SOURCES

20-184

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 77
November 22, 2004

301. The information utilized to prepare the following portions of this paper was obtained over a period of approximately two-and-one-half years from five sources: (1) The Miami-Dade Transit (MDT) web site, http://www.co.miami-dade.fl.us/transit, (2) Bob Pearsall, Manager of Service Planning, MDT (305/637-3809), (3) DMJM-Harris and R. Aleman & Associates, Inc., *South Miami-Dade Busway Safety Study* (Final Report), August 13, 2001 (cited as "*DMJM*" hereinafter), (4) The MDT Office of Safety and Security, specifically Lyle Mannion, MDT Safety Department, particularly a detailed spreadsheet log of collisions prepared by him, and Steve Chayt, System Safety Supervisor (305/375-4240), and (5) The *Miami Herald*, the primarily English-language daily newspaper in Miami-Dade County.

GENERAL DESCRIPTION OF THE SOUTH MIAMI-DADE BUSWAY

302. Miami-Dade Transit is the transit planning, construction, and operating agency for Miami-Dade County, Florida. MDT is a County Agency.

303. The South Miami-Dade Busway is located in the Southern part of the greater Miami metropolitan area, beginning approximately ten miles South and West of the Miami CBD. The Northern terminus of the Busway is located at Dadeland South Metrorail station, the Southern terminus of the heavy rail system that MDT built and operates. From Dadeland South, Metrorail runs East-Northeast to the Miami CBD, then generally Northwest to Hialeah. The South Miami-Dade Busway integrates with Metrorail, and Metromover, the Miami CBD automated guideway "peoplemover," to provide guideway transit to and from the CBD, and beyond, from the Southern portion of the County along the Atlantic Ocean.

304. The current 8.2 mile Busway, which opened for passenger service February 2, 1997, will be the first phase of a planned 30+-mile Busway. Its capital cost (not including vehicles) was $21 million. The next two extensions, totaling 11.48 miles, will run from the current Busway Southern Terminus near 112th Avenue to Florida City and are both scheduled to begin revenue service early in calendar year 2005. It is being built in two segments, the 5.0 mile North Segment and the 6.48 mile South Segment, at a projected total cost of $85.5 million for right-of-way acquisition and construction. The third phase, planned to be approximately 11 miles long, is currently being prepared for solicitation of construction bids.

305. The existing Busway was constructed largely in a former railroad right-of-way of the Florida East Coast Railway, as will be much of the extension. The first segment alignment is mostly parallel and next to U.S. 1 (South Dixie Highway), the major arterial along this corridor, although one portion of the alignment is physically separated from U.S.1 by some hundreds of feet. U.S. 1 is a heavily traveled, six-lane arterial, which operates with posted speed limits of 40 to 45 mph with many signalized intersections, but with relatively few "minor" streets crossing it.
306. Prior to the construction of the Busway's first segment, MDT operated bus service on U.S.1 itself, but most of the service formerly operated on U.S.1 has now been shifted to the Busway.

20-184

307. The Busway is essentially a dedicated two-lane roadway with "off-line" stations which allows buses to bypass other buses stopped to pick up and discharge passengers. There are fifteen stations in each direction on the Busway proper, not including the Dadeland South Metrorail bus stop and bus stops made by Busway route buses after they depart the Busway proper.

308. The Busway first segment was constructed by and is maintained by the Florida Department of Transportation (F-DOT). Besides articulated (60-foot) buses, regular-sized (40-foot) buses, and mini-buses, all operated by MDT, the Busway is also utilized by police, fire, and emergency medical vehicles.

BUSWAY BUS ROUTES

309. MDT operates eight bus lines on the first segment of the Busway (not including bus lines that cross, but do not actually travel along, the Busway). Many of these bus lines do not utilize the full Busway, branching off at various midway points to serve communities along the Busway alignment.

310. The current maximum service level is 21 buses per hour, peak hour, peak direction.

311. MDT generally utilizes 60- and 40-foot buses during the peak morning and afternoon periods, switching to smaller mini-buses during mid-day and evening periods on some routes.

OPERATING TIMES AND SPEEDS

312. The "Busway Local" route (which stops at all Busway stops and, therefore, is comparable in operating methodology with the Orange Line) is scheduled for 29 minutes travel time from Dadeland South to the Cutler Ridge Terminal. Adding approximately one mile from the South end of the Busway to Cutler Ridge Terminal (approximately the same distance as from the end of the Orange Line Busway proper to the Warner Center Transit Hub in the shorter direction of travel) to the 8.2 miles of the Busway proper produces a travel distance of approximately 9.2 miles, which produces a travel speed, including station and traffic stops, of approximately 19 mph. However, under the current operating conditions, as described below, the scheduled run time of 29 minutes is not being met, which will require adding run time. This, in turn, may require adding one or more buses to be able to maintain schedules[35].

[35] As BRT and other operating speed improvements are implemented, the faster operating speeds allow specific headways – such as five or ten minutes between buses at peak – to be operated with fewer buses and operators. Being able to get more "work," in the form of round trips out of each bus and bus operators, is one of the great advantages of BRT and Rapid Bus.

However, in any situation where the actual operating time turns out to be longer than what was anticipated, extra vehicles and vehicle operators may be required to meet service schedules.

20-184

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 79
November 22, 2004

313. At the present time, it is questionable if there is an actual bus travel time savings for Busway buses over the prior operation on U.S. 1 – in fact, by some measures, it now appears that the scheduled "Busway" buses are *slower* than the buses that used to operate on U.S. 1. The higher number of passengers has led to more daily bus runs than existed prior to the Busway, thus reducing headways between bus runs, and wait times, and thus producing a "total" travel time savings for passengers in this regard, even if the bus travel speed have not significantly improved over pre-Busway days.

RIDERSHIP

314. The Busway is credited with significant increases in ridership in this corridor, an increase of approximately 71% on weekdays and 130% on weekends over pre-Busway levels, through last year. The weekday ridership change was from approximately 7,000 daily boardings to 12,000. However, after the buses were required to stop at all grade crossings (see below), the loss of travel speed evidently led a loss of the "full speed" ridership of approximately 5%.

TRAFFIC SIGNALS AND PROBLEMS

315. The original concept of Busway operations was buses operating at relatively high speeds on the dedicated Busway without having to slow or stop at most at-grade crossings, allowing buses to proceed through the intersections at the maximum guideway operating speed of 45 mph. The system, as installed for the first Busway segment, utilized "advance loop" detection of buses on the guideway to trigger "green" lights for approaching buses. The Busway buses were not given any traffic signal preemption, priority, or preference, but because the Busway largely parallels U.S. 1, and the traffic signal progression along U.S. 1 is highly structured to favor U.S. 1 traffic, as opposed to crossing traffic, Busway buses were receiving "green" signals at grade crossings a high portion of the time. When Busway intersection traffic signals were not triggered for Busway buses, they "rested in red" for the Busway. If a Busway bus approached a grade crossing intersection during a "red" phase for U.S. 1, the bus would NOT receive a "green," but would be stopped at the signal to wait for the normal signal cycle to work to a "green" for it.

316. There are nineteen grade crossings on the Busway proper, each at a signalized intersection, with pedestrian crosswalks. Of these nineteen intersections, eleven (SW 104th Street, SW 112th Street, SW 124th Street, SW 128th Street, SW 132th Street, SW 136th Street, SW 144th Street, SW 152th Street, SW 160th Street, Caribbean Boulevard, and SW 112th Avenue) are immediately adjacent to U.S.1 and the signals for the Busway and U.S. 1 are controlled as a single intersection. Six intersections (SW 168th Street, Banyon Street, Hibiscus Street, SW 184th Street, SW 186th Street, and Marlin Road) are fairly close to, but physically separated from U.S. 1 by sufficient distance that the signals on the Busway and U.S. 1 are operated separately (these will be referred to as "isolated" intersections). The other two intersections (SW 98th Street and

20-184

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 80
November 22, 2004

Datran Boulevard) are special cases and the coordination of signaling for the Busway and U.S.1 is not a consideration.

317. Many of the problems are directly related to the relative closeness of the Busway to U.S. 1. The traffic signals for the six "isolated" intersections that gave motorists red lights so that Busway buses could proceed through intersections at speed were not originally synchronized with the traffic signals a short distance away regulating the U.S. 1 intersection. Many drivers evidently either did not notice the Busway signal, ignored the Busway signal giving them a red light and assumed that the U.S. 1 signal displaying green was operative for them, deliberately ran the Busway red signal, and/or evidently made other driving and/or judgment errors.

318. For the Busway intersections located adjacent to U.S. 1, some auto and truck drivers ignored "no turn on red" signs on the traffic signals and entered the disallowed area. In addition to incidents involving Busway buses and other allowed Busway vehicles, the Busway signals, and lack of coordination with other traffic signals or confusion over requirements, are also blamed for in increase in auto-vs.-auto collisions along the Busway. A particular problem has been the combination of "right-turn-on-red" movements off of U.S.1 across the Busway and the diagonal layout of the Busway relative to the crossing arterials. In many cases, drivers made right turns on red lights at relatively high speeds, not noticing or ignoring the signage and signaling, directly into the paths of Busway buses. Other right turning drivers noted the requirement to stop very late, either proceeding into a leading vehicle that had stopped, or braking at a very high rate, leading to the following vehicle "rear-ending" them.

319. As a result of safety concerns, many changes have been imposed on Busway operations. All advanced loop roadway sensors that triggered traffic signals to give buses priority have been turned off since approximately November 1999. This is the second "signals off" period, the first occurring from July 1997, shortly after the Busway was first opened and safety problems beginning shortly thereafter, to February 1999 (with some of the intersections "turned on" earlier). Therefore, since the Busway first segment opened in February 1997, the traffic signal priority system has only been fully operational for a total of approximately fifteen months.

320. The statistics for the period up to the advanced loop sensors being turned off in November 1999 are (source: Lyle Mannion Excel spreadsheet):

Advanced Loop Activation Statistics

1. Accidents per day from February 1997 - June 1997 (advance loop on)	0.09333	accidents per day
2. Accidents per day from July 1997 - February 1999 (advance loop off)	0.02759	accidents per day
3. Accidents per day from March 1999 - December 1999 (advance loop on)	0.08824	accidents per day
4. Accidents per day from December 1999 - November 8, 2000 (advance loop off)	0.02564	accidents per day

20-184

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 81
November 22, 2004

321. At the present time, Busway bus drivers are instructed to slow to no more than 15 mph approaching the intersections, then stop at the crossing, even when the bus has a "Green" signal, and proceed through the intersection at no more than 15 mph. Since many of the Busway bus stations are located away from the arterial street grade crossings, this instruction requires buses to slow from 45 mph to a stop, and then accelerate back up to 45 mph.

322. There have also been many changes in traffic signal operation, including coordination of Busway signals with those on U.S. 1, limiting the visibility distance of signals in an attempt to stop driver confusion as to which signal was active for them, signal timing modification, and special warning signs. Special public awareness campaigns and bus operator and emergency vehicle operator training sessions have also been implemented.

323. These changes in Busway bus operating conditions and traffic signals have evidently been successful in greatly reducing safety incidents. However, they have also significantly slowed Busway travel speeds. MDT staff has spent several years working with F-DOT to more-or-less restore the Busway traffic signal preference scheme originally implemented, in a safer manner (as detailed in the DMJM Report), but at a crossing speed for Buses of 15 mph, vice the original 45 mph. Most, but not all, of the detailed changes to "re-energize" the traffic light preference system for the first Busway segment have been approved and implemented.

324. The two segments of the second phase were designed with all the of the "15 mph" safety plans in the DMJM Report, but it is currently programmed to begin service in the same manner as bus operations on the first Busway segment, each bus always stopping at each grade crossing.

325. Confusion regarding Busway operations and traffic signals was also being blamed as a cause for increased congestion on cross-streets, although a countervailing view is that there have been rapid increases in population and roadway traffic in this corridor in recent years. The Busway signals were regarded by many drivers as delaying travel across or on to U.S. 1, which may have led to frustration-driven behavior that compounded safety problems. The deactivation of the Busway bus traffic signal preference and the other signaling changes appears to have reduced both the safety and the congestion complaint problems. Avoiding congestion complaints will be a consideration in reestablishment of Busway bus traffic signal preference in the future.

SAFETY

326. DMJM reports, "A total of 67 crashes involving buses were recorded at the busway intersections during the period February 1997 through November 2000. Forty-nine (73%) of these crashes involved injuries and two crashes resulted in fatalities."

327. Mr. Mannion's spreadsheet shows 68 collisions between February 1997 and November 2000, producing 198 injuries to bus passengers and occupants of other vehicles (151 of which

20-184

were transported to hospitals, the others either treated at the scene or not treated by emergency medical personnel), plus 17 bus operator injuries.

328. The *Miami Herald* (Luisa Yanez, "Busway Safety Measures Ordered Driver Training, Study Promised," November 2, 2000) reported 182 persons injured in 65 collisions on the busway in the 45 months from February 1997 through September 2000, including two fatalities. The *Herald* (Tyler Bridges, *County Settles Busway Claims – Officer's Family to Get $2.3 Million*, November 11, 2000) also reports over $2.4 million paid by the Miami-Dade to settle eight lawsuits filed by people injured in Busway accidents.

(329. Note: Settlement, or trial, of such safety incidents can take up to several years, which makes it unlikely that the reported cost included all death/personal injury and property damage claims, especially since the number of settlements is only a fraction of the number of personal injury safety incidents noted. However, as discussed in the second *Herald* article, there was $2.35 million settlement of the claim for the death of a Metro-Dade Police Officer who perished in the collision of his police patrol vehicle with a MDT bus. This large, expedited claim settlement obviously is the vast majority of the claim settlements paid through the date of the article.

