Los Angeles County
Metropolitan Transportation Authority

Appendix T Alternatives Withdrawn from Further Evaluation

GOLD LINE EASTSIDE TRANSIT CORRIDOR PHASE 2

Metro

Prepared for
Los Angeles Metropolitan
Transportation Authority
One Gateway Plaza
Los Angeles, CA 90012

June 2022

Appendix T

Alternatives Withdrawn from Further Evaluation

June 2022

Prepared for:
Los Angeles County Metropolitan Transportation Authority
One Gateway Plaza
Los Angeles, CA 90012

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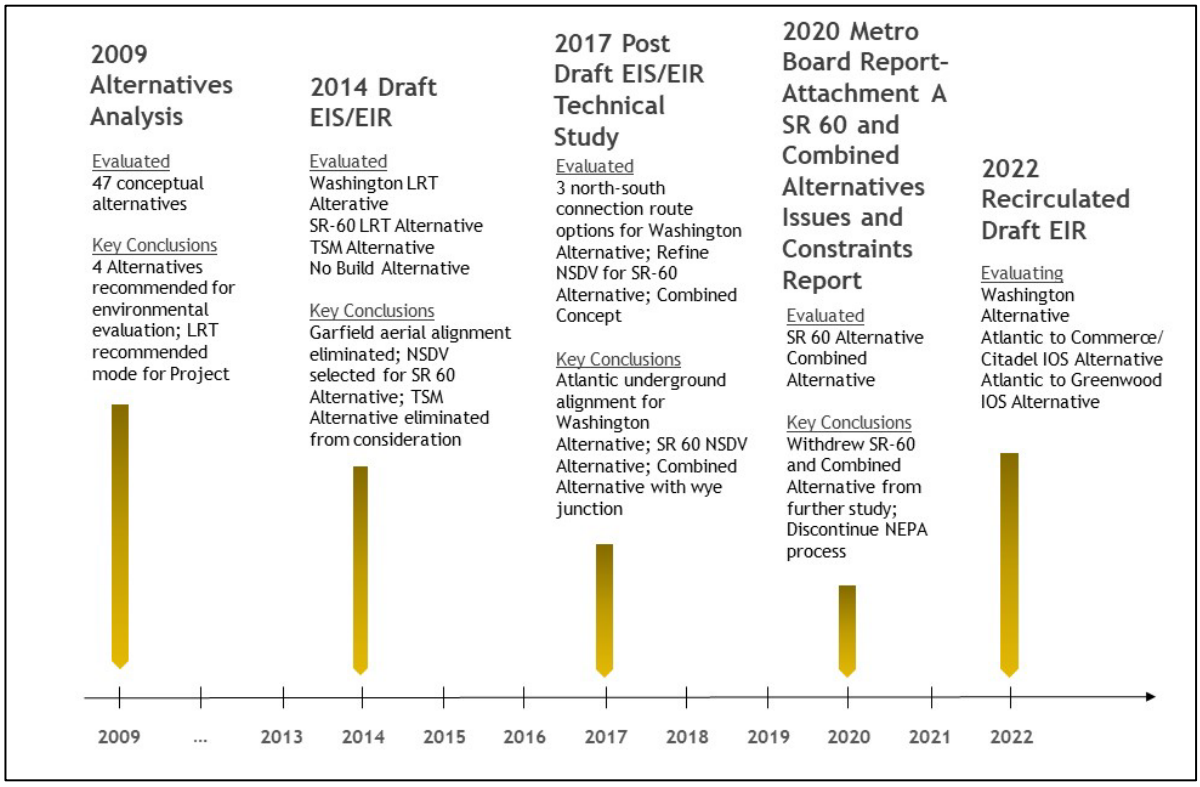
Acronyms

AA	Alternatives Analysis
BRT	Bus Rapid Transit
Caltrans	California Department of Transportation
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
FLM	First/Last Mile
FTA	Federal Transit Administration
LRT	light rail transit
Metro	Los Angeles County Metropolitan Transportation Authority
MRDC	Metro Rail Design Criteria
MSF	Maintenance and Storage Facility
NSDV	North Side Design Variation
OII	Operating Industries Inc.
OCS	overhead catenary system
Project	Eastside Transit Corridor Phase 2 Project
ROW	right-of-way
SCE	Southern California Edison
SR	State Route
TBM	tunnel boring machine
TOC	Transit Oriented Communities
TSM	Transportation Systems Management
UPRR	Union Pacific Railroad
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VMT	vehicle miles traveled

