LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

REGIONAL TRANSIT ALTERNATIVES ANALYSIS

STUDY RESULTS APPENDIX

Presented by
Booz·Allen & Hamilton Inc.

November 17, 1998

RTAA STUDY RESULTS APPENDICES

THE STUDY RESULTS APPENDIX PROVIDES DETAILED DATA TO SUPPORT THE RECOMMENDATIONS IN THE NOVEMBER 9, 1998 STUDY RESULTS REPORT

- The information included in this report represents a work in process
- The alternatives described herein represent a sketch plan of corridor options and should be used in support of a more detailed alternative evaluation to be done on each corridor in the future
- The results contained in this report represent the best available info rmation given the time constraints under which this study was completed. The level of detail for each alternative varies. Where available, prior work was used, but a large amount of new analysis was done as part of this study. All results should continue to be evaluated and refined as the study process is advanced

THE CORRIDOR ALTERNATIVES PRESENTED REPRESENT AN INITIAL BEST REPRESENTATION OF ALIGNMENTS THAT CAN SERVE THE TRANSIT DEMAND CORRIDORS. AS STUDIES ADVANCE, ADDITIONAL ALIGNMENTS AND MODAL OPTIONS SHOULD BE CONSIDERED

THE STUDY RESULTS APPENDIX INCLUDES FOUR SECTIONS

- **Appendix 1** summarizes the changes to the revenue and cost commitments since the completion of Milestone 1. This section includes the 1989 Retrofit Soundwall List which was used as a basis for determining the Soundwall funding recommendation in the Study Results Report; this section also includes the post 1989 Soundwall List which the RTAA does not fund

- **Appendix 2** summarizes the Performance Measures used for evaluation of each alternative, including the intent of each performance measure, the basis used in its determination, and the presentation of the results

- **Appendix 3** details the costing methodology used and is presented in two sub-sections:

  - **Appendix 3.1** describes the method used to determine the three cost categories: MTA costs, the lower bound estimate, and the best estimate

  - **Appendix 3.2** describes the results for each alternative in the three cost categories and summarizes possible steps the MTA can take to reduce costs from their average into the range of the best estimate

THE FOURTH SECTION OF THIS APPENDIX CONTAINS THE RAPID BUS AND CORRIDOR ALTERNATIVES ANALYSES

- The information in **Appendix 4** includes the system definition and operating characteristics, performance measures, operating and capital costs, ridership and capacities, alignment definition and implementation schedule

- The information is presented in four sub-sections. A detailed description of the data content of each sub-section is provided at the beginning of Appendix 4

  - Appendix 4.1: Rapid Bus
  - Appendix 4.2: Eastside Corridor Alternatives
  - Appendix 4.3: Westside Corridor Alternatives
  - Appendix 4.4: San Fernando Corridor Alternatives

APPENDIX 1
FUNDING

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REVENUE UPDATE

($ millions)

	FY99–FY04	FY05–FY10	FY99–FY10
ESTIMATED REVENUES, MILESTONE 1	**$18,454.3**	**$19,199.0**	**$37,653.3**
Adjustments:			
– Unexpended Pasadena Blue Line funds	$22.6		$22.6
– Additional New Starts funding	$8.3		$8.3
– Revised STIP fund estimate	$152.1	$150.0	$302.1
– Audit adjustment to financial model	$7.5		$7.5
UPDATED REVENUE ESTIMATE	**$18,644.8**	**$19,349.0**	**$37,993.8**

THROUGHOUT THE RTAA PROCESS, REVENUE PROJECTIONS HAVE BEEN REVISED AND UPDATED AS ADDITIONAL INFORMATION BECAME AVAILABLE

- The Milestone 1 "best estimate" of $18,454.3 million is based on assumptions of continuing economic growth, as reiterated on page six of the study results document

- Four adjustments have been made to the Milestone 1 revenue estimates:

  - Less has been expended on the Pasadena Blue Line than originally estimated, thereby increasing available revenue by $22.6 million. However, all of these funds are committed by the Schiff Bill to the JPA
  - The recent Federal appropriation provides $8.3 million more in New Starts funds than previously anticipated. Of this amount, $8 million are committed to Red Line planning for East Side and Mid-Cities; $0.3 million is available for an East Side Transit Center
  - Caltrans recently revised the STIP fund estimate, increasing the amount available to Los Angeles County by $152.1 million
  - The recent audit of the MTA's financial model identified $7.5 million that had been committed twice, making that much more available for programming

- As a result of these adjustments, revenue projections for the FY99-FY04 planning horizon total $18,644.8 million

COMMITMENTS UPDATE
($ millions)

	FY99–FY04	FY05–FY10	FY99–FY10
ESTIMATED COMMITMENTS, MILESTONE 1	**$17,135.1**	**$16,738.4**	**$33,873.5**
Adjustments:			
– Commitments overstated in Milestone 1	($2.1)	($1,256.7)	($1,258.8)
– Pasadena Blue Line rail cars	45.0		45.0
– Pasadena Blue Line operating costs	64.2	217.8	282.0
– Accelerated Bus Procurement	265.0		265.0
– Revised STIP funding estimate	(24.0)		(24.0)
– Model adjustments (Red Line/Blue Line)	(22.5)		(22.5)
– ASI expansion	75.0	90.0	165.0
– Additional New Starts funding	8.3		8.3
– TSM backfill	9.0		9.0
– Audit adjustment to financial model	7.4		7.4
UPDATED COMMITMENT ESTIMATE	**$17,560.4**	**$15,789.5**	**$33,349.9**

COSTS HAVE ALSO BEEN UPDATED TO INCORPORATE MORE CURRENT INFORMATION

- Commitments were overstated in the Milestone 1 report, primarily for the FY05-FY10 period. The Milestone 1 report noted this discrepancy and attributed it to the difficulty of following provisions in the MTA's financial model for financing debt
- The cost of 18 additional rail cars needed for the Pasadena Blue Line is estimated to be $45 million
- Operating costs for the Pasadena Blue Line are added and assume that service would begin in July 2002
- The Accelerated Bus Procurement was adopted by the Board and funded at $265 million
- Funds previously identified as committed in anticipation of the Caltrans STIP funds revision are now treated as uncommitted, reducing commitments by $24 million
- An adjustment to the financial model was necessary to reduce an overstated commitment to the Red Line by $22.5 million
- Recent and projected ridership growth on ADA-mandated paratransit services provided by ASI indicate a potential shortfall of approximately $15 million per year, beginning in FY00
- Recently appropriated New Starts funds have been committed to bus facilities and Red Line planning ($8.3 million)
- The need to provide the match for back-year projects (matched by the State before SB45 was enacted) was recognized, resulting in additional commitments of $9 million
- The audit of the MTA financial model identified additional committed revenue ($7.4 million)

LOS ANGELES COUNTY 1989 SOUNDWALL RETROFIT LIST

DRAFT

	Priority	State Route	Post Mile From	Post Mile To	Project Description	Estimated Cost X $1000	Program Total X $1000
297	Tier I - 1	LA-060	3.9	5.5	Monterey Park, 0.2 W Woods Av/ 0.1E Findlay Av :WB	$ 4,080	
316	Tier I - 2	LA-210	34.7	36.3	Duarte, Mountain Ave/Route 605 :E & WB	$ 3,212	
292	Tier II - 1	LA-010	3.4	3.7	Santa Monica, Cloverfield Blvd/Stewart St :EB	$ 600	
293	Tier III - 01	LA-060	15.1	16.9	Near Hacienda Hts, Turnbull Cayn Rd/0.6 E Stimson :W&EB	$ 7,706	
294	Tier III - 02	LA-405	18.0	18.2	Near Lawndale, Yukon Av/Inglewood Av :N&SB	$ 3,381	
300	Tier III - 03	LA-060	13.8	14.8	Near Industry, 0.5 W 7th Street/0.3 W Turnbull Cayn Rd :W&EB	$ 4,145	
301	Tier III - 04	LA-060	19.0	19.5	Industry, 0.5 W Fullerton Rd/ Fullerton Rd :EB	$ 1,160	
302	Tier III - 05	LA-005	37.4	37.7	Penorama City, Osborne to 0.3 N :NB	$ 540	
304	Tier III - 07	LA-101	7.5	7.7	Near Hollywood, Cahuenga Blvd/Odin St :N&SB	$ 668	
305	Tier IV - 01	LA-060	3.9	5.3	Monrabello, 0.2 W Woods Av/0.1E Findlay Av :WB	$ 8,144	
306	Tier IV - 02	LA-091	14.5	16.1	Bellflower, Lakewood Bl/Woodruff Av :N &SB	$ 9,050	
307	Tier IV - 03	LA-134	0.0	2.1	Los Angeles, Rte 101/Hollywood Way :WB	$ 5,041	
308	Tier IV - 04	LA-710	13.6	13.9	Near Compton, Atlantic Av/Alondra Blvd :SB	$ 662	
309	Tier IV - 05	LA-101	25.8	27.1	Los Angeles, 0.3 S Ventura Bl/Woodlake Ave :SB	$ 1,986	
310	Tier IV - 06	LA-210	38.6	39.8	Azusa, Coney Av/0.2E Azusa Av :WB	$ 2,259	
311	Tier IV - 07	LA-060	1.0	2.4	Los Angeles, Euclid Av/0.2W 3rd St :W & EB	$ 5,255	
312	Tier IV - 08	LA-005	16.1	16.8	Los Angeles, Euclid Av/Boyle Av :W & EB	$ 1,870	
313	Tier IV - 09	LA-005	32.7	33.9	Los Angeles, 0.3 N Hollywood Wy/0.2 N Sunland Bl :NB	$ 2,167	
314	Tier IV - 10	LA-101	21.2	23.3	Los Angeles, Reseda Bl/Winnetka Av :NB	$ 4,852	$ 66,868
316	Tier IV - 12	LA-101	13.8	14.9	Los Angeles, 0.3 S Colchester Cnyn/Woodman Ave :NB	$ 3,420	
317	Tier IV - 13	LA-010	9.8	10.1	Los Angeles, 0.2 E Washington/Redondo :WB	$ 1,500	
318	Tier IV - 14	LA-405	22.2	23.4	Inglewood, Century Bl/Manchester Bl :NB	$ 2,154	
319	Tier IV - 15	LA-110	5.8	8.5	Carson, Sepulveda Bl/223rd St :W&EB	$ 3,004	
320	Tier IV - 16	LA-101	15.4	16.9	Los Angeles, Hazeltine Av/Van Nuys Bl :NB	$ 2,405	
321	Tier IV - 17	LA-060	1.9	3.1	Near Los Angeles, Indiana St/Eastern Av :EB	$ 1,935	
322	Tier IV - 18	LA-060	21.8	22.9	Industry, 0.5 W Lemon/Brea Canyon :W&EB	$ 3,149	
323	Tier IV - 19	LA-005	27.3	28.4	Glendale, Western Av/0.2 N Alameda Av :SB	$ 2,344	
324	Tier IV - 20	LA-710	22.9	23.2	Commerce, East Yard OH/Route 7 Separation :N & SB	$ 2,296	
325	Tier IV - 21	LA-134	6.2	6.7	Glendale, Concord St/Columbus Av POC :WB	$ 1,435	
326	Tier IV - 22	LA-405	28.5	29.2	Los Angeles, 0.1 N Palms/0.1 S National Blvd :N&SB	$ 3,683	
327	Tier IV - 23	LA-060	25.0	25.3	Diamond Bar, Diamond Bar Blvd/0.2 W Golden Spring :WB	$ 1,517	
328	Tier IV - 24	LA-605	20.3	20.6	Baldwin Park, Route 10/0.3 N Route 10 :NB	$ 1,322	
329	Tier IV - 25	LA-101	11.5	12.0	Los Angeles, Moorpark/0.2W Dajunga :SB	$ 1,760	
330	Tier IV - 26	LA-010	38.5	38.9	West Covina, Grand Av/0.4 E Grand Av :WB	$ 1,702	
331	Tier IV - 27	LA-405	28.0	28.6	Los Angeles, Route 187/Palms Blvd :N&SB	$ 2,347	
332	Tier IV - 28	LA-405	15.5	15.9	Torrance, Crenshaw/0.1 S Yukon :N&SB	$ 1,828	
333	Tier IV - 29	LA-101	14.9	15.9	Canoga, Woodman/Van Nuys Blvd :SB	$ 2,600	
334	Tier IV - 30	LA-101	13.2	14.9	Cambria, 0.2 E Whitsett/Woodman :SB	$ 4,210	
335	Tier IV - 31	LA-134	3.5	3.8	Los Angeles, Los Angeles River/Forest Lawn Dr :WB	$ 3,122	
336	Tier IV - 32	LA-710	22.5	22.7	Commerce, Washington Blvd/0.2 N Washington Blvd :N&SB	$ 1,703	
337	Tier IV - 33	LA-605	14.6	15.4	Near Industry, 0.2 N Beverly Blvd/0.2 S Rose Hills Rd :SB	$ 2,461	$ 115,855
					Total Cost (including 45% Support Cost)		$172,340

Preliminary estimates as of October 13, 1998

LOS ANGELES COUNTY POST 1989 SOUNDWALL RETROFIT LIST

	Priority	State Route	Post Mile From	Post Mile To	Project Description	Estimated Cost X $1000	Program Total X $1000
339		LA-002	14.2	15.1	Los Angeles, Glendale Blvd/Route 5 :W&EB	$ 1,425	
340		LA-002	15.1	17.0	Los Angeles, Route 5/Verdugo Road :W&EB	$ 1,800	
341		LA-002	17.0	18.8	Los Angeles, Verdugo Road/Route 134 :W&EB	$ 1,700	
342		LA-002	17.5	17.3	Los Angeles, York Blvd/0.1 N Round Top Drive :W&EB	$ 1,350	
343		LA-005	3.0	4.9	Norwalk, Shoemaker/Imperial :N&SB	$ 1,813	
344		LA-005	4.9	6.9	Norwalk, Imperial/Route 605 :N&SB	$ 1,650	
345		LA-005	6.9	9.8	Downey, Route 605/Slauson Blvd :N&SB	$ 825	
346		LA-005	14.0	17.2	Los Angeles, 0.1 S Olympic/East Street :N&SB	$ 750	
347		LA-005	18.5	21.0	Los Angeles, Route 10/N of Los Angeles River :N&SB	$ 1,125	
348		LA-005	22.9	23.7	Los Angeles, Fletcher Drive/S of Glendale Blvd :N&SB	$ 1,050	
349		LA-005	27.1	33.2	Burbank, Los Angeles River/S of Sunland Blvd :N&SB	$ 1,475	
350		LA-005	36.2	39.4	Los Angeles, 0.1 S Tujunga Wash/Route 118 :N&SB	$ 1,250	
351		LA-005	39.4	41.6	Los Angeles, Route 118/Route 405 :N&SB	$ 1,975	
352		LA-010	2.2	3.7	Santa Monica, Lincoln Blvd/ E of 27th Street :W&EB	$ 1,500	
353		LA-010	4.0	5.4	Santa Monica, E of Centinela Ave/Route 405 :W&EB	$ 2,500	
354		LA-010	5.5	6.8	Los Angeles, Route 405/Motor Ave :W&EB	$ 1,800	
355		LA-010	6.4	6.8	Los Angeles, Overland Ave/Motor Ave :NB	$ 425	
356		LA-010	7.2	9.3	Los Angeles, W Palms/Fairfax Ave :W&EB	$ 1,950	
357		LA-010	10.1	13.3	Los Angeles, Redondo Blvd/Normandie Ave :W&EB	$ 2,188	
358		LA-010	13.3	13.6	Los Angeles, Normandie Ave/Vermont Ave :EB	$ 2,200	
359		LA-010	13.3	18.4	Los Angeles, Normandie Ave/E of Albany Street :W&EB	$ 1,575	
360		LA-010	14.2	18.4	Los Angeles, San Pedro Street/Fichett :W&EB	$ 850	
361		LA-010	21.5	24.0	Alhambra, W of Route 710/Garfield :W&EB	$ 1,663	
362		LA-010	24.8	25.4	Monterey Park, New Ave/Walnut Grove Ave :W&EB	$ 1,275	
363		LA-010	28.2	29.6	El Monte, Rio Hondo/Valley :W&EB	$ 1,250	
364		LA-010	29.7	31.1	El Monte, E of Valley Road/Route 605 :W&EB	$ 1,325	
365		LA-010	31.1	34.5	Baldwin Park, Route 605/Pacific Ave :W&EB	$ 2,900	
366		LA-010	34.8	36.0	West Covina, Sunset Ave/Lark Ellen Ave :W&EB	$ 1,400	
367		LA-010	36.0	36.5	West Covina, Lark Ellen Ave/Azusa Ave :W&EB	$ 1,275	
368		LA-010	36.5	37.5	West Covina, Azusa Ave/Citrus :W&EB	$ 1,075	
369		LA-010	38.5	42.4	West Covina, Grand Ave/Routes210/57 Seperation :W&EB	$ 1,575	
370		LA-010	44.2	45.7	Pomona, Dudley Ave/Garey Ave :W&EB	$ 3,275	
371		LA-010	45.7	48.3	Pomona, Garey Ave/Mills :W&EB	$ 3,375	
372		LA-030	1.3	2.9	La Verne, Cataract Ave/Damien Ave :W&EB	$ 800	
373		LA-057	1.2	5.1	Diamond Bar, N of Brea Road/N of Sunset Crossing :N&SB	$ 1,600	
374		LA-057	6.0	7.4	Pomona, 0.2 S Temple Ave/N of Campus :N&SB	$ 825	
375		LA-060	2.2	3.3	Los Angeles, Romona/Route 710 :WB	$ 525	
376		LA-060	8.6	11.7	Los Angeles, San Gabriel Blvd/Route 605 :W&EB	$ 1,350	
377		LA-060	13.1	14.3	Los Angeles, Cross Road Parkway/7th Ave :WB	$ 750	
378		LA-060	18.5	23.5	Diamond Bar, Fullerton Road/Route 57 :W&EB	$ 525	
379		LA-060	25.6	28.0	Pomona, Diamond Bar Blvd/Phillips Ranch :W&EB	$ 1,100	
380		LA-071	0.8	1.5	Pomona, 0.2 S San Jose Creek/S of Valley Blvd :N&SB	$ 1,125	
381		LA-090	1.1	2.0	Los Angeles, Ballona Creek/Inglewood Blvd :WB	$ 1,725	
382		LA-090	2.0	2.5	Culver City, Inglewood Blvd/Route 405 :W&EB	$ 1,275	
383		LA-091	11.8	14.5	Bellflower, Los Angeles River/Lakewood Blvd :N&SB	$ 575	
384		LA-101	2.7	4.6	Los Angeles, S of Alvarado Street/N of Vermont Ave :N&SB	$ 750	
385		LA-101	12.6	12.8	Los Angeles, Radford Ave/Laurel Canyon Blvd :NB	$ 400	

Preliminary estimates as of October 13, 1998

LOS ANGELES COUNTY POST 1989 SOUNDWALL RETROFIT LIST

	Priority	State Route	Post Mile From	Post Mile To	Project Description	Estimated Cost X $1000	Program Total X $1000
386		LA-101	18.7	19.7	Los Angeles, N of Havenhurst Ave/Louise Ave :N&SB	$ 1,225	
387		LA-101	20.2	21.0	Los Angeles, White Oak Ave/Burbank Blvd :N&SB	$ 1,500	
388		LA-101	31.9	32.2	Calabasas, Lost Hills Road/0.3 N Lost Hills Road :NB	$ 350	
389		LA-110	0.7	6.6	Los Angeles, N of Olver Street/0.1 N 223rd Street :W&EB	$ 1,375	
390		LA-110	24.0	27.4	Los Angeles, S of College/0.3 N 43ed Ave :SB	$ 1,300	
391		LA-110	27.7	30.1	Los Angeles, 0.4 MI South Ave 52/Arroyo Seco Ave :SB	$ 1,725	
392		LA-118	4.8	8.3	Los Angeles, E of Tampa Ave/W of Havenhurst Ave :W&EB	$ 2,550	
393		LA-118	9.2	12.4	Los Angeles, E of Woodely Ave/San Fernando Road :W&EB	$ 2,475	
394		LA-134	0.9	2.5	Burbank, N of Cahuenga Blvd/N of California Street :EB	$ 750	
395		LA-134	6.2	6.8	Glendale, W of Concord Street/E of Columbus :W&EB	$ 625	
396		LA-134	7.1	11.3	Glendale, Brand Blvd/N of Figueroa Street :W&EB	$ 2,700	
397		LA-170	14.7	17.3	Los Angeles, Riverside Drive/N of Victory Blvd :W&EB	$ 2,350	
398		LA-170	15.5	16.3	Los Angeles, Burbank Blvd/Cumard Street :W&EB	$ 1,350	
399		LA-170	16.6	16.9	Los Angeles, Laurel Canyon Blvd/Victory Blvd :W&EB	$ 700	
400		LA-170	18.7	19.7	Los Angeles, Saticoy Street/Roscoe Blvd :SB	$ 1,280	
401		LA-210	0.5	4.8	Los Angeles, E of Foothill Blvd/W of Mackay Street :W&EB	$ 5,950	
402		LA-210	6.0	11.5	Los Angeles, Paxton Street/S of Sunland Ave :W&EB	$ 2,775	
403		LA-210	15.9	17.1	Glendale, Boston/Ramsdell Ave :W&EB	$ 1,300	
404		LA-210	17.1	21.5	La Canada, Ramsdell Ave/Berkshire Place :W&EB	$ 3,350	
405		LA-210	18.9	21.5	La Canada, Route 2/210 Seperation/Berkshire Place :W&EB	$ 1,725	
406		LA-210	23.0	26.8	Pasadena, W of Lincoln/Wilson :W&EB	$ 3,075	
407		LA-210	29.8	34.2	Arcadia, Rosemead/California :W&EB	$ 4,925	
408		LA-210	38.2	41.9	Azusa, Orange Ave/Big Dalton Wash :W&EB	$ 2,800	
409		LA-210	41.9	42.1	Glendora, Big Dalton Wash/Glendora Ave :NB	$ 463	
410		LA-210	42.1	47.4	Glendora, Glendora Ave/0.7 E San Dimas Ave :W&EB	$ 2,475	
411		LA-210	44.5	45.2	San Dimas, 0.2 N/0.3 S of Gladstone Street :NB	$ 888	
412		LA-405	0.0	1.0	Long Beach, San Gabriel River/Atherton Street :SB	$ 325	
413		LA-405	6.4	10.9	Long Beach, Long Beach Blvd/213th Street :N&SB	$ 1,400	
414		LA-605	11.3	14.4	Santa Fe Springs, Rivera Road/S of Beverly Blvd :N&SB	$ 2,125	
415		LA-405	13.8	15.2	Torrance, Normandie Ave/S of Crenshaw :N&SB	$ 1,650	
416		LA-605	19.8	21.0	Irwindale, S of Route 10/Ramona :NB	$ 550	
417		LA-405	23.5	28.5	Inglewood, Florance Ave/S of Belloe Creek :N&SB	$ 1,525	
418		LA-605	25.9	26.1	Irwindale, Route 210/S of Huntington Drive : N&SB	$ 575	
419		LA-405	26.1	26.5	Culver City, Slauson Ave/Ballona Creek :SB	$ 600	
420		LA-405	27.0	31.1	Culver City, Braddock Drive/Ohio Ave :N&SB	$ 3,750	
421		LA-405	38.6	39.0	Los Angeles, Sepulveda Blvd/Ventura Blvd :SB	$ 425	
422		LA-405	38.8	39.5	Los Angeles, Sepulveda Blvd/Route 101, N Morrison St :N&SB	$ 1,075	
423		LA-405	46.2	47.7	Los Angeles, S of Devonshire Street/Rinaldi Street :N&SB	$ 1,925	
424		LA-710	17.0	19.0	Bell, N of Los Angeles River/S of Clara Street :N&SB	$ 850	
440		LA-101	23.20	24.30	Winnetka Ave. to Desoto Ave.		
442		LA-110	20.90	22nd-tower	Between 22nd St. and Sower st.		
445		LA-14	50.70	Av. - P	Av. P, NB		
446		LA-134	10.90	11.30	West of Arbor Del Place to Eagle Vista Drive E/B		
447		LA-210	22.50	23.20	North Arroyo Blvd. To Lincoln Ave.		$ 136,545

Total Cost (Including 45% Support Cost) $197,990

Preliminary estimates as of October 13, 1998

APPENDIX 2
PERFORMANCE MEASURE DESCRIPTION

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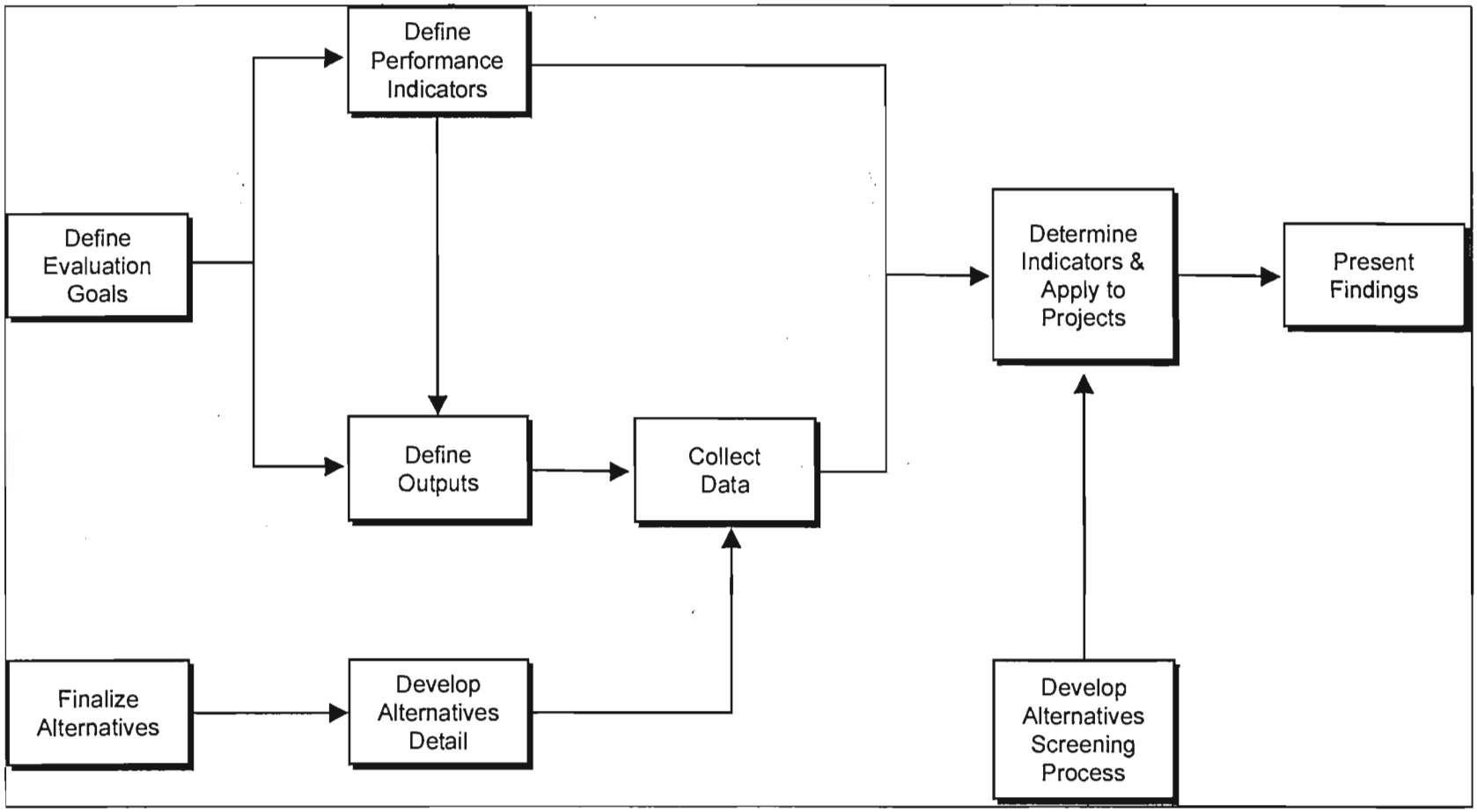
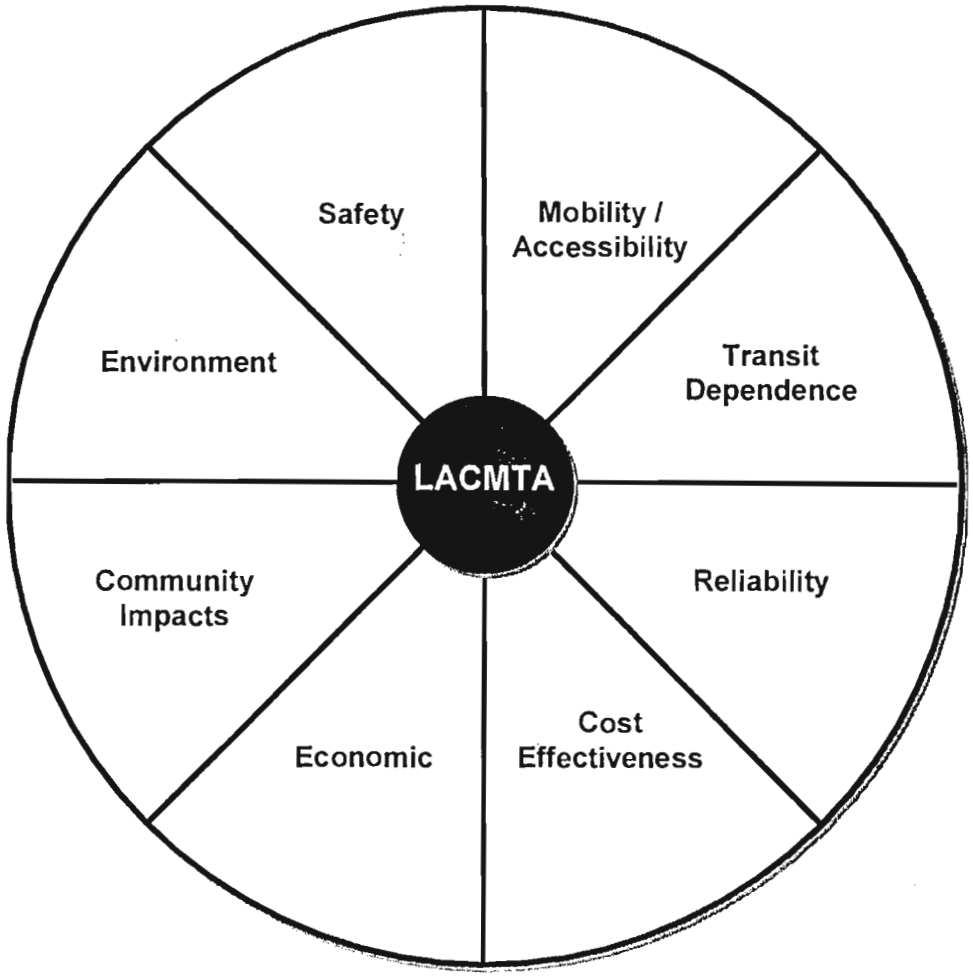
PERFORMANCE EVALUATION MAIN TASKS



PERFORMANCE EVALUATION FOR THE MTA ALTERNATIVES HAS NOW BEEN COMPLETED

- The Project teams utilized the "short list" of options developed for Milestone 2
- Project teams fleshed out each alternative in terms of individual data fields necessary to calculate the performance measures, both quantitatively and qualitatively
- The MTA regional travel demand model constituted one of the key inputs for trip generation, vehicle delay and other mobility and environmental issues
- Input from community focus groups, government ad-hoc, peer review panels was incorporated throughout the process

THE EXISTING FRAMEWORK INCORPORATES EIGHT GOALS



OUTREACH INPUT TO EVALUATION GOALS

Performance Area	Average Ranking
Mobility/Accessibility	1.98
Transit Dependency	2.88
Reliability	2.92
Cost Effectiveness	3.74
Community Impacts	4.02
Economic	4.10
Safety	4.59
Environmental	4.61

EACH ALTERNATIVE IS PRESENTED BASED ON A TWO-TIER EVALUATION SYSTEM, REFLECTING EXTERNAL FEEDBACK RECEIVED (E.G., AD-HOC, PEER REVIEW) VIS-A-VIS THE RELATIVE IMPORTANCE OF EACH MEASUREMENT AREA

TIER 1...

Key Evaluation Areas:

- Mobility
- Transit Dependence
- Cost Effectiveness
- Reliability
- Community Impacts

TIER 2...

Key Evaluation Areas:

- Economic measures
- Safety
- Environmental

MOBILITY EVALUATION INCLUDES FOUR SEPARATE SERIES OF PERFORMANCE MEASURES

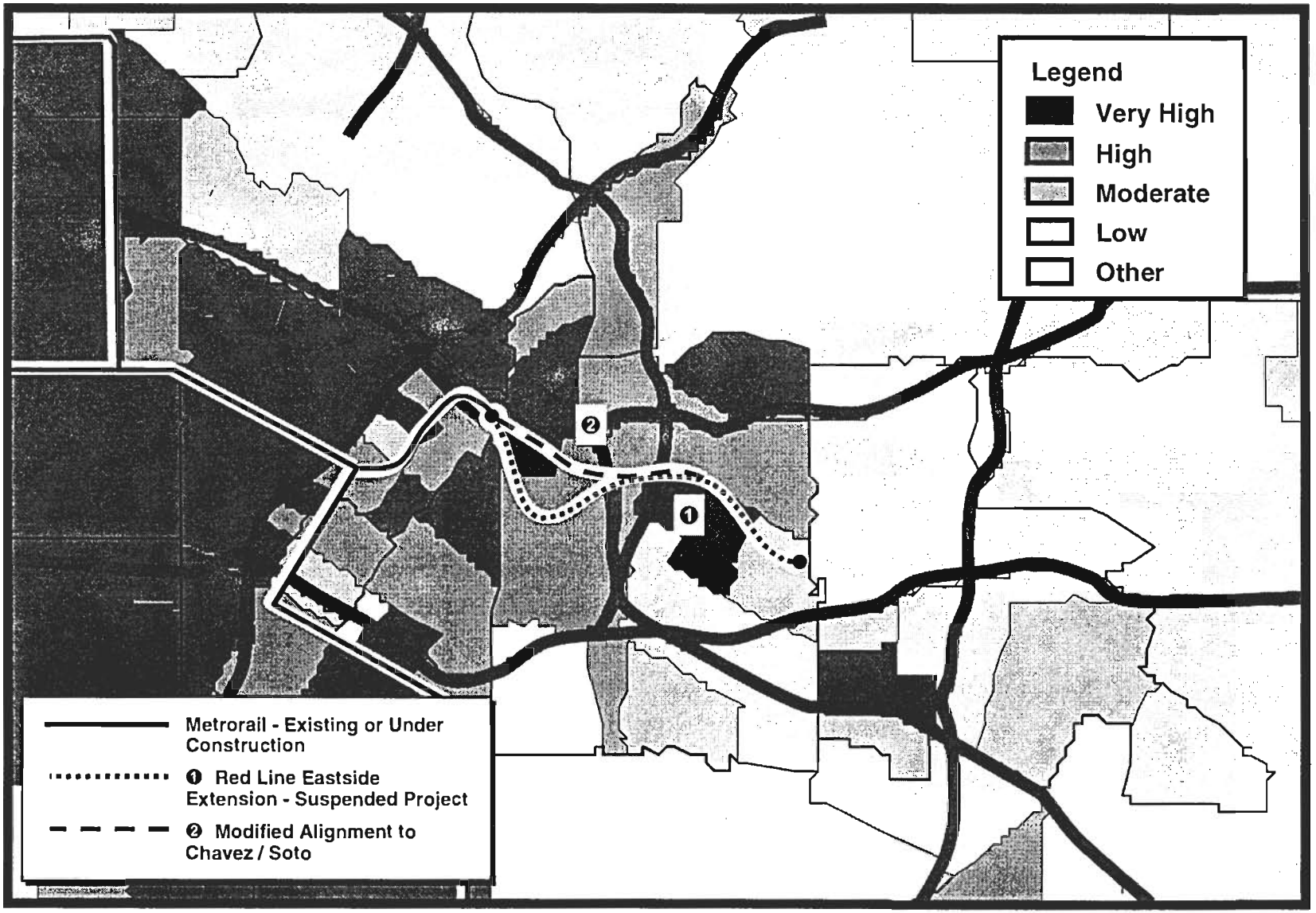
- **Market Size** corresponds to the total number of additional transit trips generated as a result of each alternative, compared to the base case for 2010. Total transit trips in the County are listed, as well as the alternative transit trip percentage of those total trips

- **Mobility Index** corresponds to the average person throughput for the county. The mobility index is presented compared to the base case and as percentage increase over the base case

- **Vehicle Delay** represents the total number of hours lost due to congestion for all Los Angeles County trip makers

- **Job Accessibility** is the percent of total employment that can be reached within one hour of transit travel time (including waiting, walking, and the travel time on the bus or rail system)

TRANSIT DEPENDENCE INDEX MAP
Eastside Corridor - Heavy Rail Options



THE DEGREE OF TRANSIT DEPENDENCE FORMS A CRITICAL COMPONENT OF THE EVALUATION FRAMEWORK

- **Transit Dependence Index** - This Index corresponds to a geographic superposition of three critical drivers to transit dependency: population density, income level, and low auto ownership. The overall Index is developed by comparing the alignments of each alternative with transit dependence "zones" and overall Origin-Destination patterns for the Community Statistical Area. The end result is a Transit Dependence Index which varies from "low" to "very high" for each alternative

- **Job Accessibility** - The percent of total employment that can be reached within one hour of transit travel time for the transit dependent public (including waiting, walking, and the travel time on the bus or rail system)

COST EFFECTIVENESS AIMS TO ANSWER TWO QUESTIONS: HOW MUCH AND HOW EFFICIENTLY ARE THE DOLLARS SPENT

- **Project Costs** include capital and operating costs. Capital costs typically last only for the construction period, while operating and maintenance costs last for the entire life of the project

- **Cost Efficiency** is listed in terms of cost per trip

THE RELIABILITY MEASURE REFERS TO EXPECTED SERVICE RELIABILITY FROM ALTERNATIVES, BUT IT IS BASED ON PAST MTA EXPERIENCE

ALTERNATIVE	Model Notes	RELIABILITY
		● Very Reliable ◔ Reliable ◑ Moderately Reliable
HR to First / Lorena	E-1 Suspended	●
HR to Chavez/ Soto (Without Little Tokyo Station)	E-2 HRT	●
LR from Union Station to Whittier/Atlantic Blvd.	E-5 LRT	◔
Rapid Bus (Atlantic Blvd. / Santa Monica)	E-4 BusWay	◑

WESTSIDE CORRIDOR COMMUNITY IMPACT RATINGS

❶

GENERAL COMMUNITY IMPACTS	ALTERNATIVES																					
	HR to Pico / San Vincent (Suspended)					HR to Wilshire / Fairfax					Blue Line Exposition Branch					Rapid Bus (Atlantic Blvd./Santa Monica)					Bus Transitway along Exposition Blvd.				
	-5 0 +5					-5 0 +5					-5 0 +5					-5 0 +5					-5 0 +5				
	Negative		No Effect		Positive	Negative		No Effect		Positive	Negative		No Effect		Positive	Negative		No Effect		Positive	Negative		No Effect		Positive
Impacts on Property Values					✓					✓				✓				✓						✓	
Impacts on Businesses					✓					✓				✓					✓					✓	
Impacts on Security			✓					✓					✓					✓					✓		
Impacts on Aesthetics			✓					✓				✓						✓					✓		
Noise Impacts			✓					✓				✓						✓				✓			
Impacts on Traffic Lanes			✓					✓					✓				✓						✓		
Community Response *			✓					✓					✓						✓				✓		

❷

COMMUNITY IMPACTS ON RELOCATIONS	ALTERNATIVES																					
	HT to Pico / San Vincent (Suspended)					HR to Wilshire / Fairfax					Blue Line Exposition Branch					Rapid Bus (Atlantic Blvd./Santa Monica)					Bus Transitway along Exposition Blvd.				
	Minor				Major	Minor				Major	Minor				Major	Minor				Major	Minor				Major
Household Relocations	✓					✓					✓					✓					✓				
Community Facility Relocations	✓					✓					✓					✓					✓				
Historic Site Relocations	✓					✓					✓					✓					✓				

COMMUNITY IMPACTS ARE CRITICAL IN CONSIDERING ANY MAJOR ALTERNATIVE AND INCORPORATE TEN INDIVIDUAL ELEMENTS

COMMUNITY IMPACT	EXAMPLE
Impact on Property Values	Positive impact on property values due to new heavy rail line
Impact on Businesses	Positive impact due to neighborhood attractiveness
Impacts on Security	Reduced community security due to vagrants drawn by station
Impacts on Aesthetics	Reduce aesthetics due to elevated light rail line and associated catenary
Noise Impacts	Negligible surface impact with subterranean metro
Impacts on Traffic Lanes	Negative due to transforming a lane to a dedicated bus transitway
Community Response	Negative if despite environmental mitigation, significant components of the community are against the project
Household Relocations	Significant impact with light rail system construction
Community Facility Relocations	Negligible with subterranean metro
Historic Site Relocations	Probably significant even if only one or two facilities need relocation

COMBINED TIER ONE MEASURES CAN BE COMPARED WITHIN SEPARATE CORRIDORS OR ACROSS CORRIDORS AS NEEDED

ALTERNATIVE	MOBILITY								TRANSIT DEPENDENCE			COST EFFECTIVENESS					RELIABILITY
	Market			Mobility Index			Annual. Transit Travel Time Decrease	Job Accessibility	Transit Dependence Index	Work Destination	Job Accessibility Index	Project Unit Costs		Cost Efficiency			
	Additional Daily Transit Trips Generated	LA County Daily Transit Trips	Percent of Total	Alternative Specific	Base 2010	Percent Change						Capital Costs / Mile (MTA)	O&M Costs / Mile (BAH)	Annualized Lifecycle Cost / Trip	Subsidy / Trip	Life Cycle Cost/User Benefit Hour	Failure Rate per Mode
WESTSIDE																	
HR to Pico / San Vincent	◕	◕	◑	●	N/A	●	◑	◑	◑	●	◑	○	◑	◕	●	●	●
HR to Wilshire/ Fairfax	◕	◕	◑	◕	N/A	◕	◕	◑	◑	●	◑	○	◔	◕	●	◕	●
Blue Line Exposition Branch	◕	●	◑	◑	N/A	◑	●	◑	◕	◑	◑	◕	◕	◕	◑	◔	◕
Exposition Busway	●	●	●	◑	N/A	◑	●	●	◑	◑	●	●	●	●	●	●	◕

◔	◑	◕	●
Low	Moderate	High	Very High

ADDITIONAL MEASURES CONSIDERED IN THE PROJECT WILL INCLUDE ECONOMIC IMPACTS, ENVIRONMENTAL EMISSIONS, AND SAFETY

ECONOMIC IMPACTS	ENVIRONMENTAL EMISSIONS	SAFETY
Jobs Supported - jobs supported by capital expenditures - jobs supported by operating expenditures	Auto Emissions - includes Reactive Organic Gases, hydrocarbons and nitrous oxides	Passenger Accidents/Boarding
Gross Area Product	Bus Emissions	Pedestrian Accidents/100,000 train miles (trains) Pedestrian Accidents/100,000 VMT (bus)
		Vehicle Accidents/100,000 train miles (trains) Vehicle Accidents/100,000 VMT (bus)

BOTH TIER 1 AND TIER 2 MEASURES ARE INCLUDED IN THE FINAL PROJECT EVALUATION MATRIX

PERFORMANCE EVALUATION RESULTS ARE PRESENTED FOR EACH CORRIDOR ALTERNATIVE

- Top Down Summaries provide "Harvey Ball" results for each alternative, by study corridor (i.e., Rapid Bus, Eastside, Westside, San Fernando Valley)

- While the definitions of the harvey balls vary by performance measure (e.g., higher degree of safety versus lower degree of safety, higher mobility impact versus lower mobility impact), each alternative can consistently be compared based on a "most favorable", "least favorable" basis.