330. Almost all transit safety and risk management professionals believe that many bus passengers and others claiming injuries in such incidents are making claims for non-existent injuries and/or exaggerating the extent of injuries for purposes of public liability/property damage claims and similar improper purposes. While this belief may have significant factual backing in many specific instances, transit agencies historically have found it more practical, and far less risky, to settle many claims with some question of validity.)

331. The collision and injury rates appear to have been reduced significantly over time as MDT and F-DOT have implemented changes in signaling and other Busway/road operating conditions and in vehicle operating methodologies. They decreased very significantly – by two-thirds or more – in the periods following the "turn off" of the Busway bus traffic signal systems, as evidenced by the spreadsheet table above.

332. The following timeline utilizes *Miami Herald* articles to show safety incident rates and significant changes to Busway operations over time (these articles may be found in Exhibit XXVI):

A. 12 collisions through the first four months of operation (Alfonso Chardy, *Complaint Spells Trouble for Busway*, June 9, 1997)

B. 13 collisions and 55 slight personal injuries; Busway buses to stop at intersections along Southern leg of Busway, temporary disconnection of some sensors that trip bus green light signals, modification and synchronization of traffic signals, and more

20-184

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 83
November 22, 2004

visible signage to inform motorists of the Busway (Alfonso, Chardy, *Busway Changes May Reduce Accidents*, June 12, 1997; *Busway Priority Faces Temporary Red Light*, June 14, 1997)

Non-Busway collision rate on adjacent South Dixie Highway and surrounding residential streets increases after Busway opens:

Time Period	Days	Collisions	Collisions/Day
2/1-4/1/96	61	96	1.57
9/1-11/28/96	89	46	.51
11/29/96-2/2/97	66	71	1.08
Total Pre-Busway	216	213	.99
Post-Busway			
2/3-4/9/97	66	121	1.83

The Busway is also blamed for more congestion on U.S. 1 by a Florida Highway Patrol Spokesman, leading to "more stopping and going and more rear-end collisions and reckless driving."

The local F-DOT Department Chief, however, stated that the crashes were due to a general increase in traffic.

The *Herald* story was occasioned by "... several South Dade County commuters who complained of more accidents since the busway opened." (Alfonso Chardy, *Crashes Escalate Near the Busway – Route is Now More Congested*, September 22, 1997)

C. Police Officer killed in Busway bus-vs.-patrol car collision (Arnold Markowitz, *Police Officer, 27, Dies After South Dade Car-Bus Crash*, December 9, 1999)

D. Semi-Trailer Truck-vs.-bus-vs.-auto collision injures 18 (Draeger Martinez, *3-Vehicle Crash Injures 18 People*, February 29, 2000)

E. Two Metro-Dade Police cars collide on Busway while responding to emergency call, injuring three officers (Draeger Martinez, *Police Cars Collide, Three Officers Hurt*, May 26, 2000)

F. Busway bus-vs.-auto collision results in fatality and critical injury; 182 personal injuries in 64 collisions from Busway opening February 1997 through September

20-184

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor **Page 84**
November 22, 2004

2000 (Ana Acle and Tyler Bridges, *Man Dies in Crash*, November 1, 2000). Collision rate by year:

1997 (February-December)	16
1998	12
1999	29
2000 (January-September)	8
Total	65

"Transportation engineers tinkered with the traffic signals in 1998 after a series of accidents, and officials insist that it reduced the number of accidents."

G. Changes in Busway procedures (Luisa Yanez, *Busway Safety Measures Ordered Driver Training, Study Promised*, November 2, 2000):

1. Hire outside consultant (DMJM) to analyze causes of all accidents on Busway since opening
2. Instruct bus operators to slow to 15 mph at all intersections (This was in error – at this time, all buses were stopping at all intersections)
3. New training for all bus operators
4. Public awareness campaign

The DMJM report included the following recommendations:

1. (Short term crash countermeasures recommended for all busway intersections) – "Design advanced loop operation for bus approach speed of 15 m.p.h. This proposal would involve implementing changes to the operation of the advanced loops which would require buses to reduce their approach speeds to 15 m.p.h. on the approaches to the intersection. Supplemental signs, markings and driver training are recommended for the effective implementation of this countermeasure. This measure is expected to reduce both the frequency and severity of potential crashes at the intersections."

2. (Long Term Crash Countermeasures) "Long term crash countermeasures are recommended for consideration after installation and evaluation of the short term and medium term measures. Crash countermeasures recommended for long term consideration include the following:

   a. Installation of flashing signals, similar as used for railroad crossings.
   b. Installation of automatic gates, similar as used for railroad crossings.
   c. Installation of flashing signals, similar as used for moveable bridges.

20-184

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 85
November 22, 2004

d. Installation of grade separated intersections." 20-184

THE INTERCONNECTIVITY OF THE QUEST FOR SPEED AND SAFETY

20-185

333. In its Draft Environmental Impact Statement/Draft Environmental Impact Report, *San Fernando Valley East-West Transit Corridor*, May 2001 (DEIS/DEIR), MTA claimed that the bus travel time from North Hollywood (specifically, the North Hollywood Red Line Station) to Warner Center (specifically, the proposed Transit Center located on Owensmouth Avenue between Erwin Street and Oxnard Street[36]) would be 28.8 minutes[37].

334. In their comments on the DEIS/DEIR, several interested parties[38] made very strong objections to this run time projection on two grounds:

A. It would be absolutely impossible for MTA to achieve this travel time for a large number of specified reasons

B. Bus travel along this corridor would be extremely unsafe at the speeds MTA had specified, and under the conditions that MTA had specified, in the DEIS/DEIR.

20-186

335. These two issues – speed and safety – are closely integrated. In order to justify the BRT project, MTA must show that it will attract large numbers of new riders – which, in turn, requires great speed and travel time advantages over any other reasonable transit option. However, the technologies that MTA is proposing to gain this speed appear to lead to questionable public safety – and the sole example of the use of these technologies in North America, *the project that MTA itself cited to show the safety of these technologies* – has turned them off due to its high rate of collisions, injuries, and fatalities.

20-187

336. Without the use of these technologies – actually, even *with* most of them – the travel time saving of BRT is minimal, or non-existent, as discussed in detail in this comment letter, thereby questioning the utility of this project. However, even without their use, even with a significantly slower BRT, there are *still* very major concerns about safety on the BRT.

20-188

337. In the FEIS, MTA has admitted that the 28.8 minute travel time promulgated in the DEIS/DEIR is questionable, and it presented the bus run time in the form of a "Lower Bound" of

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[36] DEIS/DEIR, Volume 1, *Figure S-7: Warner Center Transit Hub Potential Circulation (On-Street)*, page S-19.

[37] DEIS/DEIR, *Table S-4: Comparison of Alternatives*, page S-44.

[38] See FEIR, Volume 2, particularly: Rabbi Aron B. Tendler, pp. 7-128/170; Jan Chatten-Brown, Esq. on behalf of the Concerned Citizens Transit Coalition (CCTC), pp. 7-177/192; and Thomas A. Rubin/Richard K. Stone, pp. 7-323/342.

Comment 20-185

This comment references earlier comments on the Final EIR and is acknowledged for the record.

Comment 20-186

Please refer to Response 20-35.

Comment 20-187

The additional transit riders attracted to the BRT with the upper bound (40.0 minute) travel time, which assumes a much lower level of transit priority and speed than the lower bound (28.8 minute) travel time with full signal priority, exceed the new transit riders for the Rapid Bus Alternatives, as shown in Table 8.6.5. Also please refer to Response to Comment No. 20-35.

Comment 20-188

Please see Response 20-98.

20-188

the former 28.8 minutes and an "Upper Bound" of 40 minutes[39]. In the FEIR, in response to specific comments, MTA now claims, "The BRT Alternative has a range of travel times to cross the Valley from 28.8 minutes to 40 minutes[40]." However, even MTA, *in its own press release*[41], states,

> "A trip from the Warner Center Transit Hub to North Hollywood will take approximately 35 to 40 minutes, compared to on-street bus service which today takes 55 minutes for the same trip, and which will lengthen over time as congestion increases[42]."

338. In the Request for Proposal for the buses that will actually operate on the SFV BRT, we have the same running time:

> "With an end-to-end run time of approximately 35 to 40 minutes, operating at speeds of 35 mph in the Chandler Boulevard median, and 55 MPH maximum speeds, the project will include a fleet of new bus rapid transit vehicles[43]."

339. Even in FEIR, where, for some reason, MTA still wishes to cling to the idea that a 28.8 minute travel time is somehow still possible, MTA admits that 28.8 minutes between Warner Center and North Hollywood via BRT is now the "Lower Limit" of a range. However, as MTA's own press release, and MTA's own RFP to *buy the buses that will operate the BRT service* show, even 35 minutes is questionable and 28.8 minutes never even comes up.

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[39] FEIR, Volume 1, *Table S-4a, Refinements to the Locally Preferred Alternative (BRT and the Weekend Service Option)*, page S-49.

[40] FEIR, Volume 2, Comment F16-2, page 7-326.

[41] "MTA Certifies Final Environmental Report on San Fernando Valley East-West Busway; Final Design to Get Underway," February 28, 2002. (http://www.mta.net/press/2002/02_February/mta_023.htm).

[42] As will be seen below, citing this travel time for street-running buses between from Warner Center to North Hollywood is a disingenuous attempt by MTA to make the alternative to a full BRT on Burbank-Chandler appear non-competitive.

[43] MTA, "CHANGES IN SPECIFICATIONS AND / OR PLANS, ADDENDUM 1, RFP OP33200645," issued July 9, 2002, Section SP-31, "SAN FERNANDO VALLEY EAST-WEST BUS RAPID TRANSIT PROJECT," page 9.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor **Page 87**
November 22, 2004

THE MIAMI-DADE TRANSIT BUSWAY – MTA'S MODEL FOR A "SAFE" BRT

20-189

340. While MTA has admitted that the actual travel time will be significantly higher – despite its obvious attempt to keep the now-discredited 28.8 minute travel time on the table – it has *not* made any significant changes many of the important bus travel speed and operating conditions that led to many of the safety concerns. With the exception of a few extremely brief comments – required by the CEQA process – elsewhere in the FEIR[44], MTA's entire response to the detailed safety concerns submitted by several knowledgeable commenters is:

> "A busway project operating in Miami, Florida is similar to the proposed San Fernando Valley East-West Transit Corridor BRT and is offered as an example of safety performance. The Miami project has been in operation since February 1997. The busway, which traverses 8 miles, has 19 intersections, and runs parallel to US-1, is operated by Miami-Dade Transit. The Miami Project has intersections with coordinated signal control (such as would be the case with the BRT) and intersections without coordinated signal control. The accident rate at the intersections with coordinated signal control was approximately 1 accident per every 20 million entering vehicles.
>
> "The proposed BRT is designed to operate at-grade with all intersections signaled in a manner similar to the coordinated signal control intersections in the Miami project. The BRT busway and parallel street traffic will have the same signal phasing at intersections. Cross traffic will be phased to pass through both intersections as if they were one.
>
> "Additional safety measures have been incorporated into the BRT project design that are not present in the Miami project. Although the busway and parallel traffic will have the same signal phasing, they will each have their own signage, active signs, street painting, and signals to warn cross traffic and right-turn lanes that they are not to enter either intersection. Pre-signals will be installed to keep all cross traffic from entering the busway/parallel traffic intersection. Should a motorist enter into the intersection on a yellow signal, the vehicle will be able to pass through the full intersection before the busway/parallel traffic is phased to green. Right turn lanes will have active "No Right Turn" signs and should motorist ignore that warning they will be stopped by a signal situated on the opposite side of the busway[45]."

341. COST's full response to the above requires a great deal of detail. The short response can be made in two parts:

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[44] See FEIR, Volume 2, Comments C5-6, C5-7, C9-29, C9-66, C9-68, and C11-11C.2(a), C-17-13, as illustrative of MTA's responses to safety concerns of commenters.

[45] FEIR, Volume 2, Comment C9-66, page 7-157.

Comment 20-189

The design of the Orange Line has incorporated additional safety features not present in the Miami system. Please refer to response to comment C9-66 in the Final EIR and Response 11-3 herein.

20-189

A. Yes, there are many great similarities between the Miami-Dade Transit (MDT) Busway project and the proposed SFV BRT. Other than the MDT Busway, there is no other bus transit guideway project in the United States currently in operation that is remotely similar to the SFV BRT. The similarities are even closer than MTA sets forth above, in that many of the SFV BRT safety features in the last paragraph above *are* in place in the MDT Busway[46].

B. There is, however, one extremely significant omission in the MTA comment above – the MTD Busway is *not* now operating in the manner it was designed for, with traffic signal preemption/priority[47] The source document for the 28.8 minute run time projection (Manuel Padron & Associates, "Run Time Estimate – San Fernando Valley EIS/EIR – Bus Rapid Transit (BRT), 24-May-2000, Filename: #sfv-brt.wk4) assumes preemption at street crossings where there is not a BRT station and assumes green time advance/extend up to ten second for street crossings where there is a station. The former is "Preemption," as defined above, the later could be either Full or Partial Priority. The Busway buses do *not* currently have any signal priority or preference of any type – in fact, each Busway bus approaches each of the 19 grade crossings at a maximum speed of 15 mph, comes to a complete stop at the stop line – *even if the bus has a Green traffic signal* – and then, after the bus operator has checked that the way is clear, proceeds through the intersection at a speed no greater than 15 mph. As a

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46 DMJM-Harris & R. Aleman & Associates, Inc., *South Miami-Dade Busway Safety Study*, Final Report, August 13, 2001, Volume 2, Figures A-1 through A-19, inclusive.

