Section 7.0 Comparative Analysis of Alternatives

7.1 Introduction

This section presents the comparative analysis of the two build alternatives, the No Build, and the Transportation System Management (TSM), carried from the initial screening process. As described in more detail in Section 2, after review and input received during the early scoping process on modes, alignments, station locations, and configurations, over thirty alternatives, previously identified in a number of studies, were evaluated and reduced during preliminary screening to 8 for screening. The remaining 8 alternatives were evaluated using screening criteria established during the early scoping process and were further reduced to two build alternatives with one variation, a TSM, and a No Build Alternative. The other alternatives were eliminated from further consideration due to their inability to meet the project's goals and objectives.

The two build alternatives carried into the next step of the evaluation process were as follows:

- At-Grade Emphasis Light Rail Transit (Alternatives 3A & 3B)
- Underground Emphasis Light Rail Transit (Alternative 5)

In addition, the TSM and the No Build alternatives were carried forward into the next steps. These alternatives were further analyzed and refined. The analysis and the recommendations are summarized in this section. This section is organized by the developed evaluation criteria, which expanded upon the FTA New Starts Evaluation and Ranking criteria.

7.2 Approach

Based on the Alternative Methodology Report provided to Metro, a final screening of the alternatives is the next step for evaluating alternatives. This final screening involves evaluating the remaining alternatives on a conceptual level and applying the goals and objectives for this project to each alternative. The following goals were identified for the Regional Connector Transit Corridor project:

Goal 1 - Support Community Planning Efforts: Support the progression of the regional center area as an integrated destination and a dynamic and livable area, accommodating projected growth in a sustainable manner.

Goal 2 - Support Public Involvement and Community Preservation: Incorporate the public in the planning process and balance the benefits and impacts while preserving communities in the area, such as Little Tokyo/Arts District, Bunker Hill, Civic Center, and Historic District.

Goal 3 - Improve Mobility and Accessibility both Locally and Regionally: Develop an efficient and sustainable level of mobility within LA County to accommodate planned growth and a livable environment.

Goal 4 - Support Efforts to Improve Environmental Quality: Minimize adverse environmental impacts.

Goal 5 - Provide a Cost Effective Alternative Transportation System: Develop a system that serves as an economical alternative mode of transportation.

Goal 6 - Achieve a Financially Feasible Project: Develop a project that maximizes opportunities for funding and financing, and that is financially sustainable.

Goal 7 - Provide a Safe and Secure Alternative Transportation System: Develop a project that is safe for riders, pedestrians, and drivers, while meeting the region's needs for security.

The goals established for the Regional Connector are consistent with FTA New Starts Evaluation and Ranking Criteria as shown in Table 7-1.

Table 7-1 Project Justification Criteria and Measures

FTA New Starts Evaluation Criteria/Measures

Criterion	Measure(s)
Mobility Improvements	• Normalized Travel Time Savings (Transportation System User Benefits per Project Passenger Mile) • Number of Transit Dependent Riders Using the Proposed New Starts Project • Transit Dependent User Benefits per Passenger Mile on the Project • Share of User Benefits Received by Transit Dependents Compared to the Share of Transit Dependents in the Region
Environmental Benefits	• EPA Air Quality Designation
Cost Effectiveness	• Incremental Cost per Hour of Transportation System User Benefit • Incremental Cost per New Rider (for informational purposes only)
Transit Supportive Land Use and Future Patterns	• Existing Land Use • Transit Supportive Plans and Policies • Performance and Impacts of Policies
Other Factors	• Economic Development • Making the Case for the Project • Congestion Pricing • Optional considerations. See Section VI.4

As developed during the early scoping process, specific measures and criteria were established for each goal as a means of assessing whether an alternative meets the goal. A comparative analysis was performed to see how well each alternative performed in comparison to the others.

7.3 Goal 1: Support Community Planning Efforts

- Support land use policies and Community Plans
- Support and coordinate with development and redevelopment efforts
- Support the City's efforts to improve urban design and the pedestrian environment by contributing to a healthy environment
- Support efforts to improve safety and security for downtown residents, employees, and visitors
- Support transit dependent communities

7.3.1 Initial Screening Criteria

The initial screening criteria for Goal 1, its associated performance measures, and results of the findings for the two build, the No Build, and the TSM are presented in Table 7-2. Subsequent sections explain each performance measure and the results for each alternative.

Table 7-2 Support Community Planning Efforts *Initial Screening Criteria*				
Goal	Performance Measure	At-Grade		Underground
		Option A	Option B	
1	Population, Population Density, Households, Housing Density for year 2030 (within 1/4 mile of alignment)			
	Population (within 1/4 mile of alignment)	10,889	10,889	10,997
	Population Density (within 1/4 mile of the alignment)	10,675 persons per sq mile	10,675 persons per sq mile	11,201 persons per sq mile
	Households (within 1/4 mile of alignment)	8,523	8,523	8,744
	Household Density (within 1/4 mile of alignment)	8,356 units per sq mile	8,356 units per sq mile	8,922 units per sq mile
1	Transit Oriented Design Supportive Plans and Policies in place (Score 1-worst to 5-best)	4	4	5
1	Number of Jobs, Employment Density for year 2030 within 1/4 mile of alignment			
	Employment (within 1/4 mile of alignment)	133,888	133,888	124,110
	Employment Density (within 1/4 mile of alignment)	131263 jobs per sq mile	131263 jobs per sq mile	126,623 jobs per sq mile
1	Number of direct connections to key activity centers within 1/4 mile of alignment (Score 1-worst to 5-best)	5	5	5
1	Number of Opportunities for Redevelopment within 1/4 mile of alignment (underdeveloped or underutilized properties along alternative alignment)	8	8	9

Population, Population Density, Housing, Housing Density

For the two build alternatives, population and population density are higher for the underground versus the at-grade alternative, due to the fact that the underground alternative's alignment travels straight through the Little Tokyo community, under 2nd St. The ¼ mile buffer includes residential developments in Little Tokyo, as well as some converted warehouse lofts in the adjacent Arts District. The at-grade alternative heads north on Main and Los Angeles Sts. and traverses the Civic Center area, which contains fewer households and residents, and more offices.

Transit Oriented Design supportive plans and policies in place

Transit Oriented Design (TOD) plans and policies include all state and local policies that support transit friendly development and design. Both the underground and at-grade alternatives are affected by five TOD supportive plans, including the LA City General Plan

design/street standards, the Community Redevelopment Agency (CRA) 2006 Streetcar Study, part of the CRA Identified Redevelopment Areas, the CRA City Center Redevelopment Plan, and the Little Tokyo Planning and Design Guidelines. The underground alternative was rated a point higher for this measure because an underground system provides more development opportunities above station entrances and on properties used for construction. The at-grade alignments under consideration are street-running, and therefore do not provide the same off-street development opportunities.