DETAILED HARVEY BALL AND NUMERIC RESULTS PER ALTERNATIVE ARE PROVIDED IN APPENDIX 4

APPENDIX 3
COST ESTIMATING METHODOLOGY

APPENDIX 3.1
COST ESTIMATING DETAILS

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PROJECT UNIT COSTS FOR THE INITIAL RED LINE SEGMENT WERE GENERALLY HIGHER THAN THE NATIONAL AVERAGE*

Select Red Line Unit Costs Relative to National Average for Heavy Rail Projects

Category	Sub-Category	Units	Ratio of MTA Unit Costs to National Average*
Guideway	Underground Guideway	Linear Feet	92%
	Track	Track Feet	154%
Systems	Signal System	Track Feet	106%
	Electrification	Track Feet	146%
Stations	Subway	Station	165%
Vehicles	Revenue Vehicles	Rev. Vehicle	141%
Soft-Costs	Engineering & Design	Linear Feet	792%
	Construction Management	Linear Feet	429%
	Project Management	Linear Feet	556%
	Project Initiation	Linear Feet	668%
	Training/Start-up-Testing	Linear Feet	504%

* National average values inflated to LA price levels, Source: Booz-Allen & Hamilton Inc.

CAPITAL COSTS WERE DEVELOPED FOR EACH ALTERNATIVE BASED ON THE ALIGNMENT DEFINITIONS PRODUCED BY THE ALTERNATIVES ANALYSIS TEAM

- Three sets of independent capital cost estimates were developed for each alternative:
  1. *MTA Estimates* — Capital cost estimates based on MTA's current cost experience
  2. *Independent Estimates* — Independent capital cost estimates based on the average capital cost experience of other US transit operators.
  3. *Best Estimate Capital Costs* — These cost estimates represent the lowest believed to be attainable by MTA and include alternate contracting and management approaches (e.g. Design-Build)

- This costing approach was designed to address concerns that MTA capital costs are frequently higher than industry averages
  - The MTA Estimates provide an upper bound to the cost of each alternative
  - The Independent Estimates provide lower bound cost ranges based on the actual cost and construction experience of other operators — these lower bound estimates may not be attainable by MTA given local cost levels, labor agreements, etc.
  - The Best Estimate Capital Costs utilize:
    a) MTA unit costs when the MTA costs are at the lower bound, are not significantly different from the independent costs or are believed to be more realistic for local conditions
    b) Independent costs where attainable by MTA and significantly lower than MTA costs
    c) A combination of the MTA and Independent based (primarily for soft-costs) based on the level of cost savings believed to be attainable by MTA (e.g., through alternate contracting and management techniques)

THE CAPITAL UNIT COSTS USED TO ESTIMATE THE TOTAL COST OF EACH ALTERNATIVE WERE DERIVED FROM MTA RECORDS AND FROM NATIONAL CAPITAL COSTING EXPERIENCE

- MTA estimates of capital costs for each alternative utilized MTA's "Planning Level" cost estimates:
  - These costs are regularly adjusted to reflect MTA's actual cost experience
  - Level of detail coincides with the asset types definitions defined for this study
  - Costing structure includes MTA's overhead (soft) costs including start-up costs, insurance, design and project management costs and contingencies

- The Independent unit capital cost estimates were derived from Booz•Allen's national capital cost database:
  - Database captures unit capital costs from all light rail, heavy rail and Busway/HOV projects completed in the US over the past 20-year period
  - Level of detail coincides with the asset types definitions defined for this study (see above)
  - Database identifies over 400 capital cost line items
  - Provides detailed descriptions of project alignments, design philosophy and other characteristics
  - Identifies year of project construction
  - Includes right-of-way, environmental mitigation, demolitions, utility relocation
  - Includes all soft-costs (engineering & design, construction management, project management, insurance, testing and start-up, etc.)

- All National Database costs have been converted to a common $1998 baseline using FTA's Transit Capital Cost Price Index developed by Booz•Allen & Hamilton Inc.

SAMPLE UNIT COSTS FOR SYSTEMS, STATIONS AND VEHICLES AS USED FOR THE MTA AND INDEPENDENT COST ESTIMATES

DRAFT UNIT CAPITAL COSTS — Guideway and Facilities ($1998)†

CATEGORY	SUB-CATEGORY	MTA COSTS			INDEPENDENT COSTS*		
		Units	Heavy Rail	Light Rail	Units	Heavy Rail	Light Rail
Guideway	At-Grade-Ballast Guideway	Route Feet	$2,580	$900	Route Feet	$1,000	$760
	At-Grade-In-Street Guideway	Route Feet	NA	Not Available	Route Feet	NA	$2,460
	Aerial Structure Guideway	Route Feet	$6,500	$6500	Route Feet	$6,125	$3,750
	Elevated Fill Guideway	Route Feet	$3,500	$3,500	Route Feet	$1,760	$690
	Underground Guideway – Cut & Cover	Route Feet	$12,000	$8,500	Route Feet	$12,200	$12,200
	Underground Guideway - Tunnel	Route Feet	$10,000	Not Available	Route Feet	$10,300	$10,300
	Open Trench Guideway	Route Feet	$6,500	$3,500	Route Feet	$5,500	$4,500
	Grade Crossing		NA	$250,000	Each	NA	$180,000
	Trackwork (Incl. Special Trackwork)	Route Feet	$420 – $575	$420 – $480	Track Feet	$675	$140 – $260
Facilities	Building	Lump Sum	$2,000,000 to $50,000,000	$25,000,000 to $35,000,000	Rev. Vehicle	$7,700,000	$650,000
	Storage Yard				Track Feet	$440	$160
	Major Shops				Rev. Vehicle	$157,000	$42,000

* National averages based on experience of other US transit operators

† Draft cost estimates — estimates currently under review

UNIT COSTS FOR SYSTEMS, STATIONS AND VEHICLES AS USED FOR THE MTA AND INDEPENDENT COST ESTIMATES

DRAFT UNIT CAPITAL COSTS — Systems, Stations and Vehicles ($1998)†

CATEGORY	SUB-CATEGORY	MTA COSTS			INDEPENDENT COSTS*		
		Units	Heavy Rail	Light Rail	Units	Heavy Rail	Light Rail
Systems	Train Control	Route Feet	$2,200	$1,500	Route Feet	$1080	$485
	Traction Power	Route Feet	$258	$296	Route Feet	$660	$370
	Communications	Route Feet	$1,500	$230	Route Feet	$180	$83
	Fare Collection	Station	$750,000	$240,000	Station	$1,000,000	$130,000
Stations	At-Grade	Station	$36,000,000	$3,500,000	Station	$18,000,000	$1,135,000
	Subway	Station	$65,000,000	NA	Station	$53,000,000	NA
	Aerial	Station	$30,000,000	$7,500,000	Station	$22,000,000	$4,000,000
	Open Trench Station	Station	$35,000,000	$28,700,000	Station	$24,000,000	$21,000,000
	Retained Fill (Elevated) Station	Station	$20,000,000	NA	Station	$18,500,000	NA
	Parking Lots	Space	$3,161	$3,000	Space	$5,500	$2,437
	Parking Garages	Each	$5,000,000	Not Available	Space	$10,000	Not Available
	Signage & Graphics	Station	$1,500,000		Station	$300,000	$35,157
Vehicles	Revenue Vehicles ("LA" Vehicle)	Rev. Vehicle	NA	$3,200,000	Rev. Vehicle	NA	$2,002,000
	Revenue Vehicles (Low Floor LRT)	Rev. Vehicle	NA	$2,400,000	Rev. Vehicle	NA	
Environmental	Hazardous Waste Handling	Route Feet	$500–$1,000	$200	Route Feet	$100	$100

* National averages based on experience of other US transit operators

† Draft cost estimates — estimates currently under review

SOFT-COST AS A PERCENT OF HARD-COSTS AND CONTINGENCY FACTORS

DRAFT UNIT CAPITAL COSTS — Soft Cost and Contingency Factors

CATEGORY	SUB-CATEGORY	Units	MTA	INDEPENDENT
Soft Cost Factors	Pre–Revenue Operations	Percent	2.5%	2.0%
	Owners Project Insurance	of	8.0%	6.5%
	Master Agreements	Total	2.5%	2.5%
	"Art for Transit" – Station Artwork	Hard	0.5%	NA
	Professional Services	Costs †	30%-45%	22% to 25%
Contingencies	Guideways & Structures	Percent	10% - 12%	10% - 12%
	Hazardous Waste Handling	of	10% - 12%	10% - 12%
	Stations	Total	12% - 17%	12% - 17%
	Yards, Systems and Vehicles	Cost	8% - 10%	8% - 10%
	Pre-Rev. Operations, Insurance	by	10%	10%
	Right-of-Way	Category ‡	10%	10%
	Professional Services		10%	10%

* National averages based on experience of other US transit operators

† Total hard costs include costs for all guideway, trackwork, stations, systems, vehicles, facilities and other "hard" assets

‡ Ranges reflect the degree of completion/design (i.e., contingency factor declines as a project becomes more defined).

OPERATING AND MAINTENANCE (O&M) COSTS FOR EACH ALTERNATIVE HAVE BEEN DEVELOPED USING MTA'S EXISTING O&M COST MODEL

- O&M Model developed using MTA's detailed budget (approx. 700 line items)
- MTA's O&M model provided the flexibility required to analyze the cost impacts of independent changes in service levels for the Red Line, Blue Line, Green Line and bus system.
- Budget level detail permitted analysis of O&M cost impacts resulting from new technologies (e.g., new farebox systems)
- Model was recalibrated to the FY1998 budget
- Analysis of the O&M costs for each alternative used input data derived from the alternative's operating plan and travel demand analysis

APPENDIX 3.2
CAPITAL AND OPERATING COST RESULTS

CAPITAL AND OPERATING COSTS (Millions $1998)

Planning Area	Model Notes	Alternative	Alignment	Route Miles	Total Cost			Cost Per Mile			Annual O&M Costs
					MTA	Lower Bound	Best Est.	MTA	Lower Bound	Best Est.	
Eastside	E1	Suspended Red Line	Union Station east to First/Lorena	3.62	$922.6	$739.9	$794.9	$254.9	$204.4	$219.6	$10.5
	E2	Red Line 2 Station Extension	Union Station to Chavez / Soto	1.92	$481.1	$385.0	$414.8	$250.6	$200.5	$216.0	$3.4
	E4*	Busway - At-Grade (with branching routes)	Union Station to Whittier & Atlantic	5.9	$88.2	$68.2	$70.4	$14.9	$11.6	$11.9	$15.5
	E5*	Light Rail - At-Grade	Union Station to Whittier & Atlantic	5.9	$430.9	$351.3	$371.0	$73.0	$59.5	$62.9	$9.9
	E6	Light Rail - At-Grade	Union Station south to Little Tokyo	0.4	$63.4	$41.8	$53.1	$151.0	$99.5	$126.4	$0.2
Westside	W1	Suspended Red Line	Wilshire & Western to Pico & San Vicente	2.6	$607.4	$471.6	$489.3	$237.3	$184.2	$191.1	$4.4
	W4	Subway Red Line	Below grade to Wilshire	3.17	$859.7	$684.0	$733.6	$271.2	$215.8	$231.4	$6.5
	W2*	Busway	Exposition	18.5	$264.3	$316.1	$231.1	$14.3	$17.1	$12.5	$14.7
	W3*	Light Rail	Exposition	18	$930.8	$739.2	$842.9	$51.7	$41.1	$46.8	$21.2

* Cost estimates for these options do not include extensive analysis of condemnation and/or mitigation requirements. Actual development costs may be higher.

CAPITAL AND OPERATING COSTS – Continued (Millions $1998)

Planning Area	Model Notes	Alternative	Alignment	Route Miles	Total Cost			Cost Per Mile			Annual O&M Costs
					MTA	Lower Bound	Best Est.	MTA	Lower Bound	Best Est.	
San Fernando Valley	V1	Red Line Extension to I-405	North Hollywood to I-405 Sepulveda	6.01	$920.0	$728.1	$827.7	$153.1	$121.1	$137.7	$12.7
	V3*	Busway	Warner Center to North Hollywood Red Line Station	14	$173.0	$140.8	$143.8	$12.4	$10.1	$10.3	$14.0
	V2	Light Rail	Warner Center to North Hollywood Red Line Station	13.8	$1,126	$878.4	$934.5	$81.6	$34.6	$67.7	$22.6
Systemwide Bus	B5	Expanded Rapid Bus Network (Includes Rapid Bus Base Routes plus additional routes. Costs are in addition to those included in the high technology option))		338.5	$221.4	$199.2	$206.9	$0.7	$0.6	$0.6	$60.0

* Cost estimates for these options do not include extensive analysis of condemnation and/or mitigation requirements. Actual development costs may be higher.

DETAILED CAPITAL COSTS HAVE BEEN DEVELOPED FOR EACH OF THE PROJECT ALTERNATIVES

- For most capital items, MTA costs were not significantly different from the national average (when adjusted to LA price levels)

- Significant exceptions to this observation include the following asset types:
  - Stations
  - Vehicles
  - Communications
  - Signage and Graphics
  - Project Soft-Costs

- Each of these items offers the potential for project cost savings — in the case of stations, vehicles and soft-costs, these savings may be significant:

Item	Potential Savings (% of asset cost)	Share of Total Project Cost
Stations	5% to 40%	10% to 15%
Vehicles	10% to 25%	10% to 15%
Soft-Costs	20% to 30%	30% to 45%

- The total cost savings attainable from these areas is captured by the "Best Estimates" Costs

BOOZ·ALLEN AND PEER-GROUP ANALYSIS IDENTIFIED BOTH STATION AND VEHICLE COSTS AS HIGHER THAN AVERAGE

Vehicles

- Vehicle costs might be reduced through the use of performance specification which facilitates the use of "off the shelf" technology

- Peer review team members identified MTA as having specification requirements which are considerably more strenuous than the industry average

- Given these requirements, MTA has paid per vehicle costs which are 10% to 25% higher than the industry average for similar vehicles

Stations

- Similarly, the peer review group suggested the station costs might be reduced by:

  - Creating a standardized station design
  - Utilizing less amenities than traditional MTA station facilities
  - Building smaller stations

A VARIETY OF OPTIONS EXIST TO REDUCE PROJECT SOFT COSTS

- "Learning by Doing" — capital development costs tend to decline as agencies expand their rail networks
  - Decreased costs reflect reduced design needs and increased agency construction experience
  - Development costs for the Red Line extension to North Hollywood are less than that for the initial Red Line segment
  - Inflation adjusted capital costs for Washington Metro (WMATA) decreased by between 25% and 33% over the period 1974 and 1988 during which WMATA constructed 10 rail segments

- Design–Build
  - Use of turnkey contracting by US operators is yielding cost savings to sponsoring agencies
  - The highest cost savings originate from reductions in the time required to complete project development
  - The capital costing team will provide order of magnitude estimates of the potential cost savings

SAVINGS IDENTIFIED THROUGH THIS PROCESS WERE APPLIED TO "BEST ESTIMATE" COSTS

PROJECT UNIT COSTS TEND TO DECLINE WHEN NEW SEGMENTS ARE ADDED TO AN EXISTING RAIL NETWORK (I.E., RELATIVE TO THE INITIAL NETWORK INVESTMENT)

- A variety of factors contribute to this cost decrease including:
  - Reduced design costs (components only need to be designed once)
  - Increased agency procurement, project and construction management experience
  - Supplier agreements (refined through successive procurements)
  - One time costs (control center, admin, revenue counting)

- MTA may achieve similar reductions in cost savings by learning from past projects
  - Perform most construction management in-house using MTA staff
  - Limit contracting of construction management duties to specialized areas such as geotechnical and advanced systems
  - Bid more engineering and design work on a competitive basis to greater number of small, specialty contractors

USE OF DESIGN–BUILD CONTRACTING CAN REDUCE PROJECT CAPITAL COSTS BY 5% TO 10%[1] (HIGHER FOR DBOM – DESIGN/BUILD/OPERATE/MAINTAIN)

- Under a Design–Build contract, a single contractor completes the final design, construction, systems procurement and start-up/testing of the full project

- D/B reduces costs through the following mechanisms:
  - Schedule compression and reduced price escalation
    - reduced funding constraints
    - elimination of task sequencing buffers
    - overlapping of sequential tasks (where possible)
  - Reduced construction management and administrative costs
    - shorter project duration
    - fewer contract interfaces to coordinate
  - Increased efficiencies of a single contractor
    - consolidated PM functions
    - pooling of risks (performance bonds, insurance)
    - more effective utilization of labor (reduced downtime and delay claims)
  - Reduced incentive for design and delay claims
    - leads to reduced contingency requirements

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[1] *Based on BAH research for FTA and "*Pasadena Turnkey Implementation Analysis*" report prepared for MTA by BAH January, 1996.*

ESTIMATED COST SAVINGS FROM A DESIGN–BUILD PROCUREMENT BY FUNCTION (AS A PERCENT OF TOTAL PROJECT CAPITAL COSTS)

	(PERCENT OF TOTAL CAPITAL COSTS)	
	Design–Build	**DBOM**
• Reduced Escalation	2.75	2.75
• Reduced Construction Management Costs	1.63	4.88
• Reduced MTA Project Administration	0.75	0.75
• Economies of Scale	1.3	1.38
• Reduced Contingency	0.75	0.75
• Added Consultant and Legal Support	(1.00)	(1.00)
CAPITAL COST SAVINGS	**6.25%**	**9.50%**
• O&M Cost Savings	0.00	11.88
O&M AND CAPITAL COST SAVINGS	**6.25%**	**21.38%**

THESE ESTIMATES OF D/B COST SAVINGS MAY BE CONSERVATIVE — MARYLAND MTA IS EXPECTING HIGHER OVERALL SAVINGS FOR ITS DESIGN–BUILD LRT EXTENSION PROJECTS

THE O&M COST MODEL'S INPUT, OUTPUT AND PARAMETER SETTINGS HAVE BEEN REVIEWED FOR REASONABILITY AND ACCURACY

- O&M costing team has verified the recalibrated of the MTA O&M model
- The O&M costing team has assessed the reasonability of the model's internal cost parameters (e.g., for fuel, wages, staffing rates, etc.) against industry standards
  - Model estimates are considered reasonable given the modes, network structure and service levels proposed
  - Confidence in the model's predictive accuracy
- The O&M costing team has verified the model parameter settings for each alternative to ensure they accurately reflect the alternative's service characteristics — including number of vehicles, revenue miles, service hours, unit costs and other input values
- The O&M team has assessed the reasonability of model output for each alternative
  - Model output is considered reasonable

APPENDIX 4
EVALUATION OF ALTERNATIVES

APPENDIX 4.1
RAPID BUS

THIS SECTION SUMMARIZES THE COMPONENTS OF THE ALTERNATIVES ANALYSIS -- THE PRESENTATION IN EACH APPENDIX SUB-SECTION GENERALLY FOLLOWS THIS FORMAT

- The section starts with a description of the modal types and alignments examined in each corridor
- Next is a summary evaluation of the corridor alternatives' performance, implementation duration and cost using MTA historical cost data, as well as a summary of each alternative's physical description and operating characteristics
- Each corridor section then looks at each alternative individually and includes an alignment map, the alternative's physical and operating characteristics, strengths and weaknesses, and a detailed cost breakdown
- The current status of each alternative in the corridor is summarized next, followed by a detailed implementation schedule for each alternative
- Tier 1 and Tier 2 Performance Goals are summarized for each alternative, followed by detailed Performance Measures that support each Performance Goal
- The sub-section ends with detailed backup support for the analysis of community impacts and transit dependence

THE COUNTYWIDE RAPID BUS SYSTEM INCLUDES A NUMBER OF FEATURES WHICH CAN BE USED TO DIFFERENTIATE AND SPEED UP BUS SERVICE

- The Rapid Bus network is intended to provide high quality, high speed service through a combination of limited stop service and signal priority

- Rapid Bus includes: vehicles with a different look from other buses in the fleet (e.g., gold standard); vehicles with additional technology components (e.g., signal preemption); diamond lane operation during peak hours; joint use transit centers at key locations

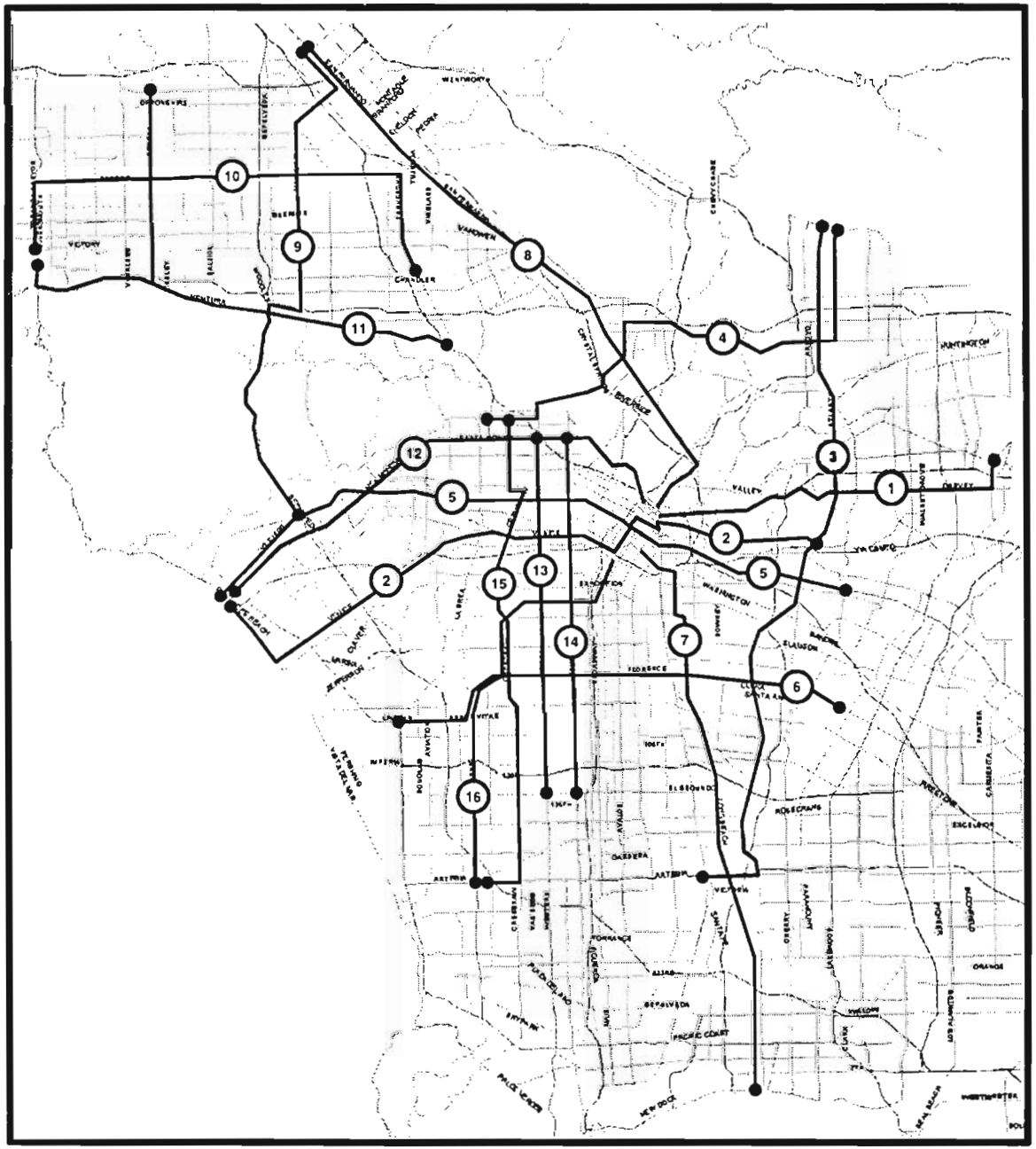
- Rapid Bus vehicles could function differently than the standard fleet and could include low floor and articulated buses

- Criteria for selection of priority rapid bus routes should include:
  - Transit dependent corridors
  - Major high speed transit connections
  - Priority community service due to suspended or deferred rail projects

- Implementation is possible in the very near term:
  - Initiate three demonstration lines over the next 12 months and monitor their performance through FY2001
  - Expand reasonable countywide network in accordance with a long range plan
  - Could serve to focus ridership on potential future fixed guideway corridors

THE INDIVIDUAL COMPONENTS OF THE RAPID BUS PROGRAM COULD BE IMPLEMENTED IN FULL OR PART

POTENTIAL EXPANDED RAPID BUS NETWORK



A COUNTYWIDE RAPID BUS ALTERNATIVE IS BEING CONSIDERED TO ENHANCE REGIONAL BUS SERVICE. THE FEATURES OF THIS ALTERNATIVE INCLUDE LIMITED STOP, SIGNAL PRIORITIZATION AND PEAK HOUR DEDICATED LANES WHERE AVAILABLE

- A potential rapid bus network could include the following routes...

Rapid Bus	Limits	No. Buses	Stops	New Transit Centers	Route Length	Average Speed
1. Garvey Ave.	El Monte Busway – LACBD	13	16		15.9	15.6
2. Chavez / Venice	Monterey Park – Santa Monica	30	48	1	24.4	16.2
3. Atlantic Blvd.	Pasadena – Artesia Blue Line Station	16	19		26.7	15.9
4. Colorado Blvd.	Pasadena – Hollywood	15	26		18.2	16.5
5. Whittier / Wilshire	City of Commerce – Santa Monica	43	47	1	23.7	16.6
6. Florence Blvd.	Los Angeles International Airport – Whittier	16	31	1	27.9	31.6
7. Long Beach Blvd.	LACBD – Long Beach	20	38		22.4	17
8. San Fernando Rd.	LACBD – Sylmar Transit Center	15	30		25.1	19.8
9. Van Nuys Blvd.	Sylmar Transit Center – Westwood/UCLA	14	19	1	23.0	17.9
10. Roscoe Blvd.	Red Line North Hollywood Station – Warner Center	12	15		22.7	25.3
11. Ventura Blvd.	Red Line Universal City Station – Warner Center Branch Line to Cal State Northridge Via Reseda Blvd.	14	19	1	18.2	21.8
12. Santa Monica Blvd.	LACBD – Santa Monica	27	31	1	20.0	15.6
13. Western Ave.	Hollywood - Green Line Imperial/Wilmington Station	14	20		18.2	16.1
14. Vermont Ave.	Hollywood – Green Line Vermont Ave. Station	19	17		12.7	14.4
15. Crenshaw Blvd.	Hollywood – South Bay Galleria Transit Center	10	33		21.5	17.0
16. Hawthorne Blvd.	LACBD – South Bay Galleria Transit Center	14	26		17.9	14.9

PRELIMINARY EVALUATION OF THE COUNTYWIDE RAPID BUS ALTERNATIVES HAS YIELDED THE FOLLOWING INFORMATION

No. Buses	No. Stops	No. Transit Facilities	Headways (Min.)	Route Miles	Daily Ridership	Peak Hour Capacity	Ultimate Peak Hour Capacity	Capital Cost($M)	Annual Operating Cost($M)
200	435	6	Varies	340	126,570	N/A	N/A	221.4	60.0

- The implementation of this program is assumed to follow a three phased approach; Phase 1 is anticipated to operate midway through FY2000 through FY2001, Phase 2 operates midway through FY2003 and Phase 3 operates midway through FY2005

- Under this implementation scheme and inflating the capital and operating costs which are in 1998 dollars results in additional commitments through the 2010 planning horizon:
  - $147.8 million in capital and $119.3 million in operating costs through FY2004
  - $118.9 million in capital and $478.8 million in operating costs from FY05 to FY10

AVAILABLE	FY99 – FY04 ($ millions)	FY05 – FY10 ($ millions)	FY99 – FY10 ($ millions)
TOTAL AVAILABLE	$ 593.9	$1830.8	$2424.7
LESS RAPID BUS COSTS	$ 267.1	$ 597.7	$ 864.8
NET REMAINING	$ 326.8	$1233.1	$1559.9

1st Tier Performance Measures

SYSTEMWIDE ALTERNATIVE

ALTERNATIVE	Model Notes	Route Miles	MOBILITY								TRANSIT DEPENDENCE			COST EFFECTIVENESS					RELIABILITY
			Market			Mobility Index			Annual Transit Travel Time Decrease	Job Accessibility	Transit Dependence Index	Index Composition	Job Accessibility Index	Project Unit Costs		Cost Efficiency			Failure Rate per Mode
			Additional Daily Transit Trips Generated	LA County Daily Transit Trips	Percent of Total	Alternative Specific	Base 2010	Percent Change						Capital Costs / Mile (M1A)	O&M Costs / Mile (BAH)	Annualized Lifecycle Cost / Trip	Subsidy / Trip	Life Cycle Cost / User Benefit Hour	
Rapid Bus	B-5 Rapidbus	338.5	37,402	919,306	4.07%	43.59	43.32	0.62%	34,095	17.00	3.15	50% Very High, 25% High, 15% medium, 10% low	22.90	$654,062	$238,109	$6.27	$6.18	$24.35	Low

ALTERNATIVE	Model Notes	Route Miles	MOBILITY								TRANSIT DEPENDENCE			COST EFFECTIVENESS					RELIABILITY
			Market			Mobility Index			Annual Transit Travel Time Decrease	Job Accessibility	Transit Dependence Index	Work Destination	Job Accessibility Index	Project Unit Costs		Cost Efficiency			Failure Rate per Mode
			Additional Daily Transit Trips Generated	LA County Daily Transit Trips	Percent of Total	Alternative Specific	Base 2010	Percent Change						Capital Costs / Mile (M1A)	O&M Costs / Mile (BAH)	Annualized Lifecycle Cost / Trip	Subsidy / Trip	Life Cycle Cost / User Benefit Hour	
Rapid Bus	B-5 Rapidbus	338.5	●	●	●	●	N/A	●	●	●	◕	◑	◕	●	●	●	●	◕	◕

2nd Tier Performance Measures

ALTERNATIVE	Model Notes	ECONOMIC				ENVIRONMENT			SAFETY			
						Air Quality Index			Safety Index			
		Job Supported, Operating	Jobs Supported, Capital	Gross Area Product, Operating ($98Millions)	Gross Area Product, Capital ($98Millions)	Additional Transit Emissions	Non Transit Vehicular Emissions (kgs)	Percent of NTVE	Pass. Accidents per 100,000 Boardings	Pass. Accidents per 100,000 Hub/Train Miles	Traffic Accidents per 100,000 Hub/Train Miles	Safety Index
Rapid Bus	B-3 Rapidbus	565	510	18.96	25.27	7,641	242,932	3.15%	0.40	0.06	2.69	Composite

ALTERNATIVE	Model Notes	ECONOMIC				ENVIRONMENT			SAFETY			
						Air Quality Index			Safety Index			
		Job Supported, Operating	Jobs Supported, Capital	Gross Area Product, Operating	Gross Area Product, Capital	Additional Transit Emissions	Non Transit Vehicular Emissions (kgs)	Percent of NTVE	Pass. Accidents per 100,000 Boardings	Pass. Accidents per 100,000 Hub/Train Miles	Traffic Accidents per 100,000 Hub/Train Miles	Safety Index
Rapid Bus	B-3 Rapidbus	●	○	●	○	●	◑	●	◕	◕	◕	◕

RAPID BUS RESULTS FOR THE SYSTEM-WIDE ALTERNATIVES INCLUDE...

TIER 1 MEASURES

Alternative	Model Note	Mobility	Transit Dependency	Reliability	Community Impacts	Cost Effectiveness
Rapid Bus	B-3 Rapid Bus	●	◕	◑	◑	◕

TIER 2 MEASURES

Alternative	Model Note	Economic	Safety	Environmental
Rapid Bus	B-3 Rapid Bus	◑	◕	◕

KEY

●	Most Favorable or High	○	Least Favorable or Low

COST ESTIMATE COVERSHEET

PROJECT: SYSTEMWIDE RAPID BUS
16 LINES

EST. HTL
DATE 11/5/98
REV. 2
$: 1998 Dollars

SHT. 2
OF 2
XLS

DESCRIPTION	QTY	MTA UNIT PRICE	BAH UNIT PRICE	UNIT	MTA COST	LOWER BOUND	ESTIMATED PROJECT COST
GUIDEWAY COSTS							
SUBTOTAL (GUIDEWAY COST)	0				$0	$0	$0
HAZARDOUS WASTE HANDLING							
ALLOWANCE	0	$1,500,000	NA	LS	$0	$0	$0
SUBTOTAL (HAZ MAT)					$0	$0	$0
STATION COST							
RAPID BUS STATION STOPS (total cost per directional pair including shelters, pedestrian crosswalks, landscaping, lighting, signage, information kiosks, bus pads)	387	$50,000	$50,000	EA	$19,350,000	$19,350,000	$19,350,000
TRANSIT CENTERS	6	$4,000,000	$4,000,000	EA	$24,000,000	$24,000,000	$24,000,000
SUBTOTAL (STATION COST)					$43,350,000	$43,350,000	$43,350,000
MAINT. FACIL & YARD COSTS							
MAINTENANCE FACILITIES (ALLOWANCE)	200	$54,151	$54,151	VEH	$10,830,240	$10,830,240	$10,830,240
SUBTOTAL (MAINT. FACIL.)					$10,830,240	$10,830,240	$10,830,240
VEHICLE COST							
REVENUE VEHICLE (including diagnostics, counters, onboard C	200	$382,500	$365,791	EA	$76,500,000	$73,158,200	$73,158,200
SUBTOTAL (VEHICLE COST)					$76,500,000	$73,158,200	$73,158,200
SYSTEM WIDE EQUIPMENT COST							
PRIORITY SIGNALIZATION (BY INTERSECTION)	1255	$25,000	$25,000	EA	$31,375,000	$31,375,000	$31,375,000
UNIFIED FARE SYSTEM (INCL RAIL COSTS, EXCL BUS VEH.)		$22,315,960	$22,315,960	LS	$0	$0	$0
UNIFIED FARE SYSTEM - BUS FARE BOXES	200	$5,500	$5,500	VEH	$1,100,000	$1,100,000	$1,100,000
UNIFIED FARE SYSTEM - CARD/TRANSFER PROCESSORS	200	$3,600	$3,600	VEH	$720,000	$720,000	$720,000
UNIFIED FARE SYSTEM - PARTS AND SERVICES	1	$273,000	$273,000	LS	$273,000	$273,000	$273,000
GPS/AVL - ON-BOARD VEHICLE EQUIP.	0	$25,000	$25,000	VEH	$0	$0	$0
GPS/AVL - TRANSMISSION TOWERS		$394,000	$394,000	EA	$0	$0	$0
GPS/AVL - CENTRAL CONTROL		$1,800,000	$1,800,000	EA	$0	$0	$0
BUS DIAGNOSTICS PACKAGE (new vehicles only)	0	$5,000	$5,000	VEH	$0	$0	$0
ON-BOARD PASSENGER COUNTERS W/ AVL	0	$2,500	$2,500	VEH	$0	$0	$0
ON-BOARD PASSENGER COUNTERS W/0 AVL		$7,500	$7,500	VEH	$0	$0	$0
PASSENGER COUNTER SYSTEM SOFTWARE		$30,000	$30,000	RF	$0	$0	$0
ON-BOARD CAMERAS	0	$3,500	$3,500	VEH	$0	$0	$0
SUBTOTAL (SYSTEM COST)					$33,468,000	$33,468,000	$33,468,000
TOTAL ESTIMATED COST - 1998 DOLLARS					$164,148,240	$160,806,440	$160,806,440

Note: Excludes investment in High Tech equipment for existing (2073 vehicle) bus fleet; includes costs for E3 Rapid Bus system.

COST ESTIMATE COVERSHEET

PROJECT:	SYSTEMWIDE RAPID BUS	EST.	HTL	SHT.	1
	16 LINES	DATE	11/5/98	OF	2
	0	REV.:	2		
	0	$:	1988 Dollars		

ITEM DESCRIPTION		MTA ESTIMATED COST	LOWER BOUND COST	PROJECTED FINAL COST
1A) GUIDEWAYS AND STRUCTURES		$0	$0	$0
1B) HAZARDOUS WASTE HANDLING ALLOWANCE		$0	$0	$0
2) STATIONS		$43,350,000	$43,350,000	$43,350,000
3) MAIN YARD AND SHOP		$10,830,240	$10,830,240	$10,830,240
4) SYSTEMWIDE EQUIPMENT		$33,468,000	$33,468,000	$33,468,000
5) VEHICLES		$76,500,000	$73,158,200	$73,158,200
SUBTOTAL (A) (see page 2 for details)		**$164,148,240**	**$160,806,440**	**$160,806,440**
6) PRE REVENUE OPERATION	2.9%	$4,760,299	$4,663,387	$4,663,387
7) OWNERS INSURANCE	0.0%	$0	$0	$0
8) MASTER AGREEMENTS	0.0%	$0	$0	$0
SUBTOTAL (B)		**$4,760,299**	**$4,663,387**	**$4,663,387**
9) ART FOR TRANSIT (C)	0.0%	$0	$0	$0
SUBTOTAL (C)		**$0**	**$0**	**$0**
10) RIGHT OF WAY (D) ALLOWANCE		$0	$0	$0
SUBTOTAL (D)		**$0**	**$0**	**$0**
11) PROF. SERVICES (E)		$32,342,989	$15,639,237	$22,616,349
SUBTOTAL (E)		**$32,342,989**	**$15,639,237**	**$22,616,349**
12) CONTINGENCY (F)				
A) ITEM 1A	12%	$0	$0	$0
ITEM 1B	12%	$0	$0	$0
B) ITEM 2	10%	$4,335,000	$4,335,000	$4,335,000
C) ITEM 3, 4, & 5	10%	$12,079,824	$11,745,644	$11,745,644
D) ITEM 6, 7, & 8	10%	$476,030	$466,339	$466,339
E) ITEM 10	10%	$0	$0	$0
F) ITEM 11	10%	$3,234,299	$1,563,924	$2,261,635
SUBTOTAL (F)		**$20,125,153**	**$18,110,906**	**$18,808,618**
GRAND TOTAL - 1998 DOLLARS		**$221,376,680**	**$199,219,970**	**$206,894,793**

COST ESTIMATE COVERSHEET

PROJECT: RAPID BUS DEMONSTRATION
3 LINES

EST. HTL
DATE 11/5/98
REV. 2
$: 1998 Dollars

SHT. 2
OF 2
XLS

DESCRIPTION	QTY	MTA UNIT PRICE	BAH UNIT PRICE	UNIT	MTA COST	LOWER BOUND	ESTIMATED PROJECT COST
GUIDEWAY COSTS							
SUBTOTAL (GUIDEWAY COST)	0				**$0**	**$0**	**$0**
HAZARDOUS WASTE HANDLING							
ALLOWANCE	0	$1,500,000	NA	LS	$0	$0	$0
SUBTOTAL (HAZ MAT)					**$0**	**$0**	**$0**
STATION COST							
RAPID BUS STATION STOPS	65	$50,000	$50,000	EA	$3,250,000	$3,250,000	$3,250,000
(total cost per directional pair including shelters, pedestrian crosswalks, landscaping, lighting, signage, information kiosks, bus pads)							
TRANSIT CENTERS	1	$4,000,000	$4,000,000	EA	$4,000,000	$4,000,000	$4,000,000
SUBTOTAL (STATION COST)					**$7,250,000**	**$7,250,000**	**$7,250,000**
MAINT. FACIL & YARD COSTS							
MAINTENANCE FACILITIES (ALLOWANCE)	40	$54,151	$54,151	VEH	$2,166,048	$2,166,048	$2,166,048
SUBTOTAL (MAINT. FACIL.)					**$2,166,048**	**$2,166,048**	**$2,166,048**
VEHICLE COST							
REVENUE VEHICLE (including diagnostics, counters, c	40	$382,500	$365,791	EA	$15,300,000	$14,631,640	$14,631,640
SUBTOTAL (VEHICLE COST)					**$15,300,000**	**$14,631,640**	**$14,631,640**
SYSTEM WIDE EQUIPMENT COST							
PRIORITY SIGNALIZATION (BY INTERSECTION)	200	$25,000	$25,000	EA	$5,000,000	$5,000,000	$5,000,000
UNIFIED FARE SYSTEM (INCL RAIL COSTS, EXCL BUS VEH.)		$22,315,960	$22,315,960	LS	$0	$0	$0
UNIFIED FARE SYSTEM - BUS FARE BOXES	40	$5,500	$5,500	VEH	$220,000	$220,000	$220,000
UNIFIED FARE SYSTEM - CARD/TRANSFER PROCE	40	$3,600	$3,600	VEH	$144,000	$144,000	$144,000
UNIFIED FARE SYSTEM - PARTS AND SERVICES	1	$54,600	$54,600	LS	$54,600	$54,600	$54,600
GPS/AVL - ON-BOARD VEHICLE EQUIP.	0	$25,000	$25,000	VEH	$0	$0	$0
GPS/AVL - TRANSMISSION TOWERS		$394,000	$394,000	EA	$0	$0	$0
GPS/AVL - CENTRAL CONTROL		$1,800,000	$1,800,000	EA	$0	$0	$0
BUS DIAGNOSTICS PACKAGE (new vehicles only)	0	$5,000	$5,000	VEH	$0	$0	$0
ON-BOARD PASSENGER COUNTERS W/ AVL	0	$2,500	$2,500	VEH	$0	$0	$0
ON-BOARD PASSENGER COUNTERS W/0 AVL		$7,500	$7,500	VEH	$0	$0	$0
PASSENGER COUNTER SYSTEM SOFTWARE		$30,000	$30,000	RF	$0	$0	$0
ON-BOARD CAMERAS	0	$3,500	$3,500	VEH	$0	$0	$0
SUBTOTAL (SYSTEM COST)					**$5,418,600**	**$5,418,600**	**$5,418,600**
TOTAL ESTIMATED COST - 1998 DOLLARS					**$30,134,648**	**$29,466,288**	**$29,466,288**

Note: Excludes investment in High Tech equipment for existing (2073 vehicle) bus fleet; includes costs for E3 Rapid Bus system.