47 This paper will utilize MTA's definition of the technical terms used to describe the types of traffic signal favoritism commonly utilized, as found in FEIR, Volume 1, §2-2.3.5 a. "Transit Priority/Traffic Signals, Control, and Safety – Transit Priority page 2-40.

"There are typically three types of interaction (none of which decrease the amount of crossing time allocated for pedestrians) between the signal system and transit system to provide the most efficient operation for both the transit system and vehicular traffic.

- Preemption grants the right-of-way to a mass transit vehicle by interrupting the normal signal cycle sequence. (This strategy is not expected to be used in the East-West BRT project.)
- Full Priority may extend or shorten the traffic signal green indication of the transit phase. The transit phase may be a parallel vehicle phase or an independent phase. Full priority also allows the skipping of a traffic phase if needed to advance the required transit and/or compatible vehicle phase. Typically the phase skipped is a low volume phase during that period of time, which results in improved operations for the transit service with minimal impact to the traffic operation. (This strategy may be considered for low volume smaller street crossings.)
- Partial Priority allows the traffic signal controller to advance the start (early green), or retard the end (extend green) of the transit phase and any compatible vehicle phase. Partial Priority does not skip any vehicle phase to extend or bring up early the transit phase. (This strategy will be used for most of the BRT crossings.)"

The above citation is new to the FEIS, not being included in the DEIS/DEIR. It was required after LA-DOT definitively refused full Preemption for BRT crossing.

result, bus travel on the MDT Busway is now *slower* than bus travel on the adjacent U.S. 1[48]. 20-189

342. Why has the MDT Busway traffic signal priority system been "turned off?" Why, after an investment of $21 million in the Busway[49] (not including the cost of buses), has MDT terminated all of the speed advantages of one of its showcase transit projects? Why, after being physically available for service for 66 months from its opening in February 1997 through July 2002, has the full Busway only been in full operation for fifteen months and partial operation for another eleven, with the entire bus preference system totally shut down (for the second time) since November 2000[50]?

343. Safety. 20-190

344. Or, more properly, the lack thereof.

345. During the times when the MDT Busway bus traffic signal preference systems were in operation, there were 47[51] bus-vs.-auto collisions in 432/771 days (at the intersections believed to be more dangerous, the traffic signal preference systems were shut down more frequently), an average of more than one every ten days when all intersections had traffic signal preference operational. On average, there was one collision per every 1,522 bus end-to-end trips[52]. These collisions produced 161 injuries[53] and two fatalities[54]. 20-191

346. With a busway length of 8.2 miles[55](MTA above describes the Busway as, "8 miles," but the above and MDT personnel describe the busway length, exclusive of non-busway street running portions of busway bus routes, as 8.2 miles.), this is an collision rate of one every 12,480 miles. In the 2000 National Transit Database reporting year, MDT reported a collision rate of one every 60,689 Motor Bus Revenue Vehicle Miles (this statistic *includes* significant amounts of Busway service and collisions and, therefore, the non-Busway service alone is somewhat higher), almost five times the rate for the Busway alone. MTA reported one collision for every

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48 My interviews with Bob Pearsall, Manager of Service Planning, MDT and Lyle Mannion, MDT Safety and Security, collected in *Miami-Dade Transit South Miami-Dade Busway* (MDT SMDB).

49 MDT SMDB.

50 February-June, 1997 and March-early December 1999. The "non-isolated" intersection bus traffic signal priority signals were also in operation from early December 1999 through October 2000, when the entire bus traffic signal priority system was shut down for the second time. Source: My analysis of data contained in Excel file, "busway stats.xls," prepared by Lyle Mannion/Jose Guerra , MDT Safety and Security.

51 My analysis of data contained in "busway stats.xls."

52 My analysis of data contained in "busway stats.xls."

53 My analysis of data contained in "busway stats.xls."

54 Arnold Markowitz, "Police Officer, 27, Dies After South Dade Car-Bus Crash, *Miami Herald*, December 9, 1999 and Ana Acle and Tyler Bridges, "Man Dies in Crash," *Miami Herald*, November 1, 2000.

55 MDT, "South Miami-Dade Busway," http://www.co.miami_dade.fl.us/transit/metrobus/busway.htm.

Comment 20-190

These parenthetical statements are acknowledged for the record.

Comment 20-191

The commenter points out that the MTA bus operators have a better record, in terms of collisions per revenue vehicle mile compared to the national average; one collision per 124,862 motor bus revenue vehicle miles versus the national average of one collision per 79,502 miles, 57% more miles traveled per accident than the national average. This illustrates how comparisons to other transit operators can be misleading. It is not possible to forecast in advance how many collisions could be anticipated on a new facility like the Orange Line. Please refer again to Response 20-35.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 90
November 22, 2004

124,862 Motor Bus Revenue Vehicle Miles and the national average was one collision for every 79,502 Miles[56]Data on Revenue Vehicle Miles from NTDB, 2000, Table 28, *Transit Operating Statistics: Service Supplied and Consumed: Details by Transit Agency, Directly Operated and Purchased Transportation Service*, which showed 24,214,800; 85,655,000; and 1,763,669,100 revenue vehicle miles for MDT, MTA, and National Total Motor Bus, respectively. (Note: Revenue Vehicle Miles includes both directly operated and purchased transportation service.). **20-191**

347. The Busway collisions produced injuries at a very high rate: an average of 3.43 injuries/collision, over four times the .79 reported for MDT bus service as a whole for the year 2000 (again, a statistic that includes some of the Busway collisions). MTA reported a 2.36 ratio for 2000 and the national ratio was .90[57]. The main reasons for this high ratio is that the Busway collisions tended to be more dangerous – the buses tended to be operating at high speeds and most of the collisions were at approximately right angles – and carried more passengers, so more people were exposed to injury when the collisions occurred.

348. But what about the very low accident ratio reported by MTA above for the MDT Busway – "The accident rate at the intersections with coordinated signal control was approximately 1 accident per every 20 million entering vehicles" – how could MTA report such a low accident rate in the FEIR if the collision/injury data presented above is correct?

349. The answer is, MTA has, evidently, chosen to selectively determine which data for which intersections to evaluate and then to evaluate it in a way that produces the results it wanted. **20-192**

350. The statistic reported by MTA is not totally incorrect, but it is the result of a great deal of manipulation, errors in methodology, and just plain not-particularly relevant statistical design, including: **20-193**

A. The data source appears to be taken from the *South Miami-Dade Busway Safety Study* – prepared after the Danny Alverez, the Metro-Dade Executive Director, fully shut

[56] A "revenue vehicle mile" is a mile traveled by a transit vehicle (in this case, a bus) in scheduled transit service to the public. It excludes "deadhead" miles traveled from operating yards to and from beginnings and ends of bus routes, miles driven for training not carrying passengers, and other miles driven not in scheduled transit service.

Data on Total Collisions from U.S. Department of Transportation/Federal Transit Administration, National Transit Database (NTDB) for 2000 reporting year, Table 22, *Transit Safety: Details by Transit Agency, Number of Incidents – Collisions, Non-Collisions and Total Property Damage*, which showed 399, 686, and 23,184 for MDT, MTA, and National Total Motor Bus collisions, respectively.

[57] NTDB, 2000, Table 24, *Transit Safety: Details by Transit Agency, Number of Injuries – Collisions and Non-Collisions*. Injuries reported by entity are: MDT total bus service – 315, MTA – 1,616, National Total Motor Bus – 20,800.

Comment 20-192

The data analyzed was for intersections with coordinated traffic signals, as will be the case on the Orange Line. It would not be appropriate to compare the operations of uncoordinated signalized intersections on another facility to the proposed sophisticated coordinated signal system, which will be implemented on the Orange Line. Please see response to comment 11-3.

Comment 20-193

The calculation of the accident rate of one accident per 20 million entering vehicles was developed by Myra L. Frank & Associates, as noted in this comment, in an attempt to provide an accident rate for the at-grade crossings in Miami which were judged to be most comparable to the intersections on the Orange Line in Los Angeles. Please refer to response to comments 20-191 and 20-192. In addition, signal priorities are planned for reactivation on the Miami busway in mid 2005 (per telephone conversation with Isabel Pedron, MDT, on December 2, 2004).

down the Busway traffic signal priorities for the second – and final – time[58], specifically, Table 7, "Intersection Crash Statistics (Bus Crashes Only)," Volume 1, page 16. This table shows the crash data for all 19 Busway intersections, but by eliminating the eight intersections that did not have "coordinated signal control," the intersections with the 1st, 2nd, 3rd, 4th, 5th, 7th, 8th, and 15th "worst" crash rates, which together produced 52 of the total 67 – 77% – Busway bus crashes, were eliminated from the analysis. (The 67 crashes included all from the beginning of the analysis period to the end of the study period, not just those that occurred when the Busway bus traffic signal priority system was fully or partially operative.) 20-193

B. MTA's implicitly claimed rationale – that the intersections eliminated were different than those planned for the SFV BRT – is not totally without merit, and is deserving of detailed analysis (which MTA has not performed). However, there would appear to be a requirement to inform the public exactly what was done to produce the statistic shown. While MTA can present arguments why the excluded intersections should be excluded, there are opposing arguments that were not heard – specifically, the design of the excluded intersections *does* have important similarities to many of the SFV BRT intersections. (Most of the excluded MDT intersections were fairly far from any major street running parallel to the Busway. There are two SFV BRT intersections that share this characteristic – Victory near Winnetka and Sepulveda near Oxnard. These types of intersections have different safety concerns than intersections that are close to major parallel streets. To eliminate virtually all consideration of the Miami experience that was inconsistent with MTA's expectations is a highly questionable statistical technique, to say the least.) Indeed, from the information that was presented by MTA, there was no way that any reader who did not have detailed knowledge of the MDT Busway's history to even know that such issues might exist.

C. More important, MTA's action in eliminating all the intersections except those that did not have very many crashes contains an undisclosed, but very important, implicit assumption – that there are no SFV BRT intersections that have unique factors, not found in MDT Busway intersections that were not excluded, that present serious safety concerns. In fact, as we shall see, there are *many* SFV BRT intersections that present extreme safety concerns, concerns that are not found in any of the MDT Busway intersections – in fact, of the 29 SFV BRT intersections analyzed, only ten were similar to the MDT Busway intersections that MTA did not exclude (Note: Our count of intersections is slightly lower than the MTA count because we counted crossings of multiple streets simultaneously or close to simultaneously as a single intersection).

58 Luisa Yanez, *Busway Safety Measures Ordered – Driver Training, Study Promised*, Miami Herald, November 2, 2000.

D. From the review of the source data and the very careful construction of the above comment in the FEIR, it is extremely difficult to draw any conclusion other than the person or persons who prepared it, and/or directed its preparation, had detailed knowledge of the MDT Busway situation and made a very conscious decision to present as they did to make it appear that the design of the SFV BRT would produce a safe system, excluding any information that might lead to questioning of this conclusion. MTA has refused to provide information regarding how this comment came to be prepared in the manner in which it was. What is known is that MTA's consultant responsible for the preparation of the FEIS had the relevant data, and evidently enough detailed analysis of it was performed to produce the statistic that was published, which required a decision to exclude the data for eight of the nineteen intersections. The individual that contacted MDT to obtain this data was Tracy Dudman, Planner, of Myra Franks & Associates, Inc[59]. The Myra Franks Project Manager was Gary Petersen and the Principal-in-Charge was Ms. Franks. The primary MTA SFV BRT personnel responsible for the EIR process were Kevin Michel, Project Manager and Carol Inge, Director[60]. James L. de la Loza is the MTA Executive Officer, Countywide Planning and Development.

20-193

E. The actual calculation performed by the consultant compared crash statistics to vehicles entering intersections for the entire 46-month period that the Busway had been in existence at the time that the calculation was done – February 1997 through November 2000. However, for a significant portion of this period, all or part of the Busway bus traffic signal priority system was not operating – and these non-operational periods were, by far, the safest periods for operation of the Busway. If MTA was creating a statistic to show the safety of a Busway operating with bus traffic signal preference similar to that planned for the SFV BRT, then the inclusion of time periods when the bus traffic signal preference system was *not* operational would appear to be highly improper.

F. The calculation utilized average daily traffic data for each intersection measured by DMJM multiplied by the number of days in the 46-month Busway active period. However, all of the traffic counts were performed on weekdays[61]. In general, for most urban roadways, traffic on Saturdays, Sundays, and holidays is significantly less than that on weekdays[62]. Without far more data than is presented here, a precise calculation of annual traffic is not possible, but this, "all days are weekdays"

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59 My telephone conversations with Lyle Mannion, MDT Safety and Security, March/April 2002.
60 FEIR, Volume 1, Appendix B, List of Preparers, Page B-1.
61 DMJM, Volume 2, Appendix C.
62 Transportation Research Board, *Highway Capacity Manual* (Special Report 209, Third Edition), 1994, Chapter 2, "Traffic Characteristics," "Daily Variations," pp. 2-15/16.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 93
November 22, 2004

20-193

assumption undoubtedly overstates vehicles entering the intersections over the study period and, therefore, produces an accident rate that is understated.

G. Using the DMJM data, I could not reproduce closely an "accident rate at the intersections with coordinated signal control (of) approximately 1 accident per every 20 million entering vehicles" – but did produce a value of one accident per every 16,325,290 entering vehicles (this degree of detail presented for fans of meaninglessly precise statistics). If, however, one was rounding to the nearest ten million, then 16,325,290 does round to 20 million – but the variation is 18.6% from the point projection and, of course, errors on the side that better supports MTA's contention that the SFV BRT design is safe.