Number of Jobs

For the two build alternatives, the at-grade alternative has higher employment and employment density when compared to the underground alternative. The at-grade alternative runs north-south on Main and Los Angeles Sts., adjacent to City Hall and various other city and federal buildings in the Civic Center. The densities of workers per square mile are greater in these buildings as opposed to the buildings in the vicinity of the underground alternative alignment.

Number of direct connections to key activity centers

The underground and the at-grade alternatives all received the best score of 5 for the number of direct connections to key activity centers within ¼ mile of each alignment. Both alternatives traverse some of the busiest downtown corridors, with easy walking distances for key destinations, including the Civic Center, Little Tokyo, the Museum of Contemporary Art, the Grand Avenue Project, and the Bunker Hill/Library district. Further analysis of the final locations of stations and portals will assist in providing exact distances, however the compact nature of the downtown blocks and the initial placement of the stations provides good coverage of key activity centers.

Number of opportunities for redevelopment

The number of opportunities for redevelopment within ¼ mile of the alignments is calculated by estimating the number of underdeveloped or underutilized lots that may potentially be obtained for TOD, mixed use development, or transit friendly uses. There were a total of eight locations along the at-grade alternative that were identified as having redevelopment potential, while nine locations were identified for the underground alternative.

7.3.2 Final Screening Criteria

The final screening criteria developed for Goal 1 and its associated performance measures are presented in Table 7-3. The results of the findings for the two build, No Build, and TSM alternatives are presented in subsequent sections.

Table 7-3 Support Community Planning Efforts *Final Screening Criteria*				
Goal	Performance Measure	At-Grade		Underground
		Option A	Option B	
1	Number of planned development projects in the area over the next 10 years, including residential/office space/commercial units within 1/4 mile of alignment	20	20	22
1	Number of connections with sidewalks that support the City's Downtown Street Standards (Score 1-worst to 5-best)	5	5	5

Number of planned development projects in the area over the next 10 years, including residential/office space/commercial units

Downtown Los Angeles has experienced a resurgence in high-rise residential and business development. The at-grade alternative corridor has approximately 20 planned or currently under construction projects within ¼ mile of the alignment, and the underground corridor has approximately 22 projects. These planned or currently under construction projects do not include the conversion of office space to residential lofts. Some of these new developments include the Yards, Mura, Block 8/Gateway, Vibiana Lofts, The Medallion, Zen, and Park Fifth.

Number of connections with sidewalks that support the City's Downtown Street Standards

The City of Los Angeles' Downtown Street Standards are a set of design guidelines which aid in the current and future planning and development efforts of sidewalks, streets, design enhancements, and any other features which would introduce a more cohesive street network in the downtown area. The underground alternative would not directly affect the design guidelines along the alignment corridor; however design guidelines would be affected in and around station and portals locations. The at-grade alternative may have a more direct affect on the design standards due to the need for redesigning of street widths, right of ways, and sidewalks. Both the at-grade and underground alternatives receive a high score for integration potential with the existing street design standards that are in place today. The station designs, as shown in the renderings in Section 2.3.3 and 2.3.4, remain consistent with the standards applicable to the specific street.

7.4 Goal 2: Support Public Involvement and Community

- Balance the benefits and impacts to low income and minority communities
- Enable workers and visitors to gain access to the regional center to increase its economic vitality and benefit from its economic opportunity

7.4.1 Initial Screening Criteria

The initial screening criteria for Goal 2, its associated performance measures, and results of the findings for the two build, the No Build, and the TSM are presented in Table 7-4. Subsequent sections explain each performance measure and the results for each alternative.

Table 7-4 Support Public Involvement and Community
Initial Screening Criteria

Goal	Performance Measure	At-Grade		Underground
		Option A	Option B	
2	Evaluation of potential disproportionate effects: Environmental justice effects will be evaluated per NEPA/CEQA requirements (Score 1-worst to 5-best)	4	4	2
2	Initial areas identified for potential acquisitions for station and alignment	Approx.8 Locations	Approx. 8 Locations	Approx. 11 Locations
2	Evaluation of potential disproportionate effects: Number of low income households (HH) within 1/4 mile of proposed alignment (does not include actually in construction)			
	# of Low Income HH	3,702or 34.7%	3,702or 34.7%	3,390 or 35.3%
	# of SROs and shelters	19 (approx. 997 beds/rooms)	19 (approx. 997 beds/rooms)	20 (approx. 1,042 beds/rooms)
	# of Homeless Service Providers	9	9	9
2	Number of residents by ethnicity within 1/4 mile of alignment (US Census)			
	White	3,105	3,105	3,163
	African American	3,437	3,437	3,390
	American Indian/Eskimo	103	103	119
	Asian	8,978	8,978	4,699
	Hawaiian/ PI	23	23	23
	Other	60	60	54
	Two or more	334	334	322
	Hispanic	5,861	5,861	7,769
2	Urban fit potential for alignment and for stations, including physical scale, visual fit, and cultural preservation	4	4	2
2	Percentage of service grade separated	34%	21%	91%
	Total underground - new tunnel & existing 2nd St. tunnel	46%	38%	94%
2	Community acceptance (high, medium, low)	High	High	High

Evaluation of potential disproportionate effects: Environmental justice effects will be evaluated per NEPA/CEQA requirements

Although both build alternatives would be evaluated under NEPA/CEQA requirements, scoring was used to determine which alternatives would potentially have more severe environmental justice impacts relative to others. The at-grade alternative received a score of four because it would not directly impact the Little Tokyo community (the only residential community in the PSA), as the alignment would not run directly through this community. The underground alternative received a lower score of two based on the alignment running directly under the Little Tokyo community, as well as the potential affects due to the 1st and Alameda St. intersection.

Area identified for potential acquisitions

Both build alternatives will require the acquisition of property. The At-grade Emphasis Alternatives will require less property than the Underground Emphasis Alternative but will still need property for traction power substations and other ancillary facilities, for incorporation of split stations into the public sidewalks, for portals, for the additional space required to allow for the train turns on the street surface and finally, for construction staging. The following is a list of potential areas impacted by acquisition:

- Temple St. - south side between Alameda and Judge Aiso St.
- Main and Los Angeles Sts. between Temple and 1st Sts. to accommodate train turn movements and station platforms
- Corners of 2nd St. at Main and Los Angeles Sts. to accommodate train turn movements
- 2nd St. between Hill and Los Angeles Sts. to accommodate sidewalk widenings, ancillary facilities such as traction power substations and construction staging
- Northeast corner of 3rd and Flower St. for train portal and construction staging
- Station entrances and emergency exits locations adjacent to 5th St.