COST ESTIMATE COVERSHEET

PROJECT: RAPID BUS DEMONSTRATION	EST.	HTL	SHT. 1
3 LINES	DATE	11/5/98	OF 2
0	REV.:	2	
0	$:	1988 Dollars	

ITEM DESCRIPTION		MTA ESTIMATED COST	LOWER BOUND COST	PROJECTED FINAL COST
1A) GUIDEWAYS AND STRUCTURES		$0	$0	$0
1B) HAZARDOUS WASTE HANDLING ALLOWANCE		$0	$0	$0
2) STATIONS		$7,250,000	$7,250,000	$7,250,000
3) MAIN YARD AND SHOP		$2,166,048	$2,166,048	$2,166,048
4) SYSTEMWIDE EQUIPMENT		$5,418,600	$5,418,600	$5,418,600
5) VEHICLES		$15,300,000	$14,631,640	$14,631,640
SUBTOTAL (A) (see page 2 for details)		**$30,134,648**	**$29,466,288**	**$29,466,288**
6) PRE REVENUE OPERATION	2.9%	$873,905	$854,522	$854,522
7) OWNERS INSURANCE	0.0%	$0	$0	$0
8) MASTER AGREEMENTS	0.0%	$0	$0	$0
SUBTOTAL (B)		**$873,905**	**$854,522**	**$854,522**
9) ART FOR TRANSIT (C)	0.0%	$0	$0	$0
SUBTOTAL (C)		**$0**	**$0**	**$0**
10) RIGHT OF WAY (D) ALLOWANCE		$0	$0	$0
SUBTOTAL (D)		**$0**	**$0**	**$0**
11) PROF. SERVICES (E)		$5,497,993	$2,658,025	$3,843,847
SUBTOTAL (E)		**$5,497,993**	**$2,658,025**	**$3,843,847**
12) CONTINGENCY (F)				
A) ITEM 1A	12%	$0	$0	$0
ITEM 1B	12%	$0	$0	$0
B) ITEM 2	10%	$725,000	$725,000	$725,000
C) ITEM 3, 4, & 5	10%	$2,288,465	$2,221,629	$2,221,629
D) ITEM 6, 7, & 8	10%	$87,390	$85,452	$85,452
E) ITEM 10	10%	$0	$0	$0
F) ITEM 11	10%	$549,799	$265,803	$384,385
SUBTOTAL (F)		**$3,650,655**	**$3,297,884**	**$3,416,466**
GRAND TOTAL - 1998 DOLLARS		**$40,157,201**	**$36,276,719**	**$37,581,123**

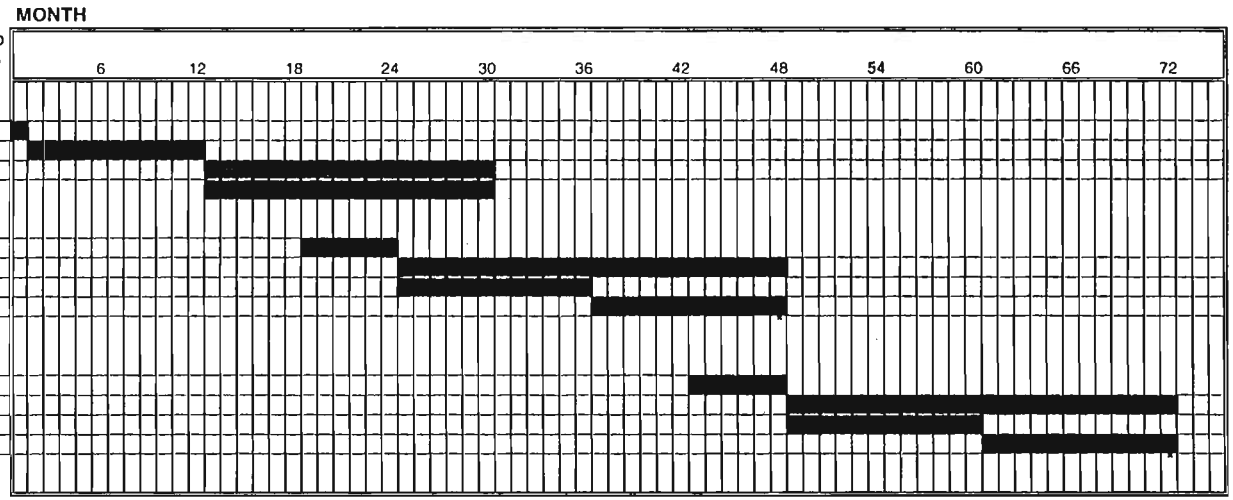
THE COUNTYWIDE RAPID BUS EXPANSION HAS THE FOLLOWING STRENGTHS AND WEAKNESSES

STRENGTHS	WEAKNESSES
1. Offers regional mobility solution 2. Two thirds of the rapid bus corridors serve transit dependant populations and destinations 3. Can be quickly implemented 4. Relatively low cost 5. Serves high demand corridors 6. Transit centers improve modal connectivity and puts right-of-way purchased in suspended rail corridors to productive use 7. Serves to focus transit demands to support future fixed guideway systems 8. Applicable to all county operators 9. Readily recognizable as a different service offering	1. Providing dedicated Peak Hour Lanes reduces the number of travel lanes and leads to increased congestion 2. Not having dedicated right-of-way slows operations relative to an exclusive facility 3. Bus service may not provide as significant economic redevelopment opportunities as rail lines 4. Some elements of the community indicate strong support for rail projects

THE DEMONSTRATION PROGRAM WILL BE DESIGNED TO MAXIMIZE SYSTEM PERFORMANCE AND DEMONSTRATE DIFFERENT APPROACHES

RAPID BUS IMPLEMENTATION SCHEDULE

PROJECT PHASE	Percent Complete	Months to Complete
Phase I		
Select Demonstration Routes	0%	1
Engineering / Construction	10%	11
Revenue Service		18
Evaluate Program	0%	18
Phase II		
Select Routes	0%	6
Procure Buses	0%	24
Engineering	20%	12
Construction	0%	12
Start of Revenue Service		
Phase III		
Select Routes	0%	6
Procure Buses	0%	24
Engineering	20%	12
Construction	0%	12
Start of Revenue Service		



The use of buses acquired as part of the accelerated procurement program allows the first phase to be implemented within 12 months

THE IMPLEMENTATION OF THE COUNTYWIDE RAPID BUS SYSTEM CAN FOLLOW A PHASED PROCESS THROUGH FY 2005

- Determine Priority Corridors for demonstration projects (e.g., Suspended / Deferred Project Corridors, Transit Dependent)
- Coordinate Priority Signal Program with City of Los Angeles Department of Transportation
- Design Corridor Facilities
- Procure Buses
- Construct Facilities
- Implement Service
- Monitor Program Performance

APPENDIX 4.2
EASTSIDE CORRIDOR

FOUR ALTERNATIVES WERE TAKEN THROUGH THOROUGH ANALYSIS FOR THE EASTSIDE CORRIDOR

- Red Line Subway Extension to First/Lorena (Suspended Project)
- Red Line Subway Extension to Chavez/Soto
- Light Rail Extension to Whittier / Atlantic
- Bus Transitway to Whittier / Atlantic

SUMMARY OF EASTSIDE CORRIDOR ALTERNATIVES

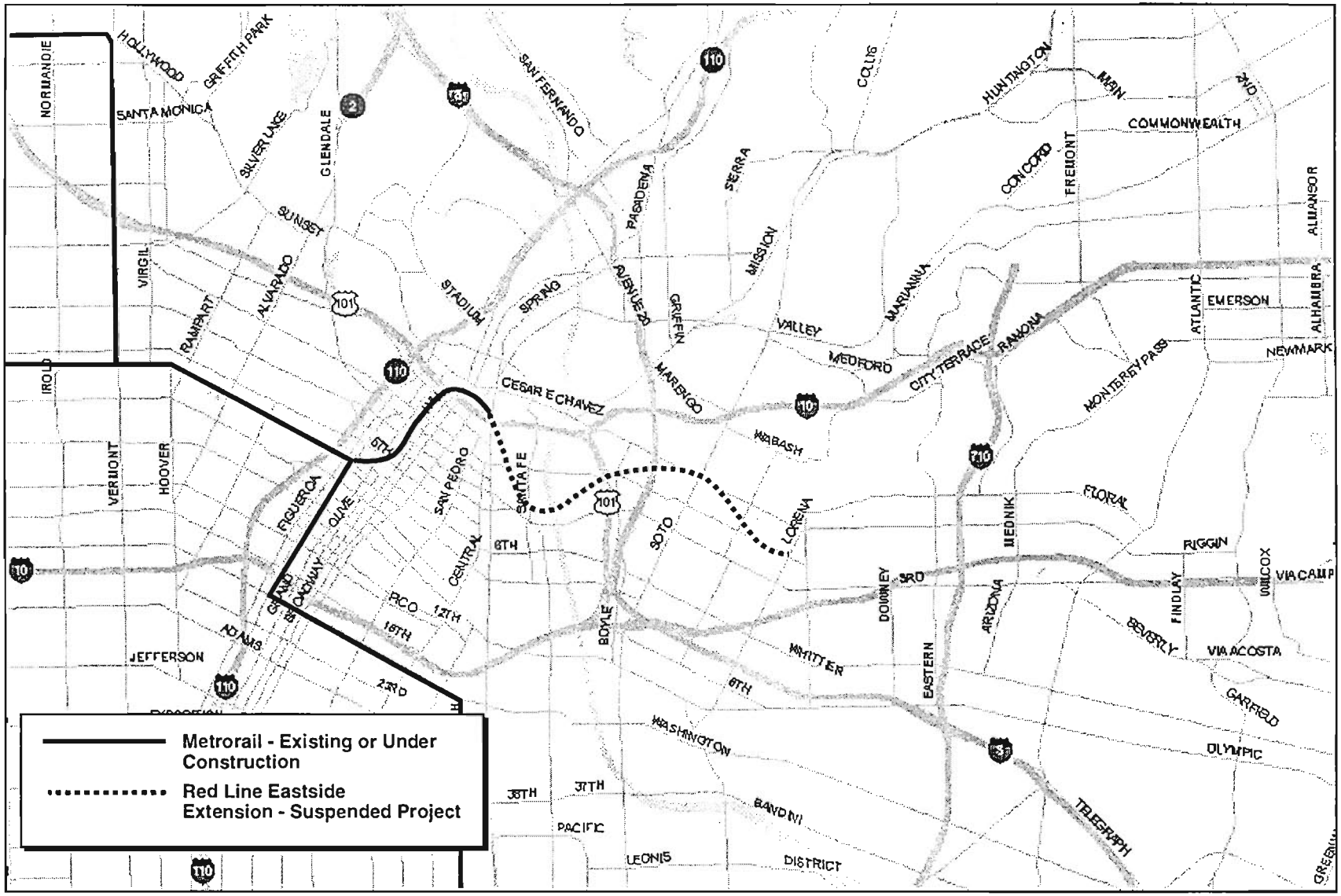
Alternative	Alignment	Mode	Grade	No. of Stations	No. of Stations with Park and Ride Lots	Route Length (miles)	One-Way Travel Time (minutes)	Average Speed (mph)	Peak Headway (minutes)	Off-Peak Headway (minutes)
Heavy Rail to First / Lorena — Suspended Project	Union Station to First / Lorena	Heavy Rail	Subway	4	None	3.2	7.4	25.9	4.25	5.0
Heavy Rail to Chavez / Soto — Revised Alignment without Little Tokyo Station	Union Station to Chavez/ Soto	Heavy Rail	Subway	2	None	1.9	3.6	31.3	4.25	5.0
Light Rail to Whittier / Atlantic	Union Station to Whittier / Atlantic	Light Rail	At-Grade with one aerial section	7	None	5.9	26.5	13.4	5.0	12.0
Bus Transitway to Whittier / Atlantic	Gateway Plaza to Whittier / Atlantic	Bus	At-Grade	7	None	5.9	26.5	13.4	5.0	12.0

SUMMARY RESULTS FOR EASTSIDE CORRIDOR ALTERNATIVES

Alternative	Capital Costs ($M)	Operating Costs ($M)	Estimated Ridership	Estimated Time Before Construction (months)	Mobility	Transit Dependence	Reliability	Community Impact	Cost Effectiveness
Heavy Rail Subway: Union Station to First / Lorena (Suspended Project)	922.6	10.5	10,400	7	◕	●	●	◕	◔
Heavy Rail Subway: Union Station to Chavez / Soto	481.1	3.4	6,100	32	◑	●	●	●	○
Light Rail At-Grade: Union Station to Atlantic / Whittier	430.9	15.5	11,500	62	◕	◕	◕	◑	◕
Bus Transitway At-Grade: Gateway Plaza to Atlantic / Whitter	88.2	9.9	11,400	62	◔	◕	◕	◑	◕

KEY ● *Most Favorable or High* ⟶ ⊕ *Least Favorable or Low*

EASTSIDE CORRIDOR – SUSPENDED PROJECT



THE SUSPENDED PROJECT TO THE EASTSIDE PROVIDES A HEAVY RAIL SUBWAY ALIGNMENT INTO THE HEART OF EAST LOS ANGELES

- The characteristics of the alignment include...

Alignment Limits: Union Station to First/Lorena
Station Locations: Little Tokyo/Arts District
First/Boyle
Chavez/Soto
First/Lorena
No. Vehicles: None, extension of Red Line and utilizes existing fleet

Vehicles	Consist Length	Route Miles	Speed (MPH)	One-Way Time (Min)	Peak Headway (Min)	Off-Peak Headway (Min)	Planned Peak-Hour Capacity (Passengers per Hour)	Maximum Build-Out Peak-Hour Capacity (Passengers Per Hour)
Not Required	4	3.2	25.9	7.4	4.25	5	31,350	53,294

Strengths	Weaknesses
1. Serves demand travel corridor 2. Strong Community Support 3. Minimal Community Impacts 4. Design is nearly complete 5. Utilizes existing Red Line Vehicles 6. Utilizes Existing Maintenance Facility 7. Expands the Red Line network and Improves regional connectivity 8. Portion of Right-of-Way Purchased	1. High Cost

PROJECT: EASTSIDE HEAVY RAIL
UNION STATION TO 1ST/LORENA

EST. HTL
DATE 11/5/98
REV. 0
$: 1988 Dollars

SHT. 2
OF 2
XLS

DESCRIPTION	QTY	MTA UNIT PRICE	BAH UNIT PRICE	UNIT	MTA COST	LOWER BOUND	ESTIMATED PROJECT COST
GUIDEWAY COSTS							
TWIN TUNNEL	19124	$11,000	$10,296	RF	$210,364,000	$196,909,257	$210,364,000
SEISMIC SECTION ADDER	295	$5,000	$5,000	RF	$1,475,000	$1,475,000	$1,475,000
SUBTOTAL (GUIDEWAY COST)	**19124**				**$211,839,000**	**$198,384,257**	**$211,839,000**
HAZARDOUS WASTE HANDLING							
ALLOWANCE	3800	$650	NA	RF	$2,470,000	$2,470,000	$2,470,000
SUBTOTAL (HAZ MAT)					**$2,470,000**	**$2,470,000**	**$2,470,000**
STATION COST							
SUBWAY STATIONS	2	$40,000,000	$36,663,148	EA	$80,000,000	$73,326,297	$73,326,297
SUBWAY STATIONS W/ CROSSOVER	2	$70,000,000	$66,663,148	EA	$140,000,000	$133,326,297	$133,326,297
SUBTOTAL (STATION COST)					**$220,000,000**	**$206,652,593**	**$206,652,593**
MAINT. FACIL & YARD COSTS							
MAINTENANCE FACILITIES (ALLOWANCE)				LS	$0	$0	$0
SUBTOTAL (MAINT. FACIL.)					**$0**	**$0**	**$0**
VEHICLE COST							
REVENUE VEHICLE				EA	$0	$0	$0
SUBTOTAL (VEHICLE COST)					**$0**	**$0**	**$0**
SYSTEM WIDE EQUIPMENT COST							
TRACKWORK (INCL. SPECIAL TRACKWORK)	19124	$575	$674	RF	$10,996,300	$12,890,891	$10,996,300
TRAIN CONTROL STA.	4	$1,100,000	NA	EA	$4,400,000	NA	$4,400,000
TRAIN CONTROL GDWY	19124	$1,100	$880	RF	$21,036,400	$16,835,347	$21,036,400
TRACTION POWER STA. (XFMR)	3	$1,750,000	$4,235,377	EA	$5,250,000	$12,706,132	$5,250,000
COMMUNICATIONS	19124	$1,000	$208	RF	$19,124,000	$3,969,375	$3,969,375
FARE COLLECTION	4	$750,000	$1,072,420	LS	$3,000,000	$4,289,681	$3,000,000
SIGNAGE & GRAPHICS	4	$750,000	$302,155	LS	$3,000,000	$1,208,620	$1,208,620
SUBTOTAL (SYSTEM COST)					**$66,806,700**	**$51,900,046**	**$49,860,695**
TOTAL ESTIMATED COST - 1998 DOLLARS					**$501,115,700**	**$459,406,896**	**$470,822,288**

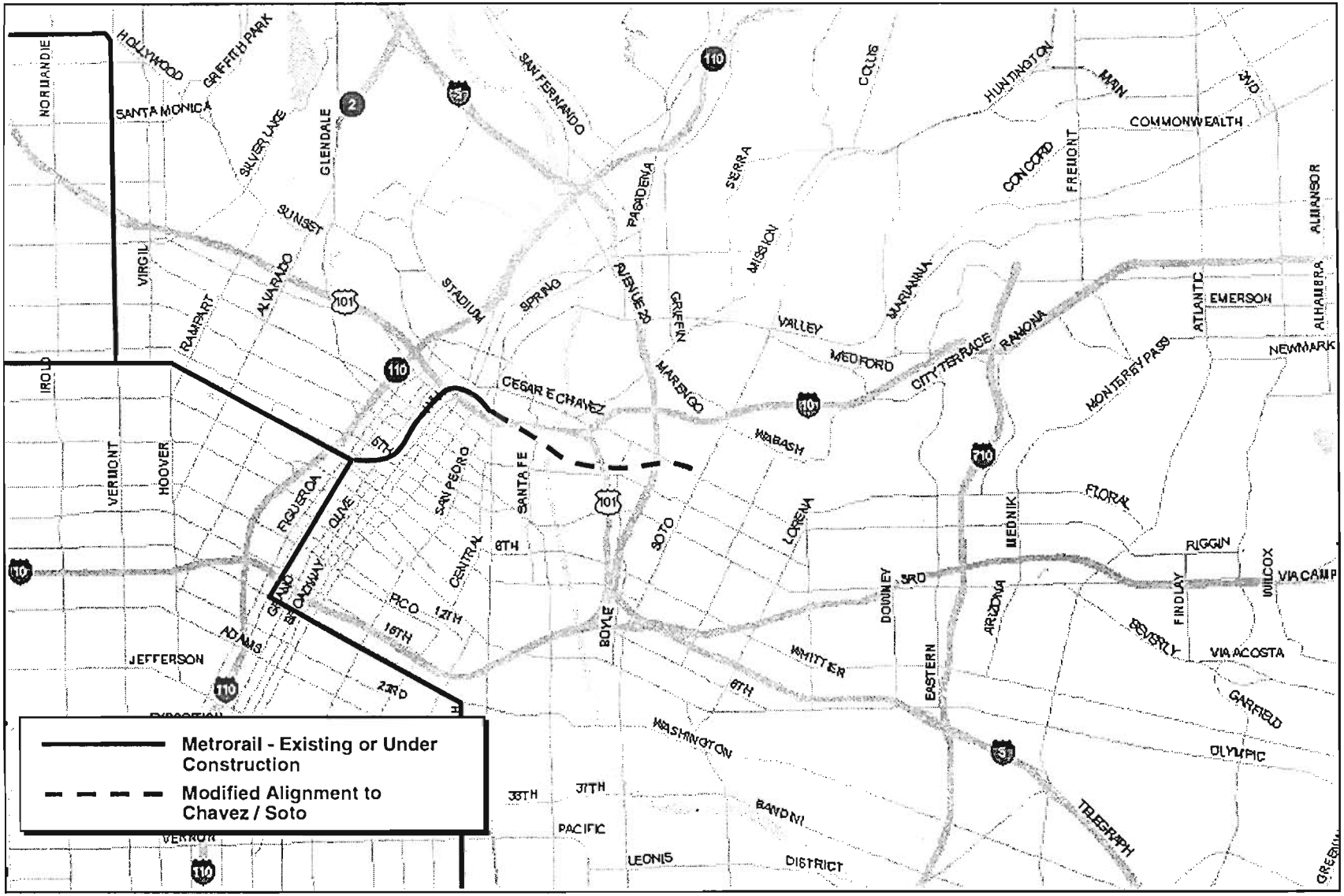
COST ESTIMATE COVERSHEET

PROJECT:	EASTSIDE HEAVY RAIL	EST.	HTL	SHT.	1
	UNION STATION TO 1ST/LORENA	DATE	11/5/98	OF	2
		REV.:	0		
		$:	1988 Dollars		

ITEM DESCRIPTION		MTA ESTIMATED COST	LOWER BOUND COST	PROJECTED FINAL COST
1A) GUIDEWAYS AND STRUCTURES		$211,839,000	$198,384,257	$211,839,000
1B) HAZARDOUS WASTE HANDLING ALLOWANCE		$2,470,000	$2,470,000	$2,470,000
2) STATIONS		$220,000,000	$206,652,593	$206,652,593
3) MAIN YARD AND SHOP		$0	$0	$0
4) SYSTEMWIDE EQUIPMENT		$66,806,700	$51,900,046	$49,860,695
5) VEHICLES		$0	$0	$0
SUBTOTAL (A) (see page 2 for details)		**$501,115,700**	**$459,406,896**	**$470,822,288**
6) PRE REVENUE OPERATION	2.5%	$12,527,893	$11,485,172	$11,770,557
7) OWNERS INSURANCE	8.0%	$40,089,256	$36,752,552	$37,665,783
8) MASTER AGREEMENTS	2.5%	$12,527,893	$11,485,172	$11,770,557
SUBTOTAL (B)		**$65,145,041**	**$59,722,897**	**$61,206,897**
9) ART FOR TRANSIT (C)	0.5%	$2,505,579	$2,297,034	$2,354,111
SUBTOTAL (C)		**$2,505,579**	**$2,297,034**	**$2,354,111**
10) RIGHT OF WAY (D) INCL. COST TO DATE ($17,728,000)		$36,609,000	$36,609,000	$36,609,000
SUBTOTAL (D)		**$36,609,000**	**$36,609,000**	**$36,609,000**
11) PROF. SERVICES (E) INCL. COST TO DATE ($90,000,000)		$242,150,128	$122,803,491	$159,877,843
SUBTOTAL (E)		**$242,150,128**	**$122,803,491**	**$159,877,843**
12) CONTINGENCY (F)				
A) ITEM 1A	10%	$21,183,900	$19,838,426	$21,183,900
ITEM 1B	10%	$247,000	$247,000	$247,000
B) ITEM 2	8%	$17,600,000	$16,532,207	$16,532,207
C) ITEM 3, 4, & 5	8%	$5,344,536	$4,152,004	$3,988,856
D) ITEM 6, 7, & 8	10%	$6,514,504	$5,972,290	$6,120,690
E) ITEM 10 B	0%	INCL. IN ITEM	INCL. IN ITEM	INCL. IN ITEM
F) ITEM 11	10%	$24,215,013	$12,280,349	$15,987,784
SUBTOTAL (F)		**$75,104,953**	**$59,022,276**	**$64,060,437**
GRAND TOTAL - 1998 DOLLARS		**$922,630,400**	**$739,861,694**	**$794,930,577**

Cost development worksheet HR.xls E1 Lorena – Sum Incl Soft-Costs

EASTSIDE CORRIDOR – MODIFIED ALIGNMENT TO CHAVEZ / SOTO



THE CHAVEZ/SOTO HEAVY RAIL SUBWAY ALIGNMENT TO THE EASTSIDE MODIFIES THE SUSPENDED PROJECT BY ELIMINATING TWO STATIONS AND REDUCING THE LENGTH OF TUNNEL CONSTRUCTION

- The characteristics of the alignment include...

Alignment Limits: Union Station to Chavez/Soto
Station Locations: First/Boyle
Chavez/Soto
No. Vehicles: None, extension of Red Line and utilizes existing Fleet

Vehicles	Consist Length	Route Miles	Speed (MPH)	One-Way Time (Min)	Peak Headway (Min)	Off-Peak Headway (Min)	Planned Peak-Hour Capacity (Passengers per Hour)	Maximum Build-Out Peak-Hour Capacity (Passengers Per Hour)
Not Required	4	1.9	31.3	3.6	4.25	5	18,418	31,310

Strengths	Weaknesses
1. Serves demand travel corridor	1. High Cost
2. Strong Community Support	2. Limited Corridor Penetration
3. Minimal Community Impacts	3. No Little Tokyo Connection
4. Utilizes existing Red Line Vehicles	4. Requires Modification to EIR
5. Utilizes Existing Maintenance Facility	5. Requires Redesign
6. Expands the Red Line network and Improves regional connectivity	
7. Portion of Right-of-Way Purchased	
8. Lower Cost than Suspended Project	

PROJECT: EASTSIDE LRT
UNION STATION TO WHITTIER/ATLANTIC

EST. HTL
DATE 11/5/98
REV. 0
$: 1988 Dollars

SHT. 2
OF 2
XLS

DESCRIPTION	QTY	MTA UNIT PRICE	BAH UNIT PRICE	UNIT	MTA COST	LOWER BOUND	ESTIMATED PROJECT COST
GUIDEWAY COSTS							
BRIDGE OVER 101 FREEWAY (SEGMENTAL)	800	$10,500	$3,750	RF	$8,400,000	$3,000,045	$8,400,000
AT-GRADE-GUIDEWAY	30250	$2,500	$2,457	RF	$75,625,000	$74,334,268	$75,625,000
(including street restoration @ $250 RF and sidewalk reconstruction @ $400 RF)							
SUBTOTAL (GUIDEWAY COST)					**$84,025,000**	**$77,334,311**	**$84,025,000**
HAZARDOUS WASTE HANDLING							
ALLOWANCE	1	$1,500,000		LS	$1,500,000	$1,500,000	$1,500,000
SUBTOTAL (HAZ MAT)					**$1,500,000**	**$1,500,000**	**$1,500,000**
STATION COST							
PASSENGER LOADING/UNLOADING FACILITIES	7	$500,000	$656,260	EA	$3,500,000	$4,593,819	$3,500,000
SUBTOTAL (STATION COST)					**$3,500,000**	**$4,593,819**	**$3,500,000**
MAINT. FACIL & YARD COSTS							
MAINTENANCE FACILITIES (ALLOWANCE)	1	$35,000,000		LS	$35,000,000	$27,048,316	$35,000,000
SUBTOTAL (MAINT. FACIL.)					**$35,000,000**	**$27,048,316**	**$35,000,000**
VEHICLE COST							
REVENUE VEHICLE	34	$2,500,000	$2,008,268		$85,000,000	$68,281,115	$68,281,115
SUBTOTAL (VEHICLE COST)					**$85,000,000**	**$68,281,115**	**$68,281,115**
SYSTEM WIDE EQUIPMENT COST							
TRACKWORK (INCL. SPECIAL TRACKWORK)	31050	$421	$522	RF	$13,072,050	$16,207,294	$13,072,050
TRAIN CONTROL STA.	6	$160,000	Included below	EA	$960,000	Included below	$960,000
TRAIN CONTROL GDWY	31050	$500	$485	RF	$15,525,000	$15,055,647	$15,525,000
TRACTION POWER STA. (XFMR)	6	$1,100,000	$1,927,875	EA	$6,600,000	$11,567,248	$6,600,000
COMMUNICATIONS	31050	$0	$90	RF	$0	$2,807,414	$0
FARE COLLECTION	6	$250,000	$151,477	EA	$1,500,000	$908,860	$1,500,000
SIGNAGE & GRAPHICS	6	$0	$41,016	EA	$0	$246,097	$0
SUBTOTAL (SYSTEM COST)					**$37,657,050**	**$46,792,559**	**$37,657,050**
TOTAL ESTIMATED COST - 1998 DOLLARS					**$246,682,050**	**$225,550,120**	**$229,963,165**

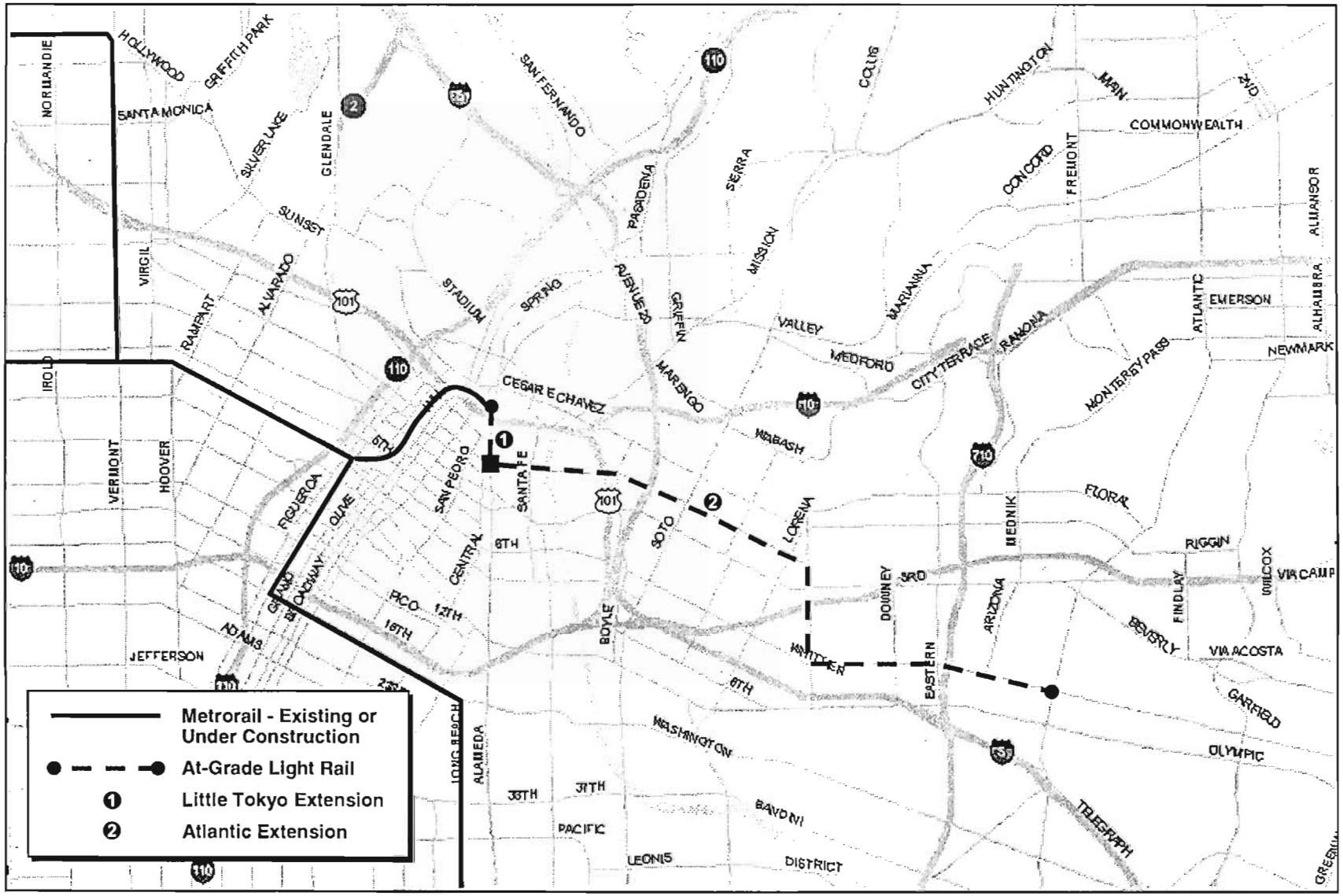
COST ESTIMATE COVERSHEET

PROJECT:	EASTSIDE HEAVY RAIL	EST.	HTL	SHT.	1
	UNION STATION TO CHAVEZ/SOTO	DATE	11/5/98	OF	2
		REV.:	0		
		$:	1988 Dollars		

ITEM DESCRIPTION		MTA ESTIMATED COST	LOWER BOUND COST	PROJECTED FINAL COST
1A) GUIDEWAYS AND STRUCTURES		$112,751,000	$105,633,881	$112,751,000
1B) HAZARDOUS WASTE HANDLING ALLOWANCE		$2,470,000	$2,470,000	$2,470,000
2) STATIONS		$110,000,000	$103,328,297	$103,326,297
3) MAIN YARD AND SHOP		$0	$0	$0
4) SYSTEMWIDE EQUIPMENT		$35,760,300	$27,294,227	$26,848,285
5) VEHICLES		$0	$0	$0
SUBTOTAL (A) (see page 2 for details)		**$260,981,300**	**$238,724,385**	**$245,395,582**
6) PRE REVENUE OPERATION	2.5%	$6,524,533	$5,968,110	$6,134,890
7) OWNERS INSURANCE	8.0%	$20,878,504	$19,097,951	$19,631,647
8) MASTER AGREEMENTS	2.5%	$6,524,533	$5,968,110	$6,134,890
SUBTOTAL (B)		**$33,927,569**	**$31,034,170**	**$31,901,426**
9) ART FOR TRANSIT (C)	0.5%	$1,304,907	$1,193,622	$1,226,978
SUBTOTAL (C)		**$1,304,907**	**$1,193,622**	**$1,226,978**
10) RIGHT OF WAY (D) INCL. COST TO DATE ($17,728,000)		$19,402,770	$19,402,770	$19,402,770
SUBTOTAL (D)		**$19,402,770**	**$19,402,770**	**$19,402,770**
11) PROF. SERVICES (E) INCL. COST TO DATE (approx $32,500,000)		$126,246,618	$63,896,616.02	$83,419,491.57
SUBTOTAL (E)		**$126,246,618**	**$63,896,616**	**$83,419,492**
12) CONTINGENCY (F)				
A) ITEM 1A	10%	$11,275,100	$10,563,386	$11,275,100
ITEM 1B	10%	$247,000	$247,000	$247,000
B) ITEM 2	8%	$8,800,000	$8,266,104	$8,266,104
C) ITEM 3, 4, & 5	8%	$2,860,824	$2,183,538	$2,147,863
D) ITEM 6, 7, & 8	10%	$3,392,756.90	$3,103,417.00	$3,190,142.57
E) ITEM 10 B	0%	INCL. IN ITEM	INCL. IN ITEM	INCL. IN ITEM
F) ITEM 11	10%	$12,624,661.82	$6,389,661.60	$8,341,949.16
SUBTOTAL (F)		**$39,200,343**	**$30,753,107**	**$33,468,158**
GRAND TOTAL - 1998 DOLLARS		**$481,063,506**	**$385,004,669**	**$414,814,405**

Cost development worksheet HR.xls E2 Chavez – Sum Incl sunk-Costs

EASTSIDE CORRIDOR – LIGHT RAIL



THE LIGHT RAIL ALIGNMENT IS AN EXTENSION OF THE PASADENA BLUE LINE AND PROVIDES AN AT-GRADE ALTERNATIVE TO SERVE THE TRAVEL MARKET NEEDS OF THE EASTSIDE CORRIDOR

- The characteristics of the alignment include...