20-194

351. While the above quibbles are interesting examples of how not to perform statistical analysis and/or how to manipulate data to present your favored outcome in the most positive manner, the key problem with the "accident rate at the intersections with coordinated signal control was approximately 1 accident per every 20 million entering vehicles" statistic is, simply, that it is *not* a particularly good indicator for our current purposes. What we are trying to do is to assess the safety of BRT guideways operating as the MDT Busway does and as the SFV BRT is proposed to operate. Vehicles entering an intersection is a useful statistic to be utilized in statistical analysis of collisions involving the vehicles crossing the busway. However, that is *not* the focus of this analysis – the focus is the analysis of *bus* collisions. MTA's statistic is not the most useful for this purpose.

352. For the major portion of the vehicles crossing the Busway, there was no bus anywhere near the crossing street at the time the counted vehicles crossed. By this logic, the fewer the buses using the Busway, the safer the crossing would be per vehicle (for times when there were no buses on the Busway, it had a "perfect" safety record for bus-vs.-auto collisions). While this is obviously a true statement, it is approximately equal to saying that alcohol/drug-impaired drivers are not much of a safety hazard because only a small number of other drivers are in collisions involving them. A far more useful statistic would be, what percentage of alcohol/drug-impaired drivers are involved in collisions (and how does this compare to the comparable statistic for non-impaired drivers)?

(353. Interestingly, total vehicles is most useful for analyzing total collisions – but the data presented only presents bus-vs.-vehicle collisions. As we shall see below, there are strong reasons to believe that the MDT Busway has contributed to a significant increase in auto-vs.-auto collisions at Busway intersections, but these types of collisions were *not* included in the DMJM crash counts, nor in the MTA, "1 per every 20 million entering vehicles" statistic.)

354. The statistic that is far more meaningful than the crash rate per vehicles entering the Busway on the cross streets is the crash rate per *bus*. To produce this statistic, two data items are required, the number of bus-vs.-other vehicle collisions, which is known, and the number of bus

Comment 20-194

The comment is acknowledged for the record. The crash rate referenced in comment response 20-191 is an appropriate statistic for consideration.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor **Page 94**
November 22, 2004

20-194

trips per intersection[63]. While these differences are somewhat troubling, overall, they do not appear to be of great consequence – any difference in results caused by these differences in counts is extremely unlikely to be sufficiently large to impact any decisions that may be influenced by this analysis. It was ultimately decided to utilize the author's methodology, primarily because it produced three different counts, one each for working weekdays, Saturdays, and Sundays; while the DMJM report only produced working weekday counts.

20-195

355. Let us now look at some comparative statistics[64]:

Crash Rates Per Vehicles Entering Busway Intersections

Crash Rate, Selected Busway Intersections, as Reported by MTA in FEIS:	1 in 20, 000,000
Crash Rate, Selected Busway Intersections, as Calculated from DMJM Data (Without Rounding);	1 in 16,325,290
Crash Rate, All Busway Intersections, Entire Period:	1 in 5,815,918
Crash Rate, Entire Busway, Bus Priority Traffic: Signaling Operational Periods Only:	1 in 2,853,458

Crash Rates Per Busway Buses Entering Busway Intersections

Crash Rate per Entering Busway Bus, All Intersections, Entire Period:	1 in 75,937
Crash Rate per Entering Busway Bus, All Intersections, All Bus Priority Traffic Signaling Operational Periods:	1 in 62,465
Crash Rate per Entering Busway Bus, All Intersections, Equal Operational Time Period for All Intersections:	1 in 43,837
Crash Rate per One-Way Bus Trip Through All Busway Intersections, All Bus Priority Traffic Signals Operating:	1 in 1,522

(356. Note: With the exception of the very last statistic, all crash rates are for single vehicles entering single intersections, average for all nineteen intersections. The final statistic is for a bus

[63] These data were obtained in two ways; from the DMJM report (Table 3, "Estimated Daily Bus Trips – Typical Weekday," Volume 1, page 11) and from recent MDT bus schedules.
The author's counts produced weekday values that were slightly higher than those produced by DMJM – 5,097 total daily intersection crossings vs. 4,871, a difference of 4.4%. More seriously, most of the total difference was concentrated at six intersections, where the differences were as high as 21%. It was not possible to determine the reason for these differences, but one possibility is that the author counted buses entering and leaving the busway at an intersection as a bus entering that intersection; DMJM may not have. Also, it is known if there were schedule changes between the times of the DMJM and the author's counts.

[64] The first statistic is the MTA crash rate of one per 20 million expressed in terms of the crash rate per million entering vehicles. The others are author's calculations base on data from "busway stats.xls."

Comment 20-195

As noted in comment 20-191, MTA has a better collision record than the national average. Comment 20-193 points out that many of the intersections on the Miami busway are dissimilar to those on the Orange Line. Differences in the physical design of the two busways, differences in the traffic signal systems which will control the buses and other vehicles, and differences in the performance of bus operators make it difficult to use data from the Miami busway to forecast anticipated accident experience on the Orange Line. MTA and its consultants, working closely with LADOT, have taken every precaution to design the Orange Line in as safe a manner as members of the traffic engineering and civil engineering professions know how to.

20-195

making a one-way trip through all nineteen intersections when all Busway bus traffic signal priority systems are active.

357. The difference between the third and second to last statistics – 62,465 and 43,837 – is that the traffic signal priority systems at the more dangerous intersections were on for a shorter period of time – 432 vs. 771 days – and, therefore, the statistic for all operational periods shows a safer result than the one for all signals operating for an equal time period.)

358. Therefore, if we only look at the crash rate for the entire Busway, for the periods where the Busway bus traffic signal priority system was operational – in other words, an operation that is comparable to what would be expected for the operation of a BRT system – we see a crash rate that is almost exactly *seven times* what MTA has reported.

20-196

HIGH-SPEED BRT OPERATIONS THROUGH GRADE CROSSINGS IS SIMILAR TO LIGHT RAIL OPERATIONS THROUGH SIMILAR GRADE CROSSINGS, THEREFORE, BRT SHOULD HAVE LIGHT RAIL-STYLE SAFETY DEVICES

359. Exactly how dangerous is a BRT of the type that MTA has proposed for Burbank-Chandler? Currently, there is only one Busway of this type in the U.S., the MDT example discussed above. However, another valid comparison is to light rail system operating at high speeds with surface grade crossings.

360. However, there are not very many examples of this type of light rail operation, either – in large part, one could assert, because it is considered too dangerous. In fact, there is only one light rail line in the U.S. that operates in this manner – the Long Beach-Los Angeles Blue Line.

361. In Los Angeles County, we now have three light rail lines in operation: The Long Beach-Los Angeles Blue Line, which has been in operation since the Summer of 1991, the Green Line, which has been operating since the Summer of 1995, and Pasadena Gold Line, which has been in operation since the Summer of 2003. The Green Line has been the safest light rail line in the nation, with not a single fatality during this period and almost no injuries of any kind. The Blue Line has been the most *unsafe* light rail line, measured by fatalities – by an extremely wide margin. During its first ten years of operations, the Blue Line has had 60 fatalities due to collisions, compared to 82 for the other 19 U.S. light rail systems *combined.* It had almost three times the 21 fatalities suffered by second place San Diego Trolley, Inc., the only other light rail system to have more than ten fatalities[65][66].

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[65] NTDB, 1991-2000 reporting years, fatality tables for these years.

[66] I have not discussed the Pasadena Gold Line in the main text because the comparison between the Blue and Green lines is a perfect example for the point I want to make. The Gold Line has been in full operation for only slightly over one year and, therefore, has limited operational experience and data.

(Continued)

Comment 20-196

Comparisons of light rail vehicle performance and bus performance can be misleading because buses are lighter weight vehicles which can be maneuvered to modify their travel path to avoid a collision and have quicker braking capabilities. The commenter notes that bus speeds will be reduced at crossings near stations, which is approximately one third of the crossings. The Revised Final EIR presents data for the BRT alternative with a 40.0 minute travel time in addition to the 28.8 minute travel time to address the concerns that the buses may not travel as fast as originally anticipated, and the BRT Alternative still results in the largest increase in new transit riders. The Court of Appeal affirmed MTA's conclusion that the BRT would not create a significant safety impact and agreed with MTA that it is not proper to compare the Orange Line with the Long Beach Blue Line: "MTA was entitled to determine buses were a different kettle of fish from trains." (Court of Appeal Decision, p. 19.) Please see Response 11-3.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor **Page 96**
November 22, 2004

362. What is the difference?

20-196

363. The Green Line is the only light rail line in the U.S. that has a totally exclusive guideway. The Green Line Has no crossing streets or pedestrian walkways, no opportunity for any car, cyclist, or pedestrian to encounter a Green Line train without being someplace where they have absolutely no business being. The Green Line has never had a fatality, for the most part, because it is extremely difficult for anyone to get in the way of a train.

364. The Blue Line is the only light rail line in the U.S. that operates at high speed through grade crossings in a densely populated area, where vehicles and people and light rail trains can occupy the exact same space on a regular basis – and, when they do so at the same time, the results are generally catastrophic. There are 77 Blue Line grade crossings[67] – including dozens in the high-speed mid-corridor section where trains pass through at speeds up to 55 mph.

365. The majority of the fatalities – 85% in a December 1999 analysis[68] – occur in this segment of the Blue Line. In the "street running" segments of Blue Line along Washington Boulevard and Flower Street South of the Los Angeles central business district and in the Long Beach transit mall and its approaches, the highest train speed the same as the posted "rubber tire" vehicle speed limit on the streets where the trains operate, generally 35 mph.

366. Oddly, there does not appear to be an explicit statement of the SFV BRT bus operating speed in Volume 1 of the FEIR, where it is common to describe the project being studied in great detail. There are statements that imply that the top operating speed of BRT buses will operate at speeds higher than the speed limits for nearby streets, particularly the statement, "It has been assumed that in the Chandler Boulevard median, buses would not operate faster than the posted speed limits on the adjacent north and south roadways. Buses operating on-street would also not exceed posted speed limits[69]." (Why would such statements, regarding compliance with speed limits in specific sections of the BRT and bus route alignment, be necessary unless there was an intention to operate at higher than speed limit speeds in other segments?) In Volume II, however, in response to the author's and others' comments questioning the 28.8 minute SFV BRT travel time in the DEIS/DEIR, MTA states, "... the assumptions used to develop the 28.8

In general, however, it has proven to be far safer than the Blue Line. In my opinion, the reasons for this are that the Gold Line does not have high-speed travel through grade-crossings and that it actually travels very slowly through many of its grade crossings, including those that are most likely to be the most dangerous.

[67] MTA, National Transit Database report to the U.S. Federal Transit Administration, 1994, Form 403, "Transit Way Mileage."

[68] Douglas P. Shuit, "85% of Blue Line Deaths Occur on Fastest Segment," *Los Angeles Times*, December 23, 1999. At that time, 40 of the 47 Blue Line fatalities had occurred in the high-speed mid-corridor segment of the line.

[69] FEIS, Volume 1, Section 2-2.3, "Bus Rapid Transit (BRT) From North Hollywood to Warner Center, the Locally Preferred Alternative," page 2-21.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor **Page 97**
November 22, 2004

20-196

run time include a maximum operating speed of 55 mph[70] ..." and "Buses will slow down to 45 miles per hour at all intersections in other portions of the corridor[71] The 45 mph speed appears to apply only to intersections not located at stations. Also, Since most of the BRT stations are far side stations located fairly closely to the cross streets, travel through these intersections at speeds close to 45 mph is not feasible. For example, FEIS, Volume 2, Drawing C-323, shows the curve through the intersection of Fulton Avenue and Burbank Boulevard rated for a maximum speed of 25 mph.

367. (By the way, the above statement is the key to a definitive proof that the 28.8 minute Warner Center to North Hollywood run time is impossible. The worksheet that produces the 28.8 minute runtime shows maximum speeds of 50 and 55 mph, but does *not* include and mention of limiting speeds to 45 mph through intersections[72]. Also, the worksheet shows maximum speeds of 50 mph between the Eastern start of the BRT section and Laurel Canyon Station and 55 mph between Laurel Canyon Station and Fulton/Burbank Station. However, buses will *not* be traveling at these speeds along Chandler Boulevard – "It has been assumed that in the Chandler Boulevard median, buses would not operate faster than the posed speed limits on the adjacent north and south roadways[73]."

368. Since the 28.8 minute run time was based on assumptions that have since been changed, and the changes will reduce run time, then it is clearly impossible for the 28.8 minute run time to be achieved under the assumptions in the FEIR.)

369. Higher speed increases the safety risks considerably. Vehicle's stop time and distance goes up considerably – far more than *pro rata* – as operating speed increases, meaning that there is less chance that the transit vehicle operators can avoid collisions. Of course, the higher the operating speed, the higher the actual collision speed, and higher collision speeds also have a far greater than pro rata impact on fatality, injury, and property damage rates.

20-197

370. Another important safety consideration in Blue Line safety is that the majority of fatalities in the mid-corridor segment – including the last seventeen fatalities in a row as of the December 1999 analysis – occur at what is known as "far side" stations. A far side station is one that is located on the far side of the cross street; this configuration allows transit vehicles to get through the traffic signals before boarding and deboarding passengers, which generally saves travel time over "near side" stations.

70 FEIS, Volume 2, Comment F16-6, page 7-332.
71 FEIS, Volume 2, Comment F15-1, page 7-321.
72 Manuel Padron & Associates, "Run Time Estimate – San Fernando Valley EIS/EIR – Bus Rapid Transit (BRT), "filename #sfv-brt.wk4," 24-May-2000.
73 FEIR, Section 2-2.3 Bus Rapid Transit (BRT) From North Hollywood to Warner Center, the Locally Preferred Alternative, page 2-21.