The Underground Emphasis Alternative will require larger properties to place relief shafts, emergency exits, station entrances, train portals and construction staging. Although more area is required for the Underground Emphasis Alternative, there is a strong history of successful developments that Metro has undertaken with developers that produces revenue to Metro in terms of ground lease as well as new housing and commercial spaces for the community. They are as follows:

- Property bounded by Alameda, 1st, 2nd Sts and Temple Ave.
- 2 locations for station entrances for each station, total 6 sites
- Blast relief shafts (3) and emergency exits
- One traction power substation location.

Evaluation of potential disproportionate effects: Number of low income HH

The evaluation of disproportionate effects considers the number of low income, single-occupancy units (SROs) and homeless shelters along each alignment. Of the total number of households within ¼ mile of the at-grade alternative, 3,702 or 34.7% are low income households, compared to 3,390 or 35.3% of those within ¼ mile of the underground alternative alignment. The number of SROs is 19 for the at-grade alternative and 20 for the underground alternative and the same numbers of homeless shelters are found within ¼ mile of both alternatives.

Number of residents by ethnicity

The number of residents by ethnicity demonstrates the demographics of the downtown community. Both of the build alternatives are similar in that the population within ¼ mile of the each alignment is composed of over 80 percent minorities. The ethnic majority population within ¼ mile of the underground alternative is Hispanic, and the second highest ethnic population is Asian. The Asian population is the ethnic majority in the vicinity of the at-grade alternative, and the Hispanic population is the second highest population, followed by African American, then White.

Urban fit potential, including physical scale, visual fit, and cultural preservation by station and assignment

The urban fit potential was rated by station and by overall alignment. The results for the two build alternatives were rated as 'fitting' well into the existing urban environment while offering the maximum available direct connections to key activity centers within ¼ mile of the alignment.

Percentage of service grade separated

The underground alternative contains the higher percentage of service grade separation 94 percent of the total alignment located underground. The at-grade alternatives differ slightly from eachother due to differing lengths of underground alignments along the Flower St. portion of the line. Option A of the at-grade alternative remains underground on Flower St. until just below 3rd St. while Option B surfaces on Flower St. just below 4th St. The total underground portion, including the new tunnel and existing 2nd St. tunnel, is higher for Option A than Option B.

Community Acceptance

Both of the build alternatives received 'High' scores for the level of community acceptance, due to the high levels of positive response from community members, community organizations, and feedback received throughout the screening process. Initial comments expressed concern for the at-grade running trains and their impacts to the Little Tokyo community. However, because the LRT traverses on the edges of the community, there would not be any direct impact.

7.4.2 Final Screening Criteria

The final screening criteria developed for Goal 2 and its associated performance measures are presented in Table 7-5. The results of the findings for the two build, No Build, and TSM alternatives are presented in subsequent sections.

Table 7-5 Support Public Involvement and Community *Final Screening Criteria*				
Goal	Performance Measure	At-Grade		Underground
		Option A	Option B	
2	Number of potential acquisitions	12	12	11
2	Percentage of service grade separated	34%	21%	94%
2	Evaluation of potential disproportionate effects and risk to environmental justice populations related to construction activities (Score 1-worst to 5-best)	4	4	5
2	Urban fit potential, including pedestrian accessibility and urban design enhancement opportunities	4	4	4

Number of potential acquisitions

The At-grade Emphasis includes approximately 12 locations where property acquisition may occur. Specific parcels and property owners will be identified in the next phase, the Draft EIR/EIS. The Underground Emphasis includes approximately 11 properties where potential property acquisitions may occur.

Percentage of service grade separated

See previous section for a description of the percentage of service that would be grade separated under each build alternative.

Evaluation of potential disproportionate effects and risk to environmental justice populations related to construction activities

The at-grade alternative does not run through, but adjacent to, the only residential community in the PSA, Little Tokyo. Therefore, construction activities would not directly impact this community, but would be located directly west and north of the Little Tokyo center. Construction activities for the underground alternative, which runs underneath Little Tokyo, would affect the community. Construction impacts at the 1st and Alameda Sts. intersection and the 2nd and Los Angeles Sts. intersection would be mitigated, as these are the only areas in Little Tokyo where LRT portals and station entrances would be located.

Urban fit potential including pedestrian accessibility and urban design enhancement opportunities

Both the at-grade and underground alternatives maintain a high level of urban fit potential with the surrounding land uses, including pedestrian accessibility possibilities. The alternatives have the potential to be integrated into the existing environment and dense streetscape. There also exists various possibilities to introduce creative new transit and pedestrian friendly street features, such as bicycle centers, 'green-scapes', and other enhancements.

7.5 Goal 3: Improve Mobility and Accessibility both Locally and Regionally

- Improve the connectivity of the regional transit service and provide a more attractive travel alternative for residents, workers, and visitors in the region
- Facilitate sustainable regional development
- Increase ridership of the Metro transit system and reduce single occupancy trips
- Maintain or enhance transit services to the transit dependent
- Improve travel time for transit users system-wide
- Improve person throughput
- Reduce growth of congestion in corridor

7.5.1 Initial Screening Criteria

The initial screening criteria for Goal 3, its associated performance measures, and results of the findings for the two build, the No Build, and the TSM are presented in Table 7-6. Subsequent sections explain each performance measure and the results of each alternative.

Table 7-6 Improve Mobility and Accessibility both Locally and Regionally *Initial Screening Criteria*						
Goal	Performance Measure	No Build	TSM	At-Grade		Underground
				Option A	Option B	
3	Increase in daily transit boardings (amount of transit users increased compared to No Build)			10,125	10,125	19,768
3	New daily transit trips (compared to No Build)		950	7,617	8,389	10,199
3	New daily transit trips (compared to TSM)			6,667	7,439	9,249
3	Traffic Impacts (number of intersections with E or F Level of Service)			3	3	1
3	Reduction in number of transfers by operational plan of alignment (daily reductions at US & 7th/Metro)			20,600	20,600	25,900
3	Total number of lanes reduced (cumulative for all streets)			24	27	0
3	Number of potentially impacted intersections			12	13	1
3	Peak period travel time through Regional Connector Alignment (including 5 min. for each transfer)					
	North-South: US to Pico	17.00 min	22.00 min	14.42 min	13.56 min	12.2 min
	East-West: 1st/Utah (to US) to Pico	22.75 min	29:75 min	14.99 min	14.13 min	10.2 min
3	Number of left turn pockets affected			8	10	4
3	Number of on-street public parking spaces affected			88	88	0
3	Number of driveways affected			26	30	2
3	Daily hours of transportation user benefits (compared to No Build)		665	8,938	9,903	12,111

Increase in daily transit boardings

Of the two build alternatives, the underground alternative demonstrates a significant increase in the number of daily transit users, with 19,768 users compared to the at-grade increase of 10,125 users. Some station locations for the At-Grade Emphasis LRT Alternative are not in prime locations where there is an abundance of dense residential, commercial, and office uses.