Alignment Limits: Union Station to Atlantic Blvd.
Station Locations: Little Tokyo, First/Boyle, First/Soto, First/Indiana Whittier/Rowan, Whittier/Arizona, Whittier/Atlantic
No. Vehicles: 34

Vehicles	Consist Length	Route Miles	Speed (MPH)	One-Way Time (Min)	Peak Headway (Min)	Off-Peak Headway (Min)	Planned Peak-Hour Capacity (Passengers per Hour)	Maximum Build-Out Peak-Hour Capacity (Passengers Per Hour)
34	2	5.9	13.4	26.5	5.0	12.0	5,453	10,224

Strengths	Weaknesses
1. Meets Travel Market Demands 2. Lower Costs 3. Deepest Penetration Through Eastside 4. Expands Pasadena Blue Line Network 5. Can Provide Connection to Little Tokyo if Chavez/Soto Subway Alternative is Preferred	1. Dedicated Right-of-Way Requires Reduction in the number of Travel Lanes 2. Station Construction Requires Significant Right-of-Way Purchase and Condemnation of Residential/Business Property 3. Mixed Flow Alternative Significantly Reduces System Speed and Significantly Impacts Street Congestion 4. Requires Modification or New EIR 5. System Design Must Be Done 6. Requires Transfer to Travel West 7. Requires New Maintenance Facility

PROJECT:	EASTSIDE LRT	EST.	HTL	SHT.	2
	UNION STATION TO WHITTIER/ATLANTIC	DATE	11/5/98	OF	2
		REV.	0	XLS	
		$:	1988 Dollars		

DESCRIPTION	QTY	MTA UNIT PRICE	BAH UNIT PRICE	UNIT	MTA COST	LOWER BOUND	ESTIMATED PROJECT COST
GUIDEWAY COSTS							
BRIDGE OVER 101 FREEWAY (SEGMENTAL)	800	$10,500	$3,750	RF	$8,400,000	$3,000,045	$8,400,000
AT-GRADE-GUIDEWAY	30250	$2,500	$2,457	RF	$75,625,000	$74,334,266	$75,625,000
(including street restoration @ $250 RF and sidewalk reconstruction @ $400 RF)							
SUBTOTAL (GUIDEWAY COST)					**$84,025,000**	**$77,334,311**	**$84,025,000**
HAZARDOUS WASTE HANDLING							
ALLOWANCE	1	$1,500,000		LS	$1,500,000	$1,500,000	$1,500,000
SUBTOTAL (HAZ MAT)					**$1,500,000**	**$1,500,000**	**$1,500,000**
STATION COST							
PASSENGER LOADING/UNLOADING FACILITIES	7	$500,000	$656,260	EA	$3,500,000	$4,593,819	$3,500,000
SUBTOTAL (STATION COST)					**$3,500,000**	**$4,593,819**	**$3,500,000**
MAINT. FACIL & YARD COSTS							
MAINTENANCE FACILITIES (ALLOWANCE)	1	$35,000,000		LS	$35,000,000	$27,048,316	$35,000,000
SUBTOTAL (MAINT. FACIL.)					**$35,000,000**	**$27,048,316**	**$35,000,000**
VEHICLE COST							
REVENUE VEHICLE	34	$2,500,000	$2,008,268		$85,000,000	$68,281,115	$68,281,115
SUBTOTAL (VEHICLE COST)					**$85,000,000**	**$68,281,115**	**$68,281,115**
SYSTEM WIDE EQUIPMENT COST							
TRACKWORK (INCL. SPECIAL TRACKWORK)	31050	$421	$522	RF	$13,072,050	$16,207,294	$13,072,050
TRAIN CONTROL STA.	6	$160,000	Included below	EA	$960,000	Included below	$960,000
TRAIN CONTROL GDWY	31050	$500	$485	RF	$15,525,000	$15,055,647	$15,525,000
TRACTION POWER STA. (XFMR)	6	$1,100,000	$1,927,875	EA	$6,600,000	$11,567,248	$6,600,000
COMMUNICATIONS	31050	$0	$90	RF	$0	$2,807,414	$0
FARE COLLECTION	6	$250,000	$151,477	EA	$1,500,000	$908,860	$1,500,000
SIGNAGE & GRAPHICS	6	$0	$41,016	EA	$0	$246,097	$0
SUBTOTAL (SYSTEM COST)					**$37,657,050**	**$46,792,559**	**$37,657,050**
TOTAL ESTIMATED COST - 1998 DOLLARS					**$246,682,050**	**$225,550,120**	**$229,963,165**

Cost development worksheet LRT.xls E5 - Sum

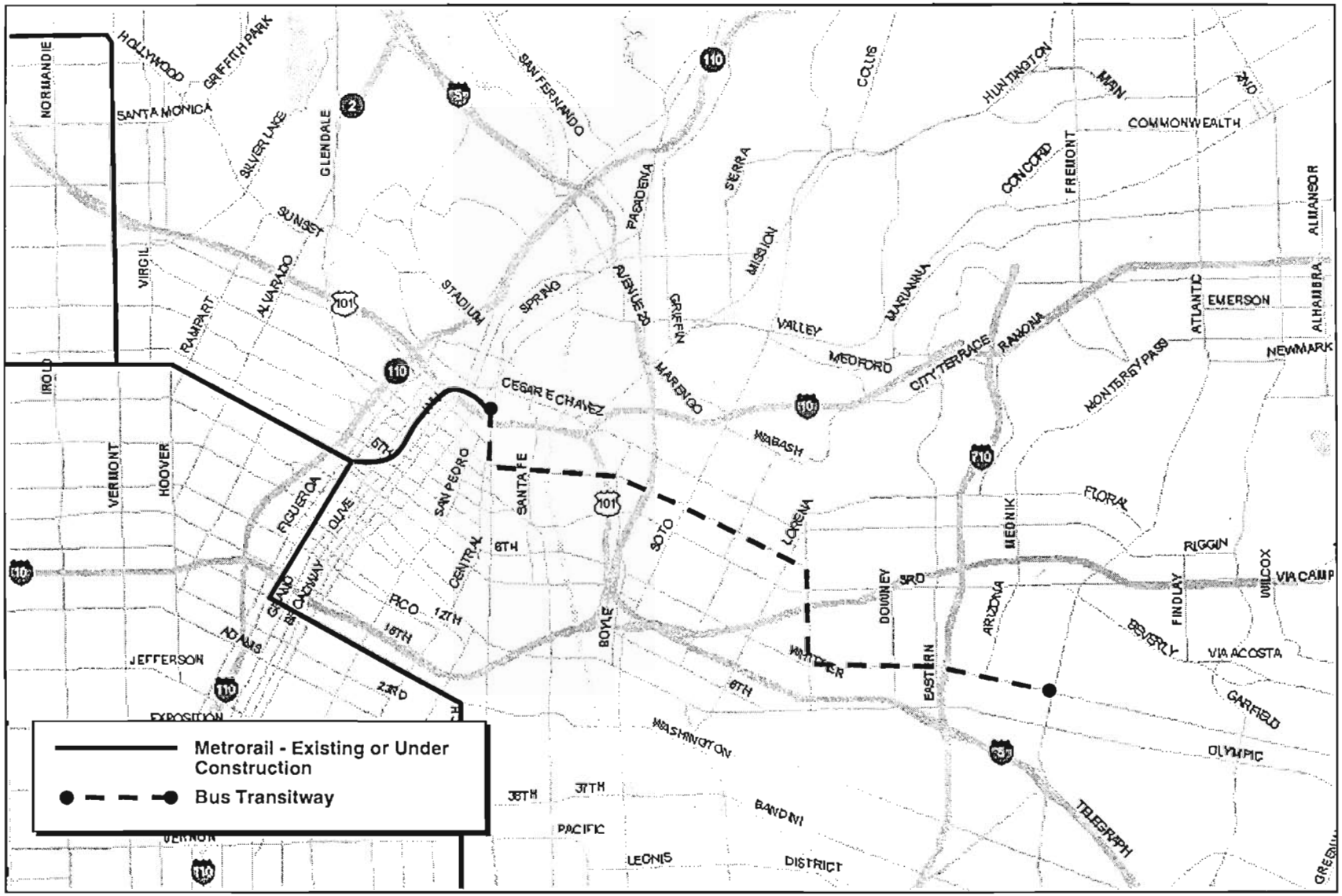
COST ESTIMATE COVERSHEET

PROJECT:	EASTSIDE LRT	EST.	HTL	SHT.	1
	UNION STATION TO WHITTIER/ATLANTIC	DATE	11/5/98	OF	2
		REV.:	0		
		$:	1988 Dollars		

ITEM DESCRIPTION			MTA ESTIMATED COST	LOWER BOUND COST	PROJECTED FINAL COST
1A) GUIDEWAYS AND STRUCTURES			$84,025,000	$77,334,311	$84,025,000
1B) HAZARDOUS WASTE HANDLING ALLOWANCE			$1,500,000	$1,500,000	$1,500,000
2) STATIONS			$3,500,000	$4,593,819	$3,500,000
3) MAIN YARD AND SHOP			$35,000,000	$27,048,316	$35,000,000
4) SYSTEMWIDE EQUIPMENT			$37,657,050	$46,792,559	$37,657,050
5) VEHICLES			$85,000,000	$68,281,115	$68,281,115
SUBTOTAL (A) (see page 2 for details)			**$246,682,050**	**$225,550,120**	**$229,963,165**
6) PRE REVENUE OPERATION		2.5%	$6,167,051	$5,638,753	$5,749,079
7) OWNERS INSURANCE		8.0%	$19,734,564	$18,044,010	$18,397,053
8) MASTER AGREEMENTS		2.5%	$6,167,051	$5,638,753	$5,749,079
SUBTOTAL (B)			**$32,068,667**	**$29,321,516**	**$29,895,211**
9) ART FOR TRANSIT (C)		0.5%	$1,233,410	$1,127,751	$1,149,816
SUBTOTAL (C)			**$1,233,410**	**$1,127,751**	**$1,149,816**
10) RIGHT OF WAY (D)			$5,000,000	$5,000,000	$5,000,000
SUBTOTAL (D)			**$5,000,000**	**$5,000,000**	**$5,000,000**
11) PROF. SERVICES (E)			$110,195,811	$61,624,777	$74,482,294
SUBTOTAL (E)			**$110,195,811**	**$61,624,777**	**$74,482,294**
12) CONTINGENCY (F)					
A) ITEM 1A	10%		$8,402,500	$7,733,431	$8,402,500
ITEM 1B	10%		$150,000	$150,000	$150,000
B) ITEM 2	8%		$280,000	$367,505	$280,000
C) ITEM 3, 4, & 5	8%		$12,612,564	$11,369,759	$11,275,053
D) ITEM 6, 7, & 8	10%		$3,206,867	$2,932,151.56	$2,989,521
E) ITEM 10	0%		$0	$0	$0
F) ITEM 11	10%		$11,019,581	$6,162,478	$7,448,229
SUBTOTAL (F)			**$35,671,512**	**$28,715,325**	**$30,545,304**
GRAND TOTAL - 1998 DOLLARS			**$430,851,450**	**$351,339,488**	**$371,035,790**

Cost development worksheet lrt.xls e1 e5 sum

EASTSIDE CORRIDOR – BUS TRANSITWAY



THE BUS TRANSITWAY FOLLOWS THE SAME ALIGNMENT AS THE LIGHT RAIL ALTERNATIVE AND PROVIDES BUS SERVICE TO SERVE THE TRAVEL MARKET NEEDS OF THE EASTSIDE CORRIDOR

- The characteristics of the alignment include...

Alignment Limits: Union Station to Atlantic Blvd.
Station Locations: Little Tokyo, First/Boyle, First/Soto, First/Indiana Whittier/Rowan, Whittier/Arizona, Whittier/Atlantic
No. Vehicles: 34

Vehicles	Consist Length	Route Miles	Speed (MPH)	One-Way Time (Min)	Peak Headway (Min)	Off-Peak Headway (Min)	Planned Peak-Hour Capacity (Passengers per Hour)	Maximum Build-Out Peak-Hour Capacity (Passengers Per Hour)
34	2	5.9	13.4	26.5	5.0	12.0	1,996	6,732

Strengths	Weaknesses
1. Meets Travel Market Demands 2. Lowest Cost 3. Deepest Penetration Through Eastside 4. Less Community Disruption than Light Rail Alternative	1. Dedicated Lane Requires Reduction in the number of Travel Lanes 2. Requires Transfer to Travel West 3. Dedicated Lane Limits Parking

COST ESTIMATE

PROJECT:	EASTSIDE BUS TRANSITWAY	EST.	HTL	SHT.	2
		DATE	11/6/98	OF	2
	UNION STATION TO	REV.	0	XLS	
	WHITTIER/ATLANTIC VIA ALAMEDA	$:	1998 Dollars		

DESCRIPTION	QTY	MTA UNIT PRICE	BAH UNIT PRICE	UNIT	MTA COST	LOWER BOUND	ESTIMATED PROJECT COST
GUIDEWAY COSTS							
AT GRADE BUSWAY	29370	$320	$466	RF	$9,398,400	$13,685,288	$9,398,400
AT GRADE BUSWAY @ STATION	2880	$535	Incl in above	RF	$1,540,800	Incl in above	$1,540,800
STREET IMPROVEMENTS @ XINGS	30	$152,000	$139,891	EA	$4,560,000	$4,196,718	$4,560,000
SUBTOTAL (GUIDEWAY COST)	**32280**				**$15,499,200**	**$17,882,006**	**$15,499,200**
HAZARDOUS WASTE HANDLING							
ALLOWANCE	1	$1,500,000	NA	LS	$1,500,000	$1,500,000	$1,500,000
SUBTOTAL (HAZ MAT)					**$1,500,000**	**$1,500,000**	**$1,500,000**
STATION COST							
AT GRADE STATION (120 FT. SIDE PLATFORM) (including finishes, landscaping, canopies, lighting & signage)	7	$505,000	$526,318	EA	$3,535,000	$3,684,224	$3,535,000
SUBTOTAL (STATION COST)					**$3,535,000**	**$3,684,224**	**$3,535,000**
MAINT. FACIL & YARD COSTS							
MAINTENANCE FACILITIES (ALLOWANCE)	1	$5,000,000	$5,000,000		$5,000,000	$5,000,000	$5,000,000
SUBTOTAL (MAINT. FACIL.)					**$5,000,000**	**$5,000,000**	**$5,000,000**
VEHICLE COST							
REVENUE VEHICLE	34	$350,000	$333,291		$11,900,000	$11,331,894	$11,331,894
SUBTOTAL (VEHICLE COST)					**$11,900,000**	**$11,331,894**	**$11,331,894**
SYSTEM WIDE EQUIPMENT COST							
PRIORITY SIGNALIZATION	1	$2,580,000	$750,000	LS	$2,580,000	$750,000	$750,000
TICKET VENDING MACHINES	52	$75,000	NA	EA	$3,900,000	$908,859	$908,859
COMMUNICATIONS	32250	$50	$24	RF	$1,612,500	$774,418	$774,418
GUIDEWAY LIGHTING INCL. ELECTRIFICATION	32250	$60	$60	RF	$1,935,000	$1,935,000	$1,935,000
SECURITY	32250	$30	$30	RF	$967,500	$967,500	$967,500
SIGNAGE/GRAPHICS (OTHER THAN STATIONS)	32250	$20	$17	RF	$645,000	$538,040	$538,040
SUBTOTAL (SYSTEM COST)					**$11,640,000**	**$5,873,817**	**$5,873,817**
TOTAL ESTIMATED COST - 1998 DOLLARS					**$49,074,200**	**$45,271,941**	**$[illegible]89,911**

COST ESTIMATE

PROJECT:	EASTSIDE BUS TRANSITWAY	EST.	HTL	SHT.	1
	0	DATE	11/6/98	OF	2
	UNION STATION TO	REV.:	0		
	WHITTIER/ATLANTIC VIA ALAMEDA	$:	1988 Dollars		

ITEM DESCRIPTION			MTA ESTIMATED COST	LOWER BOUND COST	PROJECTED FINAL COST
1A) GUIDEWAYS AND STRUCTURES			$15,499,200	$17,882,006	$15,499,200
1B) HAZARDOUS WASTE HANDLING ALLOWANCE			$1,500,000	$1,500,000	$1,500,000
2) STATIONS			$3,535,000	$3,684,224	$3,535,000
3) MAIN YARD AND SHOP			$5,000,000	$5,000,000	$5,000,000
4) SYSTEMWIDE EQUIPMENT			$11,640,000	$5,873,817	$5,873,817
5) VEHICLES			$11,900,000	$11,331,894	$11,331,894
SUBTOTAL (A) (see page 2 for details)			**$49,074,200**	**$45,271,941**	**$42,739,911**
6) PRE REVENUE OPERATION		2.5%	$1,226,855	$1,131,799	$1,068,498
7) OWNERS INSURANCE		8.0%	$3,925,936	$3,621,755	$3,419,193
8) MASTER AGREEMENTS		5.0%	$2,453,710	$2,263,597	$2,136,996
SUBTOTAL (B)			**$7,606,501**	**$7,017,151**	**$6,624,686**
9) ART FOR TRANSIT (C)		0.5%	$245,371	$226,360	$213,700
SUBTOTAL (C)			**$245,371**	**$226,360**	**$213,700**
10) RIGHT OF WAY (D)			$0	$0	$0
SUBTOTAL (D)			**$0**	**$0**	**$0**
11) PROF. SERVICES (E)			$22,770,429	$8,897,055	$13,881,923
SUBTOTAL (E)			**$22,770,429**	**$8,897,055**	**$13,881,923**
12) CONTINGENCY (F)					
A) ITEM 1A	12%		$1,859,904	$2,145,841	$1,859,904
ITEM 1B	12%		$180,000	$180,000	$180,000
B) ITEM 2	17%		$600,950	$626,318	$600,950
C) ITEM 3, 4, & 5	10%		$2,854,000	$2,220,571	$2,220,571
D) ITEM 6, 7, & 8	10%		$760,650	$701,715	$662,469
E) ITEM 10	10%		$0	$0	$0
F) ITEM 11	10%		$2,277,043	$889,705	$1,388,192
SUBTOTAL (F)			**$8,532,547**	**$6,764,150**	**$6,912,086**
GRAND TOTAL - 1998 DOLLARS			**$88,229,048**	**$68,176,656**	**$70,372,306**

EACH OF THE ALTERNATIVES SELECTED FOR FINAL EVALUATION IN THE EASTSIDE CORRIDOR ARE AT DIFFERENT STAGES IN THE PLANNING AND DESIGN PROCESS

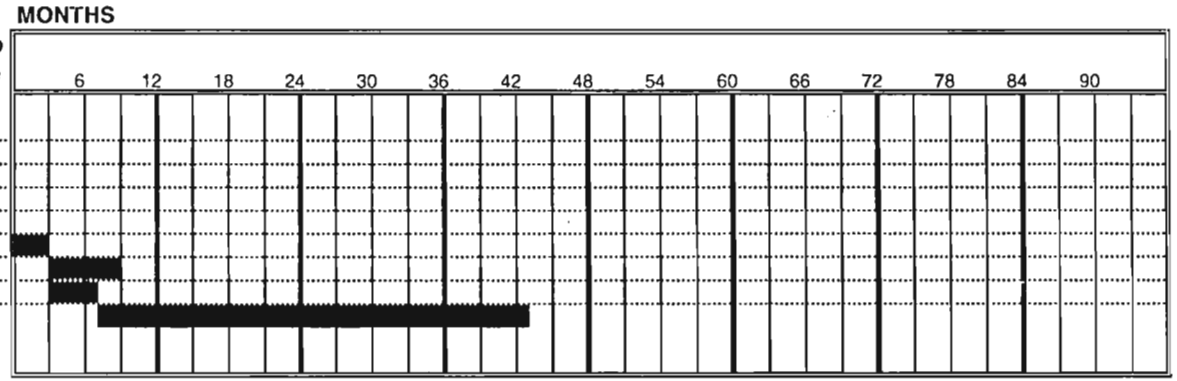
- The suspended project to First and Lorena is for all intents and purposes ready to go, but adequate funding is not available to build this segment of subway
- The other projects in this corridor are at different stages in the planning process and must pass a number of steps prior to implementation

Alternative	STEPS TO IMPLEMENTATION										
	Alternatives Analysis				Prepare Draft EIS (9 mo.)	FTA, Public, & Board Review (6 mo.)	Prepare Final EIS (4 mo.)	Develop ROD (6 mo.)	Final Design (12 mo.)	Bid (4 mo.)	Total Months to Construction
	Scope & Purpose (3 mo.)	Develop & Screen Alternatives (5 mo.)	Detailed Alternative Definition (10 mo.)	Evaluate Alternatives (3 mo.)							
Heavy Rail Subway: Union Station to First / Lorena (Suspended Project)	Complete	Complete	Complete	Complete	Complete	Complete	Complete	Complete	95% 3 mo.	4 mo.	7 mo.
Heavy Rail Subway: Union Station to Chavez / Soto	Complete	Complete	Complete	Complete	65% 3 mo.	0% 6 mo.	0% 4 mo.	0% 6 mo.	50% 9 mo.	4 mo.	32 mo.
Light Rail At-Grade: Union Station to Atlantic / Whittier	0% 3 mo.	0% 5 mo.	0% 10 mo.	0% 3 mo.	0% 9 mo.	0% 6 mo.	0% 4 mo.	0% 6 mo.	0% 12 mo.	4 mo.	62 mo.
Bus Transitway At-Grade: Gateway Plaza to Atlantic / Whitter	0% 3 mo.	0% 5 mo.	0% 10 mo.	0% 3 mo.	0% 9 mo.	0% 6 mo.	0% 4 mo.	0% 6 mo.	0% 12 mo.	4 mo.	62 mo.

NO PROJECT IN THE EASTSIDE CORRIDOR IS READY TO GO AND ADDITIONAL PLANNING OR FUNDING IS NEEDED IN THE FY04 PERIOD PRIOR TO IMPLEMENTATION

IMPLEMENTATION TIMEFRAME FOR SUSPENDED PROJECT TO FIRST / LORENA

PROJECT PHASE	Percent Complete	Months to Complete
Alternatives Analysis	100%	
Draft EIS	100%	
Final EIS	100%	
Preliminary Engineering	100%	
Procurement Strategy / ROD	100%	
Final Design / Engineering	95%	3 - 4
Right-of-Way Acquisition	80%	6
Contractor Bid	0%	4
Construction and Testing	0%	36 - 42
Total Time to Completion		45 - 52

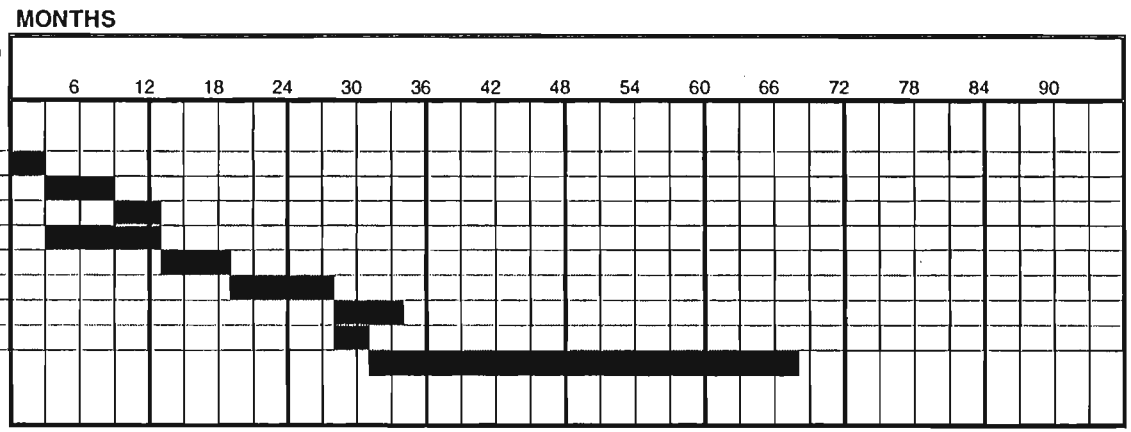


THE SUSPENDED PROJECT TO THE EASTSIDE COULD CONTINUE WITH ONLY FINAL DESIGN ELEMENTS AND CONSTRUCTION REMAINING

- All environmental documents for the full Suspended Project are complete
- Five percent of the design and engineering work remains
- Completion of construction to First and Lorena and the revenue testing period is estimated to require an additional 3 to 3 ½ years

IMPLEMENTATION TIME FRAME FOR MODIFIED ALIGNMENT TO CHAVEZ / SOTO

PROJECT PHASE	Percent Complete	Months to Complete
Alternatives Analysis	100%	
Draft EIS	65%	3
DEIS Review	0%	6
Final EIS	0%	4
Preliminary Engineering	65%	12
Procurement Strategy / ROD	0%	6
Final Design / Engineering	50%	9
Right-of-Way Acquisition	90%	6
Contractor Bid	0%	4
Construction and Testing	0%	36
Total Time to Completion		68



THE MODIFIED ALIGNMENT TO CHAVEZ / SOTO REQUIRES REVISIONS TO DESIGN FOR THE NEW TUNNEL ALIGNMENT. CONSTRUCTION TIME CAN DECREASE BUT ADDITIONAL ENVIRONMENTAL TIME TO PREPARE ENVIRONMENTAL DOCUMENTS IS REQUIRED

- The Modified Alignment to Chavez / Soto requires a reselection of the Locally Preferred Alternative. This process, which takes place normally during the development of the Draft EIS, is expected to take 9 months

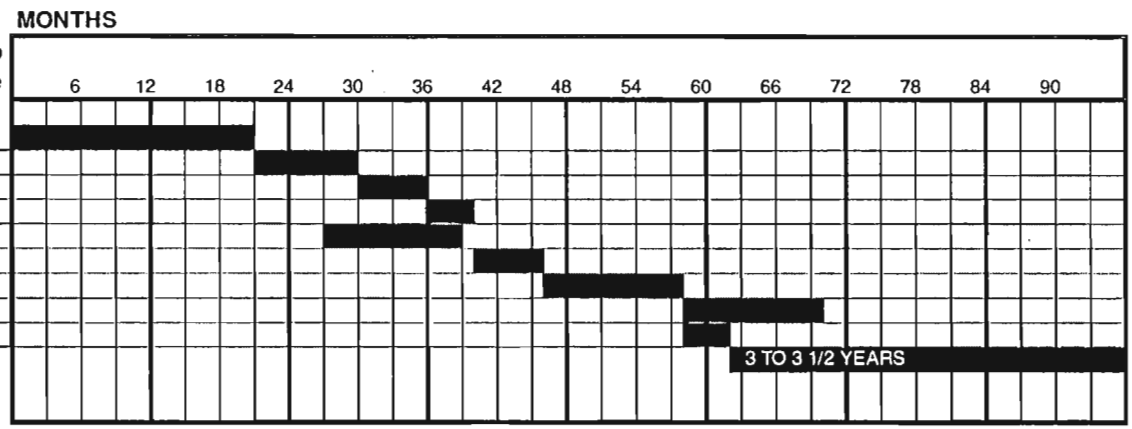
- New tunnel designs must be completed for the shortened tunnel between Union Station and the station at First and Boyle. Although station designs for the First / Boyle and Chavez / Soto stations are nearly complete, they may require minor revisions. These design revisions and completion of the Final Environmental Impact Statement can occur as the Locally Preferred Alternative is being revised

- Right-of-way acquisition for the Modified Alignment is nearly complete and requires just an additional 6 months

- Construction for this shortened subway alternative can be complete in two years. Testing and final preparations are estimated to require up to an additional year

IMPLEMENTATION TIME FRAME FOR LIGHT RAIL EXTENSION TO WHITTIER / ATLANTIC

PROJECT PHASE	Percent Complete	Months to Complete
Alternatives Analysis	0%	21
Draft EIS	0%	9
DEIS Review	0%	6
Final EIS	0%	4
Preliminary Engineering	0%	12
Procurement Strategy / ROD	0%	6
Final Design / Engineering	0%	12
Right-of-Way Acquisition	0%	12
Contractor Bid		
Construction and Testing	0%	36 - 42
Total Time to Completion		94 - 100

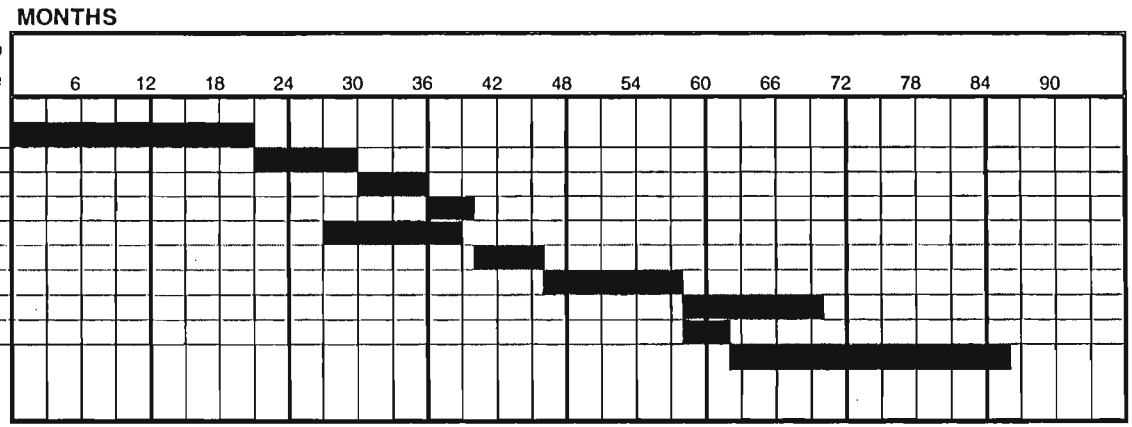


AN EXTENSION OF LIGHT RAIL TO THE EASTSIDE REQUIRES AN ENTIRELY NEW PROJECT DEVELOPMENT PROCESS

- Choosing a light rail option on the Eastside will require a new alternatives analysis process which can last approximately 21 months
- Development of a new Draft EIS and adoption of a Locally Preferred Alternative will require approximately 15 months
- Completion of the Final Environmental Impact Statement requires four additional months
- Construction and testing of an Eastside light rail alternative will require approximately three to four years. Additional time to mitigate impacts to street traffic and commercial businesses occurs within this time frame
- The construction process is complicated by the need to build a bridge over the existing US – 101 freeway. The need to maintain traffic flow requires an elongated construction schedule

IMPLEMENTATION TIME FRAME FOR BUS TRANSITWAY TO WHITTIER / ATLANTIC

PROJECT PHASE	Percent Complete	Months to Complete
Altematives Analysis	0%	21
Draft EIS	0%	9
DEIS Review	0%	6
Final EIS / Prelim. Engineerir	0%	4
Preliminary Engineering	0%	12
Procurement Strategy / ROD	0%	6
Final Design / Engineering	0%	12
Right-of-Way Acquisition	0%	12
Contractor Bid	0%	4
Construction	0%	24
Total Time to Completion		86



THE DEVELOPMENT OF A BUSWAY TO THE EASTSIDE REQUIRES AN ENTIRELY NEW PROJECT DEVELOPMENT PROCESS

- Choosing a bus transitway option on the Eastside will require a new alternatives analysis process which can last approximately 21 months
- Development of a new Draft EIS and adoption of a Locally Preferred Alternative will require approximately 15 months
- Completion of the Final Environmental Impact Statement requires four additional months
- Construction of an Eastside bus transitway alternative will require approximately two years. Additional time to mitigate impacts to street traffic and commercial businesses may be necessary

EASTSIDE CORRIDOR RESULTS INCLUDE...

TIER 1 MEASURES

Alternative	Model Note	Mobility	Transit Dependency	Reliability	Community Impacts	Cost Effectiveness
Heavy Rail to First/Lorena	E-1 Suspended	◕	●	●	◕	◔
Heavy Rail to Chavez/Soto (without Little Tokyo Station)	E-2 HRT	◑	●	●	●	○
Light Rail from Union Station to Whittier / Atlantic	E-5 LRT	◕	◕	◕	◑	◕
Bus Transitway from Union Station to Whittier / Atlantic	E-4 Transitway	◔	◕	◕	◑	◕

TIER 2 MEASURES

Alternative	Model Note	Economic	Safety	Environmental
Heavy Rail to First/Lorena	E-1 Suspended	●	●	●
Heavy Rail to Chavez/Soto (without Little Tokyo Station)	E-2 HRT	◑	●	●
Light Rail from Union Station to Whittier / Atlantic	E-5 LRT	◑	◑	●
Bus Transitway from Union Station to Whittier / Atlantic	E-4 Transitway	◔	◕	◕

KEY

●	Most Favorable or High	○	Least Favorable or Low

ALTERNATIVE	Model Note	Route Miles	MOBILITY								TRANSIT DEPENDENCE			COST EFFECTIVENESS				RELIABILITY
			Market			Mobility Index			Annual. Transit Travel Time Decrease	Job Accessibility	Transit Dependence Index	Index Composition	Job Accessibility Index	Project Unit Costs		Cost Efficiency		
			Additional Daily Transit Trips Generated	LA County Daily Transit Trips	Percent of Total	Alternative Specific	Base 2010	Percent Change						Capital Costs / Mile (MTA)	O&M Costs / Mile (MTA)	Annualized Lifecycle Cost / Trip	Subsidy / Trip	Reliability per Mode
HR to First / Lorena	E-1 Suspended	3.82	1,715	883,619	0.19%	43.37	43.32	0.12%	3,432	16.28	3.3	50% Very High, 40% High, 10% Low	21.96	$254,881,678	$2,900,552.49	$32,866	$5,907	Very low to low
HR to Chavez/ Soto (Without Little Tokyo Station)	E-2 HRT	1.92	349	882,253	0.04%	43.42	43.32	0.23%	1,552	16.26	3.5	70% Very High, 20% High, 10% Low	21.95	$250,572,917	$1,770,833.33	$84,241	$9,527	Very low to low
LR from Union Station to Whittier/Atlantic Street.	E-5 LRT	5.9	1,782	883,066	0.20%	43.40	43.32	0.18%	4,173	16.40	2.95	80% Very High, 15% High, 10% Low, 15% Very Low	22.10	$73,033,896	$1,677,966.10	$15,551	$5,403	Low
Bus Transitway – (Union Station to Whittier Atlantic Blvd.)	E-4 Transitway	5.9	-2,782	878,822	-0.28%	43.24	43.32	-0.18%	1,266	16.20	2.95	80% Very High, 15% High, 10% Low, 15% Very Low	21.90	$14,525,424	$1,067,796.61	N/A	N/A	Low

ALTERNATIVE	Model Note	Route Miles	MOBILITY								TRANSIT DEPENDENCE			COST EFFECTIVENESS				RELIABILITY
			Market			Mobility Index			Annual. Transit Travel Time Decrease	Job Accessibility	Transit Dependence Index	Work Destination	Job Accessibility Index	Project Unit Costs		Cost Efficiency		
			Additional Daily Transit Trips Generated	LA County Daily Transit Trips	Percent of Total	Alternative Specific	Base 2010	Percent Change						Capital Costs / Mile (MTA)	O&M Costs / Mile (MTA)	Annualized Lifecycle Cost / Trip	Subsidy / Trip	Reliability per Mode
HR to First / Lorena	E-1 Suspended	3.82	◕	◕	◑	◕	N/A	◕	◑	◔	◕	●	◔	○	○	◔	◔	●
HR to Chavez/ Soto (Without Little Tokyo Station)	E-2 HRT	1.92	◑	◑	◔	●	N/A	●	◔	◔	●	●	◔	○	◔	○	○	●
LR from Union Station to Whittier/Atlantic Street.	E-5 LRT	5.9	◕	◕	◑	●	N/A	●	◑	◕	◕	●	◑	◕	◔	◕	◔	◕
Bus Transitway – (Union Station to Whittier Atlantic Blvd.)	E-4 Transitway	5.9	◔	◔	○	○	N/A	○	◔	◔	◕	●	◔	●	◑	N/A	N/A	◕

ALTERNATIVE	Model Notes	ECONOMIC				ENVIRONMENT			SAFETY			
						Air Quality Index			Safety Index			
		Job Supported, Operating	Jobs Supported, Capital	Gross Area Product, Operating ($98Millions)	Gross Area Product, Capital ($98Millions)	Additional Transit Emissions	Non Transit Vehicular Emissions (kgs)	Percent of NTVE	Pass. Accidents per 100,000 Boardings	Pass. Accidents per 100,000 Hub/Train Miles	Traffic Accidents per 100,000 Hub/Train Miles	Safety Index
HR to First / Lorena	E-1 Suspended	311	22189	10.43	1099.74	N/A (stationary source)	242,992	N/A	0.08	0.00	1.33	Composite
HR to Chavez/ Soto (Without Little Tokyo Station)	E-2 HRT	101	11,570	3.38	573.47	N/A (stationary source)	243,024	N/A	0.08	0.00	1.33	Composite
LR to Little Tokyo	E-5 LRT	293	10,363	9.83	513.63	N/A (stationary source)	243,026	N/A	0.15	0.83	4.17	Composite
Bus Transitway -- (Union Station to Whittier Atlantic Blvd.)	E-4 Transitway	186	2,061	6.26	102.15	5,725	243,031	2.36%	0.40	0.06	2.69	Composite

ALTERNATIVE	Model Notes	ECONOMIC				ENVIRONMENT			SAFETY			
						Air Quality Index			Safety Index			
		Job Supported, Operating	Jobs Supported, Capital	Gross Area Product, Operating	Gross Area Product, Capital	Additional Transit Emissions	Non Transit Vehicular Emissions (kgs)	Percent of NTVE	Pass. Accidents per 100,000 Boardings	Pass. Accidents per 100,000 Hub/Train Miles	Traffic Accidents per 100,000 Hub/Train Miles	Safety Index
HR to First / Lorena	E-1 Suspended	◕	●	◕	●	●	◑	●	●	●	●	●
HR to Chavez/ Soto (Without Little Tokyo Station)	E-2 HRT	○	◑	○	◑	●	◑	●	●	●	●	●
LR to Little Tokyo	E-5 LRT	◑	◑	◑	◑	●	◑	●	◑	◑	◑	◑
Bus Transitway -- (Union Station to Whittier Atlantic Blvd.)	E-4 Transitway	◑	○	◑	○	◕	◑	◕	◕	●	◕	◕

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GENERAL COMMUNITY IMPACTS	ALTERNATIVES																			
	HR to First / Lorena (Suspended)					HR to Chavez / Soto (Without Ltl. Tokyo Sta.)					LR from Union Sta. To Whittier/Atlantic Blvd.					Bus Transiway (Union Station To Whittier/Atlantic Blvd.)				
	-5 0 +5					-5 0 +5					-5 0 +5					-5 0 +5				
	Negative		No Effect		Positive	Negative		No Effect		Positive	Negative		No Effect		Positive	Negative		No Effect		Positive
Impacts on Property Values					✓					✓					✓			✓		
Impacts on Businesses				✓					✓					✓					✓	
Impacts on Security			✓					✓					✓					✓		
Impacts on Aesthetics					✓					✓			✓					✓		
Noise Impacts			✓					✓				✓						✓		
Impacts on Traffic Lanes			✓					✓				✓					✓			
Community Response *					✓					✓		✓					✓			

* *Where Applicable*

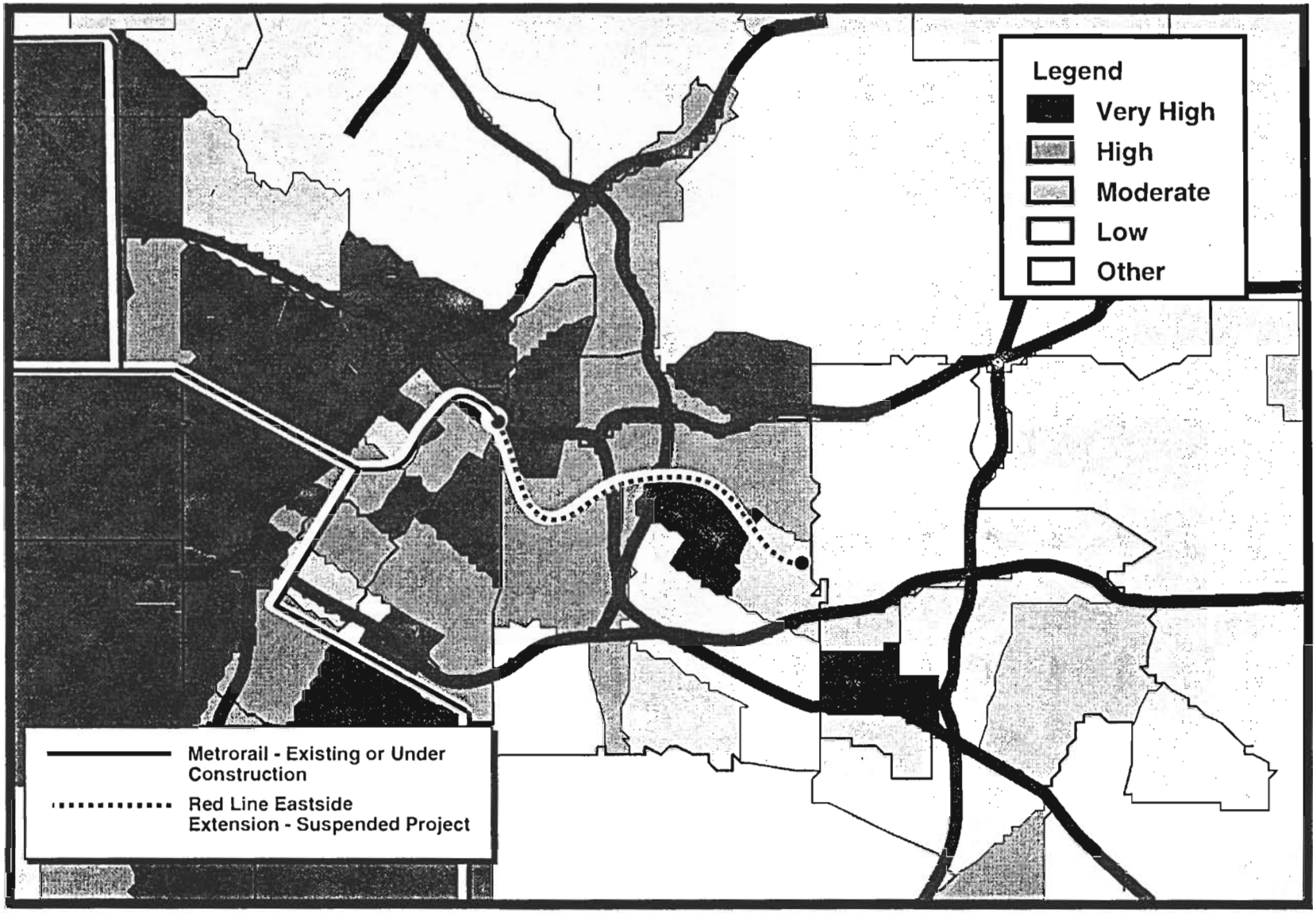
● Posiive ● Positive ◔ Slight Mitigable ◑ Neutral

❷

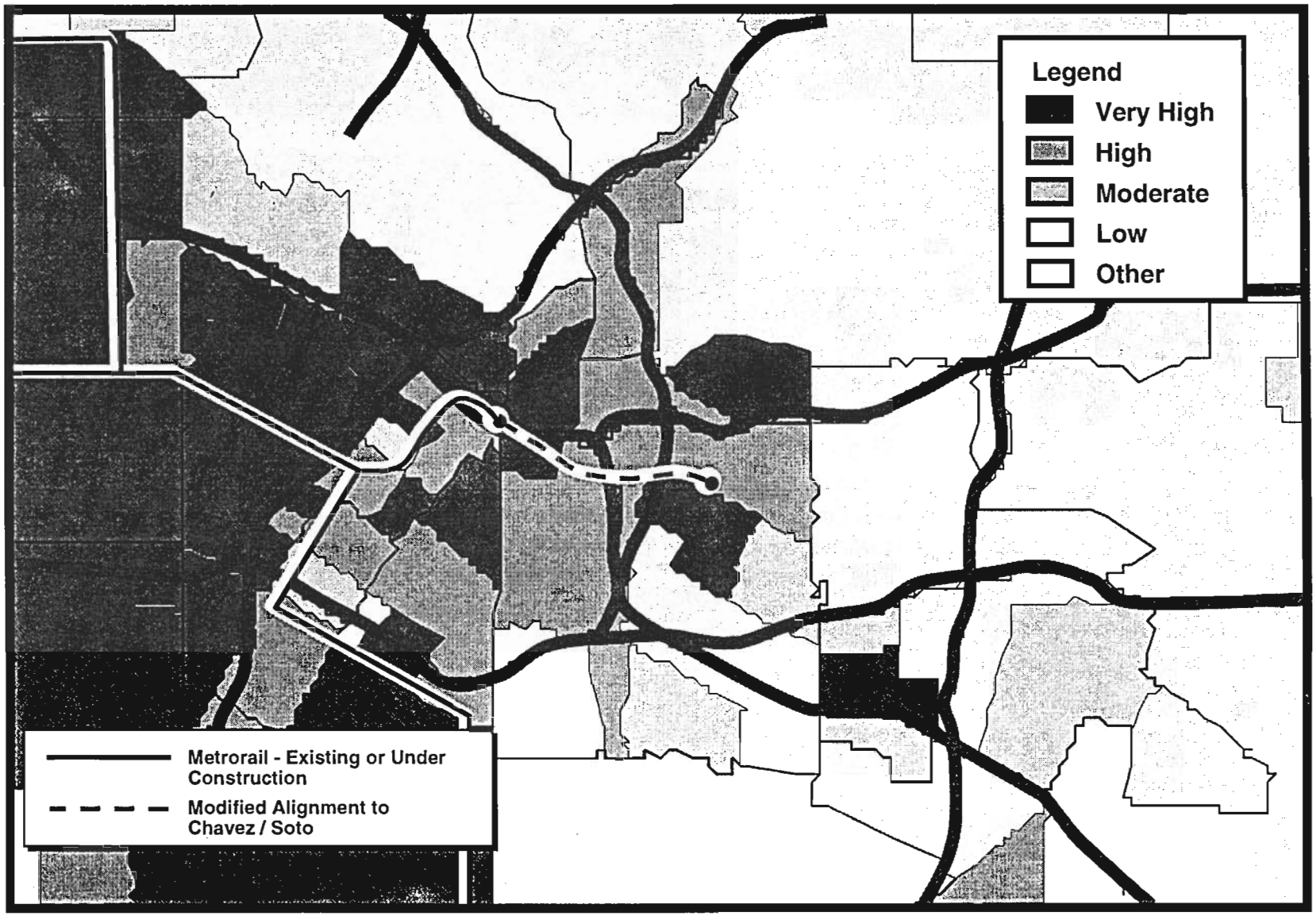
COMMUNITY IMPACTS ON RELOCATIONS	ALTERNATIVES																			
	HR to First / Lorena (Suspended)					HR to Chavez / Soto (Without Ltl. Tokyo Sta.)					LR from Union Sta. To Whittier/Atlantic Blvd.					Bus Transiway (Union Station To Whittier/Atlantic Blvd.)				
	Minor				Major	Minor				Major	Minor				Major	Minor				Major
Household Relocations				✓					✓					✓		✓				
Community Facility Relocations	✓							✓						✓		✓				
Historic Site Relocations	✓							✓						✓		✓				