Comment 20-197

The description of "far side" stations is acknowledged for the record, but it should also be noted that buses passing through intersections as they approach the far side station would be slowing to stop at the station. It is correct that the majority of stations on the Orange Line will be far side stations. While it is true that the Orange Line will have the similarity to the Blue Line noted, a preponderance of far side stations, other comparisons to the Blue Line should be discounted for the reasons mentioned in Response 20-196.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 98
November 22, 2004

371. For the eleven pairs of stations in the BRT section of the route, eighteen of the twenty-two stations are far-side stations[74].

20-197

372. Therefore, the SFV BRT shares two very important characteristics with the Long Beach Blue Line, America's most dangerous light rail line – high operating speeds through cross streets in a dense urban environment and a high percentage of far side stations (the SFV BRT's percentage is far higher than the Blue Line's). These factors also should lead to questions of the safety of the BRT concept, as applied to the Burbank-Chandler corridor. However, there is no recognition of this in the FEIS at all. In the *Summary of Operational Impacts* in the FEIS Executive Summary, we see, under "Potential Environmental Impacts – Operations," "Safety and Security," for BRT:

> "Potential for marginal increase in bus accidents; however, net benefits are likely due to improved signalization and exclusive busway[75]."

20-198

373. In many ways, however, light rail is intrinsically safer than bus in this type of high-speed operating environment. Light rail trains are, of course, literally on rails. It generally takes an extremely violent collision or other incident to cause a train to derail or overturn, while a bus that is in a high speed collision is far more likely to veer into other roadway vehicles, stationary impediments, and/or pedestrians, and to overturn. Light rail trains also are far more massive than buses, approximately 100 tons for a two-car light rail train with passengers, vs. approximately 20 tons for a 40-foot bus with passengers and 30 tons for a 60-foot bus with passengers. Assuming a two-ton passenger automobile, with a mass ratio, light rail train vs. auto, of approximately 100:2, the usual result is only relatively minor damage to the train and its occupants – although the Blue Line has produced over 70 fatalities overall, not one of these has ever been a passenger on a train or an MTA operator or other employee, and there have been very few serious injuries to Blue Line passengers. With a mass ratio, bus vs. auto, of approximately 30:2 (for 60-foot articulated buses, which MTA is planning on operating on the Orange Line), the auto and its passengers almost always comes off far worse in a collision, but serious injuries and deaths to

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[74] FEIS, Volume 3 – Preliminary Engineering Plan and Profile Drawings. One of the stations at Balboa, Sepulveda, Van Nuys, and Woodman are near side stations. The Balboa and Sepulveda far side stations are significantly further from the cross street than the other far side stations.

[75] FEIS, Volume 1, page S-39.
Interestingly, this comment replaces the phrase, "grade separation," which appeared in the DEIS/DEIR, with "exclusive busway." Grade separation involves either raising or lowering the transit guideway above or below the crossing roadway and/or pedestrian walk way (or vice versa). This would produce a system that would likely be very safe, as the opportunities for collisions with transit vehicles are close to non-existent. MTA, however, has adamantly refused to consider grade separation for the SFV BRT, primarily, I believe, due the cost, generally estimated at approximately $10 million – and up – per intersection. Raised transit alignments can also be both extremely visually intrusive and neighborhood dividers, as the Blue Line Firestone overpass would quickly convince anyone who saw it, almost instantly. It is not known how the "grade separation" phrase found its way into the DEIS/DEIR.

Comment 20-198

The differences in the relative weights and mass of autos, buses and light rail trains are acknowledged, but it is not feasible to forecast injuries or fatalities.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor **Page 99**
November 22, 2004

bus passengers and operators are certainly not unknown. If the SFV BRT buses are as highly utilized as MTA projects them to be, there is great potential for passenger/bus operator injuries and fatalities. **20-198**

374. Finally, the Blue Line has an extremely important safety advantage over the plan for the SFV BRT: at all of the high speed mid-corridor grade crossings, the Blue Line has *railroad* grade crossing protection – roadside signals that flash lights and ring bells and the crossing arms that physically block vehicles from entering the roadway in front of the train, plus the loud horn signals of the trains as they approach intersections. As bad as the Blue Line's safety record has been, it is absolutely terrifying to consider what may have occurred if these crossing signals, gates, and audible warning were *not* in full use from day one. **20-199**

375. None of these safety devices are part of MTA's design for the SFV BRT. Should they be? Let us examine two expert opinions on this question: **20-200**

A. The purpose of the DMJM report on the MDT Busway was to find safe ways to turn the traffic signal priority back on. DMJM offered several sets of staged recommendations, ranging from short-term improvements to allow low speed (15 mph) bus speed through intersections without stopping to resuming the 45 mph design speed. (Although MDT has been attempting to get the Busway "turned back on" for almost five years, permission has not yet been granted and there is no firm date established at this time.) Under "Long Term Crash Countermeasures," we have, "Long term crash countermeasures are recommended for consideration after installation and evaluation of the short term and medium term measures. Crash countermeasures recommended for long term consideration includes the following:

   1. Installation of flashing signals, similar as used for railroad crossings.
   2. Installation of automatic gates, similar as used for railroad crossings[76]."

B. Closer to home, at the same time that MTA promulgated the SFV BRT DEIS/DEIR, it was also exposing a DEIS/DEIR for light rail or BRT on the Expo Corridor, which runs from the University of Southern California to Santa Monica, paralleling and generally slightly South of the Santa Monica (I-10) freeway. The following are all excerpts from MTA's *Mid-City/Westside Transit Corridor Draft EIS/EIR*, Volume 1, April 6, 2001 (see Exhibit XXXI for excerpts), discussing safety precautions that MTA was proposing for a BRT corridor on the former Expo rail line alignment, substantially identical in design and operation to the Burbank-Chandler BRT:

[76] DMJM, Volume 1, page vi.

Comment 20-199

This comment about the safety features provided at at-grade crossings on the Blue Line is acknowledged for the record. See also Response 20-196.

Comment 20-200

Please see response to comment 11-3. The Draft EIR conditionally provided for such gates, but only "if required and agreed to by LADOT [Los Angeles Department of Transportation]." (Draft EIR p. 4-266.) Moreover, the Z-gates were removed in response to criticism in Comment C9-69 to the FEIR. The commenter likened the Z-gates as "Disney-esque" playthings that are attractive to children and would make crossing the streets difficult for the elderly and mothers with strollers. (FEIR p. 7-157 – 7-158,) Agreeing with the commenter, the FEIR responded that the Z-gates have been removed from the Project. (Id.) The FEIR also explained that even with the Z-gates removed, the pedestrian platforms, signal timing, and LADOT's safety standards will adequately protect pedestrians. (FEIR p. 7-142 – 7-147.) The Court of Appeal already considered whether Z-gates were necessary and rejected it. The Court of Appeal affirmed MTA's conclusion that implementation of LADOT's safety standards would adequately protect pedestrians. (Court of Appeal Decision, p. 13.) Accordingly, the Final EIR provided the evidence on why the Z-gates would not be installed and that the other safety features still render the impact less than significant.

"The Mid-City/Exposition Draft EIS/EIR (April 2001) included alternatives for Bus Rapid Transit (BRT) and Light Rail Transit (LRT). For purposes of comparison, similar operating characteristics for BRT and LRT were

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 100
November 22, 2004

1. Page 24: "At vehicular intersections, crossing gates would be utilized where transit speeds are greater than 35 mph. Such gates may not be possible in certain areas due to noise or traffic concerns, and in such cases, transit speeds would be slowed to less than 35 mph."
2. Page 50: "Crossing gates shall be installed at all streets crossing the Exposition ROW where BRT operates at speeds above 35 mph."
3. Page 3.14-8/9: "In addition to the safety impact for the Wilshire BRT alternative discussed previously, the introduction of BRT along the Exposition corridor will have various safety impacts. The alignment type and operational characteristics of the BRT in a semi-exclusive right of way creates a situation similar to light rail transit. The Exposition BRT line utilizes a similar alignment to that of the Exposition LRT and has similar operating parameters. As such, many of the safety treatments utilized for the Exposition LRT alignment can also be utilized for the Exposition BRT alignment. However, some differences do exist. The use of automatic gates at BRT crossings has not been attempted in the United States, and may require special legislation to install the devices."

   "Also, in order to detect the bus to allow for full preemption of the traffic signal and to lower the automatic gates, BRT detection must be used. Trains have this detection feature built into the tracks, but buses do no have that option. Inductive loops may be the favorable solution, but they must have a built in redundant system to provide a fail-safe grade crossing. As such, if the loops malfunction, the gates lower, not allowing motorist or pedestrians to enter the crossing. A fail-safe design is necessary when using gates, because the BRT operator is not expecting to stop at the crossing.

   "Another factor that must be addressed with the use of gates at grade crossings is the frequency at which the bus arrives at the crossing. It can take from 40-60 seconds for a bus to clear a grade crossing, including the time required to call and lower the gates, pass through the crossing, and raise the gates after the bus has passed. As such, if the headway for the BRT is too small, the cross street traffic could be adversely affected, resulting in a potentially significant impacts (sic). A possible solution for this is to platoon the buses through the grade crossings that are gate controlled, so that the total delay for the cross traffic is minimized."

376. In MTA's Expo Corridor DEIS/DEIR, there are no if's, and's, but's, or other qualifications of any type – if BRT is to be operated at speeds in excess of 35 mph (the same speed break point that exists in California for light rail), there *will* be grade crossing gates at all affected intersections.

377. How can grade crossing gates be safety requirements for the Expo Corridor BRT, but not for the substantially identical Burbank-Chandler BRT?

20-200

assumed in order to compare the relative performance of BRT and LRT modes in that corridor. California Public Utilities Commission (CPUC) requirements were utilized for LRT, and gates were identified in locations selected segments of the route where speeds exceeded 35 mph. Similar assumptions were also applied to BRT, although CPUC regulations for crossing gates do not apply to BRT projects.

In June 2001, the MTA Board adopted LRT as the mode for the Exposition Transit Corridor and that project has been designed with crossing gates in accordance with PUC regulations. No further work has been undertaken for BRT in the Exposition Transit Corridor and no requirement for crossing gates has been identified."

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor **Page 101**
November 22, 2004

378. How could MTA conduct two studies of the utilization of the exact same type of Bus Rapid Transit, at the same time, and, in one, conclude that BRT has essentially the same operating characteristics and safety considerations as light rail and therefore requires virtually identical safety methodologies and technologies, while in the other, conclude that none of these safety devices are required for BRT operation[77] Interestingly, the three minute (in each direction) BRT headway that causes such great concern for traffic impact along he Expo Corridor has *less* traffic impact than the 2.5 minute BRT headways that are noted at three points on the Burbank-Chandler BRT (SFV BRT FEIS, Volume 1, page 2-77).? 20-201 20-202

BRT Can Have A Negative Safety Impact Other Than Bus-vs.-Auto Collisions

379. Confusion regarding MDT Busway operations and traffic signals was also being blamed as a cause for an increased rate of non-bus collisions along the alignment, as well as congestion on cross-streets. The Busway signals were regarded by many drivers as delaying travel across or on to U.S. 1, which may have led to frustration-driven behavior that compounded safety problems. The deactivation of the Busway bus traffic signal preference and the other signaling changes appears to have reduced both the safety and the congestion complaint problems. Avoiding congestion complaints will be a consideration in reestablishment of Busway bus traffic signal preference in the future. 20-203

Several SFV BRT Intersections Appear to Have the Potential to Be Far More Dangerous than *Any* MDT Busway Intersections 20-204

[77] It is always dangerous to speculate for the reasons that various actions are taken, but, the answer may be found in MTA's pre-selected transportation options for these alignments. For Burbank-Chandler, light rail had already been rejected long before the San Fernando Valley East-West environmental process even began – and BRT was clearly the pre-selected choice. For the Expo Corridor, light rail was the designated winning alternative.

Therefore, in the San Fernando Valley, BRT was to be made to look as positive as possible, which meant that expensive safety devices that could interfere with traffic flow were not desirable. However, for the Expo Corridor, such BRT safety devices were desirable because the objective was not to make BRT look good, but to make it look bad – so that light rail would be preferable by comparison.

This is beautifully illustrated in the last paragraph. This discussion of how frequent BRT bus crossings at high speed, coupled with the crossing gates, could negatively impact traffic on crossing streets, could be interpreted as part of the setup to choose light rail as superior. On page 2-32 of the Expo Corridor DEIS/DEIR, we see the Expo BRT described with three minute peak bus headways (in each direction). For LRT in the same corridor, on page 2-44, we see five minute peak operations (in each direction). Therefore, light rail would have far less impact on North-South traffic crossing the Expo guideway than BRT, so light rail is preferable. Given the significantly higher capital cost of light rail over BRT – $554.9 million for light rail vs. $290.9 million for BRT for the non-subway options; $674.4 million for light rail vs. $439.2 million for BRT for the subway options (Expo DEIS/DEIR, Volume 1, page 5-2) – light rail must be shown to have significant operating advantages over BRT to be justified for selection, and this is an important part of that justification.

Comment 20-201

The characteristics of the individual corridors can affect the design of the transportation technology appropriate for each corridor. The Orange Line right-of-way is typically wider (100 feet) than the Exposition Corridor (50 feet) right-of-way, wide enough to accommodate pedestrian and bicycle paths as well as landscaped buffers. A car turning from a side street into the busway right-of-way at a crossing on the Orange Line would not immediately be in the path of a bus and could stop prior to the actual bus crossing in the middle of the 100-foot right-of-way. Please see Response 20-200.