New daily transit trips compared to No Build and TSM Alternatives

The TSM alternative would result in the smallest increase in daily transit trips (950). This is likely because it does not reduce transfers for any rail passengers, but does provide a convenient new shuttle service through downtown Los Angeles. The Underground Emphasis LRT Alternative would likely attract the most new users to the system because it has the shortest trip time and it directly serves several major destinations in the PSA. The

At-Grade Emphasis LRT Alternative would bring between 7,600 and 8,400 new users to the transit system.

Traffic impacts

Under the Underground Emphasis LRT Alternative, all of the intersections in the PSA will either remain at the same level of service as under the No-Build Alternative or improve. Traffic congestion at 1st and Alameda Sts. would lessen by about 20%. Traffic congestion will be largely the same under TSM as under No-Build. However, traffic congestion will worsen at many intersections under the At-Grade Emphasis LRT Alternative, including 1st and Broadway, 1st and Spring, 1st and Los Angeles, 1st and Judge John Aiso, 2nd and Main, 2nd and Los Angeles, 2nd and Spring, 2nd and Main, Los Angeles and 3rd, San Pedro and 3rd, Temple and Main, Los Angeles and Temple, Judge John Aiso and Temple, and Temple and Alameda.

Reduction in number of transfers

Both of the build alternatives would reduce transfers for many Metro Blue, Gold, and Expo Line passengers. The At-Grade Emphasis LRT Alternative would eliminate 20,600 transfers from both existing and new transit trips system-wide. The Underground Emphasis LRT Alternative would attract more new riders to the system due to its faster speeds and favorable station locations. As such, it would eliminate 25,900 transfers daily.

Total number of lanes reduced

The number of lanes reduced is the cumulative number of roadway segments (blocks) where there will potentially be a reduction in the lane width due to an LRT alignment. The at-grade alternative will have a greater number of possible lane width reductions, with Option A affecting 24 lanes and Option B affecting 27 lanes. Traffic impacts are also considered higher due to the resulting reduction in the existing roadway capacity.

The underground alternative would not cause a reduction in any street lane widths along the alignment. Although the underground alternative introduces an underpass along Alameda St., the existing lanes would drop below ground while street level movements would retain the current number of lanes. The at-grade alternative has a similar underpass proposed at Temple and Alameda Sts., so there would be little difference between the two alternatives in terms of impacts on Alameda St. traffic.

Number of potentially impacted intersections

The number of potentially impacted intersections is the number of intersections that the LRT alignment will pass through that may experience disruption or alteration due to current configuration or physical features. The at-grade alternative Option A and Option B differ at the 4th and Flower St. intersection, and therefore Option A may impact a total of 12 intersections, while Option B may potentially impact 13 intersections. The underground alternative has only one intersection that may be impacted, at 1st St. and Alameda St. These figures include only permanent impacts, not temporary construction impacts.

Peak period travel time between major origins and destinations

In addition to reducing transfers, one of the objectives of the project is to provide faster travel to downtown destinations and to destinations outside of downtown. For north to south movement, the Metro Gold Line and Blue Line would be connected and travel time comparisons are shown for the travel time between Union Station and Pico. Currently, the travel time from both destinations is approx. 17 minutes. The underground alternative improves this travel by nearly six minutes, at 12.2 minutes.

For east to west movements, the Eastside Gold Line and Exposition Line would be connected. Travel time comparisons are shown for the travel time between 1st/Utah and Pico. When the Eastside Gold Line is in operation in 2009 the travel time will be about 23 minutes. The underground alternative would see a peak period reduction of 12 minutes.

For the at-grade alternative, the north to south movements from Union Station to Pico would be about 14 minutes, and east to west movements from 1st/Utah to Pico would be 14-15 minutes.

Number of left turn pockets affected

This performance measure considers the number of left turn pocket lanes that will be removed or displaced by the LRT alignment. The at-grade Option A has a total of 8 left-turn pocket lanes that will be displaced. The at-grade alternative Option B has a total of 10 left-turn pocket lanes that will be displaced and traffic impacts are considered high. The underground alternative has a total of 4 left-turn pockets that could potentially be affected.

Number of parking spaces potentially affected

The total numbers of potentially affected parking spaces are those that exist along the alignment that could potentially be removed and would need to be replaced. Both options for the at-grade alternative could affect 88 parking spaces located along 2nd, Main, Los Angeles, and Temple Sts. The underground alternative has minimal impacts on existing parking spaces due to being predominantly below-grade. Consequently, this alternative has minimal impacts on mobility.

Number of driveways affected

The driveways that were determined to be potentially impacted were those located directly along the alignment corridor. The at-grade alternative Option A has a total of 26 driveways along the alignment, and Option B has a total of 30 driveways. The additional driveways for Option B are located along the Flower St. segment between 5th St. and 3rd St. and are those that may affect the World Trade Center, the Westin Bonaventure, and other financial district buildings. The underground alternative does not affect any driveways along the alignment corridor.

7.5.2 Final Screening Criteria

The final screening criteria developed for Goal 3 and its associated performance measures are presented in Table 7-7. The results of the findings for the two build, No Build, and TSM alternatives are presented in subsequent sections.

Table 7-7 Improve Mobility and Accessibility both Locally and Regionally *Final Screening Criteria*						
Goal	Performance Measure	No Build	TSM	At-Grade		Underground
				Option A	Option B	
3	Daily hours of transportation user benefits (compared to No-Build)		665	8,938	9,903	12,111
3	Congestion relief (Number of intersections with improved LOS/worsened LOS in both AM and PM peak periods)		Same as No-Build	1 improved (AM) 11 worsened (AM) 1 improved (PM) 16 worsened (PM)	1 improved (AM) 11 worsened (AM) 1 improved (PM) 16 worsened (PM)	1 improved (AM) 0 worsened (AM) 1 improved (PM) 0 worsened (PM)
3	Comparison of peak period travel times between major travel pairs (assuming 5 minutes per transfer)					
	Sierra Madre Villa to Long Beach Transit Mall	97 mins	102 mins	94 mins	94 mins	92 mins
	Sierra Madre Villa to Pomona/Atlantic	49 mins	49 mins	58 mins	58 mins	58 mins
	Sierra Madre Villa to Washington/National	70 mins	75 mins	72 mins	71 mins	70 mins
	Pomona/Atlantic to Washington/National	61 mins	66 mins	52 mins	51 mins	48 mins
	Pomona/Atlantic to Long Beach Transit Mall	88 mins	93 mins	84 mins	84 mins	80 mins
3	Peak period travel times (Union Station to Staples Center - Pico Station)	17 mins	22 mins	13.6 - 14.4 mins	13.6 - 14.4 mins	12.2 mins
3	Travel times savings (over No Build)			3 mins	3 mins	5 mins
3	Reduction in VMT			N/A	N/A	N/A
3	Assessment of expandability (Score 1-worst to 5-best)			4	4	2

Hours of transportation user benefits

The Underground Emphasis LRT Alternative would yield about 12,000 daily hours of user benefit, the most of any alternative under consideration. This is partly due to the fact that it would have the fastest travel speeds and is projected to attract the most riders. The At-Grade Emphasis LRT Alternative would generate 8,900 daily hours of user benefit under Option A and 9,900 under Option B. The TSM Alternative would yield the fewest hours of benefit, 665, beyond the No-Build scenario. This is likely because it would not eliminate any transfers for rail passengers or significantly speed their trips.