◕ Less Positive ◑ Neutral ◔ Sligt Mitigable ● Positive

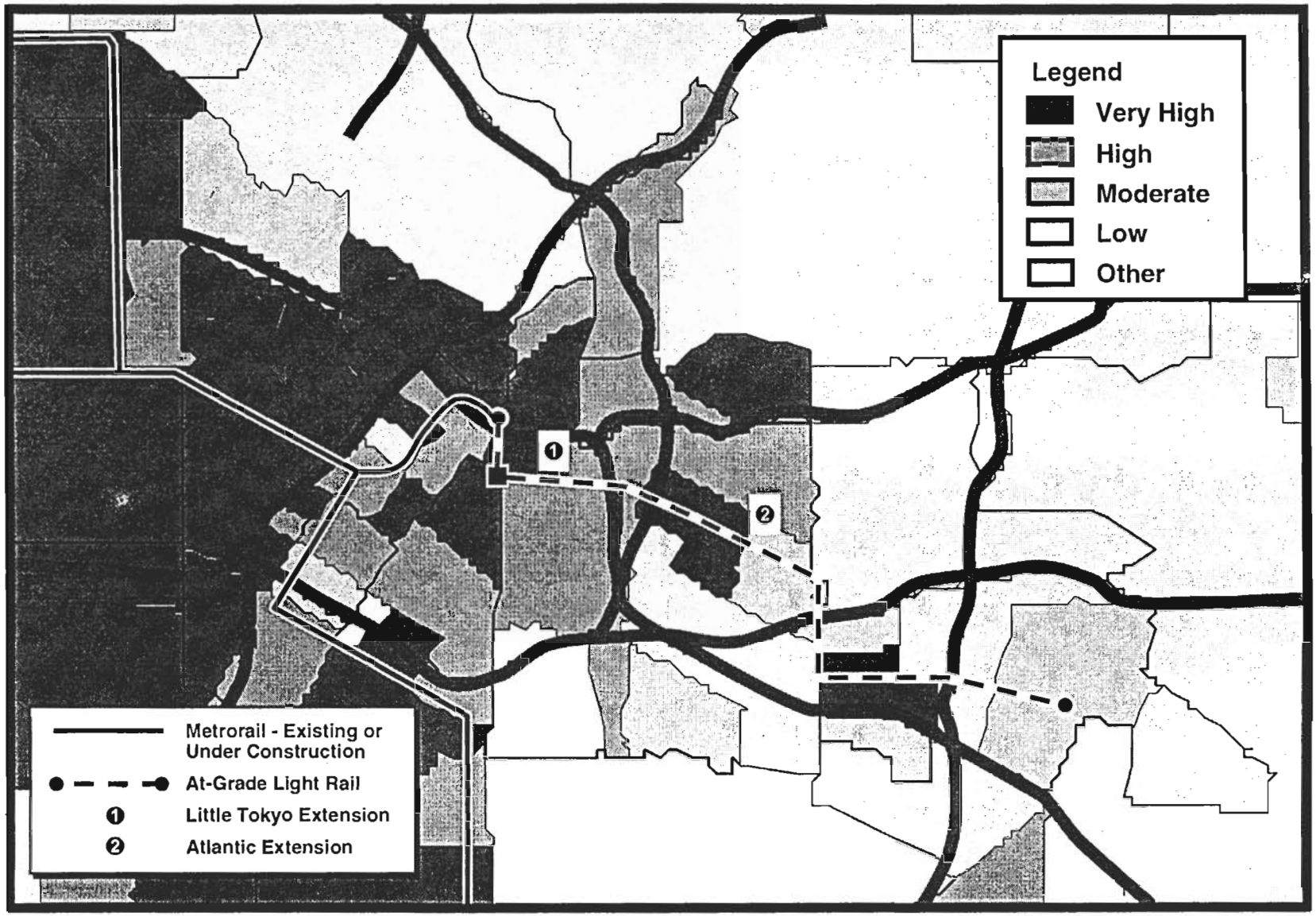
EASTSIDE CORRIDOR - SUSPENDED PROJECT



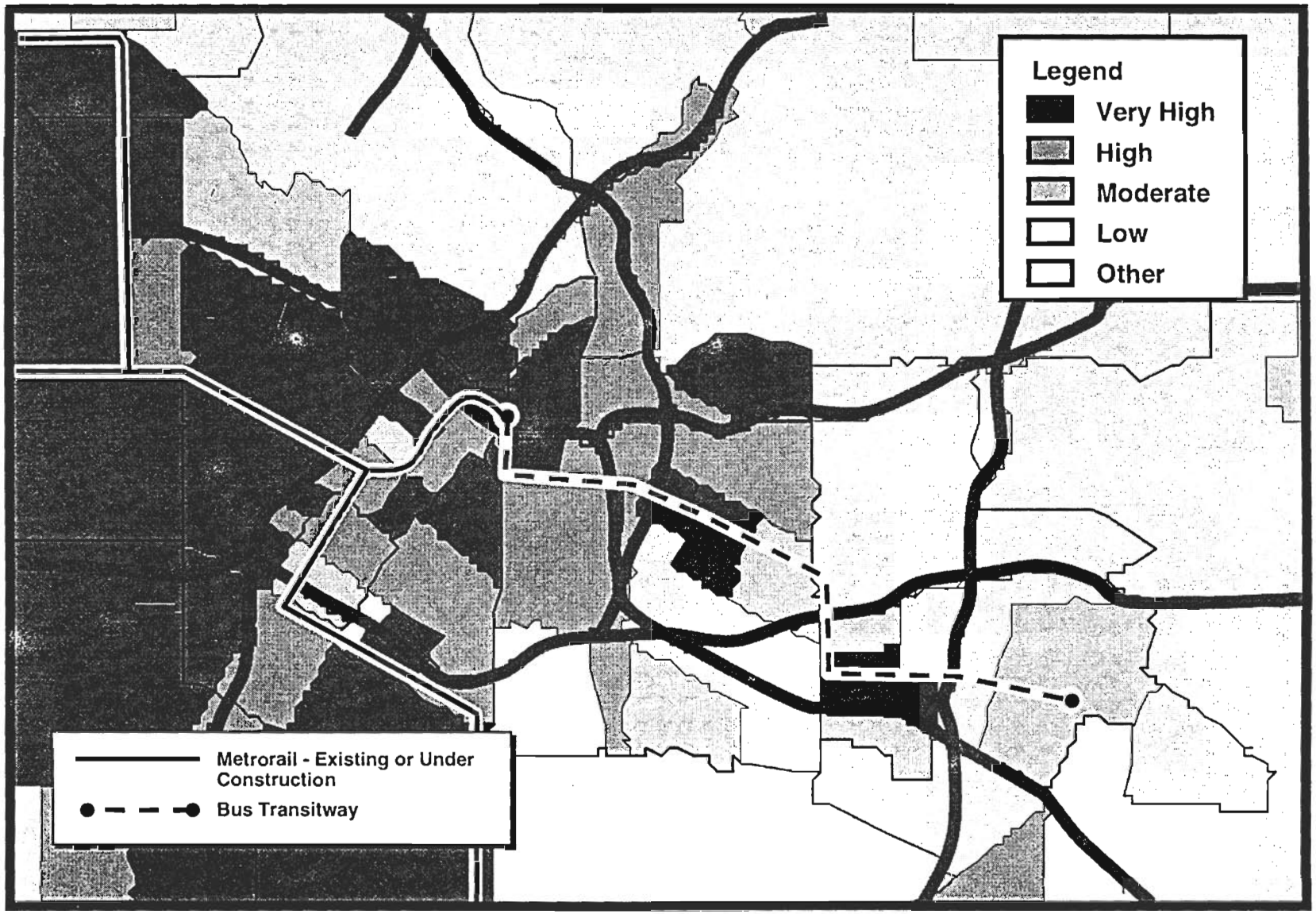
EASTSIDE CORRIDOR - MODIFIED ALIGNMENT TO CHAVEZ/SOTO



EASTSIDE CORRIDOR - LIGHT RAIL ALIGNMENT



EASTSIDE CORRIDOR - BUS TRANSITWAY



APPENDIX 4.3
WESTSIDE CORRIDOR

FOUR ALTERNATIVES IN THE WESTSIDE CORRIDOR ADVANCED TO EVALUATION

- Red Line Extension to Pico/San Vicente (Suspended Project)
- Red Line subway extension to Fairfax via Wilshire Boulevard
- Light Rail to downtown Santa Monica via Exposition right-of-way
- Bus Transitway to downtown Santa Monica via Exposition right-of-way

THE PHYSICAL AND OPERATING CHARACTERISTICS OF EACH ALTERNATIVE ARE DEFINED FOR FURTHER ANALYSIS

SUMMARY OF WESTSIDE CORRIDOR ALTERNATIVES

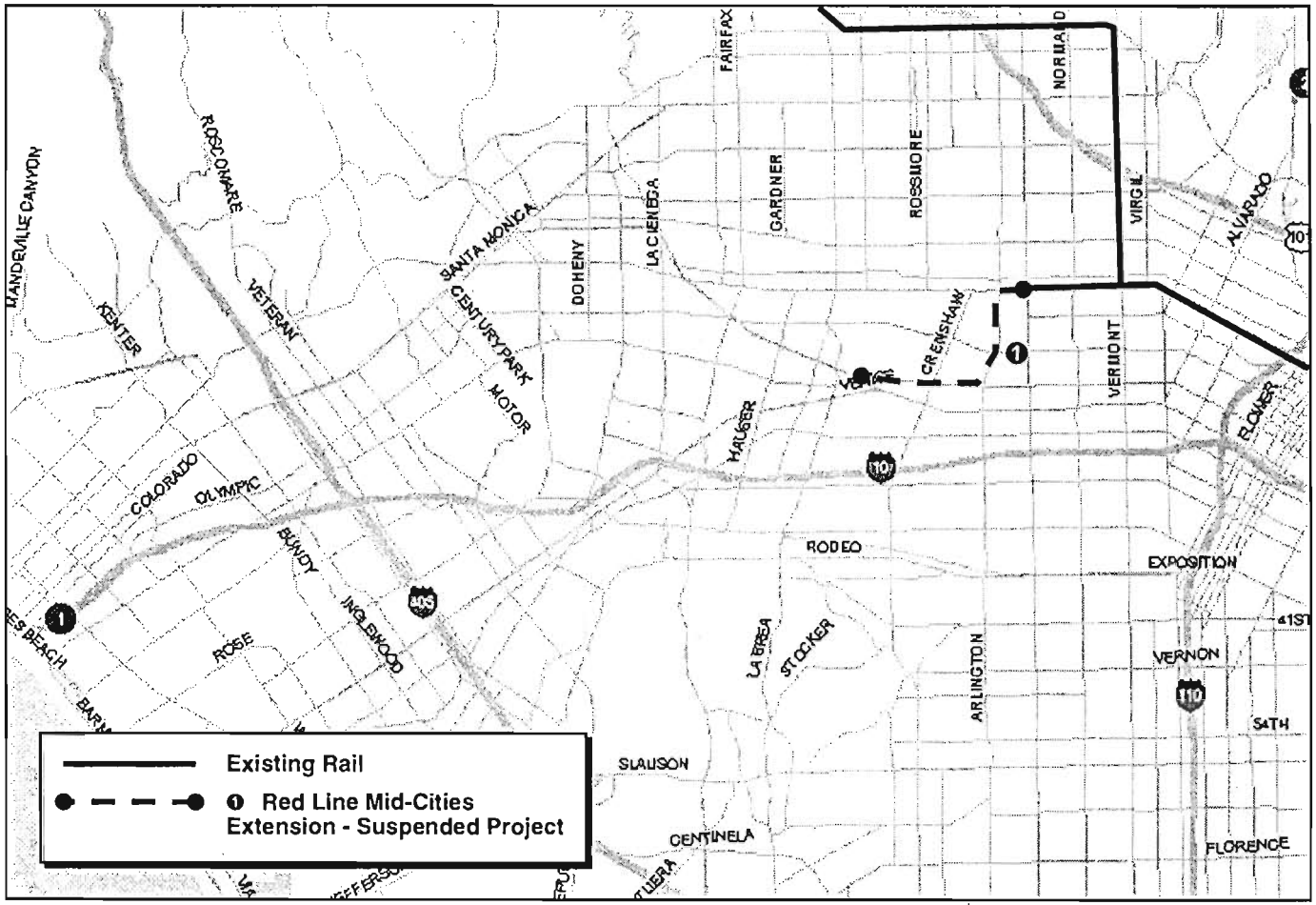
Alternative	Alignment	Mode	Grade	No. of Stations	No. of Stations with Park and Ride Lots	Route Length (miles)	One-Way Travel Time (minutes)	Average Speed (mph)	Peak Headway (minutes)	Off-Peak Headway (minutes)
Heavy Rail to Pico / San Vicente— Suspended Project, subway	Wilshire / Western to Pico San Vicente via Wilton and Arlington	Heavy Rail	Subway	2	1	2.2	3.9	33.8	4.25	5.0
Heavy Rail to Wilshire / Fairfax	Wilshire Boulevard subway or aerial to Fairfax	Heavy Rail	Subway or Aerial	3	None	3.0	4.4	41.3	4.25	5.0
Light Rail At-Grade Expo Right-of-Way: 7th / Flower to 4th / Colorado	7th/Flower LACBD to Exposition via existing Long Beach Blue Line alignment, Exposition to 4th / Colorado	Light Rail	At-Grade	16 (2 existing)	7	18	51	21.2	5.0	12.0
Bus Transitway At-Grade Expo Right-of-Way: Gateway Plaza to 4th / Colorado	Union Station To 4th / Colorado	Bus	At-Grade	24	6	18.5	51	21.8	5.0	12.0

WESTSIDE CORRIDOR ALTERNATIVES

Alternative	Capital Costs ($M)	Operating Costs ($M)	Estimated Ridership	Estimated Time Before Construction (months)	Mobility	Transit Dependence	Reliability	Community Impact	Cost Effectiveness
Heavy Rail Subway: Wilshire / Western to Pico / San Vicente (Suspended Project)	607.4	4.4	16,300	35					
Heavy Rail Subway: Wilshire / Western to Wilshire / Fairfax	859.7	6.5	21,600	50					
Light Rail At-Grade Expo Right-of-Way: 7th / Flower to 4th / Colorado	930.8	21.2	36,600	62					
Bus Transitway At-Grade Expo Right-of-Way: Gateway Plaza to 4th / Colorado	264.3	14.7	33,400	62					

KEY  *Most Favorable or High* ⟶ *Least Favorable or Low*

WESTSIDE CORRIDOR – SUSPENDED PROJECT



THE SUSPENDED PROJECT TO THE WESTSIDE EXTENDS EXISTING RED LINE SUBWAY SERVICE FURTHER INTO THE WILSHIRE DISTRICT

- The characteristics of the alignment include...

  Alignment Limits: Wilshire/Western to Pico/San Vicente
  Station Locations: Olympic/Arlington
  Pico/San Vicente
  No. Vehicles: None, extension of Red Line and utilizes existing Fleet

- This is the locally preferred alternative and as such has a number of benefits which come at a high cost

Vehicles	Consist Length	Route Miles	Speed (MPH)	One-Way Time (Min)	Peak Headway (Min)	Off-Peak Headway (Min)	Planned Peak-Hour Capacity (Passengers per Hour)	Maximum Build-Out Peak-Hour Capacity (Passengers Per Hour)
Not Reqíd	4	2.2	33.8	3.9	4.25	5	8,621	18,320

Strengths	Weaknesses
1. Serves Travel Demand Corridor 2. Minimal Community Impacts 3. Strong Community Support 4. Approved EIR 5. Design is nearly Complete 6. Extends Existing Red Line Service 7. Utilizes Existing Maintenance Facility Utilizes Existing Red Line Fleet	1. High Cost

PROJECT:	WESTSIDE HEAVY RAIL	EST.	HTL	SHT.	2
	WILSHIRE/WESTERN TO	DATE	11/5/98	OF	2
	VENICE/SAN VICENTE	REV.	0	XLS	
	SUBWAY	$:	1988 Dollars		

DESCRIPTION	QTY	MTA UNIT PRICE	BAH UNIT PRICE	UNIT	MTA COST	LOWER BOUND	ESTIMATED PROJECT COST
GUIDEWAY COSTS							
TWIN TUNNEL	10190	$10,000	$10,296	RF	$101,900,000	$104,920,798	$101,900,000
CUT & COVER GUIDEWAY	2407	$12,000	$12,255	RF	$28,884,000	$29,497,228	$28,884,000
OPEN TRENCH GUIDEWAY	950	$6,500	$3,525	RF	$6,175,000	$3,348,933	$6,175,000
					$0	$0	$0
					$0	$0	$0
SUBTOTAL (GUIDEWAY COST)	**13547**				**$136,959,000**	**$137,766,958**	**$136,959,000**
HAZARDOUS WASTE HANDLING							
ALLOWANCE (incl. La Brea Tar Pits)	13547	$500	NA	RF	$6,773,500	$6,773,500	$6,773,500
SUBTOTAL (HAZ MAT)					**$6,773,500**	**$6,773,500**	**$6,773,500**
STATION COST							
SUBWAY STATION	1	$65,000,000	$53,037,724	EA	$65,000,000	$53,037,724	$53,037,724
OPEN TRENCH STATION	1	$35,000,000	$23,916,624	EA	$35,000,000	$23,916,624	$23,916,624
BUS FACILITIES	1	$3,000,000	$3,000,000	EA	$3,000,000	$3,000,000	$3,000,000
PARKING STRUCTURE	1	$5,000,000	$5,000,000	EA	$5,000,000	$5,000,000	$5,000,000
SUBTOTAL (STATION COST)					**$108,000,000**	**$84,954,348**	**$84,954,348**
MAINT. FACIL & YARD COSTS							
MAINTENANCE FACILITIES (ALLOWANCE)					$0	$0	$0
SUBTOTAL (MAINT. FACIL.)					**$0**	**$0**	**$0**
VEHICLE COST							
REVENUE VEHICLE					$0	$0	$0
SUBTOTAL (VEHICLE COST)					**$0**	**$0**	**$0**
SYSTEM WIDE EQUIPMENT COST							
TRACKWORK (INCL. SPECIAL TRACKWORK)	13547	$575	$674	RF	$7,789,525	$9,131,609	$7,789,525
TRAIN CONTROL STA.	2	$1,100,000	NA	EA	$2,200,000	NA	$2,200,000
TRAIN CONTROL GDWY	13547	$1,100	$880	RF	$14,901,700	$11,925,771	$14,901,700
TRACTION POWER STA. (XFMR)	2	$1,750,000	$4,500,365	EA	$3,500,000	$9,000,731	$3,500,000
COMMUNICATIONS	13547	$1,000	$208	RF	$13,547,000	$2,811,813	$2,811,813
FARE COLLECTION	2	$750,000	$1,072,420	LS	$1,500,000	$2,144,841	$1,500,000
SIGNAGE & GRAPHICS	2	$750,000	$302,155	LS	$1,500,000	$604,310	$604,310
SUBTOTAL (SYSTEM COST)					**$44,938,225**	**$35,619,075**	**$33,307,348**
TOTAL ESTIMATED COST - 1998 DOLLARS					**$296,670,725**	**$265,113,881**	**$261,994,196**

Cost Development Worksheet HR.Xls W1 B1 - Sum

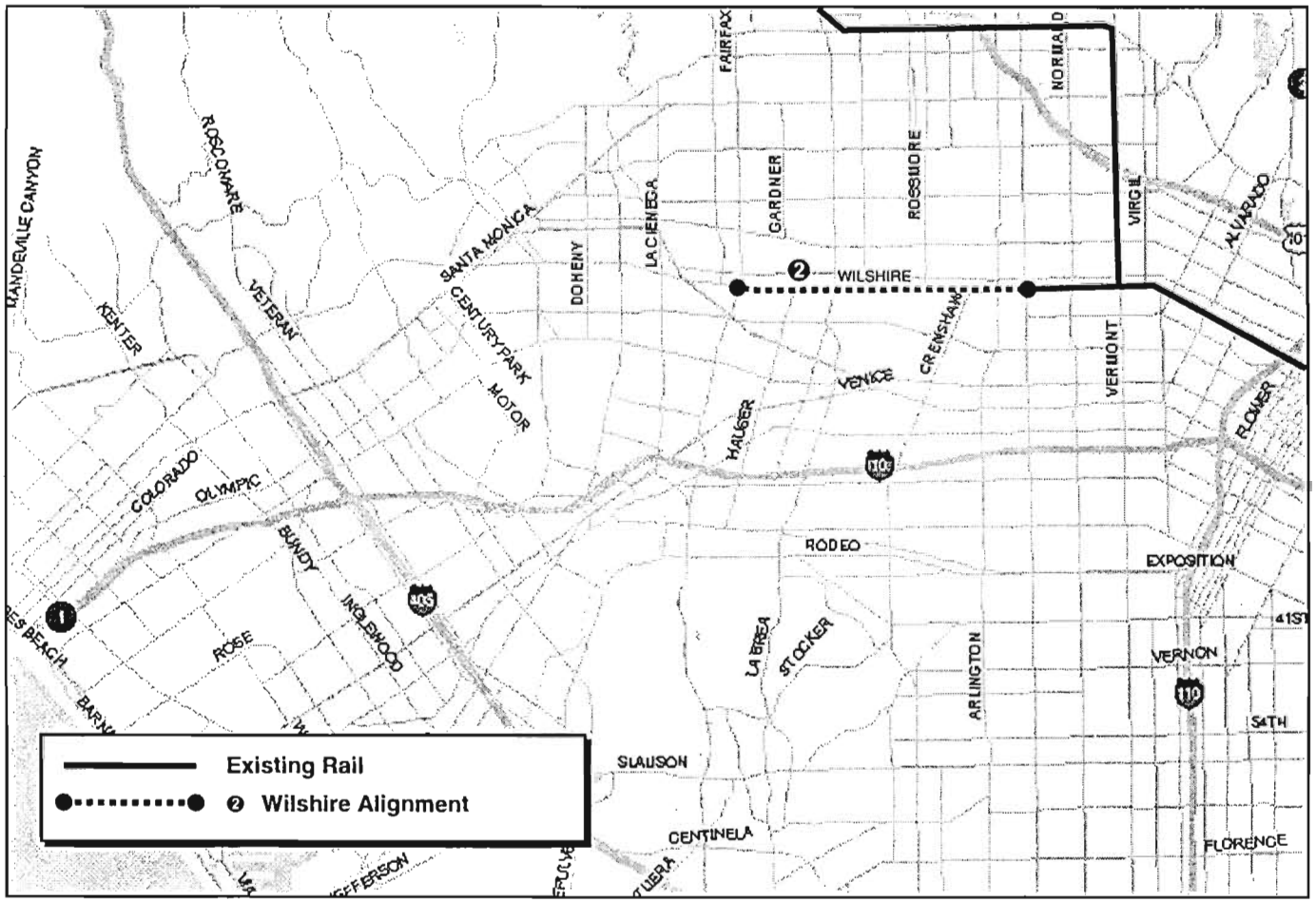
COST ESTIMATE COVERSHEET

PROJECT:	WESTSIDE HEAVY RAIL	EST.	HTL	SHT.	1
	WILSHIRE/WESTERN TO	DATE	11/5/98	OF	2
	VENICE/SAN VICENTE	REV.:	0		
	SUBWAY	$:	1988 Dollars		

ITEM DESCRIPTION			MTA ESTIMATED COST	LOWER BOUND COST	PROJECTED FINAL COST
1A) GUIDEWAYS AND STRUCTURES			$136,959,000	$137,766,958	$136,959,000
1B) HAZARDOUS WASTE HANDLING ALLOWANCE			$6,773,500	$6,773,500	$6,773,500
2) STATIONS			$108,000,000	$84,954,348	$84,954,348
3) MAIN YARD AND SHOP			$0	$0	$0
4) SYSTEMWIDE EQUIPMENT			$44,938,225	$35,619,075	$33,307,348
5) VEHICLES			$0	$0	$0
SUBTOTAL (A) (see page 2 for details)			**$296,670,725**	**$265,113,881**	**$261,994,196**
6) PRE REVENUE OPERATION		2.5%	$7,416,768	$6,627,847	$6,549,855
7) OWNERS INSURANCE		8.0%	$23,733,658	$21,209,110	$20,959,536
8) MASTER AGREEMENTS		2.5%	$7,416,768	$6,627,847	$6,549,855
SUBTOTAL (B)			**$38,567,194**	**$34,464,805**	**$34,059,245**
9) ART FOR TRANSIT (C)		0.5%	$1,483,354	$1,325,569	$1,309,971
SUBTOTAL (C)			**$1,483,354**	**$1,325,569**	**$1,309,971**
10) RIGHT OF WAY (D) ALLOWANCE EQUIVALENT TO ADOPTED ALIGNMENT			$44,000,000	$44,000,000	$44,000,000
SUBTOTAL (D)			**$44,000,000**	**$44,000,000**	**$44,000,000**
11) PROF. SERVICES (E) INCL. COST TO DATE			$162,129,050	$75,900,945	$95,581,755
SUBTOTAL (E)			**$162,129,050**	**$75,900,945**	**$95,581,755**
12) CONTINGENCY (F)					
A) ITEM 1A	12%		$16,435,080	$16,532,035	$16,435,080
ITEM 1B	12%		$812,820	$812,820	$812,820
B) ITEM 2	17%		$18,360,000	$14,442,239	$14,442,239
C) ITEM 3, 4, & 5	10%		$4,493,823	$3,561,908	$3,330,735
D) ITEM 6, 7, & 8	10%		$3,856,719	$3,446,480	$3,405,925
E) ITEM 10	10%		$4,400,000	$4,400,000	$4,400,000
F) ITEM 11	10%		$16,212,905	$7,590,094	$9,558,176
SUBTOTAL (F)			**$64,571,347**	**$50,785,576**	**$52,384,974**
GRAND TOTAL - 1998 DOLLARS			**$607,421,670**	**$471,590,776**	**$489,330,142**

Cost Development Worksheet HR.xls W1 B1 - Sum

WESTSIDE CORRIDOR – WILSHIRE ALIGNMENT



THE WILSHIRE HEAVY RAIL SUBWAY ALIGNMENT EXTENDS RED LINE SERVICE DOWN WILSHIRE BOULEVARD TO FAIRFAX

- The characteristics of the alignment include...

Alignment Limits: Wilshire/Western to Wilshire/Fairfax
Station Locations: Wilshire/Crenshaw
Wilshire/La Brea
Wilshire/Fairfax
No. Vehicles: None, extension of Red Line and utilizes existing Fleet

Vehicles	Consist Length	Route Miles	Speed (MPH)	One-Way Time (Min)	Peak Headway (Min)	Off-Peak Headway (Min)	Planned Peak-Hour Capacity (Passengers per Hour)	Maximum Build-Out Peak-Hour Capacity (Passengers Per Hour)
Not Reqíd	4	3.03	41.3	4.4	4.25	5	11,874	25,232

Strengths	Weaknesses
1. Serves Travel Demand Corridor 2. Minimal Community Impacts 3. Extends Existing Red Line Service 4. Utilizes Existing Maintenance Facility 5. Utilizes Existing Red Line Fleet 6. Provides Deepest Penetration into Westside of all Subway Alternatives	1. High Cost 2. Legislative Restriction will have to be Overturned 3. Requires Design

PROJECT:	WESTSIDE HEAVY RAIL	EST.	HTL	SHT.	2
	WILSHIRE/WESTERN TO	DATE	11/5/98	OF	2
	WILSHIRE/FAIRFAX	REV.	0	XLS	
	SUBWAY ALIGNMENT	$:	1988 Dollars		

DESCRIPTION	QTY	MTA UNIT PRICE	BAH UNIT PRICE	UNIT	MTA COST	LOWER BOUND	ESTIMATED PROJECT COST
GUIDEWAY COSTS							
TWIN BORE TUNNEL	16750	$11,000	$10,296	RF	$184,250,000	$172,465,492	$184,250,000
					$0	$0	
					$0	$0	
SUBTOTAL (GUIDEWAY COST)	**16750**				**$184,250,000**	**$172,465,492**	**$184,250,000**
HAZARDOUS WASTE HANDLING							
ALLOWANCE (incl. La Brea Tar Pits)	16750	$1,000	NA	RF	$16,750,000	$16,750,000	$16,750,000
SUBTOTAL (HAZ MAT)					**$16,750,000**	**$16,750,000**	**$16,750,000**
STATION COST							
WILSHIRE/CRENSHAW STATION	1	$40,000,000	$39,263,224	EA	$40,000,000	$39,263,224	$39,263,224
WILSHIRE/LA BREA STATION	1	$40,000,000	$39,263,224	EA	$40,000,000	$39,263,224	$39,263,224
WILSHIRE/FAIRFAX STATION & XOVER	1	$70,000,000	$69,263,224	EA	$70,000,000	$69,263,224	$69,263,224
SUBTOTAL (STATION COST)					**$150,000,000**	**$147,789,673**	**$147,789,673**
MAINT. FACIL & YARD COSTS							
MAINTENANCE FACILITIES (ALLOWANCE)					$0	$0	$0
SUBTOTAL (MAINT. FACIL.)					**$0**	**$0**	**$0**
VEHICLE COST							
REVENUE VEHICLE					$0	$0	$0
SUBTOTAL (VEHICLE COST)					**$0**	**$0**	**$0**
SYSTEM WIDE EQUIPMENT COST							
TRACKWORK (INCL. SPECIAL TRACKWORK)	16750	$575	$674	RF	$9,631,250	$11,290,651	$9,631,250
TRAIN CONTROL STA.	3	$1,100,000	NA	EA	$3,300,000	NA	$3,300,000
TRAIN CONTROL GDWY	16750	$1,100	$880	RF	$18,425,000	$14,745,454	$18,425,000
TRACTION POWER STA. (XFMR)	3	$1,750,000	$3,709,610	EA	$5,250,000	$11,128,829	$5,250,000
COMMUNICATIONS	16750	$1,000	$208	RF	$16,750,000	$3,476,627	$3,476,627
FARE COLLECTION	3	$750,000	$1,072,420	LS	$2,250,000	$3,217,261	$2,250,000
SIGNAGE & GRAPHICS	3	$750,000	$302,155	LS	$2,250,000	$906,465	$906,465
SUBTOTAL (SYSTEM COST)					**$57,856,250**	**$44,765,287**	**$43,239,342**
TOTAL ESTIMATED COST - 1998 DOLLARS					**$408,856,250**	**$381,770,452**	**$392,029,015**

Note: Vehicle costs are zero as vehicles have already been purchased for this line. MPA estimates 4 vehicle fleet required to operate this segment.

Cost Development Worksheet HR.Xls Wilshire Subway - Sum

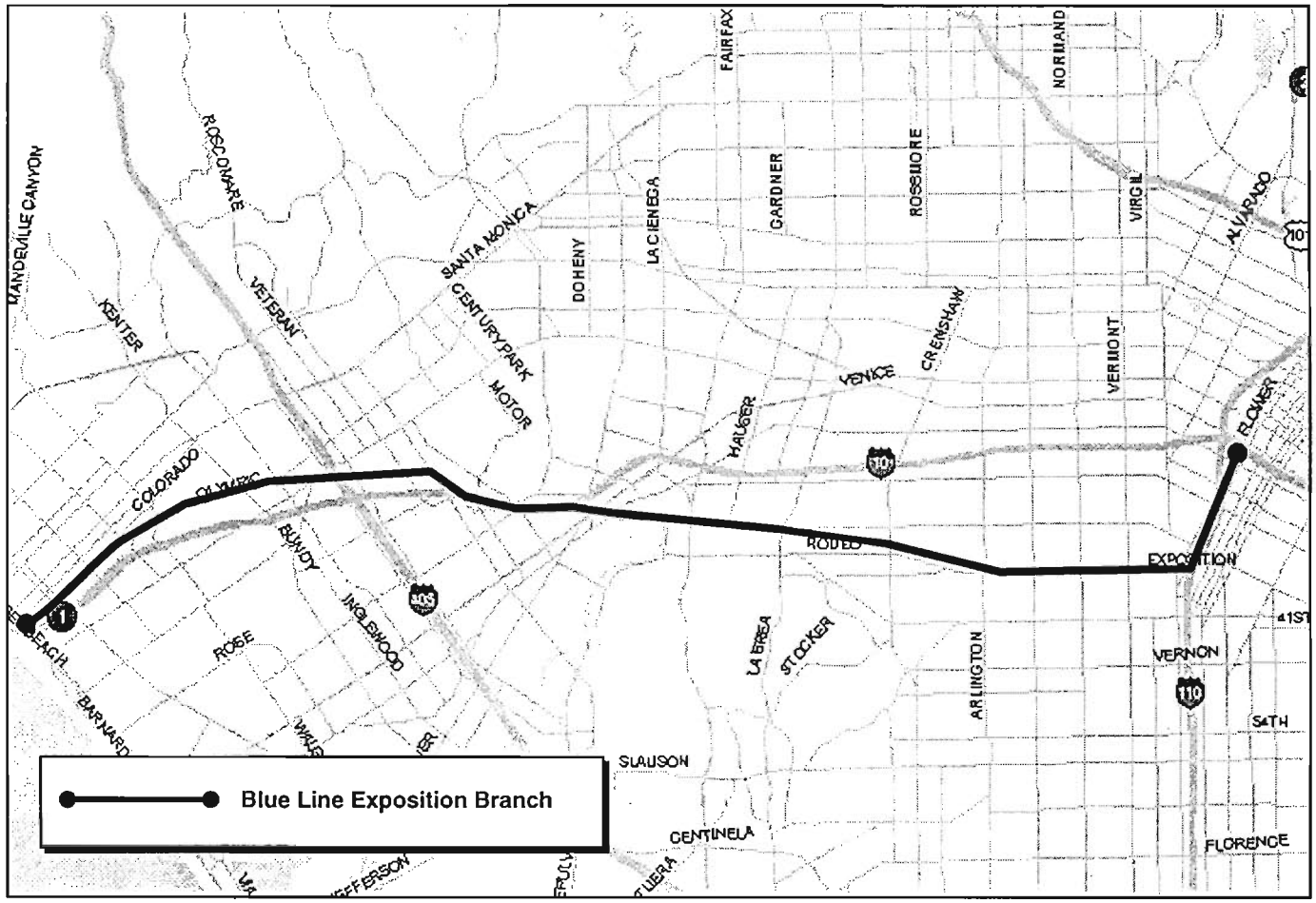
COST ESTIMATE COVERSHEET

PROJECT:	WESTSIDE HEAVY RAIL	EST.	HTL	SHT.	1
	WILSHIRE/WESTERN TO	DATE	11/5/98	OF	2
	WILSHIRE/FAIRFAX	REV.:	0		
	SUBWAY ALIGNMENT	$:	1988 Dollars		

ITEM DESCRIPTION			MTA ESTIMATED COST	LOWER BOUND COST	PROJECTED FINAL COST
1A) GUIDEWAYS AND STRUCTURES			$184,250,000	$172,465,492	$184,250,000
1B) HAZARDOUS WASTE HANDLING ALLOWANCE			$16,750,000	$16,750,000	$16,750,000
2) STATIONS			$150,000,000	$147,789,673	$147,789,673
3) MAIN YARD AND SHOP			$0	$0	$0
4) SYSTEMWIDE EQUIPMENT			$57,856,250	$44,765,287	$43,239,342
5) VEHICLES			$0	$0	$0
SUBTOTAL (A) (see page 2 for details)			**$408,856,250**	**$381,770,452**	**$392,029,015**
6) PRE REVENUE OPERATION		2.5%	$10,221,406	$9,544,261	$9,800,725
7) OWNERS INSURANCE		8.0%	$32,708,500	$30,541,636	$31,362,321
8) MASTER AGREEMENTS		2.5%	$10,221,406	$9,544,261	$9,800,725
SUBTOTAL (B)			**$53,151,313**	**$49,630,159**	**$50,963,772**
9) ART FOR TRANSIT (C)		0.5%	$2,044,281	$1,908,852	$1,960,145
SUBTOTAL (C)			**$2,044,281**	**$1,908,852**	**$1,960,145**
10) RIGHT OF WAY (D) ALLOWANCE EQUIVALENT TO ADOPTED ALIGNMENT			$66,000,000	$66,000,000	$66,000,000
SUBTOTAL (D)			**$66,000,000**	**$66,000,000**	**$66,000,000**
11) PROF. SERVICES (E) INCL. COST TO DATE	(MTA - 45%, BAH - 22%)		$238,523,330	$109,879,943	$143,066,821.09
SUBTOTAL (E)			**$238,523,330**	**$109,879,943**	**$143,066,821**
12) CONTINGENCY (F)					
A) ITEM 1A	12%		$22,110,000	$20,695,859	$22,110,000
ITEM 1B	12%		$2,010,000	$2,010,000	$2,010,000
B) ITEM 2	17%		$25,500,000	$25,124,244	$25,124,244
C) ITEM 3, 4, & 5	10%		$5,785,625	$4,476,529	$4,323,934
D) ITEM 6, 7, & 8	10%		$5,315,131	$4,963,016	$5,096,377
E) ITEM 10	10%		$6,600,000	$6,600,000	$6,600,000
F) ITEM 11	10%		$23,852,333	$10,987,994	$14,306,682
SUBTOTAL (F)			**$91,173,089**	**$74,857,642**	**$79,571,238**
GRAND TOTAL - 1998 DOLLARS			**$859,748,263**	**$684,047,049**	**$733,590,991**

Cost Development Worksheet HR.xls Wilshire Subway - Sum

WESTSIDE CORRIDOR – EXPOSITION LIGHT RAIL



THE EXPOSITION LIGHT RAIL ALIGNMENT BRANCHES OFF THE LONG BEACH BLUE LINE SERVICE AND UTILIZES EXISTING RIGHT-OF-WAY ALONG EXPOSITION BOULEVARD

- The characteristics of the alignment include...