1.0 HISTORY OF SCREENING, REFINEMENTS, AND ALTERNATIVES WITHDRAWN FROM CONSIDERATION

The evaluation and screening of concepts, engineering and environmental refinements, and decisions to withdraw alternatives from consideration has a long history in the development of the Eastside Transit Corridor Phase 2 Project (Project). As described in Section 2.1 of Chapter 2, Project Description, an Alternative Analysis (AA) process was completed in October 2009 which included preliminary, initial, final and conceptual engineering screening of concepts (Los Angeles County Metropolitan Transportation Authority [Metro] 2009). The AA Report is provided as Attachment A. This process was followed by Project refinement through conceptual engineering and environmental analysis as part of the 2014 Draft Environmental Impact Statement (EIS)/ Environmental Impact Report (EIR) (Metro, 2014a). Based on input and comments received from stakeholders and regulatory agencies, additional concepts were developed and evaluated as part of the May 2017 Post Draft EIS/EIR Technical Study (Metro, 2017).

In February 2020, the Metro Board approved the withdrawal of the State Route (SR) 60 Light Rail Transit (LRT) Alternative which faced significant environmental and engineering challenges (Metro 2020a). This section provides a summary of the screening, refinement and alternatives withdrawn for the Project. Several screening reports and technical refinement studies were completed as part of the development of the Project. This is illustrated in **Figure 2.1**, Alternatives and Screening Process.



Source: Metro; CDM Smith/AECOM JV, 2021. **Figure 1.1. Development of Alternatives and Screening Process**

Table 1-1. Concepts and Alternatives Withdrawn

Alternative and Concepts Considered	Key Reasons for Elimination	Referenced Report	Alternative(s)/Concept(s) Carried Forward
Initial Concepts			
Initial Concepts	• 47 conceptual alternatives were identified. Based on stakeholder input and technical analysis on constructability and operational feasibility, the list of conceptual alternatives was narrowed to 17 initial alternatives. • 17 initial alternatives, along with the required No Build and TSM options, underwent initial level technical and environmental analysis. • Based on a comparative analysis and public feedback, 4 build alternatives were identified for further study: SR 60 LRT, Washington Boulevard LRT, Beverly Boulevard LRT, and Beverly/Whittier Boulevard LRT. • Beverly Boulevard LRT and Beverly/Whittier Boulevard LRT alternatives were not recommended due to fatal flaws related to potential conflicts with SCE, UPRR, and Whittier Greenway Sections 6(f) and 4(f) concerns.[1]	AA Addendum October 2009[1]	• SR 60 LRT Alternative • Washington Boulevard LRT Alternative • TSM Alternative • No Build Alternative
SR 60 Alternative			
SR 60 Bus Rapid Transit (BRT)	• In the AA Report, LRT technology was determined the most appropriate transit mode given higher ridership projections and resulting capacity needs. • BRT option generated the lowest ridership of the alternatives and did not provide any cost savings when compared to the LRT alternatives.	AA Addendum October 2009[1]	• LRT chosen mode for the Eastside Transit Corridor Phase 2 Project

Alternative and Concepts Considered	Key Reasons for Elimination	Referenced Report	Alternative(s)/Concept(s) Carried Forward
SR 60 LRT Baseline Alternative (alignment south of the SR-60 Freeway)	• As described in the 2014 Draft EIS/EIR, the SR 60 LRT Baseline Alternative alignment transitions to an independent aerial structure within the south side of the SR-60 freeway to Garfield Avenue. As such, the southern alignment traverses environmentally sensitive land uses and resources including the Operating Industries, Inc. (OII) Superfund site, Whittier Narrows Flood Control Basin, Whittier Narrows Recreation Area, environmental justice communities, residential and educational land uses, and major utility corridors. • Conflicts with SCE utilities. • MSF site limitations • Metro's TOC and FLM policies. • Public Scoping comments (stakeholder concerns related to safety, access, construction, permitting, traffic, etc.)	Metro Board Report November 2014	• SR 60 LRT North Side Design Variation • Washington LRT Alternative • No Build Alternative
SR 60 LRT – Mission Junction Maintenance Yard	• The Mission Junction Maintenance Yard Site was approximately 11 acres located in the City of Los Angeles (between I-5, I-10, and the Los Angeles River). This site was not large enough to accommodate the MSF option without closing portions of Mission Road. • Technical studies found that a complicated half-mile long yard lead track would be required to access this site.	No Longer Considered 2015[2]	• Commerce MSF site option • Montebello MSF site option
SR 60 LRT – (North Side Design Variation (alignment north of the SR-60 Freeway)	• Non-standard bridge design over SR 60 Freeway. • Impacts to Caltrans' future expansion plan of the SR 60 Freeway: to accommodate potential future freeway expansion, the alignment would need to be relocated which would require more property acquisitions and result in additional environmental impacts and increased costs. • Potential conflicts with the Paramount Boulevard Bridge Restoration Project. • Withdrawn as part of the SR 60 LRT Alternative (see detailed discussion below table)	Metro Board Report February 2020	• Washington LRT Alternative • No Build Alternative