Congestion relief

The TSM Alternative would not have any effect on LOS at intersections within the PSA. The Underground Alternative would improve the intersection of 1st and Alameda Streets during both the morning and afternoon peak periods, but would leave LOS at the rest of the PSA's intersections largely unchanged. The At-Grade Emphasis LRT Alternative would

yield LOS improvements at the intersection of 2nd and Broadway in the morning, and at 2nd and San Pedro in the evening, but would worsen the performance of 14 to 16 other intersections in the PSA. This is likely because the At-Grade Emphasis LRT Alternative would require the conversion of existing traffic lanes to street-running rail right-of-way.

Comparison of peak period travel times between major travel pairs

For the most part, each of the build alternatives would yield a travel time savings of three to eight minutes during peak hours on trips involving the Metro Blue, Gold, or Expo Lines. For some trips, including those involving the Metro Expo Line and the Pasadena Gold Line, trip times would increase by one or two minutes under the build alternatives, but passengers would have one less transfer and would accordingly experience less uncertainty regarding their travel times. All build alternatives would add a new transfer to trips between the Pasadena and East Los Angeles branches of the Metro Gold Line, thus lengthening the trip time by about 9 minutes. The TSM alternative would increase trip times slightly because the shuttle buses would not run as quickly as the existing Metro Red and Purple Line subway.

Peak period travel times

The peak period travel times from Union Station to Pico would be 17 minutes under the No-Build Alternative. The TSM Alternative would lengthen this time to 22 minutes due to the use of shuttle buses in mixed-flow traffic lanes. The At-Grade Emphasis LRT Alternative would cut the trip time down to approximately 14 minutes, and the faster Underground Emphasis LRT Alternative would yield a travel time of 12 minutes. It should be noted that peak hour headways on the Metro Blue, Red, Purple, and Gold Lines are all different, and the actual transfer times between these lines vary from trip to trip. One advantage of the Regional Connector would be the elimination of transfers and the associated trip time uncertainty.

Travel times savings

During peak hours, when headways are short on all Metro Rail lines, the travel time savings over the No-Build Alternative would range from three minutes on the At-Grade Emphasis LRT Alternative to five minutes on the Underground Emphasis LRT Alternative. During off-peak and late night hours, when headways are typically 20 minutes, the travel time savings will increase to 15 minutes or more.

Reduction in VMT

Due to the small length of the Regional Connector project, the reduction in VMT are minor compared to the overall system and may not be statistically meaningful in distinguishing one project from the other. However, both projects are considered to provide some level of VMT reductions for the region.

Assessment of expandability

Due to the built out nature of the PSA, the existing light rail system and the proposed build alternatives would require significant infrastructure to expand. Metro has identified at least two extensions in its 2007 Draft Long Range Transportation Plan including an extension to the northwest and an extension south eventually connecting with the Metro owned Harbor subdivision. While the At-grade Emphasis LRT Alternative provides a

greater portion of accessibility, at some point either extension will require aerial or underground configurations due to topography, the built environment and traffic considerations. The Underground Emphasis LRT Alternative initiates below grade level so the cost of extension is already high however may be feasible depending on growth projections in jobs, population and ridership. There is currently no inclusion of infrastructure that would make an Underground Emphasis LRT Alternative extension easier to build when funding became available.

7.6 Goal 4: Support Efforts to Improve Environmental Quality

- Minimize adverse environmental impacts
- Implement mitigation measures to reduce environmental effects to acceptable levels
- Reduce emissions and improve air quality

7.6.1 Initial Screening Criteria

The initial screening criteria for Goal 4, its associated performance measures, and results of the findings for the two build, the No Build, and the TSM are presented in Table 7-8. Subsequent sections explain each performance measure and the results of each alternative.

Table 7-8 Support Efforts to Improve Environmental Quality
Initial Screening Criteria

Goal	Performance Measure	At-Grade		Underground
		Option A	Option B	
4	Noise (number of curves for LRT alignment)	6	6	3
4	Potential visual impacts to notable architectural resources within 1/4 mile of alignment (Score 1-worst to 5-best)	1	2	4
4	Number of Potential Sensitive Receptors within 1/4 mile of alignment (Score 1-worst to 5-best)	5	5	5
4	Potential impacts to historically significant locations within 1/4 mile of alignment (Score 1-worst to 5-best)	217	217	203
4	Geologic and geotechnical issues along alignment (Score 1-worst to 5-best)	2	2	1

Noise

To evaluate noise, the number of curves in the track required to make turns is used to evaluate the higher potential of generating noise; this includes on street turns, as well as turns from surface to underground configurations. The at-grade alternative has a higher number of curves, six, and therefore has a higher potential for direct noise impacts than

the underground alternative, which surfaces at one location and also contains three directional movements that may impact noise levels.

Potential visual impacts to notable architectural resources

Through the initial screening process, current landmarks and notable architecturally significant buildings were identified as potentially sensitive to visual impacts. The underground alternative has a better score than the at-grade alternative because there is less potential for visual impacts along an underground alignment. The at-grade alternative Option A has a lower score than Option B because, although identical in alignment, the differences in configuration cause differences in visual impacts.

Number of potential sensitive receptors along alignment

Sensitive receptors are initially described as individuals with respiratory diseases, children, and the elderly who occupy sensitive land uses such as daycare facilities, libraries, parks, churches, etc. Due to the minimal amount of these sensitive land uses, as well as the existing conditions of those that are already located in the downtown environment, both build alternatives receive a high score for having low potential impacts on sensitive receptors.

Potential impacts to historically significant locations along alignment

Of the two build alternatives, the underground alternative has a higher (less impactful) score in terms of potential impacts to historically significant locations within ¼ mile of the alignment. Through the initial screening process and analysis, there were two National Historic Landmarks, four National Register Districts, 78 individual National Register properties/resources, 88 California Register destinations, and 31 local landmarks identified. The at-grade alternative has the potential to impact a handful more locations, with two National Historic Landmarks, five National Register Districts, 75 Individual National register properties/resources, 98 California Register designations, and 37 local landmarks identified.