Alignment Limits: 7th/Flower (L.A.) to 4th/Colorado (Santa Monica)

Station Locations: 2 Existing on Long Beach Blue Line Alignment

14 New Stations along Exposition (Locations To Be Determined)

No. Vehicles: 39

Vehicles	Consist Length	Route Miles	Speed (MPH)	One-Way Time (Min)	Peak Headway (Min)	Off-Peak Headway (Min)	Planned Peak-Hour Capacity (Passengers per Hour)	Maximum Build-Out Peak-Hour Capacity (Passengers Per Hour)
39	2	18	21.2	51	5	12	16,635	31,190

Strengths	Weaknesses
1. Utilizes Existing Right-of-Way 2. Serves Transit Dependent Corridor 3. Provides Rail Access to Convention Center, Staples Center, USC, Coliseum and Sports Arena 4. Extends Existing Blue Line Service 5. Expands Regional Connectivity 6. A Number of Branch Alternatives can Further expand Regional Connectivity	1. Some Community Opposition 2. Does Not Serve Travel Demand Corridor of Suspended Project 3. Requires Environmental Process 4. Requires Design 5. At-Grade Alignment Poses Some Safety Considerations

PROJECT:	WESTSIDE CORRIDOR	EST.	HTL	SHT.	2
	EXPOSITION LINE	DATE	11/5/98	OF	2
	USC TO SANTA MONICA	REV.	0	XLS	
	LRT	$:	1988 Dollars		

DESCRIPTION	QTY	MTA UNIT PRICE	BAH UNIT PRICE	UNIT	MTA COST	LOWER BOUND	ESTIMATED PROJECT COST
GUIDEWAY COSTS							
AT GRADE (IN STREET CONST.)	7755	$1,800	$2,457	RF	$13,959,000	$19,056,603	$13,959,000
AERIAL GUIDEWAY	1760	$4,500	$5,284	RF	$7,920,000	$9,300,139	$7,920,000
AERIAL GUIDEWAY (OVER 110 FRWY)	720	$5,400	included above	RF	$3,888,000	included above	$3,888,000
SPECIAL BENT STRUCTURES	3	$350,000	$350,000	EA	$1,050,000	$1,050,000	$1,050,000
SPECIAL TRAFFIC MAINTENANCE	1	$800,000	$800,000	LS	$800,000	$800,000	$800,000
SUBTOTAL (GUIDEWAY COST)					**$27,617,000**	**$30,206,742**	**$27,617,000**
HAZARDOUS WASTE HANDLING							
ALLOWANCE				RF	$0	$0	
SUBTOTAL (HAZ MAT)					**$0**	**$0**	
STATION COST							
AT GRADE STATION (2 CAR PLATFORM)	3	$1,200,000	$756,261	EA	$3,600,000	$2,268,784	$2,268,784
SUBTOTAL (STATION COST)					**$3,600,000**	**$2,268,784**	**$2,268,784**
MAINT. FACIL & YARD COSTS							
MAINTENANCE FACILITIES (ALLOWANCE)					$0	$0	$0
SUBTOTAL (MAINT. FACIL.)					**$0**	**$0**	**$0**
VEHICLE COST							
REVENUE VEHICLE (all vehicle costs covered in USC to Santa Monica sheet)					$0	$0	$0
SUBTOTAL (VEHICLE COST)					**$0**	**$0**	**$0**
SYSTEM WIDE EQUIPMENT COST							
TRACKWORK (INCL. SPECIAL TRACKWORK)	10235	$421	$288	RF	$4,308,935	$2,943,540	$4,308,935
TRAIN CONTROL STA.	3	$160,000	Included below	EA	$480,000	Included below	$480,000
TRAIN CONTROL GDWY	10235	$500	$485	RF	$5,117,500	$4,962,787	$5,117,500
TRACTION POWER STA. (XFMR)	3	$1,100,000	$309,956	EA	$3,300,000	$929,869	$3,300,000
TRACTION POWER GDWY. (CATENARY)	10235	$270	$282	RF	$2,763,450	$2,883,038	$2,763,450
COMMUNICATIONS	10235	$200	$98	RF	$2,047,000	$1,005,000	$1,005,000
FARE COLLECTION	3	$250,000	$129,837	EA	$750,000	$389,511	$750,000
SIGNAGE & GRAPHICS	3	$100,000	$35,157	EA	$300,000	$105,470	$105,470
SUBTOTAL (SYSTEM COST)					**$19,066,885**	**$13,219,217**	**$17,830,355**
TOTAL ESTIMATED COST - 1998 DOLLARS					**$50,283,885**	**$45,694,742**	**$47,716,139**

COST ESTIMATE COVERSHEET

PROJECT:	WESTSIDE CORRIDOR	EST.	HTL	SHT.	1
	EXPOSITION LINE	DATE	11/5/98	OF	2
	USC TO SANTA MONICA	REV.:	0		
	LRT	$:	1988 Dollars		

ITEM DESCRIPTION		MTA ESTIMATED COST	LOWER BOUND COST	PROJECTED FINAL COST
1A) GUIDEWAYS AND STRUCTURES		$27,617,000	$30,206,742	$27,617,000
1B) HAZARDOUS WASTE HANDLING ALLOWANCE		$0	$0	$0
2) STATIONS		$3,600,000	$2,268,784	$2,268,784
3) MAIN YARD AND SHOP		$0	$0	$0
4) SYSTEMWIDE EQUIPMENT		$19,066,885	$13,219,217	$17,830,355
5) VEHICLES		$0	$0	$0
SUBTOTAL (A) (see page 2 for details)		**$50,283,885**	**$45,694,742**	**$47,716,139**
6) PRE REVENUE OPERATION	2.5%	$1,257,097	$1,142,369	$1,192,903
7) OWNERS INSURANCE	8.0%	$4,022,711	$3,655,579	$3,817,291
8) MASTER AGREEMENTS	2.5%	$1,257,097	$1,142,369	$1,192,903
SUBTOTAL (B)		**$6,536,905**	**$5,940,317**	**$6,203,098**
9) ART FOR TRANSIT (C)	0.5%	$251,419	$228,474	$238,581
SUBTOTAL (C)		**$251,419**	**$228,474**	**$238,581**
10) RIGHT OF WAY (D) PER BUDGET OF 81/25/92		$12,292,553	$12,292,553	$12,292,553
SUBTOTAL (D)		**$12,292,553**	**$12,292,553**	**$12,292,553**
11) PROF. SERVICES (E)		$20,809,429	$15,147,945	$18,606,104
SUBTOTAL (E)		**$20,809,429**	**$15,147,945**	**$18,606,104**
12) CONTINGENCY (F)				
A) ITEM 1A	11%	$3,037,870	$3,322,742	$3,037,870
ITEM 1B	11%	$0	$0	$0
B) ITEM 2	11%	$396,000	$249,566	$249,566
C) ITEM 3, 4, & 5	11%	$2,097,357	$1,454,114	$1,961,339
D) ITEM 6, 7, & 8	11%	$719,060	$653,434.82	$682,341
E) ITEM 10	25%	$3,073,138	$3,073,138	$3,073,138
F) ITEM 11	10%	$2,080,943	$1,514,795	$1,860,610
SUBTOTAL (F)		**$11,404,368**	**$10,267,789**	**$10,864,865**
GRAND TOTAL - 1998 DOLLARS		**$101,578,560**	**$89,571,821**	**$95,921,340**
GRAND TOTAL Including USC to Santa Monica Segment - 1998 DOLLARS		**$930,840,960**	**$739,170,790**	**$842,876,711**

PROJECT:	WESTSIDE CORRIDOR	EST.	HTL	SHT.	2
	EXPOSITION LINE	DATE	11/5/98	OF	2
	USC TO SANTA MONICA	REV.	0	XLS	
	LRT	$:	1988 Dollars		

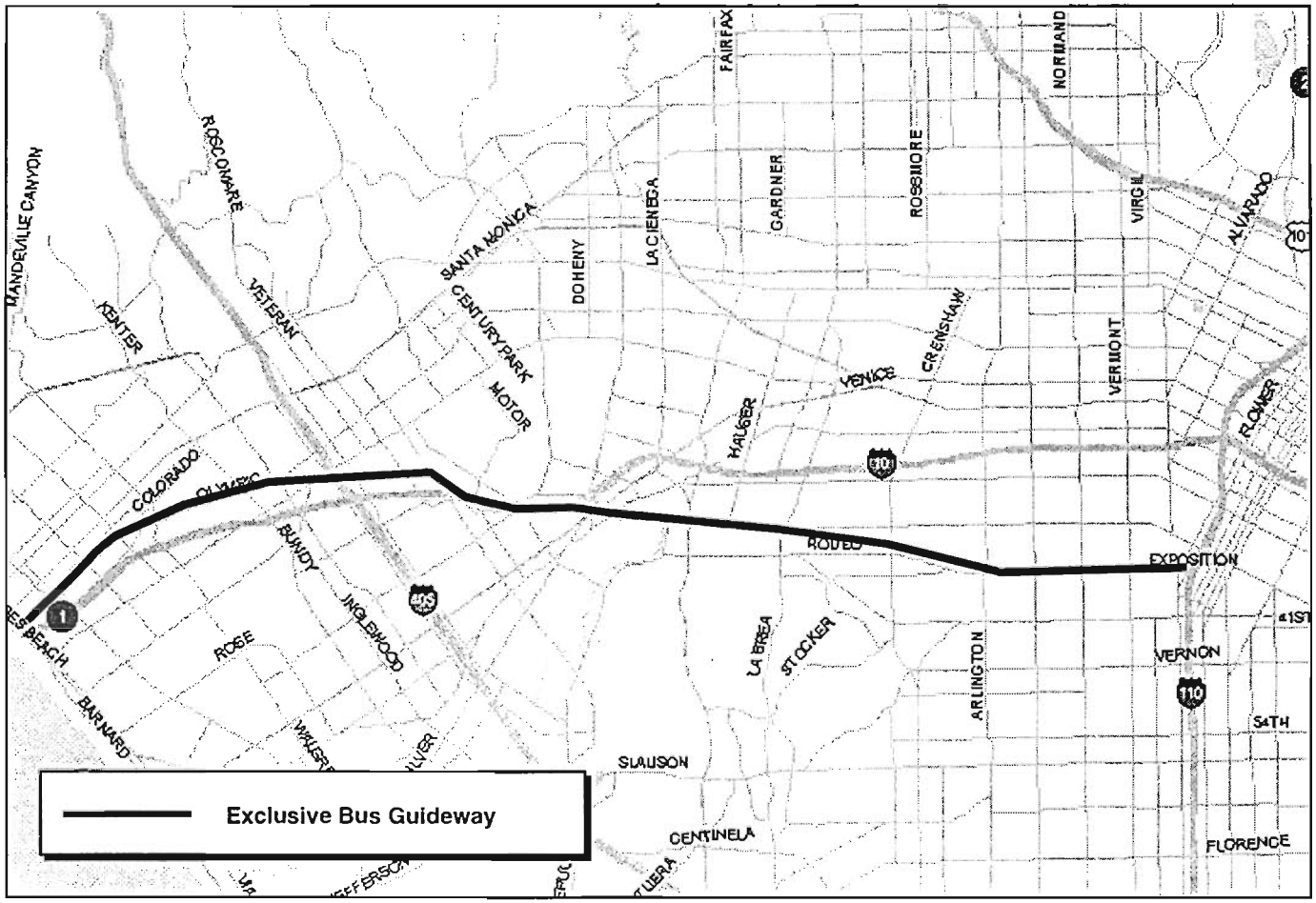
DESCRIPTION	QTY	MTA UNIT PRICE	BAH UNIT PRICE	UNIT	MTA COST	LOWER BOUND	ESTIMATED PROJECT COST
GUIDEWAY COSTS							
AT GRADE (IN STREET CONST.)	6500	$1,800	$2,457	RF	$11,700,000	$15,972,652	$11,700,000
AT GRADE (IN RAILROAD ROW)	43350	$1,200	$757	RF	$52,020,000	$32,828,779	$52,020,000
AERIAL GUIDEWAY (FLYOVER)	12600	$4,500	$3,750	RF	$56,700,000	$47,250,706	$56,700,000
SUBWAY GUIDEWAY (UNDERCROSSING)	1500	$11,400	$12,867	RF	$17,100,000	$19,299,817	$17,100,000
BRIDGE WIDENING	450	$2,000	$2,000	RF	$900,000	$900,000	$900,000
REMOVE EXISTING TRACKS	57350	$65	$18	TF	$3,727,750	$1,048,199	$3,727,750
SUBTOTAL (GUIDEWAY COST)	**121750**				**$142,147,750**	**$117,300,154**	**$142,147,750**
HAZARDOUS WASTE HANDLING							
ALLOWANCE	1	$1,738,438	NA	RF	$1,738,438	$1,738,438	$1,738,438
SUBTOTAL (HAZ MAT)					**$1,738,438**	**$1,738,438**	**$1,738,438**
STATION COST							
AT GRADE STATION (2 CAR PLATFORM)	9	$1,500,000	$756,261	EA	$13,500,000	$6,806,352	$6,806,352
AERIAL STATION (2 CAR PLATFORM)	5	$4,333,333	$2,667,216	EA	$21,666,667	$13,336,080	$13,336,080
PARK & RIDE (SURFACE LOT)	2500	$2,000	$2,437	Spaces	$5,000,000	$6,093,304	$6,093,304
SUBTOTAL (STATION COST)					**$40,166,667**	**$26,235,735**	**$26,235,735**
MAINT. FACIL & YARD COSTS							
MAINTENANCE FACILITIES (ALLOWANCE)	1	$35,000,000	$31,026,010		$35,000,000	$31,026,010	$35,000,000
SUBTOTAL (MAINT. FACIL.)					**$35,000,000**	**$31,026,010**	**$35,000,000**
VEHICLE COST							
REVENUE VEHICLES (for complete Expo alignment, LA LRT Vehicle)	39	$2,500,000	$2,002,330		$97,500,000	$78,322,456	$78,322,456
SUBTOTAL (VEHICLE COST)					**$97,500,000**	**$78,322,456**	**$78,322,456**
SYSTEM WIDE EQUIPMENT COST							
TRACKWORK (INCL. SPECIAL TRACKWORK)	64400	$421	$288	RF	$27,112,400	$18,521,152	$27,112,400
TRAIN CONTROL STA.	11	$160,000	Included below	EA	$1,760,000	Included below	$1,760,000
TRAIN CONTROL GDWY	64400	$500	$485	RF	$32,200,000	$31,226,528	$32,200,000
TRACTION POWER STA. (XFMR)	11	$1,100,000	$531,897	EA	$12,100,000	$5,850,862	$12,100,000
TRACTION POWER GDWY. (CATENARY)	64400	$270	$282	RF	$17,388,000	$18,140,466	$17,388,000
COMMUNICATIONS	64400	$200	$89	RF	$12,880,000	$5,763,195	$5,763,195
FARE COLLECTION	11	$250,000	$165,247	EA	$2,750,000	$1,817,719	$2,750,000
SIGNAGE & GRAPHICS	11	$100,000	$44,745	EA	$1,100,000	$492,195	$492,195
SUBTOTAL (SYSTEM COST)					**$107,290,400**	**$81,812,117**	**$99,565,790**
TOTAL ESTIMATED COST - 1998 DOLLARS					**$423,843,255**	**$336,434,910**	**$383,010,169**

COST ESTIMATE COVERSHEET

PROJECT:	WESTSIDE CORRIDOR	EST.	HTL	SHT.	1
	EXPOSITION LINE	DATE	11/5/98	OF	2
	USC TO SANTA MONICA	REV.:	0		
	LRT	$:	1988 Dollars		

ITEM DESCRIPTION		MTA ESTIMATED COST	LOWER BOUND COST	PROJECTED FINAL COST
1A) GUIDEWAYS AND STRUCTURES		$142,147,750	$117,300,154	$142,147,750
1B) HAZARDOUS WASTE HANDLING ALLOWANCE		$1,738,438	$1,738,438	$1,738,438
2) STATIONS		$40,166,667	$26,235,735	$26,235,735
3) MAIN YARD AND SHOP		$35,000,000	$31,026,010	$35,000,000
4) SYSTEMWIDE EQUIPMENT		$107,290,400	$81,812,117	$99,565,790
5) VEHICLES		$97,500,000	$78,322,456	$78,322,456
SUBTOTAL (A) (see page 2 for details)		**$423,843,255**	**$336,434,910**	**$383,010,169**
6) PRE REVENUE OPERATION	2.5%	$10,596,081	$8,410,873	$9,575,254
7) OWNERS INSURANCE	8.0%	$33,907,460	$26,914,793	$30,640,814
8) MASTER AGREEMENTS	2.5%	$10,596,081	$8,410,873	$9,575,254
SUBTOTAL (B)		**$55,099,623**	**$43,736,538**	**$49,791,322**
9) ART FOR TRANSIT (C)	0.5%	$2,119,216	$1,682,175	$1,915,051
SUBTOTAL (C)		**$2,119,216**	**$1,682,175**	**$1,915,051**
10) RIGHT OF WAY (D) PER UPDATE OF 11/23/93		$82,588,736	$82,588,736	$82,588,736
SUBTOTAL (D)		**$82,588,736**	**$82,588,736**	**$82,588,736**
11) PROF. SERVICES (E)		$172,923,592	$109,659,862	$144,845,478
SUBTOTAL (E)		**$172,923,592**	**$109,659,862**	**$144,845,478**
12) CONTINGENCY (F)				
A) ITEM 1A	11%	$15,636,253	$12,903,017	$15,636,253
ITEM 1B	11%	$191,228	$191,228	$191,228
B) ITEM 2	11%	$4,418,333	$2,885,931	$2,885,931
C) ITEM 3, 4, & 5	11%	$26,376,944	$21,027,664	$23,417,707
D) ITEM 6, 7, & 8	11%	$6,060,959	$4,811,019.21	$5,477,045
E) ITEM 10	28%	$22,711,903	$22,711,903	$22,711,903
F) ITEM 11	10%	$17,292,359	$10,965,986	$14,484,548
SUBTOTAL (F)		**$92,687,978**	**$75,496,748**	**$84,804,614**
GRAND TOTAL - 1998 DOLLARS		**$829,262,401**	**$649,598,969**	**$746,955,371**

WESTSIDE CORRIDOR – EXPOSITION BUS TRANSITWAY



THE EXPOSITION BUS TRANSITWAY PROVIDES A BUS ALTERNATIVE TO ALONG THE EXISTING EXPOSITION RIGHT-OF-WAY

- The characteristics of the alignment include...

Alignment Limits: Union Station (L.A.) to 4th/Colorado (Santa Monica)
Station Locations: 24 New Stations (Locations To Be Determined)
No. Vehicles: 29

Vehicles	Consist Length	Route Miles	Speed (MPH)	One-Way Time (Min)	Peak Headway (Min)	Off-Peak Headway (Min)	Planned Peak-Hour Capacity (Passengers per Hour)	Maximum Build-Out Peak-Hour Capacity (Passengers Per Hour)
29	N/A	18.5	21.8	51	5	12	6,090	20,538

Strengths	Weaknesses
1. Utilizes Existing Right-of-Way 2. Serves Transit Dependent Corridor 3. Provides Transitway Access to Convention Center, Staples Center, USC, Coliseum and Sports Arena 4. Low Cost 5. Expands Regional Connectivity 6. A Number of Branch Alternatives can Further expand Regional Connectivity	1. Some Community Opposition 2. Does Not Serve Travel Demand Corridor of Suspended Project 3. Requires Environmental Process 4. Requires Design 5. At-Grade Alignment Poses Some Safety Considerations 6. Lower Capacities

PROJECT:	EXPOSITION BUS TRANSITWAY	EST.	HTL	SHT.	2
		DATE	11/6/98	OF	2
	SANTA MONICA TO	REV.	2	XLS	
	GATEWAY	$:	1998 Dollars		

DESCRIPTION	QTY	MTA UNIT PRICE	BAH UNIT PRICE	UNIT	MTA COST	LOWER BOUND	ESTIMATED PROJECT COST
GUIDEWAY COSTS							
AT GRADE BUSWAY	63360	$320	$1,676	RF	$20,275,200	$106,195,985	$20,275,200
AT GRADE BUSWAY @ STATION	7800	$535	Incl in above	RF	$4,173,000	Incl in above	$4,173,000
STREET IMPROVEMENTS @ XINGS	110	$152,000	$139,891	EA	$16,720,000	$15,387,966	$16,720,000
TRACK REMOVAL	63360	$65	$18	RF	$4,118,400	$1,114,819	$4,118,400
AERIAL OVERPASS	5400	$5,000	$2,708	RF	$27,000,000	$14,620,824	$27,000,000
BELOW GRADE UNDERPAS	1	$5,000,000	$5,000,000	EA	$5,000,000	$5,000,000	$5,000,000
RAILROAD BRIDGE REPLACEMENT	3	$2,000,000	$2,000,000	EA	$6,000,000	$6,000,000	$6,000,000
MIXED FLOW DEDICATED BUSWAY	2020	$150	$2,845	RF	$303,000	$5,746,982	$303,000
DOWNTOWN CONNECTOR (GRAND/OLIVE)	26900	$150	Incl in above	RF	$4,035,000	Incl in above	$4,035,000
SUBTOTAL (GUIDEWAY COST)	**168954**				**$87,624,600**	**$154,066,577**	**$87,624,600**
HAZARDOUS WASTE HANDLING							
ALLOWANCE	1	$1,500,000	NA	LS	$1,500,000	$1,500,000	$1,500,000
SUBTOTAL (HAZ MAT)					**$1,500,000**	**$1,500,000**	**$1,500,000**
STATION COST							
AERIAL STATION (80 FT. SIDE PLATFORM) (including 2 elevators, finishes, canopies, lighting & signage)	1	$1,505,000	$1,681,666	EA	$1,505,000	$1,681,666	$1,681,666
AT GRADE STATION (120 FT. SIDE PLATFORM) (including finishes, landscaping, canopies, lighting & signage)	21	$505,000	$526,318	EA	$10,605,000	$11,052,672	$11,052,672
CURBSIDE STATION (INCL. CANOPY, BENCHES)	2	$27,500	$25,000	EA	$55,000	$50,000	$55,000
PARKING FACILITIES (MINIMAL AMENITIES)	1800	$1,800	$2,346	Spaces	$3,240,000	$4,223,421	$3,240,000
SUBTOTAL (STATION COST)					**$15,405,000**	**$17,007,758**	**$16,029,337**
MAINT. FACIL & YARD COSTS							
MAINTENANCE FACILITIES (ALLOWANCE)	1	$5,000,000	$5,000,000		$5,000,000	$5,000,000	$5,000,000
SUBTOTAL (MAINT. FACIL.)					**$5,000,000**	**$5,000,000**	**$5,000,000**
VEHICLE COST							
REVENUE VEHICLE	29	$350,000	$333,291		$10,150,000	$9,665,439	$9,665,439
SUBTOTAL (VEHICLE COST)					**$10,150,000**	**$9,665,439**	**$9,665,439**
SYSTEM WIDE EQUIPMENT COST							
PRIORITY SIGNALIZATION	1	$5,596,500	$2,750,000	LS	$5,596,500	$2,750,000	$2,750,000
TICKET VENDING MACHINES	46	$75,000	NA	EA	$3,450,000	$2,856,414	$2,856,414
COMMUNICATIONS	63360	$50	$38	RF	$3,168,000	$2,433,885	$2,433,885
GUIDEWAY LIGHTING INCL. ELECTRIFICATION	63360	$60	$60	RF	$3,801,600	$3,801,600	$3,801,600
SECURITY	63360	$30	$30	RF	$1,900,800	$1,900,800	$1,900,800
SIGNAGE/GRAPHICS (OTHER THAN STATIONS)	97680	$20	$39	RF	$1,953,600	$3,809,649	$1,953,600
SUBTOTAL (SYSTEM COST)					**$19,870,500**	**$17,552,349**	**$15,696,299**
TOTAL ESTIMATED COST - 1998 DOLLARS					**$139,550,100**	**$204,792,123**	**$135,515,**

COST ESTIMATE COVERSHEET

PROJECT:	EXPOSITION BUS TRANSITWAY	EST.	HTL	SHT.	1
	0	DATE	11/6/98	OF	2
	SANTA MONICA TO	REV.:	2		
	GATEWAY	$:	1988 Dollars		

ITEM DESCRIPTION		MTA ESTIMATED COST	LOWER BOUND COST	PROJECTED FINAL COST
1A) GUIDEWAYS AND STRUCTURES		$87,624,600	$154,066,577	$87,624,600
1B) HAZARDOUS WASTE HANDLING ALLOWANCE		$1,500,000	$1,500,000	$1,500,000
2) STATIONS		$15,405,000	$17,007,758	$16,029,337
3) MAIN YARD AND SHOP		$5,000,000	$5,000,000	$5,000,000
4) SYSTEMWIDE EQUIPMENT		$19,870,500	$17,552,349	$15,696,299
5) VEHICLES		$10,150,000	$9,665,439	$9,665,439
SUBTOTAL (A) (see page 2 for details)		**$139,550,100**	**$204,792,123**	**$135,515,676**
6) PRE REVENUE OPERATION	2.5%	$3,488,753	$5,119,803	$3,387,892
7) OWNERS INSURANCE	8.0%	$11,164,008	$16,383,370	$10,841,254
8) MASTER AGREEMENTS	5.0%	$6,977,505	$10,239,606	$6,775,784
SUBTOTAL (B)		**$21,630,266**	**$31,742,779**	**$21,004,930**
9) ART FOR TRANSIT (C)	0.5%	$697,751	$1,023,961	$677,578
SUBTOTAL (C)		**$697,751**	**$1,023,961**	**$677,578**
10) RIGHT OF WAY (D) ALLOWANCE FOR 4 PARK-N-RIDES		$4,900,000	$4,900,000	$4,900,000
SUBTOTAL (D)		**$4,900,000**	**$4,900,000**	**$4,900,000**
11) PROF. SERVICES (E)		$70,927,410	$41,076,859	$45,387,491
SUBTOTAL (E)		**$70,927,410**	**$41,076,859**	**$45,387,491**
12) CONTINGENCY (F)				
A) ITEM 1A	12%	$10,514,952	$18,487,989	$10,514,952
ITEM 1B	12%	$180,000	$180,000	$180,000
B) ITEM 2	17%	$2,618,850	$2,891,319	$2,724,987
C) ITEM 3, 4, & 5	10%	$3,502,050	$3,221,779	$3,036,174
D) ITEM 6, 7, & 8	10%	$2,163,027	$3,174,278	$2,100,493
E) ITEM 10	10%	$490,000	$490,000	$490,000
F) ITEM 11	10%	$7,092,741	$4,107,686	$4,538,749
SUBTOTAL (F)		**$26,561,620**	**$32,553,051**	**$23,585,355**
GRAND TOTAL - 1998 DOLLARS		**$264,267,146**	**$316,088,772**	**$231,071,031**

ALL ALTERNATIVES WITHIN THE WESTSIDE CORRIDOR REQUIRE ADDITIONAL PLANNING

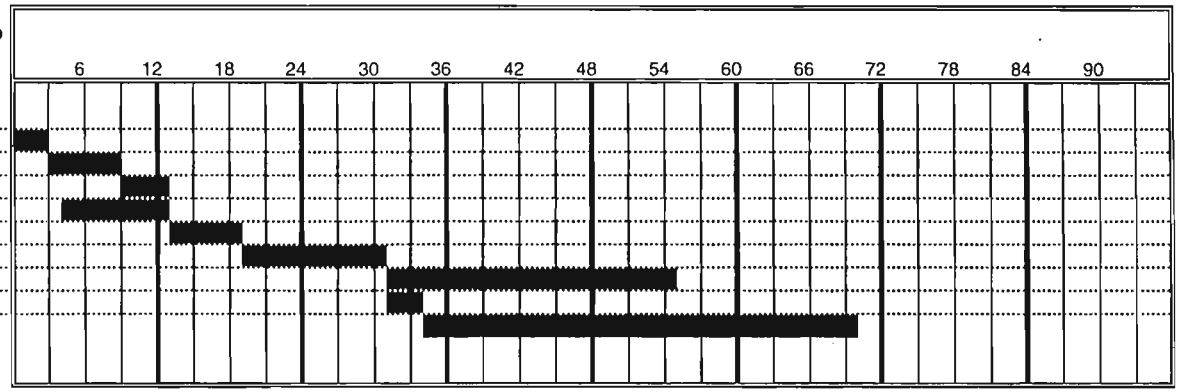
- No project in the Westside corridor is ready to move into construction at this time
- The suspended project must still go through a supplemental EIS process, as well as design prior to moving to construction

Alternative	STEPS TO IMPLEMENTATION										
	Alternatives Analysis										
	Scope & Purpose (3 mo.)	Develop & Screen Alternatives (5 mo.)	Detailed Alternative Definition (10 mo.)	Evaluate Alternatives (3 mo.)	Prepare Draft EIS (9 mo.)	FTA, Public, & Board Review (6 mo.)	Prepare Final EIS (4 mo.)	Develop ROD (6 mo.)	Final Design (12 mo.)	Bid (4 mo.)	Total Months to Construction
Heavy Rail Subway: Wilshire / Western to Pico / San Vicente (Suspended Project)	Complete	Complete	Complete	Complete	65% 3 mo.	0% 6 mo.	0% 4 mo.	6 mo.	5% 12 mo.	4 mo.	35 mo.
Heavy Rail Subway: Wilshire / Western to Wilshire / Fairfax	0% 3 mo.	40% 3 mo.	40% 6 mo.	0% 3 mo.	65% 3 mo.	0% 6 mo.	0% 4 mo.	6 mo.	5% 12 mo.	4 mo.	50 mo.
Light Rail At-Grade Expo Right-of-Way: 7th / Flower to 4th / Colorado	0% 3 mo.	0% 5 mo.	0% 10 mo.	0% 3 mo.	0% 9 mo.	0% 6 mo.	0% 4 mo.	6 mo.	0% 12 mo.	4 mo.	62 mo.
Bus Transitway At-Grade Expo Right-of-Way: Gateway Plaza to 4th / Colorado	0% 3 mo.	0% 5 mo.	0% 10 mo.	0% 3 mo.	0% 9 mo.	0% 6 mo.	0% 4 mo.	6 mo.	0% 12 mo.	4 mo.	62 mo.

NO PROJECT IN THE WESTSIDE CORRIDOR IS READY TO MOVE INTO CONSTRUCTION AND ADDITIONAL PLANNING MUST BE DONE DURING THE FY04 PERIOD

IMPLEMENTATION TIME FRAME FOR SUSPENDED PROJECT TO PICO / SAN VICENTE

PROJECT PHASE	Percent Complete	Months to Complete
Alternatives Analysis	100%	0
Draft EIS	65%	3
DEIS Review	0%	6
Final EIS	0%	4
Preliminary Engineering	0%	12
Procurement Strategy / ROD	0%	6
Final Design / Engineering	5%	12
Right-of-Way Acquisition	5%	24
Contractor Bid	0%	4
Construction and Testing	0%	36 - 48
Total Time to Completion		79 - 91

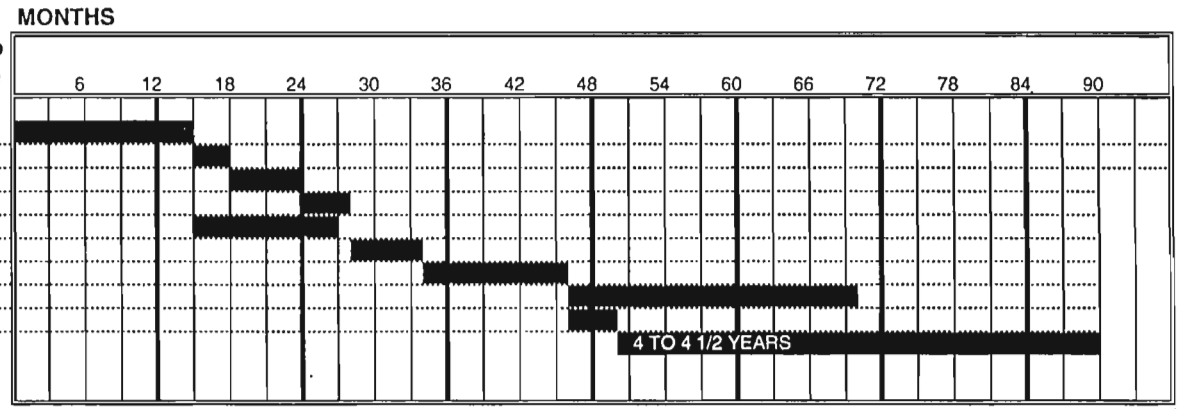


THE IMPLEMENTATION OF THE SUSPENDED HEAVY RAIL PROJECT TO PICO / SAN VICENTE RESUMES A PARTIALLY COMPLETE ENVIRONMENTAL CLEARANCE PROCESS

- The completion of the last por tion of the Draft Environmental Impact Statement will take approximately three months
- Completion of the Final Environmental Impact Statement will require an additional four months
- Right-of-way acquisition begins once all engineering work is complete a nd falls within a two-year time frame
- Once enough real estate is acquired to begin station construction, construction of the project will likely require an additional three to four years

IMPLEMENTATION TIME FRAME FOR WILSHIRE SUBWAY

PROJECT PHASE	Percent Complete	Months to Complete
Alternatives Analysis	70%	15
Draft EIS	65%	3
DEIS Review	0%	6
Final EIS	0%	4
Preliminary Engineering	25%	12
Procurement Strategy / ROD	0%	6
Final Design / Engineering	5%	12
Right-of-Way Acquisition	30%	24
Contractor Bid	0%	4
Construction and Testing	0%	48 - 54
Total Time to Completion		104 - 110



IMPLEMENTATION OF THE WILSHIRE SUBWAY ALIGNMENT TO FAIRFAX AVENUE REQUIRES REVISIONS TO ALREADY COMPLETE ENVIRONMENTAL IMPACT STATEMENTS

- Environmental clearances for the Wilshire Subway Alignment were completed in 1987. Although environmental documents are complete, new conditions require that these documents be revised. A partial alternatives analysis should be done in order for this option to advance. Such a process may require approximately 15 months

- Completion of the Environmental Impact Statement requires approximately an additional year

- Although nearly 20 percent of the required right-of-way is already owned by the MTA, the remaining right-of-way will require an additional two years to purchase

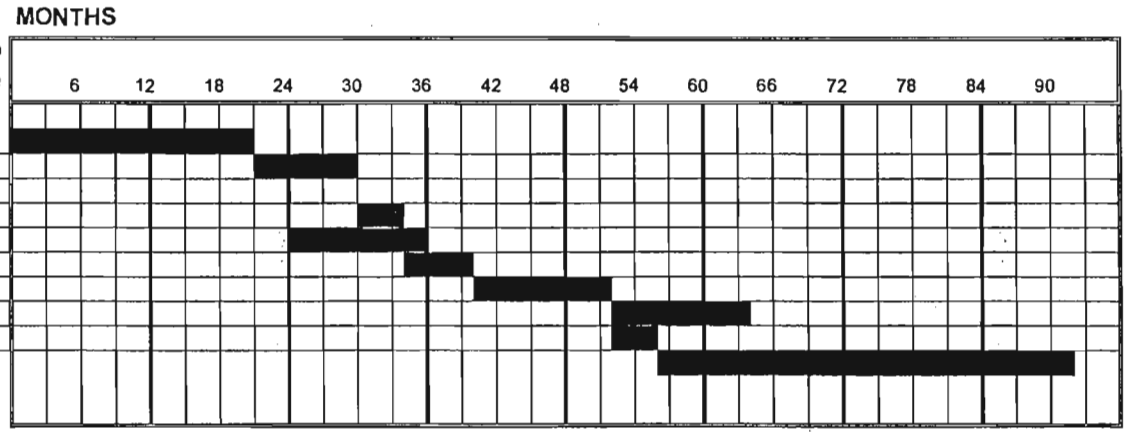
- Since a significant portion of the right-of-way is already owned by the MTA, construction can occur concurrent with the final purchases of right-of-way

- Construction of the full extension to Fairfax Avenue will take approximately three to four years. Testing will require an additional one-half to one year before revenue service can begin

IMPLEMENTATION TIMEFRAME FOR EXPOSITION LIGHT RAIL

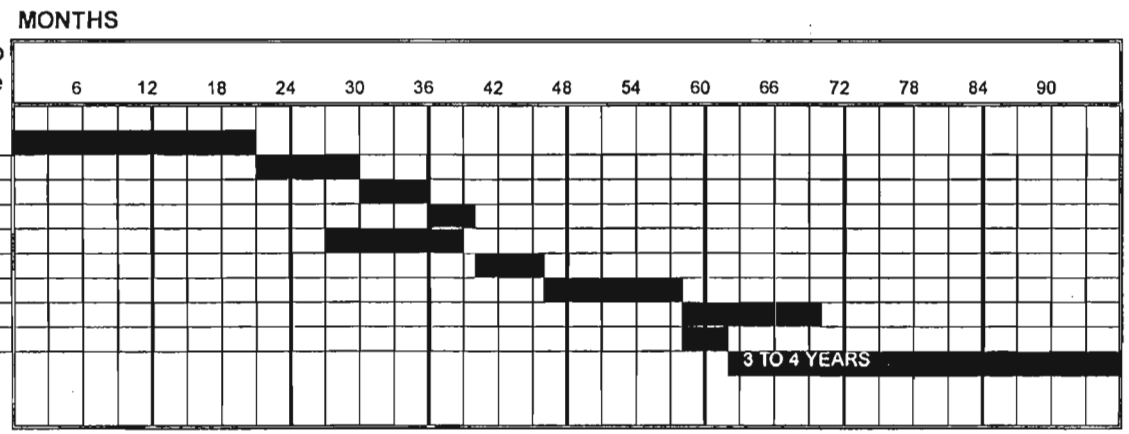
STATE FUNDING PROCESS

PROJECT PHASE	Percent Complete	Months to Complete
Alternatives Analysis	0%	21
Draft EIS	0%	9
DEIS Review	N/A	
Final EIS	0%	4
Preliminary Engineering	0%	12
Procurement Strategy	0%	6
Final Design / Engineering	0%	12
Right-of-Way Acquisition	95%	12
Contractor Bid	0%	4
Construction and Testing	0%	36 - 48
Total Time to Completion		92 - 98



FEDERAL FUNDING PROCESS

PROJECT PHASE	Percent Complete	Months to Complete
Alternatives Analysis	0%	21
Draft EIS	0%	9
DEIS Review	0%	6
Final EIS	0%	4
Preliminary Engineering	0%	12
Procurement Strategy / ROD	0%	6
Final Design / Engineering	0%	12
Right-of-Way Acquisition	95%	12
Contractor Bid	0%	4
Construction and Testing	0%	36 - 48
Total Time to Completion		98 - 104



IMPLEMENTATION OF THE LIGHT RAIL ON THE EXPOSITION RIGHT-OF-WAY REQUIRES AN ENTIRELY NEW ENVIRONMENTAL CLEARANCE PROCESS. THE TIME FRAME FOR COMPLETION DEPENDS ON THE SOURCE OF FUNDS

- Funding the Exposition Light Rail project entirely with local and state funds requires that the project satisfy the requirements of the California Environmental Quality Act. The state environmental clearance process is three to nine months shorter than the federal

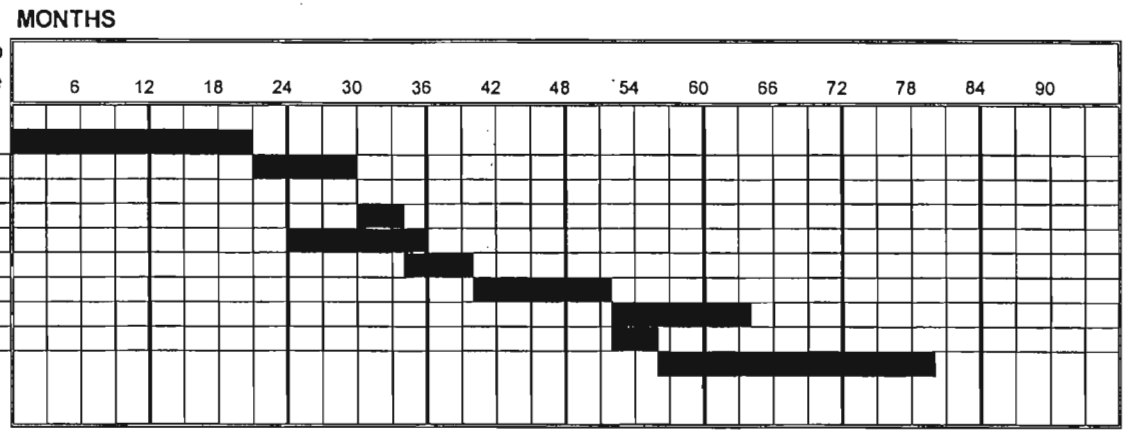
- Funding the Exposition Light Rail project with partial federal funding requires the satisfaction of the federal environmental review process. This lengthens the project time frame by 9 months. The completion of environmental clearance is estimated at 40 months

- Construction of the project and completion of testing are estimated to require an additional three to four years

IMPLEMENTATION TIMEFRAME FOR EXPOSITION BUSWAY

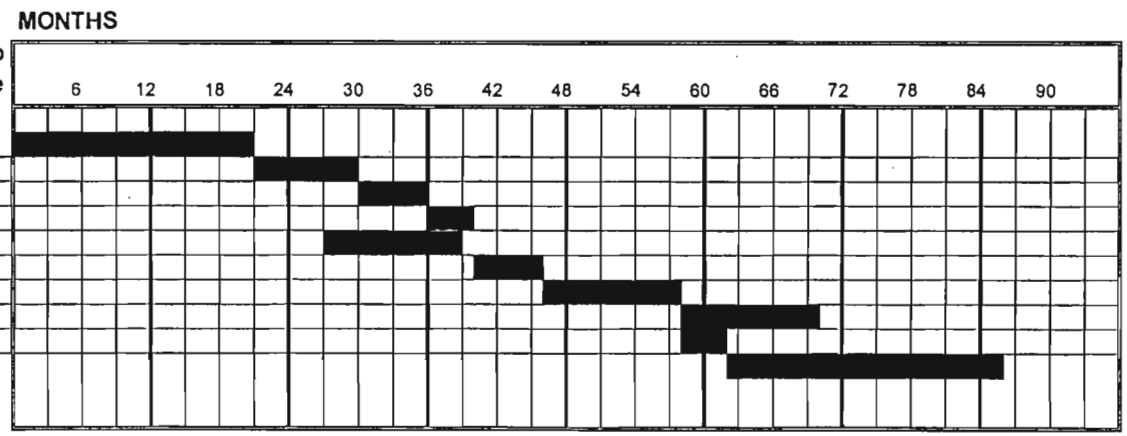
STATE FUNDING PROCESS

PROJECT PHASE	Percent Complete	Months to Complete
Alternatives Analysis	0%	21
Draft EIS	0%	9
DEIS Review	N/A	
Final EIS	0%	4
Preliminary Engineering	0%	12
Procurement Strategy	0%	6
Final Design / Engineering	0%	12
Right-of-Way Acquisition	95%	12
Contractor Bid	0%	4
Construction	0%	24
Total Time to Completion		80



FEDERAL FUNDING PROCESS

PROJECT PHASE	Percent Complete	Months to Complete
Alternatives Analysis	0%	21
Draft EIS	0%	9
DEIS Review	0%	6
Final EIS	0%	4
Preliminary Engineering	0%	12
Procurement Strategy / ROD	0%	6
Final Design / Engineering	0%	12
Right-of-Way Acquisition	95%	12
Contractor Bid	0%	4
Construction and Testing	0%	24
Total Time to Completion		86



IMPLEMENTATION OF THE EXPOSITION BUSWAY MAY REQUIRE BETWEEN FIVE AND SIX YEARS

- The Exposition Busway could be funded entirely with local and state funds. This funding arrangement requires that the project satisfy the requirements of the California Environmental Quality Act only. The project would not be required to have federal environmental documents. The state environmental clearance process can take 12 to 18 months

- Funding the Exposition Busway project with partial federal funding requires the satisfaction of the federal environmental review process. This lengthens the project time frame by 9 months. The completion of environmental clearance is estimated at 40 months

- Busway construction can be completed within approximately 2 years

WESTSIDE CORRIDOR RESULTS INCLUDE...