Alternative and Concepts Considered	Key Reasons for Elimination	Referenced Report	Alternative(s)/Concept(s) Carried Forward
Washington Alternative			
Washington LRT – Garfield Avenue (aerial)	• Concerns related to construction impacts on traffic/circulation, business disruption and/or relocation. • Based on stakeholder comments received on the Draft EIS/EIR, the Metro Board directed a study to identify other north-south connections to Washington Boulevard.	Metro Board Report February 2014	• Washington LRT – Atlantic Boulevard (underground)
Washington LRT – Garfield Avenue (underground)	• Impacts to existing businesses, residents, and relocation of underground utilities. • Does not serve highest ridership catchment area near Commerce/Citadel. • Result in significant impacts during construction (property acquisition, business displacement, and traffic/circulation).	Post Draft EIS/EIR Technical Study Report May 2017	• Washington LRT – Atlantic Boulevard (underground)
Washington LRT – Atlantic Boulevard (at-grade)	• Atlantic Boulevard is a major arterial that would be impacted by an at-grade LRT configuration, especially given the presence of numerous sensitive uses (e.g., schools and churches). • An at-grade crossing analysis concluded that an at-grade LRT could result in non-mitigatable significant traffic/circulation and access impacts.	Post Draft EIS/EIR Technical Study Report May 2017	• Washington LRT – Atlantic Boulevard (underground)
Washington LRT – Arizona Avenue (at-grade)	• An at-grade LRT alignment would require removal of on-street parking and reduction of existing travel lanes, creating a significant hardship to residents along Arizona Avenue. • A junction at 3rd Street and Mednik Avenue would require additional property acquisitions and reconfiguration of the intersection which would affect adjacent sensitive uses.	Post Draft EIS/EIR Technical Study Report May 2017	• Washington LRT – Atlantic Boulevard (underground)
Washington LRT – Arizona Avenue (underground)	• The LRT portal to underground and a rail junction on Arizona Avenue would remove the existing at-grade East LA Civic Center and Atlantic stations, essentially discontinuing service to these stations. • To accommodate the underground configuration on Arizona Avenue, it would require acquisition of numerous residences in the vicinity of 3rd Street and Mednik Avenue, where a large construction site would be needed to launch or extract a TBM.	Post Draft EIS/EIR Technical Study Report May 2017	• Washington LRT – Atlantic Boulevard (underground)

Alternative and Concepts Considered	Key Reasons for Elimination	Referenced Report	Alternative(s)/Concept(s) Carried Forward
Washington LRT – Santa Fe Springs MSF Option	• This MSF option was approximately nine acres in size located in the City of Santa Fe Springs (south of Washington Boulevard and east of Allport Avenue). • This MSF option was withdrawn due to property acquisition. The parcel is under construction for private industrial development.	No Longer Considered 2019[3]	• Commerce MSF site option • Montebello MSF site option
Washington LRT – Rosemead Boulevard Crossing Option	• Aerial configuration was withdrawn based on the findings of the Metro Grade Crossing Analysis.	No Longer Considered 2020[3]	• Washington LRT Alternative, Rosemead Boulevard at-grade
Washington LRT – San Gabriel River/ Interstate-605 Crossing Option	• Upon closer coordination with Caltrans and further development in engineering design, it was determined that the guideway could be placed under the Interstate 605 and no longer require an aerial configuration.	No Longer Considered 2021[3]	• Washington LRT Alternative, Interstate 605 at-grade
Other Alternatives and Concepts			
Beverly Boulevard LRT	• The eastern half of the alignment would require an SCE easement. However, SCE indicated potential long-term plans for use of that property. • The UPRR tracks currently accommodate Metrolink and freight operations. UPRR indicated potential plans for their property that would preclude any other structure. • The Whittier Greenway is lined on both sides by residences, and on the north side by four schools. LRT operations would require acquisition of half of this recreational area which would raise Section 4(f) issues.[4]	AA Addendum October 2009	• SR 60 LRT Alternative • Washington LRT Alternative • TSM Alternative • No Build Alternative
Whittier Boulevard LRT	• Technical and environmental analysis identified significant community impacts, including a high potential for noise and vibration, community cohesion, and street system capacity impacts.	AA Addendum October 2009	• SR 60 LRT Alternative • Washington LRT Alternative • TSM Alternative • No Build Alternative
TSM Alternative	• FTA no longer required a TSM Alternative for federal New Starts funding. • NextGen bus improvements throughout the Los Angeles County region are part of the No Build Alternative (baseline).	Draft EIS/EIR November 2014	• SR 60 LRT Alternative • Washington LRT Alternative • No Build Alternative