Geologic and geotechnical issues along the alignment

Geologic and geotechnical issues are generally related to the amount of new underground configuration the alternative includes. Therefore, the underground alternative has the most potential for issues since the alignment is over 90% underground. The at-grade alternative also has the potential for issues along the Flower St. tunnel. This portion of the alignment connects with the existing 7th St./Metro Center Station, in a new tunnel segment.

7.6.2 Final Screening Criteria

The final screening criteria developed for Goal 4 and its associated performance measures are presented in Table 7-9. The results of the findings for the two build, No Build, and TSM alternatives are presented in subsequent sections.

Table 7-9 Support Efforts to Improve Environmental Quality *Final Screening Criteria*				
Goal	Performance Measure	At-Grade		Underground
		Option A	Option B	
4	Expected level of impacts after mitigation to biological, social, and physical resources will be evaluated per CEQA/NEPA requirements (Score 1-worst to 5-best)	3	3	4
4	Reductions in PM10, NOx, and SOx emissions (Score 1-worst to 5-best)	N/A	N/A	N/A
4	Reduction in carbon footprint for avergare user (Score 1-worst to 5-best)	N/A	N/A	N/A

Expected level of impacts after mitigation to biological, social, and physical resources will be evaluated per NEPA/CEQA requirements

During the initial study, it was determined that there was no evidence that the proposed alignments would cause *significant* environmental effects on the following impact areas: biological, land use and planning, and population and housing. Because of existing downtown Los Angeles characteristics, both the at-grade and underground alternatives can be integrated into the existing urban environment. The at-grade alternative receives a point less for the higher potential for impacts from a street running LRT versus an underground system.

During next phases of analysis (EIR/EIS), mitigation measures will be proposed to reduce any significant impacts on issues such as air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, mineral resources, noise, public services, recreation, transportation and traffic, and utilities and service systems, among others.

Reductions in PM10, NOx and SOx emissions

The reductions in PM10, NOx, and SOx emissions are not applicable to either the at-grade or underground alternative because there is no difference between the alternatives.

Reduction in carbon footprint for average user

The reductions in the carbon footprint for the average user are not applicable to either the at-grade or underground alternative because there is no difference between the alternatives.

7.7 Goal 5: Provide a Cost Effective Alternative Transportation System

- Increase ridership on the Metro system
- Minimize cost per passenger
- Maximize travel time savings

7.7.1 Initial Screening Criteria

The initial screening criteria for Goal 5, its associated performance measures, and results of the findings for the two build, the No Build, and the TSM are presented in Table 7-10. Subsequent sections explain each performance measure and the results of each alternative.

Table 7-10 Provide a Cost Effective Alternative Transportation System
Initial Screening Criteria

Goal	Performance Measure	TSM	At-Grade		Underground
			Option A	Option B	
5	Rough order of magnitude annual O & M (2008 $) costs per alignment (millions)	$14M	$10 M	$10 M	$5 M
5	User Cost - Cost Effectiveness compared to No Build ($/hour of transit user benefit)	$97.28	$24.75	$20.36	$18.63

Rough order of magnitude (ROM) O&M costs

Operating and maintenance (O&M) costs are correlated with the number of peak LRT vehicles needed for daily operations. The development of the number of total and peak LRT vehicles for each alternative requires the development of an operating plan for each alternative, the estimate of running times and 'recovery' times, the number of cars per train, and the number of vehicles needed for spares and other services. Based on the operating plans for each alternative, the at-grade alternative will require 319 LRT vehicles and the underground alternative will require 303 LRT vehicles (due to the better travel time underground).

The ROM annual operating and maintenance cost for the at-grade alternative would be $10 Million, while the underground alternative O&M cost would be $5 Million.

User Cost – Cost Effectiveness

The cost effectiveness index measures the annualized change in capital cost and the annual operating and maintenance cost divided by the annual hours of transit-users benefits. FTA currently uses approximately $24 to $25 per hour of transit user benefit. The underground alternative rates the highest in cost effectiveness at $19. The at-grade alternative Option A performs the worst at $25 with Option B following at $20.

7.7.2 Final Screening Criteria

The final screening criteria developed for Goal 5 and its associated performance measures are presented in Table 7-11. The results of the findings for the two build, No Build, and TSM alternatives are presented in subsequent sections.

Table 7-11 Provide a Cost Effective Alternative Transportation System
Final Screening Criteria

Goal	Performance Measure	TSM	At-Grade		Underground
			Option A	Option B	
5	Annualized cost per hour of user benefit beyond the No-Build Alternative	$97.28	$24,75	$20.36	$18.63
5	Year 2030 Annual O & M costs (in millions)	$13.60	$9.80	$9.55	$5.15

Annualized cost per hour of transit system user benefit compared to No Build and TSM Alternatives

The TSM Alternative would have the highest cost per hour of transit system user benefit of all of the alternatives. Even though it had the smallest capital cost, the TSM Alternative does not eliminate any transfers for rail passengers, and would impart a much lower level of benefit than the build alternatives. The At-Grade Emphasis LRT Alternative would provide each hour of user benefit at $20.36 to $24.75. The Underground Emphasis LRT Alternative would have the lowest cost per hour of system user benefit ($18.63), largely because it serves the same area as the At-Grade Emphasis LRT Alternative, but has a shorter travel time and station locations more conducive to high ridership.

Annual O&M costs

Though it has the highest capital costs, the Underground Emphasis LRT Alternative would be the most inexpensive to operate. At $5.15 million per year, it is just a little over half of the annual O&M costs of the At-Grade Emphasis LRT Alternative ($9.55-$9.8 million). This is because the speeds on the underground alignment would be faster, and fewer trains would be needed to operate the service. The TSM alternative would be the most expensive to operate, at $13.6 million per year, likely due to the high volume of buses that would be needed to yield frequent headways.

7.8 Goal 6: Achieve a Financially Feasible Project

- Opportunities for private/public funding
- Opportunities for Federal and outside funding

7.8.1 Initial Screening Criteria

The initial screening criteria for Goal 6, its associated performance measures, and results of the findings for the two build, the No Build, and the TSM are presented in Table 7-12.

Subsequent sections explain each performance measure and the results of each alternative.

Table 7-12 Achieve a Financially Feasible Project
Initial Screening Criteria

Goal	Performance Measure	TSM	At-Grade		Underground
			Option A	Option B	
6	ROM Capital Costs - total and per mile per alignment (millions) (2008$)				
	total	$62.74	$795.67	$709.30	$910.36
	per mile per alignment		$424	$339	$414
6	Evaluation of availability and eligibility of capital funds at federal/state local levels to construct, operate and maintain (Score 1-worst to 5-best)				
	Federal (CEI)		1	2	5
	State (cost)		1	2	2
	Local (Cost & Subway restrictions)		1	2	1

ROM Capital Costs – total and per mile

The categories estimated for each alternative include fixed-guideway construction costs, station costs, LRT vehicles, parking (if required), maintenance and operating facility allowance, and a 10 percent unallocated contingency. The lowest cost alternative is the at-grade Option B at $709.60 million, followed by Option A at $795.67. The underground alternative is a total of $910.36 million.