TIER 1 MEASURES

Alternative	Model Note	Mobility	Transit Dependency	Reliability	Community Impacts	Cost Effectiveness
Heavy Rail to Pico/San Vicente	W-1 Suspended	◕	◕	●	●	◔
Heavy Rail to Wilshire/Fairfax	W-4 HRT	◕	◕	●	●	◔
Blue Line to Exposition Branch	W-3 LRT	◕	◕	◕	◑	◑
Bus Transitway along Exposition Branch	W-2 Busway	◕	◑	◕	◑	●

TIER 2 MEASURES

Alternative	Model Note	Economic	Safety	Environmental
Heavy Rail to Pico/San Vicente	W-1 Suspended	◕	●	●
Heavy Rail to Wilshire/Fairfax	W-4 HRT	◕	●	●
Blue Line to Exposition Branch	W-3 LRT	●	◑	●
Bus Transitway along Exposition Branch	W-2 Busway	◔	◕	◕

KEY

●	Most Favorable or High	○	Least Favorable or Low

ALTERNATIVE	Model Note	Route Miles	MOBILITY								TRANSIT DEPENDENCE			COST EFFECTIVENESS				RELIABILITY
			Market			Mobility Index			Annual Transit Travel Time Decrease	Job Accessibility	Transit Dependence Index	Index Composition	Job Accessibility Index	Project Unit Costs		Cost Efficiency		
			Additional Daily Transit Trips Generated	LA County Daily Transit Trips	Percent of Total	Alternative Specific	Base 2010	Percent Change						Capital Costs / Mile (MTA)	O&M Costs / Mile (BART)	Annualized Lifecycle Cost / Trip	Subsidy / Trip	Reliability per Mode
HR to Pico / San Vincent	W-1 Suspended	2.58	1,925	883,829	0.22%	43.39	43.32	0.16%	6,858	16.34	1.35	15% Very High, 25% High, 60% Very Low	22.06	$237,265,625	$1,718,750	$18,026	$2,070	Very low to low
HR to Wilshire/ Fairfax	W-4 HRT	3.17	2,142	884,046	0.24%	43.36	43.32	0.14%	9,464	16.38	1.6	30% High, 70% Low	22.17	$271,198,738	$2,050,473	$24,278	$2,819	Very low to low
Blue Line Exposition Branch	W-3 LRT	18	3,395	885,299	0.36%	43.34	43.32	0.05%	15,145	16.33	1.9	30% Very High, 70% Low	22.12	$54,861,111	$1,177,778	$17,791	$6,029	Low
Exposition Busway	W-2 Busway	18.5	8,653	890,567	0.97%	43.33	43.32	0.02%	22,334	16.54	1.5	20% Very High, 70% Low, 10% Very Low	22.46	$16,989,189	$297,297	$2,736	$420	Low

ALTERNATIVE	Model Note	Route Miles	MOBILITY								TRANSIT DEPENDENCE			COST EFFECTIVENESS				RELIABILITY
			Market			Mobility Index			Annual Transit Travel Time Decrease	Job Accessibility	Transit Dependence Index	Work Destination	Job Accessibility Index	Project Unit Costs		Cost Efficiency		
			Additional Daily Transit Trips Generated	LA County Daily Transit Trips	Percent of Total	Alternative Specific	Base 2010	Percent Change						Capital Costs / Mile (MTA)	O&M Costs / Mile (BART)	Annualized Lifecycle Cost / Trip	Subsidy / Trip	Reliability per Mode
HR to Pico / San Vincent	W-1 Suspended	2.58	◕	◕	◑	●	N/A	●	◑	◑	◑	●	◑	○	◔	◑	◑	●
HR to Wilshire/ Fairfax	W-4 HRT	3.17	◕	◕	◑	◕	N/A	◕	◕	◑	◑	●	◑	○	◔	◑	◑	●
Blue Line Exposition Branch	W-3 LRT	18	◕	●	◑	◑	N/A	◑	●	◑	◕	◑	◑	◕	◑	◑	◔	◕
Exposition Busway	W-2 Busway	18.5	●	●	●	◑	N/A	◑	●	●	◑	◑	●	●	●	●	●	◕

The Westside Corridor

ALTERNATIVE	Model Notes	ECONOMIC				ENVIRONMENT			SAFETY			
						Air Quality Index			Safety Index			
		Job Supported, Operating	Jobs Supported, Capital	Gross Area Product, Operating ($98Millions)	Gross Area Product, Capital ($98Millions)	Additional Transit Emissions	Non Transit Vehicular Emissions (kgs)	Percent of NTVE	Pass. Accidents per 100,000 Boardings	Pass. Accidents per 100,000 Hub/Train Miles	Traffic Accidents per 100,000 Hub/Train Miles	Safety Index
HR to Pico / San Vincent	W-1 Suspended	130	14,608	4.37	724.02	N/A (stationary source)	243,021	N/A	0.08	0.00	1.33	Composite
HR to Wilsher / Fairfax	W-4 HRT	192	20,676	6.45	1024.76	N/A (stationary source)	243,023	N/A	0.08	0.00	1.33	Composite
Blue Line Exposition Branch	W-3 LRT	627	23,749	21.05	1177.10	N/A (stationary source)	243,021	N/A	0.15	0.83	4.17	Composite
Exposition Busway	W-2 Busway	163	7,559	5.46	374.65	5,638	243,005	2.32%	0.40	0.06	2.69	Composite

ALTERNATIVE	Model Notes	ECONOMIC				ENVIRONMENT			SAFETY			
						Air Quality Index			Safety Index			
		Job Supported, Operating	Jobs Supported, Capital	Gross Area Product, Operating	Gross Area Product, Capital	Additional Transit Emissions	Non Transit Vehicular Emissions (kgs)	Percent of NTVE	Pass. Accidents per 100,000 Boardings	Pass. Accidents per 100,000 Hub/Train Miles	Traffic Accidents per 100,000 Hub/Train Miles	Safety Index
HR to Pico / San Vincent	W-1 Suspended	◔	◕	◔	◕	●	◑	●	●	●	●	●
HR to Wilsher / Fairfax	W-4 HRT	◑	●	◑	●	●	◑	●	●	●	●	●
Blue Line Exposition Branch	W-3 LRT	●	●	●	●	●	◑	●	◑	◑	◑	◑
Exposition Busway	W-2 Busway	◑	◔	◑	◔	◕	◑	◕	◕	●	◕	◕

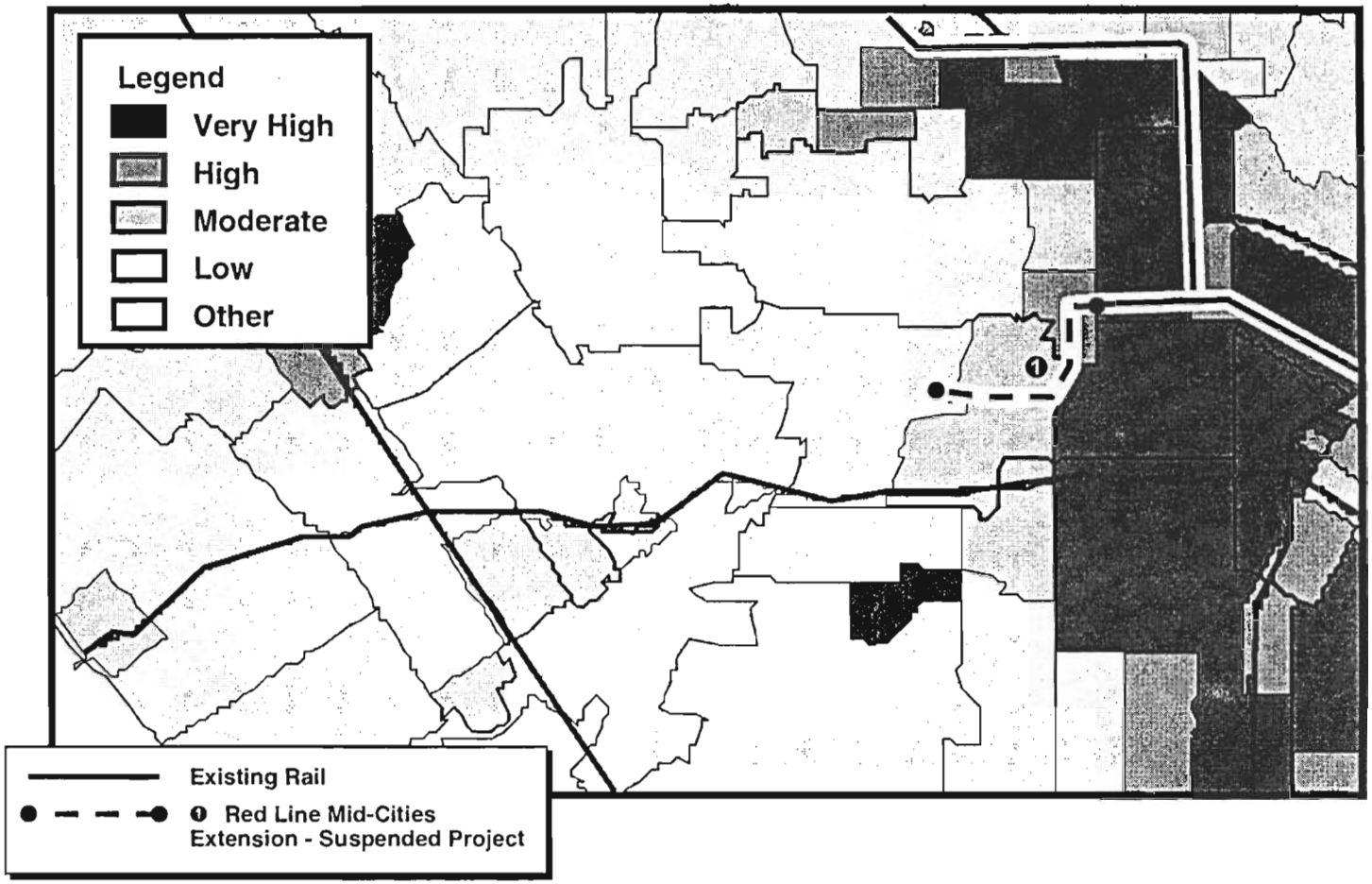
❶

GENERAL COMMUNITY IMPACTS	ALTERNATIVES			
	HR to Pico / San Vincent (Suspended)	HR to Wilshire / Fairfax	Blue Line Exposition Branch	Exposition Bus Transitway
	-5 0 +5	-5 0 +5	-5 0 +5	-5 0 +5
	Negative No Effect Positive	Negative No Effect Positive	Negative No Effect Positive	Negative No Effect Positive
mpacts on Property Values	✓	✓	✓	✓
mpacts on Businesses	✓	✓	✓	✓
mpacts on Security	✓	✓	✓	✓
mpacts on Aesthetics	✓	✓	✓	✓
oise Impacts	✓	✓	✓	✓
mpacts on Traffic Lanes	✓	✓	✓	✓
ommunity Response *	✓	✓	✓	✓
* Where Applicable	●	●	◑	◕
	Positive	Positive	Neutral	Less Positive

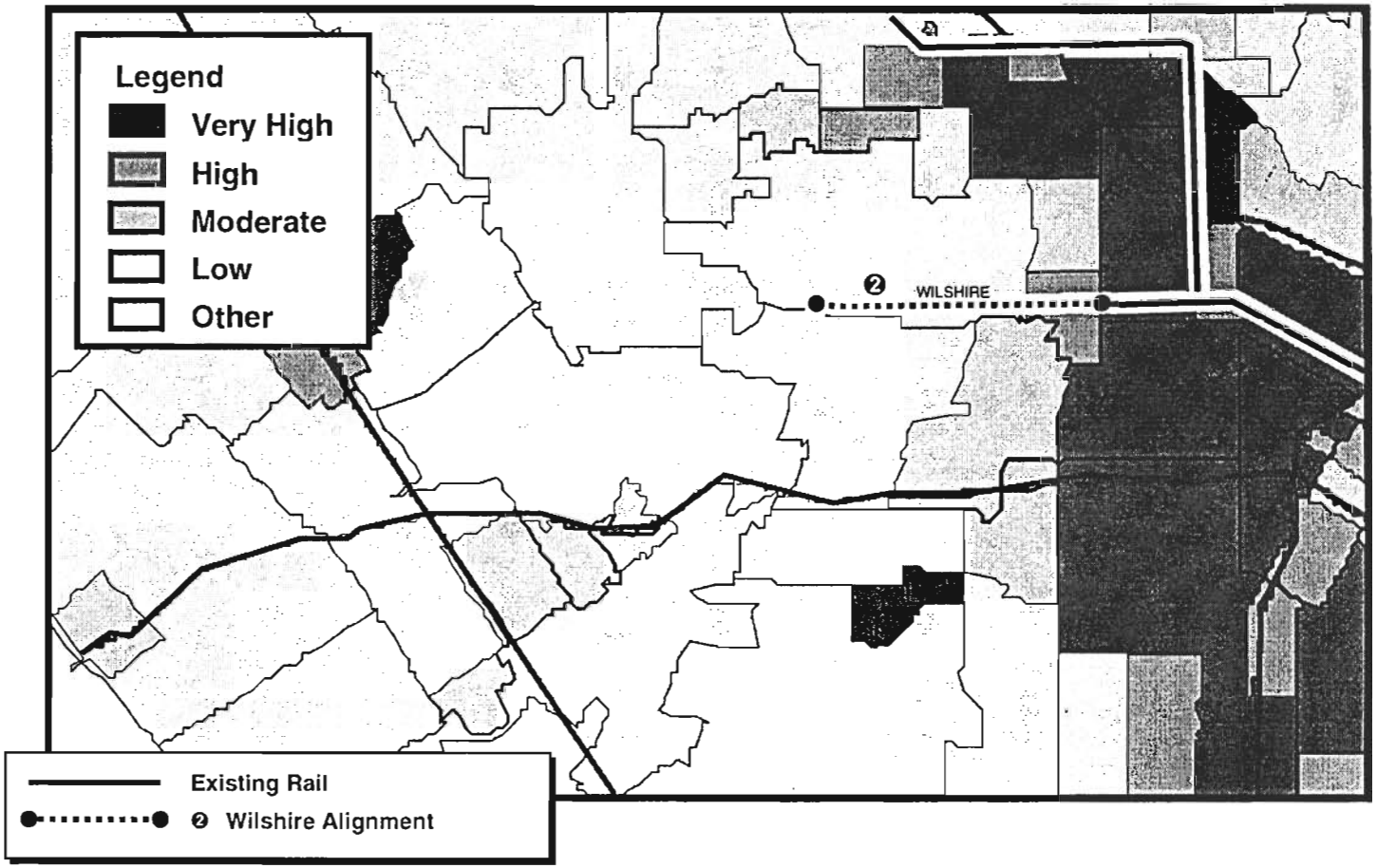
❷

COMMUNITY IMPACTS ON RELOCATIONS	ALTERNATIVES			
	HT to Pico / San Vincent (Suspended)	HR to Wilshire / Fairfax	Blue Line Exposition Branch	Exposition Busway
	Minor Major	Minor Major	Minor Major	Minor Major
ousehold Relocations	✓	✓	✓	✓
ommunity Facility Relocations	✓	✓	✓	✓
istoric Site Relocations	✓	✓	✓	✓
	●	●	●	●
	Positive	Positive	Positive	Positive

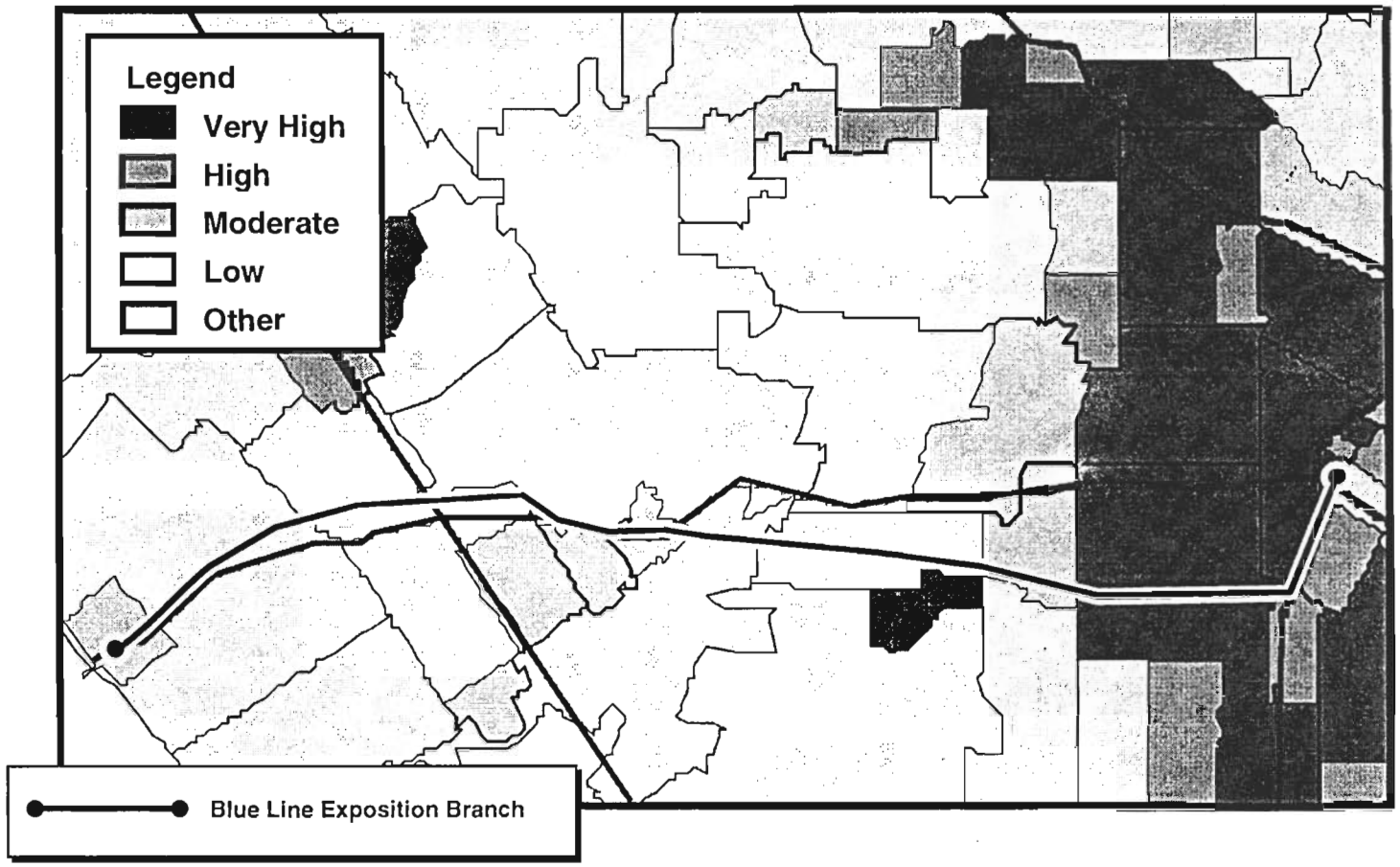
WESTSIDE CORRIDOR - SUSPENDED PROJECT



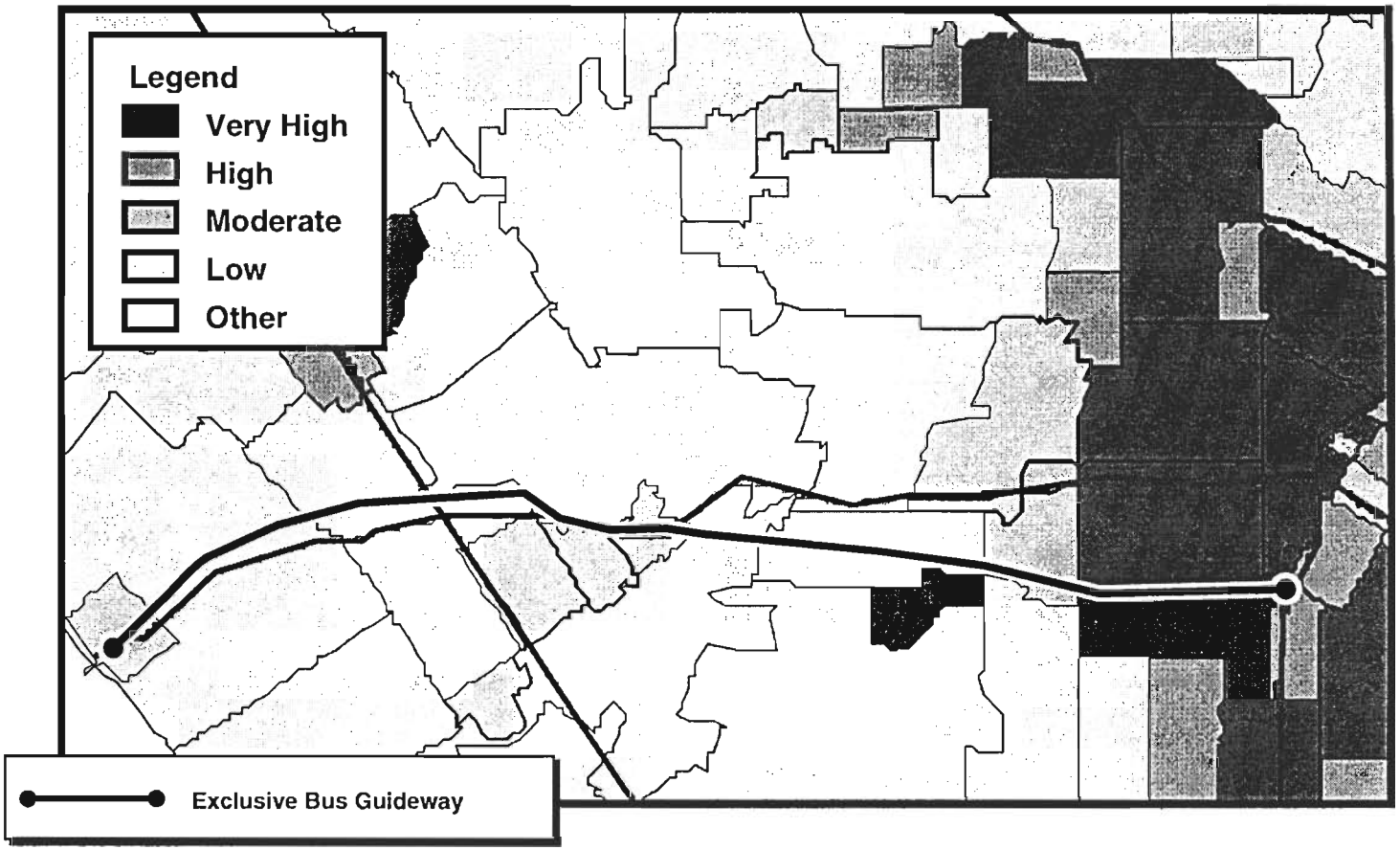
WESTSIDE CORRIDOR - WILSHIRE ALIGNMENT



WESTSIDE CORRIDOR - EXPOSITION LIGHT RAIL



WESTSIDE CORRIDOR - EXPO BUS TRANSITWAY



APPENDIX 4.4
SAN FERNANDO CORRIDOR ALTERNATIVES

THREE ALTERNATIVES IN THE SAN FERNANDO CORRIDOR ADVANCED TO FINAL EVALUATION

- Heavy rail extension to the I-405 (Deferred Project)
- Light Rail/DMU alternative from the North Hollywood Station to Warner Center
- Bus Transitway from Red Line North Hollywood Station to Warner Center

THE PHYSICAL AND OPERATING CHARACTERISTICS OF EACH ALTERNATIVE ARE DEFINED FOR FURTHER ANALYSIS

SUMMARY OF SAN FERNANDO VALLEY ALTERNATIVES

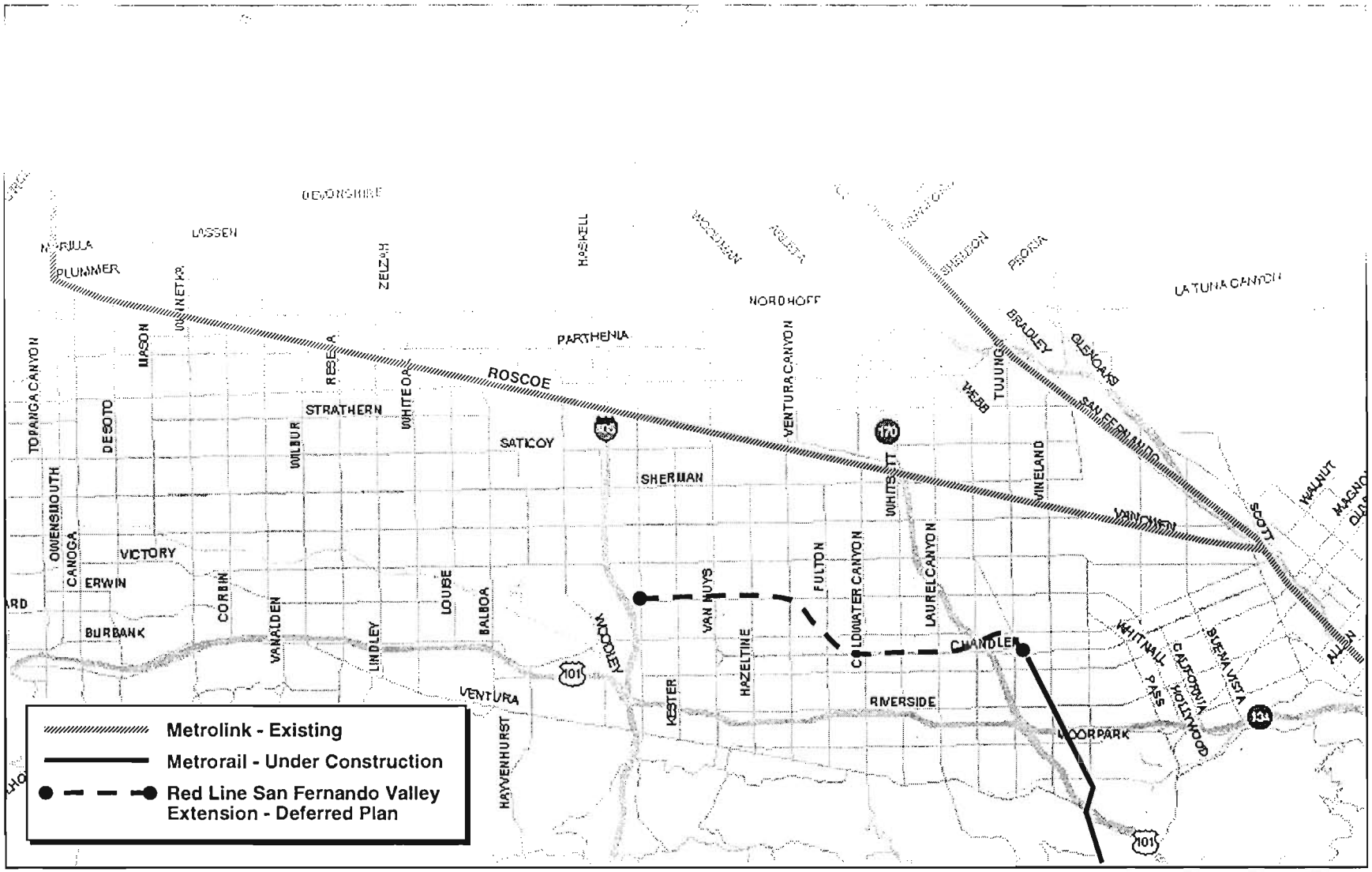
Alternative	Alignment	Mode	Grade	No. of Stations	No. of Stations with Park and Ride Lots	Route Length (miles)	One-Way Travel Time (minutes)	Average Speed (mph)	Peak Headway (minutes)	Off-Peak Headway (minutes)
Heavy Rail to I-405, subway / aerial combination	North Hollywood to I-405 via Burbank / Chandler Right-of-Way	Heavy Rail	Subway / Aerial	4	4	5.6	9.5	35.4	8.5	10.0
Light Rail (or DMU) to Warner Center	North Hollywood to Warner Center via Burbank / Chandler Right-of-Way	Light Rail	At-Grade with Elevated Flyovers	12	10	13.8	24.8	33.1	5.0	12.0
Bus Transitway	North Hollywood to Warner Center via Burbank / Chandler Right-of-Way	Bus	At-Grade in Exclusive Right – of – Way	13	6	13.8	24.8	33.1	5.0	12.0

SUMMARY RESULTS FOR SAN FERNANDO CORRIDOR ALTERNATIVES

Alternative	Capital Costs ($M)	Operating Costs ($M)	Estimated Ridership	Estimated Time Before Construction (months)	Mobility	Transit Dependence	Reliability	Community Impact	Cost Effectiveness
Heavy Rail: North Hollywood Station to I-405	920.0	12.7	15,900	38					
Light Rail At-Grade Burbank / Chandler Right-of-Way: North Hollywood Station to Warner Center	1,126.1	22.6	23,400	38					
Bus Transitway At-Grade Burbank / Chandler Right-of-Way: North Hollywood Station to Warner Center	173.0	14.0	16,100	38					

KEY *Most Favorable or High* ⟶ *Least Favorable or Low*

SAN FERNANDO VALLEY - DEFERRED PROJECT



THE DEFERRED PROJECT IN THE SAN FERNANDO VALLEY EXTENDS THE RED LINE NORTH HOLLYWOOD SEGMENT CURRENTLY UNDER CONSTRUCTION

- The characteristics of the alignment include...

  Alignment Limits: North Hollywood Station to I-405

  Station Locations: Van Nuys Boulevard
  Valley College
  Laurel Canyon
  Sepulveda Boulevard

  No. Vehicles: None, extension of Red Line and utilizes existi ng Fleet

Vehicles	Consist Length	Route Miles	Speed (MPH)	One-Way Time (Min)	Peak Headway (Min)	Off-Peak Headway (Min)	Planned Peak-Hour Capacity (Passengers per Hour)	Maximum Build-Out Peak-Hour Capacity (Passengers Per Hour)
Not Req'd	6	5.6	35.4	9.5	8.5	10	32,917	46,633

Strengths	Weaknesses
1. Serves Travel Demand Corridor 2. Minimal Community Impacts 3. Extends Existing Red Line Service 4. Utilizes Existing Maintenance Facility 5. Utilizes Existing Red Line Fleet	1. High Cost 2. Does Not Serve Warner Center 3. Some Community Opposition

PROJECT: VALLEY HEAVY RAIL	EST.	HTL		SHT.	2
NO HOLLYWOOD TO I-405	DATE	11/5/98		OF	2
STA 420+00 TO 736+00	REV.	0		XLS	
	$:	1988 Dollars			

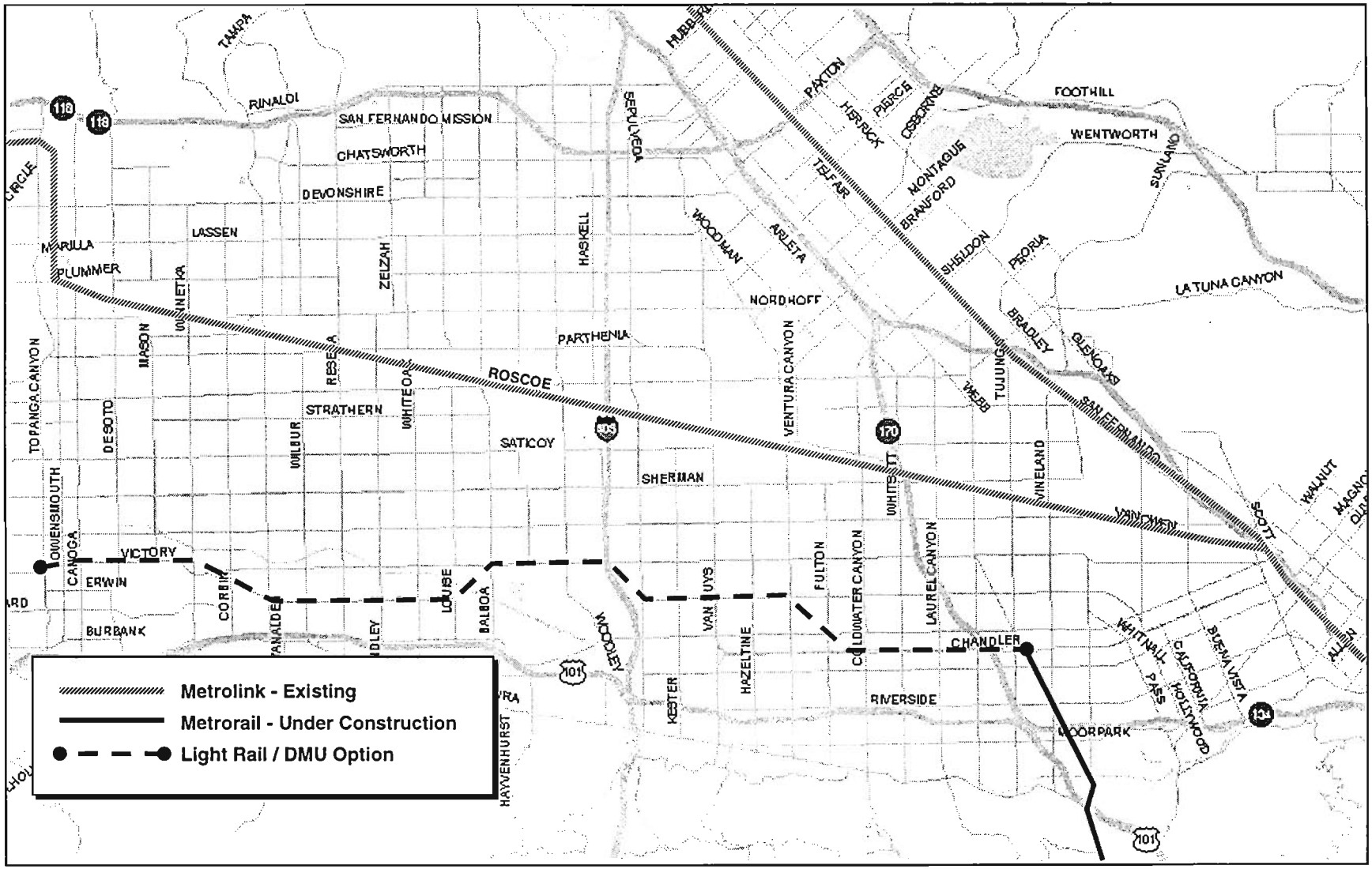
DESCRIPTION	QTY	MTA UNIT PRICE	BAH UNIT PRICE	UNIT	MTA COST	LOWER BOUND	ESTIMATED PROJECT COST
GUIDEWAY COSTS							
AERIAL	6750	$6,500	$6,125	RF	$43,875,000	$41,341,930	$43,875,000
AT-GRADE	1100	$2,250	$1,005	RF	$2,475,000	$1,105,212	$2,475,000
OPEN GUIDEWAY	1660	$6,500	$3,525	RF	$9,906,949	$5,851,819	$9,906,949
RETAINED FILL	1500	$4,500	$1,763	RF	$6,750,000	$2,643,894	$6,750,000
BORED TUNNEL	2939	$10,000	$10,296	RF	$29,390,000	$30,261,259	$29,390,000
CUT & COVER GUIDEWAY	17690	$12,000	$8,615	RF	$212,280,000	$152,407,212	$212,280,000
OTHER IMPROVEMENTS	1	$10,000,000	$10,000,000	LS	$10,000,000	$10,000,000	$10,000,000
BRIDGE WORK	100	$101,000	$101,000	RF	$10,100,000	$10,100,000	$10,100,000
SUBTOTAL (GUIDEWAY COST)	31740				$324,776,949	$253,711,325	$324,776,949
HAZARDOUS WASTE HANDLING							
ALLOWANCE	31739	$27	NA	RF	$861,973	$861,973	$861,973
SUBTOTAL (HAZ MAT)					$861,973	$861,973	$861,973
STATION COST							
AERIAL (6 CAR PLATFORM)	3	$15,000,000	$9,086,250	EA	$45,000,000	$27,258,751	$27,258,751
OPEN STATION (6 CAR PLATFORM W/ XOVEI	1	$36,000,000	$40,888,127	EA	$36,000,000	$40,888,127	$40,888,127
PARK & RIDE (SURFACE)	2000	$2,375	$5,447	EA	$4,750,000	$10,893,141	$10,893,141
SUBTOTAL (STATION COST)					$85,750,000	$79,040,019	$79,040,019
MAINT. FACIL & YARD COSTS							
MAINTENANCE FACILITIES (ALLOWANCE)	0	$2,045,000		LS	$0	$0	$0
SUBTOTAL (MAINT. FACIL.)					$0	$0	$0
VEHICLE COST							
REVENUE VEHICLE	0			EA	$0	$0	$0
SUBTOTAL (VEHICLE COST)					$0	$0	$0
SYSTEM WIDE EQUIPMENT COST							
TRACKWORK (INCL. SPECIAL TRACKWORK)	31739	$575	$595	RF	$18,249,925	$18,895,149	$18,249,925
TRAIN CONTROL STA.	3	$1,100,000	NA	EA	$3,300,000	NA	$3,300,000
TRAIN CONTROL GDWY	31739	$1,100	$880	RF	$34,912,900	$27,940,655	$34,912,900
TRACTION POWER STA. (XFMR)	3	$1,750,000	$3,435,027	EA	$5,250,000	$10,305,082	$5,250,000
TRACTION POWER GDWY (THIRD RAIL)	31739	$110	$340	EA	$3,491,290	$10,782,553	$3,491,290
COMMUNICATIONS	31739	$1,000	$208	RF	$31,739,000	$6,587,742	$6,587,742
FARE COLLECTION	3	$750,000	$1,429,894	LS	$2,250,000	$4,289,681	$2,250,000
SIGNAGE & GRAPHICS	3	$750,000	$402,873	LS	$2,250,000	$1,208,620	$1,208,620
SUBTOTAL (SYSTEM COST)					$101,443,115	$80,009,482	$75,250,477
TOTAL ESTIMATED COST - 1998 DOLLARS					$512,832,037	$413,622,799	$479,929,418

COST ESTIMATE COVERSHEET

PROJECT:	VALLEY HEAVY RAIL	EST.	HTL	SHT.	1
	NO HOLLYWOOD TO I-405	DATE	11/5/98	OF	2
	STA 420+00 TO 736+00	REV.:	0		
		$:	1988 Dollars		

ITEM DESCRIPTION		MTA ESTIMATED COST	LOWER BOUND COST	PROJECTED FINAL COST
1A) GUIDEWAYS AND STRUCTURES		$324,776,949	$253,711,325	$324,776,949
1B) HAZARDOUS WASTE HANDLING ALLOWANCE		$861,973	$861,973	$861,973
2) STATIONS		$85,750,000	$79,040,019	$79,040,019
3) MAIN YARD AND SHOP		$0	$0	$0
4) SYSTEMWIDE EQUIPMENT		$101,443,115	$80,009,482	$75,250,477
5) VEHICLES		$0	$0	$0
SUBTOTAL (A) (see page 2 for details)		**$512,832,037**	**$413,622,799**	**$479,929,418**
6) PRE REVENUE OPERATION	2.5%	$12,820,801	$10,340,570	$11,998,235
7) OWNERS INSURANCE	8.0%	$41,026,563	$33,089,824	$38,394,353
8) MASTER AGREEMENTS	2.5%	$12,820,801	$10,340,570	$11,998,235
SUBTOTAL (B)		**$66,668,165**	**$53,770,964**	**$62,390,824**
9) ART FOR TRANSIT (C)	0.5%	$2,564,160	$2,068,114	$2,399,647
SUBTOTAL (C)		**$2,564,160**	**$2,068,114**	**$2,399,647**
10 A) RIGHT OF WAY (MTA)		$79,500,000	$79,500,000	$79,500,000
10 B) RIGHT OF WAY (PROPOSED TAKES)		$9,711,568	$9,711,568	$9,711,568
SUBTOTAL (D)		**$89,211,568**	**$89,211,568**	**$89,211,568**
11) PROF. SERVICES (E) INCL. COST TO DATE		$165,962,524	$105,448,734	$119,493,017
SUBTOTAL (E)		**$165,962,524**	**$105,448,734**	**$119,493,017**
12) CONTINGENCY (F)				
A) ITEM 1A	12%	$38,973,234	$30,445,359	$103,437
ITEM 1B	10%	$86,197	$86,197	$7,904,002
B) ITEM 2	12%	$10,290,000	$9,484,802	$0
C) ITEM 3, 4, & 5	10%	$10,144,312	$8,000,948	$55,517,989
D) ITEM 6, 7, & 8	10%	$6,666,816	$5,377,096	$0
E) ITEM 10 B		INCL. IN ITEM	INCL. IN ITEM	INCL. IN ITEM
F) ITEM 11	10%	$16,596,252	$10,544,873	$11,949,302
SUBTOTAL (F)		**$82,756,812**	**$63,939,277**	**$75,474,730**
GRAND TOTAL - 1998 DOLLARS		**$919,995,266**	**$728,061,455**	**$828,899,204**

SAN FERNANDO VALLEY - LIGHT RAIL



THIS ALTERNATIVE PROVIDES AN AT-GRADE LIGHT RAIL ALIGNMENT TO WARNER CENTER UTILIZING THE BURBANK/CHANDLER RIGHT-OF-WAY

- The characteristics of the alignment include...

Alignment Limits: North Hollywood Red Line Station to Warner Center
Station Locations: 12 New Stations (Locations To Be Determined)
No. Vehicles: 33

Vehicles	Consist Length	Route Miles	Speed (MPH)	One-Way Time (Min)	Peak Headway (Min)	Off-Peak Headway (Min)	Planned Peak-Hour Capacity (Passengers per Hour)	Maximum Build-Out Peak-Hour Capacity (Passengers Per Hour)
33	2	13.8	33.1	25	5	12	12,753	23,913

Strengths	Weaknesses
1. Utilizes Existing Right-of-Way 2. Serves Warner Center 3. Lower Cost than Subway 4. Minimizes Community Impacts 5. Could be Implemented using DMU Technology 6. A Number of Branch Alternatives can Further expand Regional Connectivity	1. Robbin's Bill prohibits at-grade alternative over a section of proposed alignment 2. Segment Operates Independently and Does Not Expand any Current System 3. Requires Environmental Process 4. Requires Design 5. At-Grade Alignment Poses Some Safety Considerations 6. Requires transfer to downtown L.A.