Comment 20-202

The impact of bus headways on traffic operations of the adjacent streets is influenced not just by the bus headways, but also by the volume of traffic on the adjacent streets/intersections and the design of those streets/intersections. The streets adjacent to the Orange Line tend to be newer in design and part of a grid system located in a lower-density developed area, whereas those adjacent to the Expo Line are older in design and in a more dense urban area with higher baseline traffic conditions.

Comment 20-203

This comment relates to drivers frustration with the Miami busway design and is acknowledged for the record.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 102
November 22, 2004

380. While many of the MDT Busway intersections have proven to be prone to excessive bus-vs.-auto and other types of collisions and safety problems, the basic geometry of most of Busway intersections is fairly simple. With the exception of the two intersections at the ends of the Busway, which are special cases (and neither of which has had a collision), and one other intersection (that has had only two collisions and one collision injury)[78], the intersections are generally of two types: **20-204**

A. The Busway crosses a general purpose surface street at grade with no other significant streets in the immediate vicinity – six intersections[79]

B. The Busway crosses a general purpose surface street at grade with a major arterial (U.S. 1/South Dixie Highway) paralleling the Busway a short distance away – ten intersections[80]

(381. The above, of course, is a simplification of the many factors that go into analysis of an intersection for the proper design for traffic flow and safety – for example, this analysis takes no account of the angle of intersection of the busway and the street being crossed, which can have important safety implications in some cases. Analysis of these factors would require a detailed analysis of the safety implications for each intersection along the BRT – which MTA has not performed, perhaps because it has no interest in knowing what the results of such an analysis may be.

382. In virtually every situation, intersections have unique attributes that must be carefully analyzed by experienced, knowledgeable experts prior to design, and even then, there are often unpleasant occurrences when operations begin. [The basic rule is, never underestimate the capacity for drivers to do incredibly stupid things.] However, for the current purpose, which is to compare the complexity of the MDT Busway of the SFV BRT for purposes of determining if the design of the SFV BRT intersections might lead to safety issues not encountered in Miami, this is a useful initial screening exercise. Therefore, the simplifications in this section should be **20-205**

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78 Source: DMJM, pp. A-1, A-2, and A-19. The North "end" intersection, Datran Boulevard is located very close to the Busway bus stop, unlike almost all other Intersections and bus stops, so South-bound buses have not accelerated to any substantial speed when they reach the intersection proper, and North-bound buses have been decelerating to stop at the station immediately on the far side of the intersection. 98th Street, the second intersection from the North end of the Busway, does parallel SW 77th Avenue, but the non-bus traffic speeds are generally lower than those involving U.S. 1. The South "end" intersection, SW 112th Avenue, is a modified "T" intersection, which means that buses are unable to reach high speeds through it.

79 Source: DMJM, pp. A-1/19. Included in this category are the following stations (from North to South): SW 168th Street, Banyan Street, Hibiscus Street, SW 184th Street, SW 186th Street, and Marlin Road.

80 Source: DMJM, pp. A-1/19. Included in this category are the following stations: SW 104th Street, SW112 Street, SW 124th Street, SW 128th Street, SW 132nd Street, SW 136th Street, SW 144th Street, SW 152nd Street, Caribbean Boulevard, and SW 112th Avenue.

Comment 20-204

The comment describes the two major types of intersections on the Miami busway and is acknowledged for the record. MTA, its consultants, and LADOT carefully assessed the design of each crossing on the Orange Line to align the crossing and the adjacent station platform areas in the manner judged to be safest and easiest to position positive traffic control devices (signals) to control street auto traffic, buses and pedestrians.

Comment 20-205

This comment describes the types of at-grade crossings on the Orange Line and notes that the crossings on Sepulveda Boulevard and Winnetka Avenue will be operated with coordinated signals on the north-south streets. The comment is acknowledged for the record.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 103
November 22, 2004

kept in mind as limiting the details of the application of the comparisons, but having significant value for gaining an understanding of the "big picture.")

20-205

383. The SFV BRT intersections can be generalized and grouped into the following types, as shown below (first numbers are order from West to East; East-West street – or the street that is "more" East-West – is first mentioned; "C-###" is sheet number in FEIR, Volume 3)[81]:

I. Converting a "T" intersection into a quasi-four-way intersection (one intersection):

1. Victory/Variel (C-201)

II. Busway immediately adjacent/close to street on one side (ten intersections) (NOTE: these have the same basic geometry as MDT Busway Type B. intersections):

2. Victory/De Soto (C-202)
3. Victory/Mason (C-204)
5. Victory/Topham (C-208)
6. Topham/Corbin (C-210)
7. Topham/Tampa (C-212)
9. Oxnard/Reseda (C-217)
11. Oxnard/White Oak (C-222)
12. Victory/Balboa (C-228)
13. Victory/Woodley (C-304)
15. Bessemer/Kester (C-312)

III. Some degree of separation from nearest parallel street(s) (two intersections) (NOTE: these have the same basic geometry as MDT Busway Type A. intersections):

4. Victory/Winnetka (C-207)
14. Oxnard/Supulveda (C-310)

IV. Busway between two streets or in median of a single street (thirteen intersections):

8. Oxnard-Bessemer/Wilbur (C-215)
10. Oxnard-Topham/Lindley (C-219/220)
16. Aetna-Bessemer/Vesper (C-314)
17. Aetna-Bessemer/Van Nuys (C-315)
18. Aetna-Bessemer/Tyrone (C-316)

[81] FEIR, Volume 3 – Preliminary Engineering Plan and Profile Drawings. Less detailed enhanced photographs of the intersections are available in FEIR, Volume 1, Chapter 2, available at http://www.mta.net/trans_planning/CPD/SFV/images/ch2%20%20p.%2052_78.pdf.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 104
November 22, 2004

19. Aetna-Bessemer/Hazeltine (C-317)
23. Chandler/Coldwater Canyon (C-326)
24. Chandler/Bellaire (C-327)
25. Chandler/Whitsett (C-328)
26. Chandler/Corteen (C-329)
27. Chandler/Laurel Canyon (C-331)
28. Chandler/Colfax (C-333)
29. Chandler/Tujunga (C-342)

V. Diagonal with offset (BRT guideway crosses perpendicular streets close to, but not at, their intersection) (one intersection):

20. Oxnard-Buffalo/Woodman (C-319/320)

VI. Diagonal without offset (BRT guideway crosses perpendicular streets through intersection) (one intersection):

21. Burbank/Fulton (C-323)

VII. Diagonal with offset to center median (BRT guideway crosses perpendicular street close to, but not at, their intersection and then runs in center of second street) (one intersection):

22. Chandler/Ethel (C-325)

(384. Note: Because the above methodology counts certain multi-street intersections as a single intersection for purposes of consideration of the intersection traffic flow and signaling, the total intersection count above does not match that of the FEIS.)

385. In general, the six MDT Busway "type A." intersections (The Busway crosses a general purpose surface street at grade with no other significant streets in the immediate vicinity) are similar to the two SFV BRT "type III." intersections; and the ten MDT Busway "type B." intersections (The Busway crosses a general purpose surface street at grade with a major arterial paralleling the Busway a short distance away) are similar to the ten SFV BRT "type II." intersections.

386. The MDT type A/SFV BRT type III intersections (the Busway/BRT crosses a general purpose surface street at grade with no other significant streets in the immediate vicinity) are the ones that have caused the most problems in Miami; the ones that MTA elected to exclude from the MDT Busway data in its presentation of Busway safety "safety" in the FEIS. The two SFV BRT intersections of this type (crossing Winnetka and Sepulveda) both present special challenges. MTA evidently intends to operate these intersections with coordinated traffic signals

20-205

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 105
November 22, 2004

20-205

on the North-South street on both sides of the busway – "The proposed BRT is designed to operate at-grade with all intersections signaled in a manner similar to the coordinated signal control intersections in the Miami Project[82]." However, there is no evidence yet that this approach will be successful – as MTA's own careful selection of data from the Miami project demonstrates.

20-206

387. Some of the aspects of these intersections are particularly troubling. For example, on Sepulveda, there are large buildings that almost totally screen BRT buses from being seen by cars, and vice versa, in all direction, so there is almost no possibility of actual visual sighting of approaching opposing vehicles by any vehicle operator.

20-207

388. With one exception, the remaining seventeen SFV BRT intersections have no real counterparts in the MDT BRT, and most of these non-matched intersections present very significant challenges to safe operations. (The exception where there is something of a match is that SFV BRT intersection 1., at Victory/Variel, at the Western end of the high-speed BRT alignment, does match well in some important aspects with the Southernmost MDT Busway intersection at SW 112th Avenue. Although the actual geometries of these two intersections are somewhat dissimilar, at both intersections, the buses are at the meeting point of the high-speed exclusive and street-running portions of the bus routes. As there are turning movements in all cases – buses entering and egressing both the Busway and the BRT – the bus speeds will be significantly reduced and the types of concerns that are unique to high-speed Busway/BRT operations will be minimal, and the more common concerns of buses making turning movements at high volume signalized intersections – often a complex situation, but one with far more real world experience available to traffic engineers – will predominate.)

20-208

389. The sixteen SFV BRT intersections not accounted for above, those with no match with the MDT Busway intersection, present unusual, and even unique, types of traffic flow and safety problems.

390. Thirteen of these are Type IV – Busway between two streets or in median of a single street. These can be subdivided into two subtypes, those in the middle of Chandler Boulevard, with one-way traffic on both sides of the BRT (seven cases), and the others, which have two-way streets on each side (six cases).

391. Among other things, these types of configuration present major difficulties with left turn movements, both to and from the parallel roads, because *all* left turns must cross the BRT alignment. For example, for turns from the two-way parallel streets, drivers tend to focus primarily on the oncoming traffic on the street that they are starting from. Generally, when this traffic clears, it is safe to complete the turn. In many cases, this means waiting at a "Green" until

82 FEIR, Volume 2, Comment C9-66, page 7-157.

Comment 20-206

The traffic signals on Sepulveda Boulevard will be clearly visible to operators of vehicles on Sepulveda, so they will have a positive indication (yellow then red signal) alerting them to when they need to stop for an approaching bus.

Comment 20-207

This comment notes that safety concerns are minimal at the Victory/Variel intersection and is acknowledged for the record.

Comment 20-208

The traffic signal phases at Orange Line at-grade crossings will be designed to give drivers positive guidance with green and red turn arrows to avoid confusion or the need to wait in the middle of an intersection for the passage of on-coming through traffic. All of the turn movements across the Orange Line will have protected turns, not permissive turns. In addition, nearly every intersection of the Miami busway is at an oblique angle to the cross streets. (Miami Study p. 2.) Yet, most of the BRT's intersections will be at a 90-degree angle, much like standard street intersections. (Draft EIR Vol. 2, Sheet 25 – 54.) In addition, there are complex intersections on the Miami busway such as S.W. 152 Street. There, the busway crosses the intersection of S.W. 152 Street and S.W. 92 Street at a 45-degree angle. (Miami Study p. 2.) Yet, during the four-year study period, from February 1997 to June 2001, the S.W. 152 Street intersection (Miami Study p. 13.), p. 12, fn. 1.), had the third best safety ratio of all the intersections. (Miami Study p. 14 (safety ratio of 0.018); p. 12 ("Locations with safety ratios greater than or equal to 1.0 are considered high crash locations.").) Therefore, looking at intersection geometry without

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 106
November 22, 2004

20-208

it turns "Yellow" and the last opposing car clears the intersection. Drivers may expect that, once they have cleared the opposing lane(s) of their original street, they are in a "safe" pocket, where they can either proceed directly if the light as changed, or stop at the "Red" in the median and wait for the "Green."

392. This type of movement, however, has killed a lot of people on the Blue Line, particularly where drivers have not strictly observed the traffic signals and ordinances – which is, unfortunately, a very common event, as anyone with experience of any type in traffic safety can testify. In particular, safety problems can arise when a car is waiting to make a turn across the BRT alignment on to a perpendicular street and an on-coming bus causes the Red signal for the perpendicular street to be delayed to allow the bus to pass. In this event, the auto driver making the left turn may not be aware that the bus is coming and may instead pull on to the BRT alignment – directly in front of the on-coming bus, sometimes without allowing the bus operator sufficient time to take avoidance actions. The "safe" action for the auto driver in this situation – wait where (s)he is, in the intersection of the parallel street (s)he started from and the perpendicular street – is very abnormal to virtually all drivers.

20-209

393. Another dangerous situation often occurs when driver attempt to make left turns from the street perpendicular to the BRT alignment on to a parallel street. What often happens is that traffic in the opposing direction forces drivers to wait to make a left turn while actually on the BRT alignment. When traffic in the opposing direction is heavy, the left turning drivers have to wait until their light turns Yellow to be able to turn – or, in many cases, wait until the last opposing direction driver passes through on the Yellow and their light actually turns Red. When there are multiple cars preparing to make a left turn, the time delay can often be several seconds. This poses considerable danger of leaving cars on the BRT alignment as Busway buses approach.

394. These types of left turn movements have been the single greatest cause of Blue Line fatalities. However, at all Blue Line high-speed intersections, there are crossing signals and crossing gates to protect drivers from the on-coming trains and from themselves. *There are no such safety devices proposed for the SFV BRT.*

20-210

395. The three remaining intersections all boarder on the unique. All three intersections involve at least two streets (in addition to the BRT guideway). All three have the BRT guideway crossing the intersecting streets at angles other than right angles. And all three pose extremely challenging safety concerns.

A. Intersection 22. – Chandler/Ethel – from West to East, the BRT alignment first crosses Ethel in a Southeastern direction and then curves into the Chandler median. The approximately 70^{O} diagonal crossing of Ethel will require coordination with traffic signals on both Chandler, South of the crossing, and Albers to the North. Then, as the bus proceeds East, coordination with the signals at Chandler and Coldwater will be required to allow the bus to

considering a number of other factors can be misleading. Further, the Court of Appeal affirmed the DEIR's discussion of traffic safety was adequate. (Court of Appeal Decision, p. 16.) Thus, the Orange Line's intersections do not create a significant safety impact.