Alternative and Concepts Considered	Key Reasons for Elimination	Referenced Report	Alternative(s)/Concept(s) Carried Forward
Combined Concept	• In addition to the environmental constraints and engineering challenges described for the SR 60 Alternative, the Combined Alternative would require additional property acquisitions and result in more construction impacts in the Via Campo neighborhood. • The Combined Alternative could not support five-minute headways without interlining the Metro L (Gold) Line in the area.	Metro Board Report February 2020	• Washington LRT – Atlantic Boulevard (underground)

Source: CDM Smith/AECOM JV, 2021.
Notes:
1 See Attachment A for detailed information on the initial concepts studied (2009 AA Addendum)
2 Based on 2015 Eastside Transit Corridor Phase 2 Mission Road Conceptual Yard Lead Design technical study.
3 Based on technical studies and coordination with agency stakeholders.
4 Department of Transportation Act, Section 4(f) requires that before approving a project that uses Section 4(f) property (publicly owned public parks, recreation areas, and wildlife or waterfowl refuges, or any publicly or privately owned historic site listed or eligible for listing on the National Register of Historic Places), the Federal Highway Administration (FHWA) must determine that there is no feasible and prudent alternative that avoids the Section 4(f) properties and that harm to the Section 4(f) properties is minimized or that the project has a de minimis impact on the Section 4(f) property; Land and Water Conservation Fund Act, Section 6(f) requires that the conversion of lands or facilities acquired with Land and Water Conservation Act funds under the State Assistance program be coordinated with the National Park Service.
Key:
AA = Alternatives Analysis; BRT = bus rapid transit; Caltrans = California Department of Transportation;
EIS/EIR = environmental impact statement/environmental impact report; FLM = First/Last Mile; FTA = Federal Transit Administration;
I = Interstate; LRT = light rail transit; MSF = maintenance and storage facility; OII = Operating Industries, Inc.;
SCE = Southern California Edison; SR = State Route; TBM = tunnel boring machine; TOC = Transit Oriented Communities;
TSM = Transportation Systems Management; UPRR = Union Pacific Railroad

The following are detailed descriptions of the primary alternatives that were considered and eliminated during the development of the Project:

- **SR 60 Alternative (with and without NSDV)** – As one of the original initial concepts from the 2009 AA Report and Addendum and further studied in the 2014 Draft EIS/EIR (Metro 2014a), the SR 60 Alternative proposed a 6.9-mile LRT service from the existing Atlantic Boulevard Station to Peck Road in the city of South El Monte. There were four stations proposed with the SR 60 Alternative (Garfield Avenue, The Shops at Montebello, Santa Anita Avenue, and Peck Road) located within the cities of Montebello, Monterey Park, and South El Monte.

  The majority of this alignment (94 percent) was designed to operate within an aerial configuration on the southern portion of the SR 60 Freeway right-of-way (ROW). To avoid concerns raised by the United States Environmental Protection Agency (USEPA) regarding potential impacts to the former Operating Industries, Inc. (OII) landfill site, the 1.5-mile NSDV was also studied. West of Greenwood Avenue, the North Side Design Variation (NSDV) alignment crossed over the SR 60 Freeway, then ran approximately 3,500 feet (at-grade and aerial) before returning to the south side of the freeway, just west of Paramount Boulevard in the city of Monterey Park.