PROJECT: VALLEY LRT	EST.	HTL	SHT.	2	
NO HOLLYWOOD TO WARNER C	DATE	11/5/98	OF	2	
STA 4+54 TO 736+00	REV.	0	XLS		
	$:	1988 Dollars			

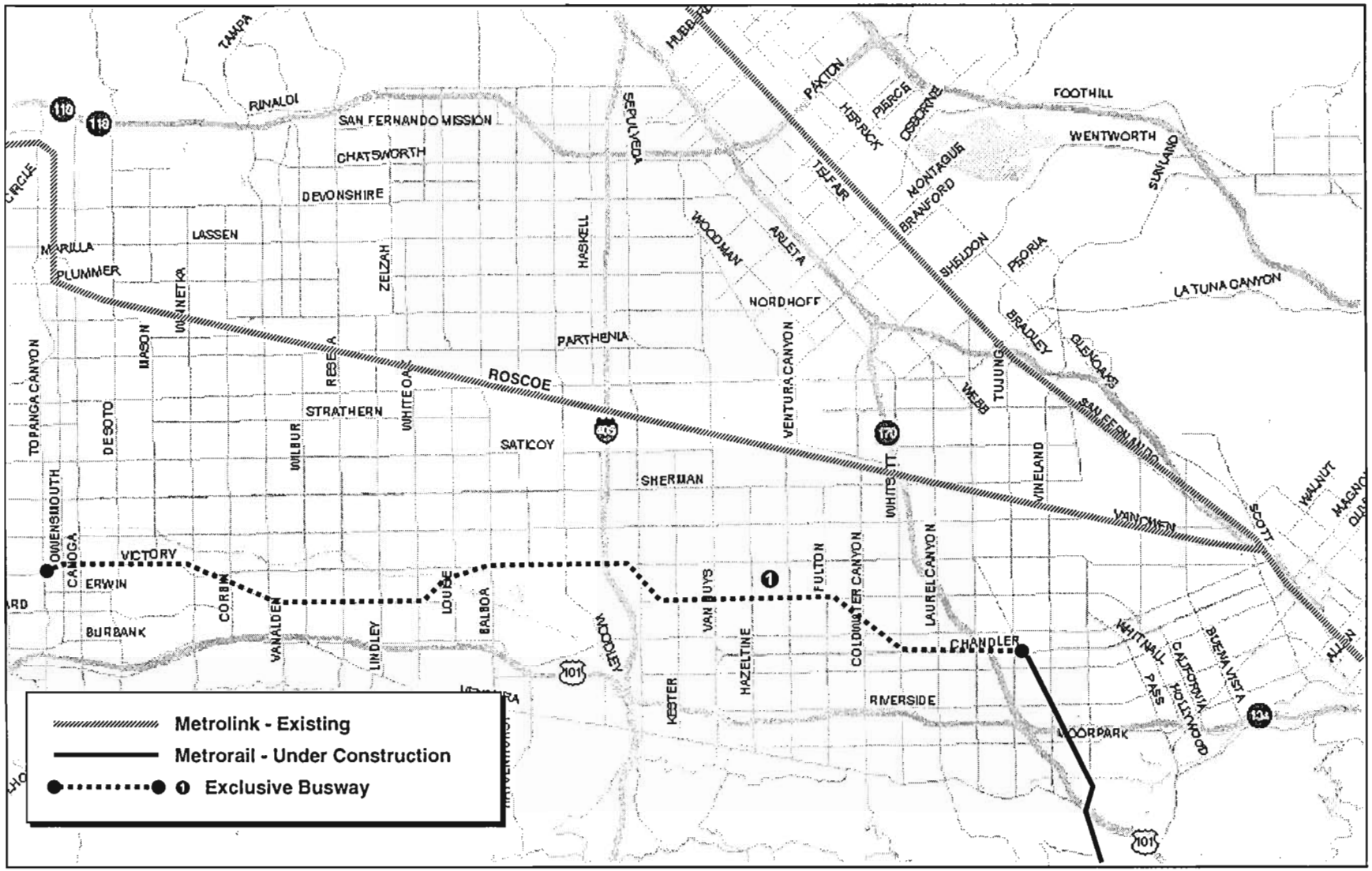
DESCRIPTION	QTY	MTA UNIT PRICE	BAH UNIT PRICE	UNIT	MTA COST	LOWER BOUND	ESTIMATED PROJECT COST
GUIDEWAY COSTS							
AT GRADE	44175	$1,800	$1,557	RF	$79,515,000	$68,790,468	$79,515,000
RETAINED GUIDEWAY	15225	$3,500	$711	RF	$53,287,500	$10,822,340	$53,287,500
AERIAL GUIDEWAY	13196	$4,500	$3,750	RF	$59,382,000	$49,485,740	$59,382,000
BRIDGES LA River, Arroyo Seco (Actuals)	100	$100,000	$100,000	EA	$10,000,000	$10,000,000	$10,000,000
OTHER GUIDEWAY IMPROVEMENTS	1	$16,550,000	$16,550,000	EA	$16,550,000	$16,550,000	$16,550,000
GRADE CROSSINGS	15	$250,000	$182,815	LS	$3,750,000	$2,742,228	$2,742,228
SUBTOTAL (GUIDEWAY COST)	72712				**$222,484,500**	**$158,390,776**	**$221,476,728**
HAZARDOUS WASTE HANDLING							
ALLOWANCE	1	$1,723,947	NA	RF	$1,723,947	$1,723,947	$1,723,947
SUBTOTAL (HAZ MAT)					**$1,723,947**	**$1,723,947**	**$1,723,947**
STATION COST							
AT GRADE STATION (2 CAR PLATFORM)	5	$1,500,000	$756,261	EA	$7,500,000	$3,781,307	$3,781,307
AERIAL STATION (2 CAR PLATFORM)	5	$3,333,333	$1,778,144	EA	$16,666,667	$8,890,720	$8,890,720
AERIAL STATION (2 CAR PLATFORM W/XOV	1	$3,333,333	$1,778,144	EA	$3,333,333	$1,778,144	$1,778,144
OPEN STATION (2 CAR PLAT. W/ CROSSOV	1	$16,666,667	$16,666,667	EA	$16,666,667	$16,666,667	$16,666,667
PASSENGER TRANSFER PORTAL AT NO. H(	1	$5,000,000	$5,000,000	EA	$5,000,000	$5,000,000	$5,000,000
PARK & RIDE (SURFACE LOT)	4700	$2,750	$2,437	Spaces	$12,925,000	$11,455,411	$12,925,000
SUBTOTAL (STATION COST)					**$62,091,667**	**$47,572,248**	**$49,041,837**
MAINT. FACIL & YARD COSTS							
MAINTENANCE FACILITIES (ALLOWANCE)	1	$25,000,000	$26,252,777		$25,000,000	$26,252,777	$25,000,000
SUBTOTAL (MAINT. FACIL.)					**$25,000,000**	**$26,252,777**	**$25,000,000**
VEHICLE COST							
REVENUE VEHICLE	33	$2,400,000	$1,959,379		$79,200,000	$64,659,492	$64,659,492
SUBTOTAL (VEHICLE COST)					**$79,200,000**	**$64,659,492**	**$64,659,492**
SYSTEM WIDE EQUIPMENT COST							
TRACKWORK (INCL. SPECIAL TRACKWORI	73146	$421	$288	RF	$30,794,466	$21,036,462	$30,794,466
TRAIN CONTROL STA.	12	$160,000	NA	EA	$1,920,000	NA	$1,920,000
TRAIN CONTROL GDWY	73146	$500	$485	RF	$36,573,000	$35,467,323	$36,573,000
TRACTION POWER STA. (XFMR)	12	$1,100,000	$2,270,794	EA	$13,200,000	$27,249,530	$13,200,000
TRACTION POWER GDWY. (CATENARY)	73146	$270	NA	RF	$19,749,420	ncluded in Trac	$19,749,420
COMMUNICATIONS	73146	$200	$83	RF	$14,629,200	$6,097,540	$6,097,540
FARE COLLECTION	12	$250,000	$86,558	LS	$3,000,000	$1,038,697	$3,000,000
SIGNAGE & GRAPHICS	12	$100,000	$35,157	LS	$1,200,000	$421,881	$421,881
SUBTOTAL (SYSTEM COST)					**$121,066,086**	**$91,311,432**	**$111,756,307**
TOTAL ESTIMATED COST - 1998 DOLLARS					**$511,566,200**	**$389,910,673**	**$473,658,312**

COST ESTIMATE COVERSHEET

PROJECT:	VALLEY LRT	EST.	HTL	SHT.	1
	NO HOLLYWOOD TO WARNER CTR	DATE	11/5/98	OF	2
	STA 4+54 TO 736+00	REV.:	0		
		$:	1988 Dollars		

ITEM DESCRIPTION			MTA ESTIMATED COST	LOWER BOUND COST	PROJECTED FINAL COST
1A) GUIDEWAYS AND STRUCTURES			$222,484,500	$158,390,776	$221,476,728
1B) HAZARDOUS WASTE HANDLING ALLOWANCE			$1,723,947	$1,723,947	$1,723,947
2) STATIONS			$62,091,667	$47,572,248	$49,041,837
3) MAIN YARD AND SHOP			$25,000,000	$26,252,777	$25,000,000
4) SYSTEMWIDE EQUIPMENT			$121,066,086	$91,311,432	$111,756,307
5) VEHICLES			$79,200,000	$64,659,492	$64,659,492
SUBTOTAL (A) (see page 2 for details)			**$511,566,200**	**$389,910,673**	**$473,658,312**
6) PRE REVENUE OPERATION		2.5%	$12,789,155	$9,747,767	$11,841,458
7) OWNERS INSURANCE		8.0%	$40,925,296	$31,192,854	$37,892,665
8) MASTER AGREEMENTS		2.5%	$12,789,155	$9,747,767	$11,841,458
SUBTOTAL (B)			**$66,503,606**	**$50,688,387**	**$61,575,581**
9) ART FOR TRANSIT (C)		0.5%	$2,557,831	$1,949,553	$2,368,292
SUBTOTAL (C)			**$2,557,831**	**$1,949,553**	**$2,368,292**
10 A) RIGHT OF WAY (MTA PROPERTIES)			$159,000,000	$159,000,000	$159,000,000
10) RIGHT OF WAY (PROPOSED TAKES)			$57,464,899	$57,464,899	$57,464,899
SUBTOTAL (D)			**$216,464,899**	**$216,464,899**	**$216,464,899**
11) PROF. SERVICES (E)			$241,327,646	$155,600,215	$211,138,783
SUBTOTAL (E)			**$241,327,646**	**$155,600,215**	**$211,138,783**
12) CONTINGENCY (F)					
A) ITEM 1A	12%		$26,698,140	$19,006,893	$26,577,207
ITEM 1B	10%		$172,395	$172,395	$172,395
B) ITEM 2	12%		$7,451,000	$5,708,670	$5,885,020
C) ITEM 3, 4, & 5	10%		$22,526,609	$18,222,370	$20,141,580
D) ITEM 6, 7, & 8	10%		$6,650,361	$5,068,839	$6,157,558
E) ITEM 10	0%	INCLUDED IN ITEM	$0	$0	$0
F) ITEM 11	10%		$24,132,765	$15,560,021	$21,113,878
SUBTOTAL (F)			**$87,631,268**	**$63,739,188**	**$80,047,639**
GRAND TOTAL - 1998 DOLLARS			**$1,126,051,450**	**$878,352,915**	**$934,515,141**

SAN FERNANDO VALLEY - BUS TRANSITWAY



THIS TRANSITWAY ALTERNATIVE PROVIDES AN AT-GRADE BUS OPTION TO WARNER CENTER UTILIZING THE BURBANK/CHANDLER RIGHT-OF-WAY

- The characteristics of the alignment include...

Alignment Limits: North Hollywood Red Line Station to Warner Center
Station Locations: 13 New Stations (Locations To Be Determined)
No. Vehicles: 22

Vehicles	Consist Length	Route Miles	Speed (MPH)	One-Way Time (Min)	Peak Headway (Min)	Off-Peak Headway (Min)	Planned Peak-Hour Capacity (Passengers per Hour)	Maximum Build-Out Peak-Hour Capacity (Passengers Per Hour)
22	N/A	13.8	33.1	25	5	12	4,669	15,746

Strengths	Weaknesses
1. Utilizes Existing Right-of-Way 2. Serves Warner Center 3. Lowest Cost Option 4. Minimizes Community Impacts	1. Robbin's Bill prohibits at-grade alternative over a section of proposed alignment 2. Requires Environmental Process 3. Requires Design 4. At-Grade Alignment Poses Some Safety Considerations 5. Lower Capacities 6. Requires Transfers

PROJECT:	VALLEY BUS TRANSITWAY	EST.	HTL	SHT.	2
		DATE	11/6/'98	OF	2
	NORTH HOLLYWOOD TO	REV.	0	XLS	
	WARNER CENTER	$:	1998 Dollars		

DESCRIPTION	QTY	MTA UNIT PRICE	BAH UNIT PRICE	UNIT	MTA COST	LOWER BOUND
GUIDEWAY COSTS						
AT GRADE BUSWAY	72864	$320	$466	RF	$23,316,480	$33,975,158
AT GRADE BUSWAY @ STATION	7200	$535	Incl in above	RF	$3,852,000	Incl in above
STREET IMPROVEMENTS @ XINGS	42	$152,000	$139,891	EA	$6,384,000	$5,875,405
TRACK REMOVAL	70000	$65	$18	RF	$4,550,000	$1,231,650
SPECIAL BRIDGE WORK @ TUJUNGA WASH	1	$5,000,000	$5,000,000	LS	$5,000,000	$5,000,000
SUBTOTAL (GUIDEWAY COST)	**150107**				**$43,102,480**	**$46,082,214**
HAZARDOUS WASTE HANDLING						
ALLOWANCE	1	$1,500,000	NA	LS	$1,500,000	$1,500,000
SUBTOTAL (HAZ MAT)					**$1,500,000**	**$1,500,000**
STATION COST						
AT GRADE STATION (120 FT. SIDE PLATFORM) (including finishes, landscaping, canopies, lighting & signage)	13	$505,000	$526,318	EA	$6,565,000	$6,842,130
PARKING FACILITIES (MINIMAL AMENITIES)	4965	$1,800	$2,346	Spaces	$8,937,000	$11,649,603
SUBTOTAL (STATION COST)					**$15,502,000**	**$18,491,733**
MAINT. FACIL & YARD COSTS						
MAINTENANCE FACILITIES (ALLOWANCE)	1	$5,000,000	$5,000,000		$5,000,000	$5,000,000
SUBTOTAL (MAINT. FACIL.)					**$5,000,000**	**$5,000,000**
VEHICLE COST						
REVENUE VEHICLE	22	$350,000	$333,291		$7,700,000	$7,332,402
SUBTOTAL (VEHICLE COST)					**$7,700,000**	**$7,332,402**
SYSTEM WIDE EQUIPMENT COST						
PRIORITY SIGNALIZATION	1	$4,336,800	$1,050,000	LS	$4,336,800	$1,050,000
TICKET VENDING MACHINES	24	$75,000	NA	EA	$1,800,000	$1,687,881
COMMUNICATIONS	72860	$50	$20	RF	$3,643,000	$1,438,205
GUIDEWAY LIGHTING INCL. ELECTRIFICATION	72860	$60	$60	RF	$4,371,600	$4,371,600
SECURITY	72860	$30	$30	RF	$2,185,800	$2,185,800
SIGNAGE/GRAPHICS (OTHER THAN STATIONS)	72860	$20	$23	RF	$1,457,200	$1,652,797
SUBTOTAL (SYSTEM COST)					**$17,794,400**	**$12,386,283**
TOTAL ESTIMATED COST - 1998 DOLLARS					**$90,598,880**	**$90,792,631**

COST ESTIMATE COVERSHEET

PROJECT:	VALLEY BUS TRANSITWAY	EST.	HTL	SHT.	1
	0	DATE	11/6/'98	OF	2
	NORTH HOLLYWOOD TO	REV.:	0		
	WARNER CENTER	$:	1988 Dollars		

ITEM DESCRIPTION		MTA ESTIMATED COST	LOWER BOUND COST	PROJECTED FINAL COST
1A) GUIDEWAYS AND STRUCTURES		$43,102,480	$46,082,214	$43,102,480
1B) HAZARDOUS WASTE HANDLING ALLOWANCE		$1,500,000	$1,500,000	$1,500,000
2) STATIONS		$15,502,000	$18,491,733	$15,502,000
3) MAIN YARD AND SHOP		$5,000,000	$5,000,000	$5,000,000
4) SYSTEMWIDE EQUIPMENT		$17,794,400	$12,386,283	$12,190,686
5) VEHICLES		$7,700,000	$7,332,402	$7,332,402
SUBTOTAL (A) (see page 2 for details)		**$90,598,880**	**$90,792,631**	**$84,627,568**
6) PRE REVENUE OPERATION	2.5%	$2,264,972	$2,269,816	$2,115,689
7) OWNERS INSURANCE	8.0%	$7,247,910	$7,263,410	$6,770,205
8) MASTER AGREEMENTS	2.5%	$2,264,972	$2,269,816	$2,115,689
SUBTOTAL (B)		**$11,777,854**	**$11,803,042**	**$11,001,584**
9) ART FOR TRANSIT (C)	0.5%	$452,994.40	$453,963.16	$423,138
SUBTOTAL (C)		**$452,994**	**$453,963**	**$423,138**
10) RIGHT OF WAY (D) ALLOWANCE FOR 4 PARK-N-RIDES		$4,680,000	$4,680,000	$4,680,000
SUBTOTAL (D)		**$4,680,000**	**$4,680,000**	**$4,680,000**
11) PROF. SERVICES (E)		$48,008,577	$18,251,323	$28,205,041
SUBTOTAL (E)		**$48,008,577**	**$18,251,323**	**$28,205,041**
12) CONTINGENCY (F)				
A) ITEM 1A	12%	$5,172,298	$5,529,866	$5,172,298
ITEM 1B	12%	$180,000	$180,000	$180,000
B) ITEM 2	17%	$2,635,340	$3,143,595	$2,635,340
C) ITEM 3, 4, & 5	10%	$3,049,440	$2,471,868	$2,452,309
D) ITEM 6, 7, & 8	10%	$1,177,785	$1,180,304	$1,100,158
E) ITEM 10	10%	$468,000	$468,000	$468,000
F) ITEM 11	10%	$4,800,858	$1,825,132	$2,820,504
SUBTOTAL (F)		**$17,483,721**	**$14,798,765**	**$14,828,609**
GRAND TOTAL - 1998 DOLLARS		**$173,002,027**	**$140,779,725**	**$143,765,940**

IN THE SAN FERNANDO CORRIDOR THE LOCALLY PREFERRED ALTERNATIVE STILL MUST BE SELECTED

- The three projects identified for final evaluation in the RTAA are at a point in the process where the Locally Preferred Alternative (LPA) is to be selected

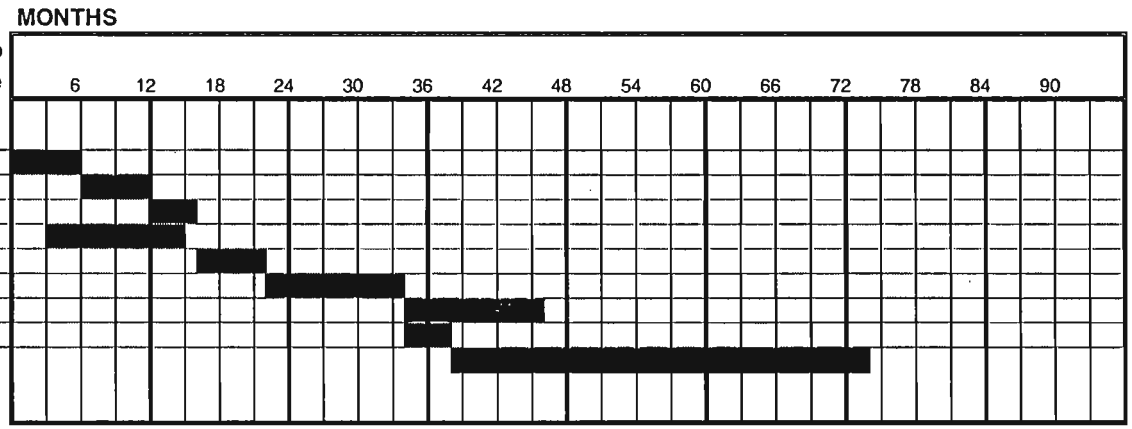
- Once the LPA has been determined, the selected project can begin the process to construction

	STEPS TO IMPLEMENTATION										
	Alternatives Analysis										
Alternative	Scope & Purpose (3 mo.)	Develop & Screen Alternatives (5 mo.)	Detailed Alternative Definition (10 mo.)	Evaluate Alternatives (3 mo.)	Prepare Draft EIS (9 mo.)	FTA, Public, & Board Review (6 mo.)	Prepare Final EIS (4 mo.)	Develop ROD (6 mo.)	Final Design (12 mo.)	Bid (4 mo.)	Total Months to Construction
Heavy Rail: North Hollywood Station to I-405	Complete	Complete	Complete	Complete	35% 6 mo.	0% 6 mo.	0% 4 mo.	6 mo.	0% 12 mo.	4 mo.	38 mo.
Light Rail At-Grade Burbank / Chandler Right-of-Way: North Hollywood Station to Warner Center	Complete	Complete	Complete	Complete	35% 6 mo.	0% 6 mo.	0% 4 mo.	6 mo.	0% 12 mo.	4 mo.	38 mo.
Bus Transitway At-Grade Burbank / Chandler Right-of-Way: North Hollywood Station to Warner Center	Complete	Complete	Complete	Complete	35% 6 mo.	0% 6 mo.	0% 4 mo.	6 mo.	0% 12 mo.	4 mo.	38 mo.

NO PROJECT IN THE SAN FERNANDO VALLEY CORRIDOR IS READY TO MOVE INTO CONSTRUCTION. THE LOCALLY PREFERRED ALTERNATIVE MUST BE DETERMINED AND THE PLANNING PROCESS COMPLETED PRIOR TO IMPLEMENTATION

IMPLEMENTATION TIMEFRAME FOR DEFERRED PROJECT -- NORTH HOLLYWOOD TO I-405

PROJECT PHASE	Percent Complete	Months to Complete
Alternatives Analysis	100%	
Draft EIS	65%	6
DEIS Review	0%	6
Final EIS	0%	4
Preliminary Engineering	0%	12
Procurement Strategy / ROD	0%	6
Final Design / Engineering	0%	12
Right-of-Way Acquisition	90%	12
Contractor Bid	0%	4
Construction and Testing	0%	36 - 42
Total Time to Completion		74 - 80



THE IMPLEMENTATION OF THE DEFERRED HEAVY RAIL PROJECT TO I-405 RESUMES THE ENVIRONMENTAL CLEARANCE PROCESS

- The planning process for a San Fernando East-West rail line was deferred before the Locally Preferred Alternative was selected. An additional twelve months is required to complete the Draft Environmental Impact Statement and select the Locally Preferred Alternative

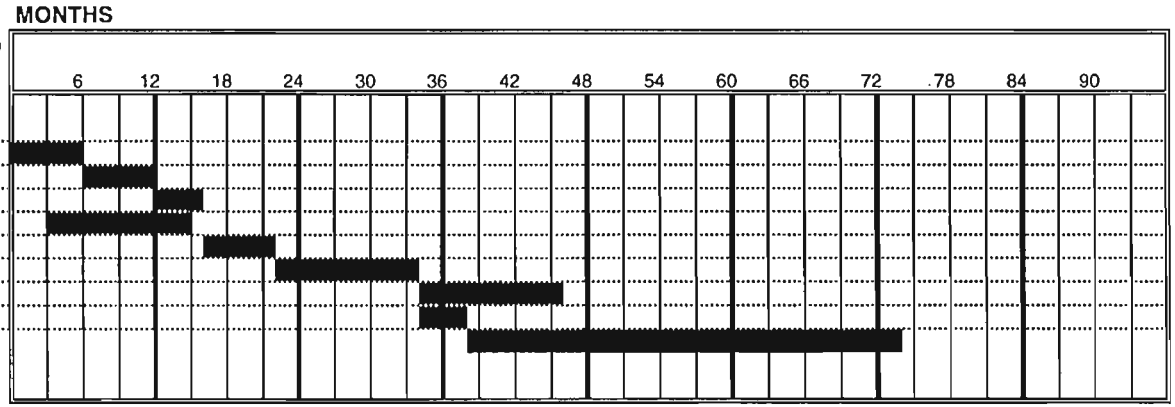
- Completion of the Final Environmental Impact Statement requires four additional months

- Right-of-way acquisition begins once all engineering work is complete and falls within a one-year time frame. Most of the right-of-way along the Burbank / Chandler right-of-way is already owned by the MTA

- Completion of construction and testing will require approximately 3 to 3 ½ years

IMPLEMENTATION TIME FRAME FOR SAN FERNANDO VALLEY LIGHT RAIL

PROJECT PHASE	Percent Complete	Months to Complete
Alternatives Analysis	100%	
Draft EIS	35%	6
DEIS Review	0%	6
Final EIS	0%	4
Preliminary Engineering	0%	12
Procurement Strategy / ROD	0%	6
Final Design / Engineering	0%	12
Right-of-Way Acquisition	90%	12
Contractor Bid	0%	4
Construction and Testing	0%	36 - 48
Total Time to Completion		74 - 86

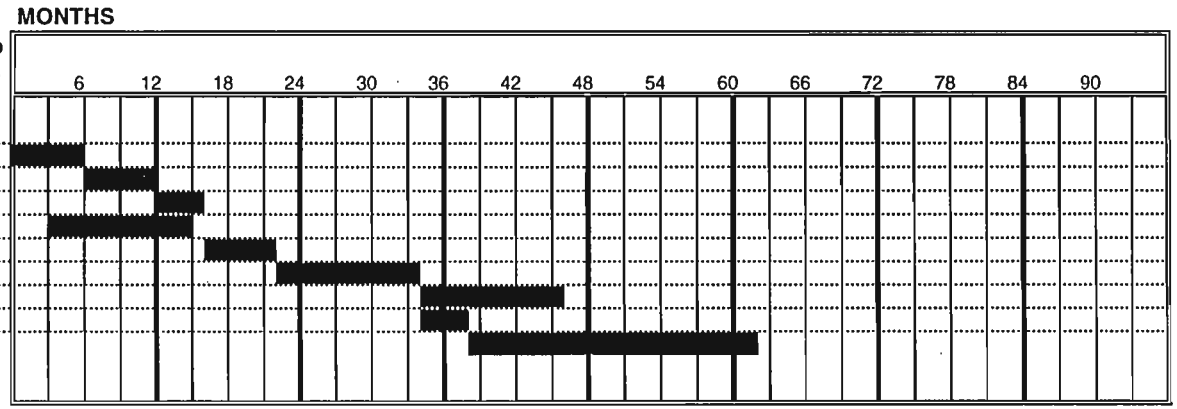


THE IMPLEMENTATION OF LIGHT RAIL ON THE BURBANK / CHANDLER RIGHT-OF-WAY CAN USE WORK COMPLETED FROM THE DEFERRED PLANNING PROCESS

- Most of the environmental clearance work for the right-of-way between the North Hollywood station and the I-405 freeway is complete. A new environmental process must be initiated for the portion of the route west of the I-405 freeway
- An additional year is required to complete the Draft EIS and select the Locally Preferred Alternative
- Completion of the Final Environmental Impact Statement will require an additional four months
- Right-of-way acquisition begins once all engineering work is complete and falls within a one-year time frame. Most of the right-of-way along the Burbank / Chandler right-of-way is already owned by the MTA
- Completion of construction and testing will require approximately 3 to 4 years

IMPLEMENTATION TIME FRAME FOR SAN FERNANDO VALLEY BUSWAY

PROJECT PHASE	Percent Complete	Months to Complete
Alternatives Analysis	100%	0
Draft EIS	35%	6
DEIS Review	0%	6
Final EIS	0%	4
Preliminary Engineering	0%	12
Procurement Strategy / ROD	0%	6
Final Design / Engineering	0%	12
Right-of-Way Acquisition	90%	12
Contractor Bid	0%	4
Construction	0%	24 - 36
Total Time to Completion		62 - 74



THE IMPLEMENTATION OF A BUSWAY ON THE BURBANK / CHANDLER RIGHT-OF-WAY TO WARNER CENTER CAN UTILIZE WORK COMPLETED IN THE DEFERRED PLANNING PROCESS

- Most of the environmental clearance work for the right -of-way east of the I-405 freeway is complete. A new environmental process must be initiated for the portion of the route west of the I-405 freeway. An additional year is required to complete the Draft EIS and select the Locally Preferred Alternative

- Completion of the Final Environmental Impact Statement requires an additional four months

- Right-of-way acquisition begins once all engineering work is complete and falls within a one-year time frame. Most of the right-of-way along the Burbank / Chandler right-of-way is already owned by the MTA

- Completion of construction will require 2 - 3 years

SAN FERNANDO VALLEY CORRIDOR RESULTS INCLUDE...

TIER 1 MEASURES

Alternative	Model Note	Mobility	Transit Dependency	Reliability	Community Impacts	Cost Effectiveness
Heavy Rail to I-405 (Subway / Aerial combination)	V-1 HRT	◕	◔	●	◕	◑
Light Rail (or DMU) to Warner Center	V-2 LRT	◑	◔	◕	◑	◑
Bus Transitway (North Hollywood to Warner Center)	V-3 transitway	◑	◔	◕	◑	●

TIER 2 MEASURES

Alternative	Model Note	Economic	Safety	Environmental
Heavy Rail to I-405 (Subway / Aerial combination)	V-1 HRT	●	●	●
Light Rail (or DMU) to Warner Center	V-2 LRT	●	◑	●
Bus Transitway (North Hollywood to Warner Center)	V-3 Transitway	◔	◕	◕

KEY

●	Most Favorable or High	○	Least Favorable or Low

The San Fernando Valley Corridor

ALTERNATIVE	Model Notes	Route Miles	MOBILITY								TRANSIT DEPENDENCE			COST EFFECTIVENESS				RELIABILITY
			Market			Mobility Index								Project Unit Costs		Cost Efficiency		
			Additional Daily Transit Trips Generated	LA County Daily Transit Trips	Percent of Total	Alternative Specific	Base 2010	Percent Change	Annual Transit Travel Time Decrease	Job Accessibility	Transit Dependence Index	Index Composition	Job Accessibility Index	Capital Costs / Mile (MTA)	O&M Costs / Mile (BAH)	Annualized Lifecycle Cost / Trip	Subsidy / Trip	Reliability per Mode
HR to I - 405 (Subway / Aerial Combination)	V-1 HRT	6.01	7,389	889,293	0.83%	43.39	43.32	0.16%	10,043	16.32	1	100% Low	22.03	$153,078,203	$2,113,144.76	$7,931	$1,503	Very low to low
LR (or DMU) to Warner Center	V-2 LRT	13.8	(534)	881,370	-0.06%	43.32	43.32	0.00%	8,330	16.15	1	100% Low	21.78	$81,601,449	$1,637,681.16	N/A	N/A	Low
Bus Transitway (N. Hollywood / Warner	V-3 Transitway	14	3,969	885,873	0.45%	43.34	43.32	0.05%	7,732	16.23	1	100% Low	21.92	$13,478,571	$350,000.00	$3,250	$1,019	Low

ALTERNATIVE	Model Notes	Route Miles	MOBILITY								TRANSIT DEPENDENCE			COST EFFECTIVENESS				RELIABILITY
			Market			Mobility Index								Project Unit Costs		Cost Efficiency		
			Additional Daily Transit Trips Generated	LA County Daily Transit Trips	Percent of Total	Alternative Specific	Base 2010	Percent Change	Annual Transit Travel Time Decrease	Job Accessibility	Transit Dependence Index	Work Destination	Job Accessibility Index	Capital Costs / Mile (MTA)	O&M Costs / Mile (BAH)	Annualized Lifecycle Cost / Trip	Subsidy / Trip	Reliability per Mode
HR to I - 405 (Subway / Aerial Combination)	V-1 HRT	6.01	●	●	●	●	N/A	●	◕	◑	◔	◔	◔	◔	◔	◕	◕	●
LR (or DMU) to Warner Center	V-2 LRT	13.8	◔	◑	○	◑	N/A	◑	◕	○	◔	◔	○	◑	◔	N/A	N/A	◕
Bus Transitway (N. Hollywood / Warner	V-3 Transitway	14	◕	●	◕	◑	N/A	◑	◑	◔	◔	◔	◔	●	●	●	◕	◕

THE SAN FERNANDO VALLEY CORRIDOR

ALTERNATIVE	Model Notes	ECONOMIC				ENVIRONMENT			SAFETY			
						Air Quality Index			Safety Index			
		Job Supported, Operating	Jobs Supported, Capital	Gross Area Product, Operating ($98Millions)	Gross Area Product, Capital ($98Millions)	Additional Transit Emissions	Non Transit Vehicular Emissions (kgs)	Percent of NTVE	Pass. Accidents per 100,000 Boardings	Pass. Accidents per 100,000 Hub/Train	Traffic Accidents per 100,000 Hub/Train	Safety Index
HR to I - 405 (Subway / Aerial Combination)	V-1 HRT	376	22126	12.61	1096.64	N/A (stationary source)	243,004	N/A	0.08	0.00	1.33	Composite
LR (or DMU) to Warner Center	V-2 LRT	669	27083	22.44	1342.31	N/A (stationary source)	243,026	N/A	0.15	0.83	4.17	Composite
Bus Transitway (N. Hollywood / Warner	V-3 Busway	145	4538	4.87	224.93	5,622	242,980	2.31%	0.40	0.06	2.69	Composite

ALTERNATIVE	Model Notes	ECONOMIC				ENVIRONMENT			SAFETY			
						Air Quality Index			Safety Index			
		Job Supported, Operating	Jobs Supported, Capital	Gross Area Product, Operating	Gross Area Product, Capital	Additional Transit Emissions	Non Transit Vehicular Emissions (kgs)	Percent of NTVE	Pass. Accidents per 100,000 Boardings	Pass. Accidents per 100,000 Hub/Train	Traffic Accidents per 100,000 Hub/Train	Safety Index
HR to I - 405 (Subway / Aerial Combination)	V-1 HRT	◕	●	◕	●	●	◑	●	●	●	●	●
LR (or DMU) to Warner Center	V-2 LRT	●	●	●	●	●	◑	●	◑	◑	◑	◑
(N. Hollywood / Warner	V-3 Busway	◔	◔	◔	◔	◕	◑	◕	◕	◕	◕	◕

The San Fernando Valley Corridor

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GENERAL COMMUNITY IMPACTS	ALTERNATIVES														
	HR to I-405 (subway / aerial Comb.)					LR (or DMU) to Warner Center					Bus Transitway (N. Holly'd. / Warner Center)				
	-5		0		+5	-5		0		+5	-5		0		+5
	Negative		No Effect		Positive	Negative		No Effect		Positive	Negative		No Effect		Positive
Impacts on Property Values					✓				✓					✓	
Impacts on Businesses					✓				✓					✓	
Impacts on Security			✓					✓					✓		
Impacts on Aesthetics			✓				✓					✓			
Noise Impacts			✓				✓					✓			
Impacts on Traffic Lanes			✓					✓					✓		
Community Response *			✓				✓						✓		

* *Where Applicable*

◕ Less Positive

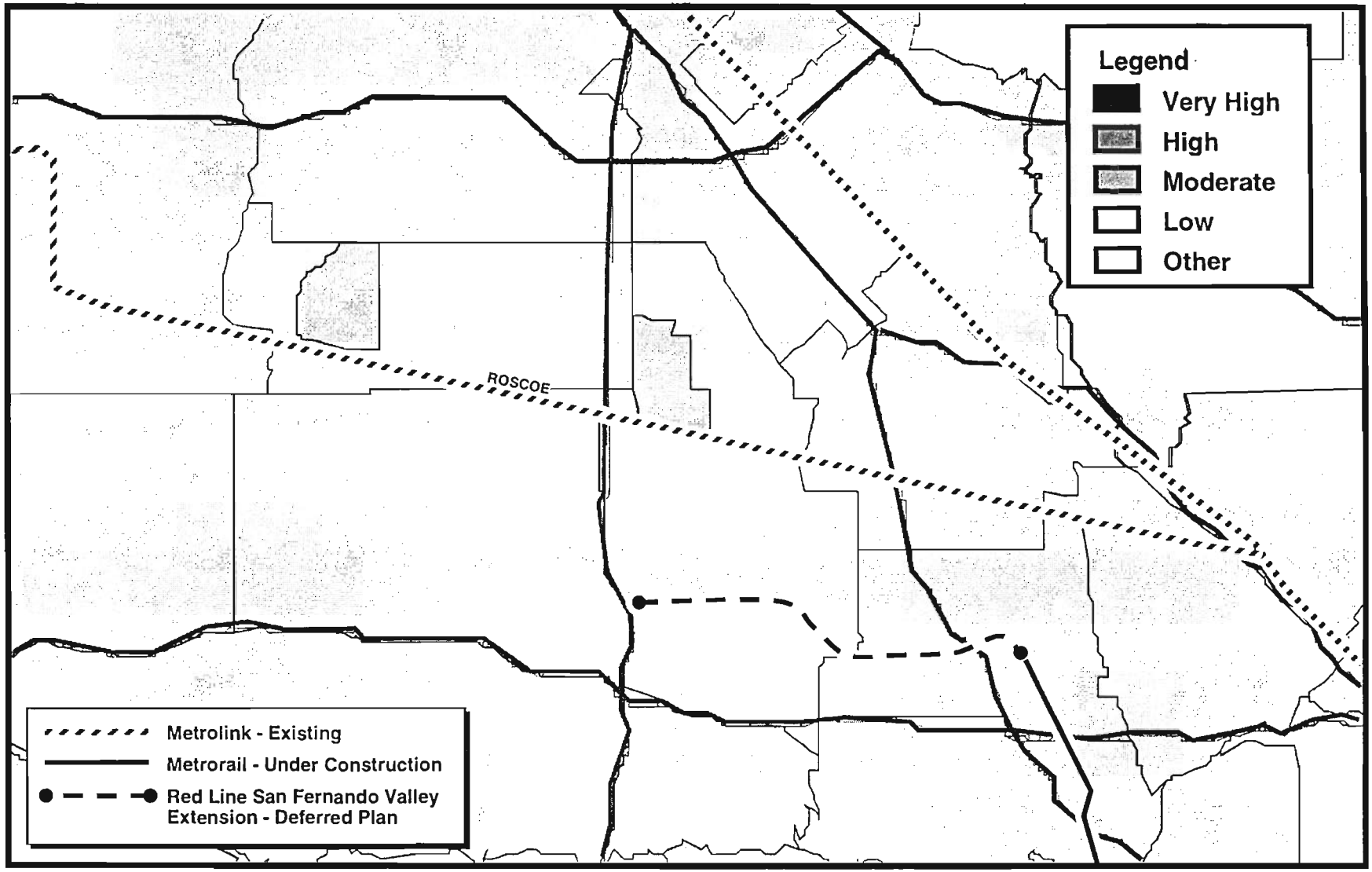
◔ Slight Mitigable

◑ Neutral

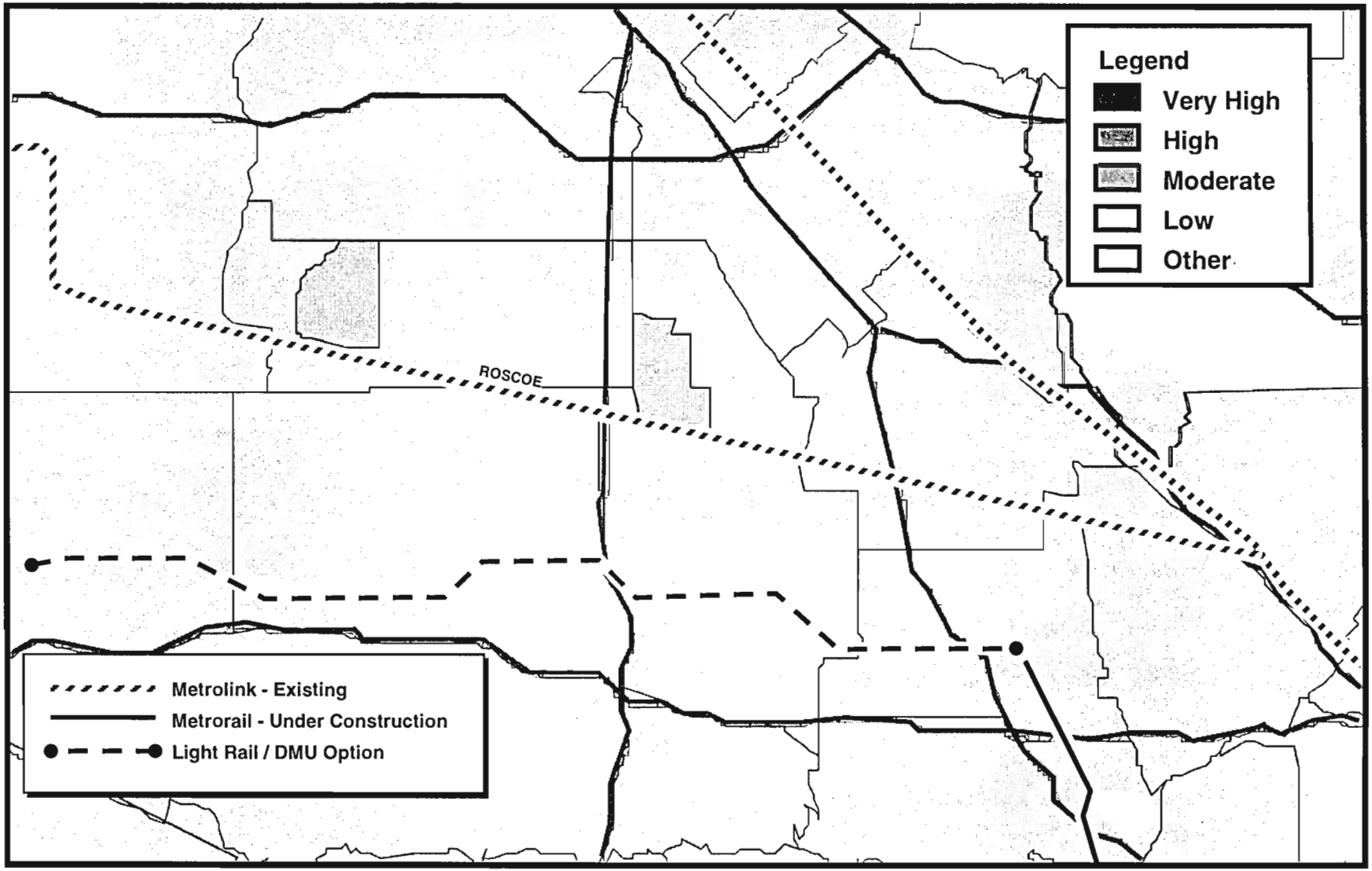
❷

COMMUNITY IMPACTS ON RELOCATIONS	ALTERNATIVES														
	HR to I-405 (subway / aerial Comb.)					LR (or DMU) to Warner Center					Bus Transitway (N. Holly'd./ Warner Center)				
	Minor				Major	Minor				Major	Minor				Major
Household Relocations	✓					✓					✓				
Community Facility Relocations		✓					✓					✓			
Historic Site Relocations	✓					✓					✓				

SAN FERNANDO VALLEY - DEFERRED PROJECT



SAN FERNANDO VALLEY - LIGHT RAIL



SAN FERNANDO VALLEY - BUS TRANSITWAY