Comment 20-209

Please refer to Response 20-196.

Comment 20-210

This comment describes the unique nature of the Chandler/Ethel at-grade crossing, which has been taken into consideration by the MTA, its consultants and LADOT in the design of signal and signing and striping improvements at this location. Please see Response 20-208.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor **Page 107**
November 22, 2004

cross Westbound Chandler to the median, approximately eight to ten seconds after crossing Ethel (assuming a bus speed of approximately 45 mph). MTA also plans a traffic signal on Chandler immediately prior to the BRT alignment crossing, which will require timing coordination with the other signals.

20-210

In some ways, the signaling for Westbound Busway buses could be even more important. With the busway egress from the Chandler median to the North side of the street beginning as a gradual curve, a Westbound automobile on Chandler, paralleling the Westbound BRT alignment, could find a bus suddenly threatening it from the left, in a movement very similar to a vehicle from a lane to the left suddenly moving into its lane. For this reason, totally blocking all vehicles from entering Chandler West of Coldwater Canyon while buses are making this curving Westward movement is essential. This will require a change in the common traffic signaling system for streets parallel to the busway, where there will be an attempt to match "Green" cycles for buses and street traffic. In this section of Chandler – the only BRT section where the bus operating speed will be limited to the speed of the parallel street – this coordination will generally produce buses and cars traveling together for several blocks, starting at the Laurel Canyon BRT station – and then the cars being stopped at Coldwater Canyon (or, alternatively, at the traffic signal on Chandler immediate prior to the BRT alignment curving to the North). The obvious danger is cars running Yellow, or even Red, lights and winding up at the wrong place at the wrong time.

Another problem will be preventing Southbound Coldwater Canyon vehicles from making a right-turn-on-red to produce the same results – unfortunately, experience with the Blue Line has shown that drivers and pedestrians have an unfortunate tendency to ignore traffic signals, and even lowered crossing gate arms, when they believe – correctly or not – that there is no traffic approaching or that they can "beat" the approaching transit vehicle. Also, there are 11 residences on the North side of Chandler West of Coldwater Canyon that have driveways on Chandler – the problem here is that drivers here often wait for Westbound Chandler vehicles to be stopped at the Red on Coldwater to be able to leave their driveways and get on to Chandler. While Eastbound BRT buses would also pose problems for Westbound Chandler auto's, these would at least be more likely to be seen by the auto drivers, and the auto's seen by the bus operators, because the vehicles are closing at only a slight angle, of 10^{o} or less – although the closing speed could be 80 mph or greater, which reduces reaction time and makes any collisions that would result far more likely to cause serious injury or death.

20-211

B. Intersection 20. – Oxnard-Buffalo/Woodman – is particularly complex. Approaching from the West, the busway curves from its Eastbound alignment that parallels the East-West streets in this portion of the Valley, begins to curve to the South, crosses Woodman at approximately a 20^{o} angle, travels approximately 400 feet, and then crosses Oxnard and the current location of Buffalo, with both stations being East and South of this last crossing.

Comment 20-211

This comment describes the unique nature of the Woodman/Oxnard at-grade crossing, which has been taken into consideration by the MTA, its consultants and LADOT in the design of signal and signing and striping improvements at this location. Please see Response 20-208.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor **Page 108**
November 22, 2004

Coordinating the traffic signals at the corner of Woodman and Oxnard – and the signals North and East of this corner – will be quite interesting, as for the buses to proceed without stopping, traffic in both directions will have to be stopped at the same time. If this both-ways street signaling is implemented, then there will be significant disruption of street traffic flows. If it isn't, then the Busway buses will have to stop at signals at least once, and potentially twice. **20-211**

Also, if more than a approximately six to eight cars (or an equivalent length number of trucks, buses and other larger vehicles) are stopped Southbound on Woodman and/or more than approximately 12 to 14 cars (or the equivalent) stopped Westbound on Oxnard, then the BRT alignment could be blocked. MTA proposes that the busway crossing of these streets will be marked for no vehicles to be stopped there at the signals, but driver compliance is far from assured.

Because of the fairly high angle of crossing of Woodman, and the presence of structures that block sight lines, there is very little visibility of buses by auto drivers, and vice versa. For buses crossing Oxnard at a shallow angle, Westbound buses will have little visibility of Westbound auto's; and Eastbound buses will have little visibility of Eastbound auto's, and vice versa. For buses and auto's operating in opposing directions, there will be better visibility – approximately 30° – but the closing speed will be quite high, shortening reaction times and increasing the severity of any collisions.

Another issue will be preventing Northbound vehicles on Woodman from making right turns on to Oxnard when buses are approaching.

Finally, Northbound traffic on Buffalo will intersect Oxnard slightly to the West of the BRT crossing point. Buffalo cars making a right turn onto Oxnard will almost immediately be on the BRT alignment. The angle of intersection, and the placement of the Eastbound BRT station platform, will make it extremely difficult for the drivers of such vehicles to be able to see Westbound BRT buses.

C. Perhaps *the* most challenging SFV BRT intersection is Burbank and Fulton. The BRT is proposed to have an approximately 45° simultaneous diagonal crossing of both of these major streets, right through the middle of the intersection. **20-212**

Obviously, all traffic on both streets must be halted for Busway buses to go through this intersection. Also, North- and Southbound vehicles on Fulton cannot be allowed to make right-turns-on-red. Finally, the major trip generator at this intersection is Valley College, on the Northeastern corner. Students using the Eastbound Busway station will have to cross the Busway to reach the boarding platforms. Students and others running to catch a bus are at risk for being hit by buses, particularly Westbound buses that will be approaching the

Comment 20-212

This comment describes the unique nature of the Fulton/Burbank at-grade crossing, which has been taken into consideration by the MTA, its consultants and LADOT in the design of signal and signing and striping improvements at this location. Please see Response 20-208.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 109
November 22, 2004

20-212

crosswalk at approximately 25 mph after slowing from 45 mph on their ways to the Westbound Busway station on the Northwest corner of this intersection.

Finally, City of Los Angeles Fire Station 102 is located at 13200 Burbank Boulevard on the Southeast corner of the intersection, approximately 100 yards from the busway. Emergency fire calls through this intersection – with the Fire Department vehicles equipped with traffic signal preemption equipment – adds another degree of complexity to the design and operation of the signaling system for this intersection.

The safety concerns for this intersection parallel those above, with the additional problem of crossing through two major streets at the same time in the same place.

20-213

396. Besides those problems discussed above, there are several other safety concerns that could prove troublesome:

A. Confused drivers who inadvertently enter the BRT alignment. This is most likely to be a problem where the BRT is next to a general use street, or in the middle of two public use streets, or in the Chandler median, where a driver could intend to make a left turn on to the general use street, but wind up, unintentionally, on the BRT.

Unfortunately, some drivers who find themselves in this situation then commit what can turn out to be even more dangerous act, such attempting to back out of the busway on the street that crosses it, attempting a U-turn on the busway, etc.

20-214

B. Drivers who improperly and intentionally use the BRT alignment as a shortcut, or to avoid a traffic backup.

20-215

C. Drivers that utilize the BRT alignment for racing.

20-216

D. Emergency vehicle drivers, particularly police officers, who utilize the BRT alignment to respond to emergency calls or for other reasons (Note: City of Los Angeles and other emergency vehicles will *not* have the necessary equipment to trigger the BRT's traffic signal preference system. The few City of Los Angeles emergency vehicles that are currently equipped with transit signal preemption devices utilize equipment that is non-compatible with the advance loop equipment that MTA has specified for the BRT. It is not known if MTA plans to equip the County of Los Angeles Sheriff's Department patrol cars that it hires from LASD, or its own non-sworn officer security officers, with these devices.) The use of the MDT Busway by emergency vehicles has led to some very serious collisions.

20-217

397. Any reasonable interpretation of the potential for traffic safety problems at the SFV BRT intersections discussed above will produce grave concerns. Despite this, MTA's total discussion

Comment 20-213

Signage will be utilized to alert drivers not to enter the busway. Enforcement may also be required. MTA will coordinate with LAPD and LADOT to fine-tune the signage, traffic signal indications and/or striping at any locations should experience indicate that drivers are not clear that the busway is for buses only. Please see Response 20-208.

Comment 20-214

Enforcement of illegal use of the busway is the responsibility of the LAPD. Please see Response 20-208.

Comment 20-215

Please refer to response to comment 20-214.

Comment 20-216

It is not anticipated that emergency vehicles would use the busway. Should they ever find the necessity to do so, they would operate under standard procedures for such emergency operations and utilize lights and sirens, as appropriate, to alert other vehicular traffic of their presence. Please see Response 20-208.

Comment 20-217

The comment notes that human beings do stupid and illegal things and is acknowledged for the record. MTA, its consultants and LADOT have attempted to anticipate driver and pedestrian behavior and to provide positive guidance via signs, striping and traffic signals to any and all such persons who must cross the busway. Please see Response 20-208.

Comments On DRFEIR, San Fernando Valley East-West Transit Corridor Page 110
November 22, 2004

20-217

of BRT safety is only slightly longer than a single page in the FEIS – Volume 1, Section 4-13.3.1.c., "Accident Prevention, c. Full BRT, Lankershim/Oxnard On-Street Alignment, and Minimum Operable Segment (MOS)," pp. 4-283/285. This yields proposals and conclusions such as:

A. "... these BRT alignments would be expected to have an impact this is minor adverse under NEPA (not significant under CEQA) on accident potential."

B. "Special safety features have also been designated to protect vehicular traffic crossing the corridor. Before reaching the intersection, drivers would be warned by "pre-signals" that they are approaching an intersection that crosses the corridor. Traffic lights will be modified to insure adequate stopping distances for cross traffic lanes to maintain acceptable levels of service at intersections. The corridor will be painted to visually designate that the corridor is not a surface street."

C. "The BRT Alternative would place buses within a dedicated corridor, separated from mixed-flow traffic except at intersections, which would reduce the potential for conflict between normal street traffic and bus operations."

D. "The intersections will operate as at-grade street crossing (sic), and will not require the installation of gates, bells or whistles associated with rail crossings."

E. "Busway drivers will have direct control over their vehicles and will be able to brake quickly or move out of the way to avoid incidents."

398. The above comments by MTA show an incredible disregard of one very important aspect of traffic safety that is well known to anyone who has ever spent any time in this field: human beings, particularly human beings who are operating vehicles or walking in urban areas, have an unbelievable capacity to do stupid things. Many of these stupid things are illegal, others just plain dumb, but they lead to situations that put people and property at risk. Any design of a surface transportation system that does not takes this cosmic truth into account is destined for disaster.

20-218

399. To the best of my knowledge, with only a very few minor exceptions, MTA has never been at "legal" fault in any way of any of the seventy-plus Blue Line fatalities. The legal fault for every single one can be traced to the driver of the vehicle in which people died, or the pedestrian that was killed, or person doing an extremely strange activity, generally the violation of an ordinance and operating the vehicle in a totally improper manner or, if a pedestrian, being in a place where they should not have been. In all cases, the people that were killed (or the driver of the vehicle that carried the passengers that were killed) were dead wrong.

400. But all of these people are not just dead wrong, they are just plain dead.

Comment 20-218

The comment is acknowledged for the record.

Comments On Draft Revised FEIR, San Fernando Valley East-West Transit Corridor
November 22, 2004 Page 111

20-219

401. A better design of the Long Beach Blue Line could have prevented the vast majority of these fatalities. Even if MTA was able to reduce the Blue Line fatality rate to only that of the second worst light rail system, well over two-thirds of these fatalities – over forty deaths – could have been prevented.

20-220

402. If the San Fernando Valley Bus Rapid Transit system is constructed and operated as it is currently designed, there is a very significant chance that it will make the Blue Line fatality record look like a goal to strive for. More likely, the high rate of collisions, injuries, and deaths will quickly result in a call for making the system more safe – which is not unlikely to produce a result similar to that of the Miami-Dade Transit Busway, where the speed-producing transit signal preferences for buses are turned off.

403. What are MTA's responses to the points made above?

20-221

404. I also wish to reference another recently opened guideway transit system that has had safety problems that relate to the Orange Line, the Houston Downtown Light Rail System operated by the Metropolitan Transit Authority of Harris County. See Exhibit XXVIII, the "Wham-Bam-Tram Ram Counter[83]" and related materials.

405. The light rail system in question operates for approximately 7.5 miles from the North side of the Houston CBD South to the Astrodome Complex and slightly further. It is almost completely at-grade, with its tracks and stations primarily located in what used to be the center lanes and dividers of Main Street and other streets. It has a high number of at-grade intersections. In these design features, it is very similar to the design of the Orange Line along Chandler and through other areas of the Valley where there are traffic lanes, or two-way streets, on both sides of the Busway. However, the speeds of the Houston Light Rail system are very low, in the 25 to 35 range for almost all its right-of-way.

406. The Houston light rail system has had more train-vs.-auto/truck/pedestrian collisions than any other U.S. light rail system over a comparable period of time, even though, at 7.5 miles, it is far shorter than almost all other systems. In Exhibit XXVIII, page 3, the graphic, "A Streetcar Named ... Disaster" now (November 21, 2004) shows 70 collisions. On page 8, the story, "It's A Record! 62!," discussed now the September 15 crash put Houston's total over the previous annual record, held by the San Francisco Municipal Railway, of 61. Muni operates 73.3 directional route miles of light rail, which is approximately 36.7 bi-directional miles (to have a figure consistent with the 7.5 miles for Houston), of which approximately 3.5 miles is subway and not generally subject to collisions.