Another measure of interest is the capital cost per mile. Again, the at-grade Option B has the lowest capital cost per mile at $339 million, followed by the underground alternative at $414 million per mile. The at-grade Option A would be considered 'worst' with the highest capital cost per mile at $424 million.

Evaluation of availability and eligibility of capital funds at federal/state/local levels to construct, operate and maintain

There are three measures for funding sources that were evaluated: federal, state, and local. The FTA New Starts Program is the primary funding source for federal funds. For this evaluation, the cost-effectiveness threshold is used as the measure for federal funding potential. The lower the cost-effectiveness, the better the alternative. FTA currently uses approximately $24 to $25 per hour of transit user benefit. The underground alternative currently rates the highest (best) in cost-effectiveness at $19, followed by the at-grade Option B at $20, then at-grade Option A at $25.

For state funding, the alternative with the lowest capital cost has the higher potential for state funding assistance. Because of the competitiveness of this project with other high priority transit projects, both the underground and the at-grade Option B receive the same score of two, while the at-grade Option A (with the highest capital cost) receives the lowest score of 1.

7.8.2 Final Screening Criteria

The final screening criteria developed for Goal 6 and its associated performance measures are presented in Table 7-13. The results of the findings for the two build, No Build, and TSM alternatives are presented in subsequent sections.

Table 7-13 Achieve a Financially Feasible Project
Final Screening Criteria

Goal	Performance Measure	At-Grade		Underground
		Option A	Option B	
6	Capital cost per rail route mile estimate disaggregated by right of way (ROW), guideway, stations, yards, and vehicles (in millions of dollars)			
	Guideway and Track Elements	$120.4	$114.3	$146.2
	Stations, Stops, and Terminals	$46.3	$25.0	$73.6
	Support Facilities: Yards, Shops, Maintenance Buildings	$8.7	$8.7	$3.3
	Sitework and Special Conditions	$86.5	$80.9	$117.0
	Systems	$18.2	$18.2	$19.6
	ROW, Land, Existing Improvements	$2.1	$2.1	$34.3
	Vehicles	$29.4	$29.4	$11.1
	Professional Services	$92.5	$81.6	$118.7
	Unallocated Contingency	$40.3	$36.0	$52.4
	TOTAL COST PER ROUTE MILE	$444.4	$396.2	$576.2

Capital cost estimate disaggregated by ROW, guideway, stations, yards, and vehicles on a cost per mile basis

At-Grade Emphasis LRT Alternative Option B has the lowest capital cost per route mile because it has the least amount of track mileage underground and only one underground station. Option A has a higher cost per route mile because there it has one additional underground station and more underground tracks. The Underground Emphasis LRT Alternative is almost entirely underground and has three underground stations, resulting in the highest capital costs.

7.9 Goal 7: Provide a Safe and Secure Alternative Transportation System

- Secure entire alignment, stations, track and other facilities
- Develop direct and indirect safety measures that exceed safety precautions typical of the Metro system

- Develop a system that balances the need for accessibility and mobility with security
- Develop a system that uses accessibility and mobility as measures for safety and security

7.9.1 Initial Screening Criteria

The initial screening criteria for Goal 7, its associated performance measures, and results of the findings for the two build, the No Build, and the TSM are presented in Table 7-14. Subsequent sections explain each performance measure and the results of each alternative.

Table 7-14 Provide a Safe and Secure Alternative Transportation System
Initial Screening Criteria

Goal	Performance Measure	At-Grade		Underground
		Option A	Option B	
7	Safety - determined to be able to provide measures typical of requirements per ADA, per typical CPUC requirements, fire life safety guidelines, and per Metro Design Guidelines for access to and from stations (amount grade separated) (Score 1-worst to 5-best)	2	1	5
	Total underground - new tunnel, existing 2nd St. tunnel, and aerial	46%	38%	94%
7	Number of emergency facilities located within 1/4 mile of the alignment, i.e., fire stations, police stations, hospitals.	4	4	4
7	Number of public events within 1/4 mile of alignment	14	14	14

Safety- determined to be able to provide measures typical of requirements per ADA, per typical CPUC requirements, fire life safety guidelines and per Metro Design Guidelines for access to and from stations

The measures used to evaluate the build alternatives included the percentage of the alignment that was fully grade-separated and the percentage of the alignment totally underground in a new tunnel or in the existing 2nd St. tunnel. It is generally assumed that the more grade-separated the alignment, the 'more safe and secure' it will be. Based on that assumption, the underground alternative received the best score, with 94 percent of the line underground, as opposed to the at-grade alternative Option A which is 46 percent underground and Option B which is 38 percent underground.

Number of emergency facilities located within ¼ mile of the alignment, i.e. fire stations, police stations, hospitals, etc.

Both build alternatives have four emergency facilities located within their ¼ mile buffer: three fire stations and one police station.

Number of public events

Currently, there are a total of 14 annually scheduled public events within ¼ mile of the at-grade and underground alternatives, including 12 street closures and two additional annual events. These public events include the Little Tokyo Cherry Blossom Festival, the Los Angeles Marathon, Fiesta Broadway, City of Angels Half-Marathon, El Grito Celebration, and the St. Patrick's Day Parade.

7.9.2 Final Screening Criteria

The final screening criteria developed for Goal 7 and its associated performance measures are presented in Table 7-15. The results of the findings for the two build, No Build, and TSM alternatives are presented in subsequent sections.

Table 7-15 Provide a Safe and Secure Alternative Transportation System
Final Screening Criteria

Goal	Performance Measure	At-Grade		Underground
		Option A	Option B	
7	Number of crossings with high pedestrian activities on a daily basis	10	10	1
7	Number of events along the alignment	14	14	14
7	Potential issues related to accessibility and line of sight for pedestrians and vehicle drivers (Score 1-worst to 5-best)	1	1	4

Number of crossings with high pedestrian activities on a daily basis

The at-grade alternative has considerably more intersections with high pedestrian activity, 10 total, due to its at-grade configuration and its location along a pedestrian heavy corridor, specifically along 2nd St. The pedestrian activity along 2nd St. is not limited to Civic Center purposes, but includes the historic and art buildings along 2nd St. as well. Many people walk along 2nd St. and up and down Main and Los Angeles Sts., especially during weekday lunch hour. In addition, because Civic Center buildings are all centrally located, people walk during most of the day to and from different departments.

The underground alternative would affect one intersection, 1st and Alameda St. In the past, this was a predominantly vehicle and truck heavy only intersection, but with the recent addition of residential developments along Alameda St and the Arts District, and with the future Metro Goldline Extension and mixed-use development, this will be a pedestrian heavy intersection.

Number of events along the alignment

See Section 7.9.1 for a description of public events.

Number of potential issues related to accessibility and line of sight for pedestrian and vehicle drivers

An at-grade running LRT may have a higher number of potential issues related to accessibility and line of sight for pedestrians and vehicles. An at-grade LRT introduces a new, fixed, transit route that drivers may not be accustomed to. Train movements and signal operations may be unfamiliar and cause initial confusion or uncertainty. Likewise, for pedestrians, an at-grade running LRT presents safety concerns due to train speeds, track crossings, and/or proper notifications for oncoming trains. For these and other reasons, the at-grade alternative receives a low score in terms of potential issues that may arise.

The underground alternative presents fewer concerns for pedestrians and street vehicular traffic due to its underground configuration throughout much of the alignment, with the exception of the 1st and Alameda St. intersection. Some potential issues include through-traffic ability, driver confusion, proper signage for turning movements, and vehicle approaching train signals. There are various features, however, that have been introduced into this intersection that will facilitate both vehicular and pedestrian movements. The underpass feature for north-south traffic removes the vehicular activity from street level to underground, leaving only the LRT and local traffic movements. In addition, the introduction of a pedestrian bridge provides pedestrians with the option to move themselves from street level to an upper platform space. For this reason, the underground alternative received a high score in terms of mitigation measures that were introduced in order to minimize potential accessibility issues.

7.10 Summary of Recommendations

After the screening of alternatives from eight build alternatives to two build alternatives, a number of refinements have been made to both alternatives with input from the community and stakeholders. Much of the input received was concern regarding the impacts to the Little Tokyo community, connections to a potential historic trolley line on Broadway, and a connection to the Grand development. The addition of a new underpass and pedestrian bridge for both alternatives help to address some key issues. Continued engineering and working with the stakeholders during the next phase of this process will lead to the resolving of the other issues.

At this point, both build alternatives are viable and can be constructed however the Underground Emphasis LRT Alternative has a greater benefit in the long term. This segment will be the core of the light rail system for the region. A high number of trains will be traversing this two-mile segment to go north, south, east or west in the County. The Underground Emphasis LRT Alternatives is that it avoids surface conflicts with autos and pedestrians which is beneficial from a safety standpoint but also beneficial from an operational standpoint i.e. one unplanned stop by a train could cause significant delays for riders in different parts of the County.

Still, the Underground Emphasis LRT Alternatives creates some significant short term impacts to the culturally sensitive Little Tokyo community. This community has a lot to gain in the long run as it will be at the core for public transit in the region. However, there is a concern that Little Tokyo business and therefore Little Tokyo itself will not survive the impacts during construction. Specific considerations for this delicate community will need to be reviewed during the next phase which includes the production of a Draft EIR/EIS. Therefore, both build alternatives are recommended for further study in a Draft EIR/EIS to vet the potential impacts and mitigations and to further engineer the details for each option.

7.11 Tradeoffs Between Alternatives

At this point in the evaluation process, alternatives are compared to each other in order to recommend the most promising alternatives that will be carried on to the next phase for full environmental review. The No Build and TSM Alternatives are required by the state and federal processes to be included in the environmental review.

Due to the regional significance of this central 1.8-mile connection, both alternatives will provide substantial mobility and accessibility improvements, consistent with Goal 3. However, due to the volume of potential conflicts with autos that an at-grade emphasized alternative provides, and considering that such a conflict would generate substantial interruptions for two major operations for the region, the Underground Emphasis LRT Alternative performs at superior level with only one potential conflict location. In addition, an Underground Emphasis LRT Alternative provides better travel times and in turn attracts more riders due to the avoidance of at-grade traffic conditions and at-grade traffic signals.

The cost for either project is significant due to the urban and built out character of the project study area. Both alternatives have substantial portions below grade, with the At-Grade Emphasis LRT Alternative below grade for more than 40 percent of the alignment. The capital cost differential between the two alternatives is approximately $200 million, but the operation and maintenance cost between the two alternatives is substantially different. The At-grade Emphasis LRT Alternative will require additional vehicles to account for the slower speeds through downtown LA due to traffic conditions. Additional costs will be incurred by the maintenance of at-grade components, including track repair, OCS maintenance, station cleaning and station facility repairs. Both alternatives score well using FTA criteria for transit system user benefits, therefore either alternative would be financially feasible.

The build alternatives meet one of two distinct criteria wanted by the general community. The Underground Emphasis LRT Alternative addresses the desire for the project to be primarily, if not entirely, underground. The At-grade Emphasis LRT Alternative addresses the desire for an alternative that does not directly impact the community of Little Tokyo by traversing Temple, Los Angeles and Main Sts. to avoid Little Tokyo. Though the Underground Emphasis LRT Alternative avoids directly conflicting with Little Tokyo's busy streets and businesses, this alternative features a single at-grade crossing at Alameda and 1st Sts., and potential impacts to Little Tokyo are still a great concern.

After initial screening, Metro worked closely with a special task force created within the Little Tokyo community, as well as with major stakeholders within the historic core, financial district, Bunker Hill and the Civic Center. The decision to include underpasses for intersections at Temple and 1st Streets, and to include a pedestrian bridge for both alternatives, has led to support from the Little Tokyo community on one or the other alternative. In addition, the historic core will continue to be involved in the potential 4th station at 2nd and Spring Sts. and the final location of an underground station on 2nd St., in order to best enhance a connection to a proposed street-car on Broadway. Both alternatives score well when using the criteria of supporting community planning efforts.

Based on the comparative analysis, the following alternatives are being recommended for consideration for future study in a Draft EIR/EIS process:

- No Build (required)
- Transportation System Management (TSM) (required)
- At-grade Emphasis LRT (including Alameda underpass and pedestrian bridge at Temple Street)
- Underground Emphasis LRT (including Alameda underpass and pedestrian bridge at 1st Street)

These alternatives are considered the best alternatives that meet the Purpose and Need for the Regional Connector Transit Corridor and are the most competitive for possible Federal New Starts funding participation.

The following issues will continue to be addressed during the development of the Draft EIR/EIS and the selection of the Locally Preferred Alternative (LPA). The LPA will be submitted to the Federal Transit Administration as the project Metro would like to advance to Preliminary Engineering.

- Design of auto underpasses, pedestrian crossings, and pedestrian bridges for both build alternatives
- Decision about specific location and configuration of stations
- Decision about a possible fourth station for the At-Grade Emphasis LRT
- Impact identification and proposed mitigation for construction and operations
- Costs
- Evaluation of the cost effectiveness of project elements