[83] While the operator of this web site has an "interesting" perspective and point of view on the subject of the Houston Light Rail System and other events, the fact behind the statements appear to be accurate and complete.

Comment 20-219

The MTA disagrees with the comment. The design of the Metro Blue Line exceeds the safety standards established by the regulatory agencies and industry practices. It is important to note that the duties, rights and obligations of a transit agency and those of a person on the highway, whether they are motorists or pedestrians, at public grade crossings are mutual and reciprocal. While a transit agency is bound to give due reasonable and timely warning of a train's approach, persons who cross a railroad track are equally bound to exercise ordinary care and diligence to ascertain whether a train is approaching. Certainly, there is no doubt as far as the design of crossings is concerned, that the MTA has fulfilled its obligations of providing more than the minimum required warning devices at all the Metro Blue Line grade crossings. It is the responsibility of persons on the road to heed the warning of these devices and the approaching train and thus "protect' themselves from harm. This responsibility is not different than what is placed on every person who crosses at a traffic-signalized intersection. Just as it is very likely that a person ignoring the "WALK/WAIT" signals at a pedestrian crosswalk will be involved in an accident, so too is the likelihood that a person ignoring the warning devices at a railroad crossing will be involved in an accident. If one were to closely examine the reasons for the accidents on the Blue Line, it would be clearly evident that the motorists and pedestrians involved in the accidents have violated the traffic laws by ignoring active warning devices provided for their safety and have shown a blatant disregard for the devices.

Comment 20-220

The commenter speculates with regard to fatalities and the need to eliminate transit signal priority for the buses.

Comments On Draft Revised FEIR, San Fernando Valley East-West Transit Corridor
November 22, 2004 Page 112

20-221

407. I have visited Houston, ridden this light rail system, and spent a fair amount of time doing both on-site and document reviews of it. I believe that its safety problems have very significant implications for the Orange Line. Many of the factors that have caused the high rate of collisions in Houston are present on the Orange Line. The biggest difference is that the Houston speeds are considerably lower than those proposed for the Orange Line, which both makes collision avoidance more difficult and significantly increases the level of damage and injury from collisions.

408. In recent months, the rate of collisions has fallen off, evidently due primarily to change in traffic operations. Of these the most significant appears to be changes in signal timing, most importantly, requiring an "all red" for 15 seconds in all directions before a light rail train is allowed to enter the intersection (see Exhibit XXIX, Lucas Wall, "Rail ridership figures called 'impressive,'" Houston Chronicle, April 6, 2004). While the collision statistics have improved significantly as this and other changes have been implemented at more at-grade intersections, I will speculate that any attempt to implement anything remotely similar along the Orange Line right-of-way would be an extremely difficult activity. How would MTA – and LA-DOT, along with other responsible entities – respond to a high rate of bus-vs.-auto/truck/pedestrian collisions along the Orange Line Busway? Would bus speeds through intersections slow? Would buses come to a complete stop at each intersection? Would "all-around red lights" be implemented at Orange Line grade crossings? What would MTA do? Does it have any plans for this possibility – a possibility that, based on recent experience with other transit operators with similar projects, there appears to be very significant possibility of occurrence?

20-222
20-223
20-224
20-225

20-226

409. Page 8-4.16-12, 8-4.16.7 Environmentally Superior Alternative – MTA concluded that the Orange Line would be the environmentally superior alternative, but this is based primarily on the very poor analysis of very poor Rapid Bus Alternatives in the DRFEIR. If MTA had used an outreach program – let alone its own technical research capabilities – to produce input regarding what an optimum, or at least good, Rapid Bus network would look like, and then worked to improve service by reducing running times rather than looking for ways to make lines run slower, and then made other service improvements that were and are well within MTA's ability to control, Rapid Bus ridership would almost certainly be significantly improved and this is primary determinant of what is environmentally superior in MTA's analysis. The other statistics, from energy usage to time savings to development would improve consistent with ridership increases.

20-227

410. Page 8-6-5, Table 8-6.1: Summary of Capital Costs (2001 Dollars, in millions) and Table 8-6.2: Capital Cost Comparison (2001 Dollars, in million) and page 8-6-6, Table 8-6.3: Incremental Annual Operating and Maintenance Costs (2001 dollars, in millions) – All of the capital cost figures for all Alternatives appear to be overstated, some very significantly.

411. Let's start with Bus capital costs, which are most, or all the capital costs for the non-Orange Line Alternatives, TSM, RB-3, RB-5, and RB-Network. Please refer to Exhibit XXV and the

The comment is acknowledged for the record. Please see Responses 20-193 and 11-3. Please see Response 20-208.

Comment 20-221

Please refer to Responses 20-35 and 20-196.

Comment 20-222

It is not possible to forecast how the operations of the Orange Line operations might be adjusted in the future to react to a situation that the MTA, its consultants and LADOT do not believe will be a likely situation. The MTA and LADOT will monitor and evaluate system operations and make appropriate adjustments to bus operations or signal timing/phasing if determined necessary. Please see Responses 20-208.

Comment 20-223

Please refer to Response 20-222.

Comment 20-224

Please refer to Response 20-222.

Comment 20-225

Please refer to Response 20-222.

Comment 20-226

The commenter claims that an unspecified better performing assemblage of Rapid Bus routes would be environmentally superior to the Project. In other words, the commenter suggests that a Rapid Bus network that generates more ridership than the RB Alternatives or even the BRT would make that network environmentally superior. Increasing ridership has little effect on environmental superiority here because no matter how many riders the optimum Rapid Bus network could

Comments On Draft Revised FEIR, San Fernando Valley East-West Transit Corridor
November 22, 2004 Page 113

20-227

spreadsheet I have prepared, "Comparison of Bus Capital Costs of Alternatives." This shows that, in 2001 Dollars, the average costs per vehicle for the various alternatives are:

TSM:	$ 526,000
Full BRT:	$1,000,000
RB-3, RB-5, and RB-Network:	$ 550,000

412. As might be expected, there are differences between the vehicles that will be utilized for each Alternative. For the TSM Alternative, while there is no explicit statement to this effect that I could find in the FEIR or RDFEIR, it appears that the 38 buses to be added would all be 40-foot CNG buses. This has been the MTA "standard" bus for many years and, at the time that the DEIS/DEIR and FEIR for this project were being prepared for and written in 2000-2002, there were no final plans in place for use of any other vehicles for standard, on-street, local bus service. If this assumption is not correct, I ask that MTA provide the proper information.

20-228

413. The Full BRT story is more complicated. As may be seen on page 2-72 of the FEIR, the Upper Bound bus assumption for this was 61 single articulated and 7 standard buses. Since the Full BRT Alternative was to include the TSM bus buy of 38 standard buses, how this was to work is unclear. I ask MTA to explain how it intended to operate 38 40-foot TSM buses out of orders for 61 single articulated and seven standard 40-foot buses.

20-229

414. Also, at the time the FEIR was being prepared, MTA was engaging in a procurement for CNG/Electric or CNG/Hybrid articulated buses to use on the Orange Line, which was cancelled – my understanding of the reason for this was that there was no bus proposed that could meet MTA's performance specifications. Therefore, MTA elected to utilize "straight" CNG single articulated 60-footers. MTA was evidently anticipating paying a substantial premium for the CNG/Electric or CNG/Hybrid buses and, when the substitution of the "straight" CNG buses was made, the unit cost[84] was significantly lower, $632,914 vs. $1 million.

20-230

415. This substitution would appear to constitute a significant savings for MTA in its Orange Line budget, but this depends on an MTA decision. In plans such as this, the relevant capital cost is not the opening day cost, but the design year cost, in this case, 2020. Note that MTA has only assigned 22 of the CNG single articulated buses for opening day Orange Line operations, but that the proper calculation of the project capital budget would include the 2020 fleet requirement, which, from the FEIR page 2-72, MTA expects to total 68 buses (including, I assume, but cannot verify, 38 TSM buses).

[84] The transit industry standard for determining the unit price of new bus purchase orders is the "all in" price, including transportation costs to the buyer; all sales and other taxes payable; spare parts; training materials, devices, and instruction costs, including travel and subsistence for initial training of maintenance employees; and special maintenance equipment required. I will assume that MTA has followed this standard in costing its various bus purchases and ask that MTA correct this assumption if it is incorrect.

garner, the network would still create a significant land use impact. (Revised FEIR, p. 8-4.1-77.) No single Rapid Bus route can achieve the ridership of the Orange Line. If it takes more than one Rapid Bus route to accomplish the same ridership of the BRT, which there is no indication that they can, the multiple route Rapid Buses could not achieve the decrease in energy consumption as compared to the single line of the Orange Line. (FEIR, p. 8-4.16-12 (Greatest in energy consumption).)

Comment 20-227

The cost per bus for TSM in 2001 dollars is $550,000, which is identical to the cost per bus used for the rapid bus alternatives. The estimated $526,000 for TSM buses reflects 1999 dollars. All cost-effectiveness comparisons in the February 2002 FEIR expressed in 2001 dollars are based on a unit cost of $550,000 for a standard bus. In order to provide an apples-to-apples comparison, this unit bus cost was maintained in calculating the capital cost of the rapid bus alternatives.

Comment 20-228

The total fleet size needed to operate the modeled transit network is provided as an output of the transportation demand model. Totals for each alternative were extracted from the model to determine incremental bus needs compared to No Build.

To determine the type of buses needed for service operating on the busway, peak hour volumes were examined for the individual routes that were defined to feed the busway. Articulated buses were assigned when volumes indicated the need for more capacity.

Many of these articulated buses were buses that were counted as standard buses under the TSM alternative, e.g., MTA 364 (a limited bus on Victory Boulevard under TSM, redirected to use the busway) and LADOT 422 (an express bus from Thousand Oaks to Universal City, redirected to use the busway to North Hollywood). Other modifications were made to the TSM alternative as part of the bus feeder plan for BRT, which led to modifications in calculated vehicles.

Comment 20-229

MTA had solicited bids for CNG-electric or CNG-hybrid articulated buses with the goal of procuring vehicles that provided an electric drive or assist, significantly noise reduction, and an aerodynamic BRT styling. However, the new technologies proposed were judged to be immature while a proposal was contingent on successful negotiation with a U.S. partner to manufacture the vehicle and to provide after-market support. After much deliberation, a source selection committee decided that an award at that time would place an unacceptably high risk to MTA and all proposals were to be rejected.

Comment 20-230

The capital cost estimates for vehicles are shown in Tables 6-1 and 6-1a of the FEIR. These vehicle cost estimates were developed based on the 2020 fleet requirements listed in Table 2-9 of the FEIR.

Comments On Draft Revised FEIR, San Fernando Valley East-West Transit Corridor
November 22, 2004 **Page 114**

20-231

416. In situations such as this, the usual costing practice is to assume that the current day prices for readily available items such as buses are the best predictors for the future prices of similar items. This would argue for the use of the current, lower, $632,914 price. However, if it is MTA's intention to procure CNG/Electric or CNG/Hybrid buses for use on the Orange Line in 2020, then the $1 million average price per vehicle could still be appropriate.

417. I would appreciate MTA's resolution of the above unresolved (at least, in the record) situation and presentation of its current best projection of Full BRT bus capital costs for our current purposes.

20-232

418. Information regarding the types of buses to be utilized for the three Rapid Bus Alternatives may be found on page 8-2-31, "Standard Metro Rapid vehicles (40-foot or 45-foot) would be used on the Rapid Bus routes depending on actual demand."

419. The actual costs of these vehicles can be determined by reference to various MTA press releases:

A. July 22, 2004, "Metro Board Approves Purchase of 75 New Buses" – "The $30 million purchase ..." and "The purchase of these 75 40-foot buses ..." – This computes to an average price per bus of $400,000.
B. February 26, 2003, "Bus of the Future is Latest Addition to MTA Bus Fleet" – "The 'Compo-bus is a 40 foot, ..." and "Each Compo-Bus costs $310,000."
C. January 23, 2003, "MTA Board Approves Purchase of 70 Additional High-capacity 45-Foot High-tech Buses" – Each bus is priced at $373,156 and ..."

420. As can be easily determined, the prices of all of these buses are well under the $526,000 and $550,000 prices in my spreadsheet.

421. Because the calculation is to be done in 2001 dollars, it will be necessary to adjust the above press release prices for the impact of inflation. The prices above are for the time of delivery, but I do not know when this will be for these vehicles, so I will assume that the proper values to utilize for this adjustment of the Annual Consumer Price Index – All Urban Consumers, U.S. City Average, U.S. Department of Labor/Bureau of Labor Statistics, for 2001 Annual and the most recent month, October 2004. These values are 176.6 and 190.9, respectively, so the adjustment factor to be applied to the above prices is .925 (176.6/190.9). This produces the following prices:

A. July 22, 2004 40-foot bus order:	$370,000
B. February 26, 2003 40-foot order:	$286,750
C. January 23, 2003 45-foot order:	$345,169

Comment 20-231

Given the current state of bus propulsion technology, it is inappropriate to predict MTA's procurement intentions for the year 2020. The agency will use appropriate technology available at that time. However, for EIR budget estimate purposes, it was necessary to utilize the most reasonable cost information available in year 2000.

Comment 20-232

The capital cost calculations for all of the alternatives use comparable bus cost values for the same types of vehicles. An attempt has been made to use conservative numbers in the cost estimates, so as not to underestimate the costs. The $550,000 per bus cost for the Rapid Bus Alternatives includes contingency costs that appear as separate line items in the BRT cost estimate contained in Tables 6-1 and 6-1a of the FEIR. A 20% contingency (Line 12H of Table 6-1) is applied to the Vehicle cost (Line 5).