  The SR 60 Alternative has undergone several refinements to address issues related to running parallel to the SR 60 Freeway and potential impacts to sensitive land uses and environmental resources. The evaluation, redesign, and refinement of the SR 60 was documented through several studies, including the Draft EIS/EIR Report (Metro 2014a), the

2017 Post Draft EIS/EIR Technical Study (Metro 2017), the additional analyses performed in 2019 (Metro 2019a), and the SR 60 and Combined Alternatives Issues and Constraints Report in 2020 (Metro 2020b). The major issues and concerns related to the SR 60 Alternative included the following:

- Ability to accommodate future improvements to the SR 60 Freeway – To accommodate Caltrans' future expansion plan of the SR 60 Freeway, the alignment would need to be relocated approximately 93 feet which would further increase constraints and impacts, including additional property acquisitions, construction impacts, and costs. In addition, given potential improvements at the SR 60/Interstate 605 Interchange, the Peck Road station and track would need to be redesigned which would result in additional environmental impacts to surrounding sensitive uses.

- Non-standard bridge design over the SR 60 Freeway – Engineering challenges would require unconventional permitting processes and extensive agency coordination, taking a considerable amount of time and potentially adding several years of delay to the Project schedule.

- Conflicts with sensitive land uses and permitting requirements from regulatory agencies – The SR 60 alignment traverses environmentally sensitive land uses and resources including the OII Superfund site, Whittier Narrows Flood Control Basin, Whittier Narrows Recreation Area, environmental justice communities, residential and educational land uses, and major utility corridors. As a result, extensive mitigations and design options would need to be developed to address potential impacts to communities and sensitive uses.

- Conflicts with SCE utilities – In the 2017 Post Draft EIS/EIR study, several refinements to the alignment were designed to address SCE utility conflicts with transmission lines. However, given the complexity of requirements from both SCE and Metro Rail Design Criteria (MRDC) (Metro 2018a), two of the three transmission line conflicts could not be avoided. Therefore, the alignment would require raising transmission lines or modifying utility corridors which would take a considerable amount of time, budget, and coordinated between agencies.

- MSF site limitations – Per Metro operation's Fleet Management Plan, the MSF site would need to accommodate 100 to 120 light rail vehicles requiring a site approximately 20 acres in size. Given the land constraints along the built-out corridor along the freeway, the MSF site proposed for the SR 60 Alternative would be 15.5 acres in size and would not accommodate a full Operations and Maintenance Facility program. Additionally, longer lead tracks and conflicts with transmission lines would require additional ROW and an easement from SCE.

- Inconsistencies with recent Metro Policies – The SR 60 Alternative was inconsistent with Metro's most recent policies and programs relative to equity, TOC, First/Last Mile (FLM), and parking. Per Metro's 2018 Equity Platform Framework (Metro 2018b) and the assessment report reviewed as part of the Metro Board Report in February 2020 (Metro 2020a), environmental and equity criteria were used to assess the SR 60 Alternative relative to physical barriers in the surrounding station areas. Given the lack of proximity to residential communities and lack of direct connections within the half-mile station area, the SR 60 Alternative was found to be less supportive of the adopted equity goals, serving

fewer low-income and transit dependent populations. The communities along the SR 60 Alternative, when compared to the county average, have lower densities, fewer communities with non-English speaking population, and fewer communities living below the federal poverty level. Metro's 2018 TOC Policy (Metro 2018c) was adopted to promote places that, by design, allow people to drive less and access transit more. As such, the TOC criteria used in the assessment report (Metro 2020a) related to an evaluation of adjacent land uses, population and employment densities. Initial findings from the TOC assessment indicated that the SR 60 Alternative was challenged and constrained since the guideway runs parallel to the freeway. Land uses surrounding the station were also less transit-supportive than those along the Washington Alternative. As described in Metro's 2014 First/Last Mile Strategic Plan (Metro 2014b) and the February 2020 Metro Board Report (Metro 2020a), FLM criteria analyzed bicycle facilities, block sizes, and active transportation elements. Due to the spatial nature of the SR 60 Alternative's proposed station areas, connections to existing residential neighborhoods were hindered by the quality of the public realm, a discontinuous and suburban street network, large block sizes, numerous freeway on/off-ramps, and freeway underpasses.

- Public Scoping Comments – During the 2019 Scoping period, the SR 60 Alternative was presented as one of the three Build LRT alternatives. Approximately one-third of the comments referenced the SR 60 Alternative which received the lowest amount of support from the public. Concerns from stakeholders included negative health and quality of life impacts related to the at-grade/aerial build for the SR 60 Alternative, community/neighborhood impacts, noise and vibration impacts, air quality impacts and visual and aesthetic impacts. A total of 21 agencies also submitted comments during the 2019 scoping period. Additional concerns were raised from several Cooperating Agencies about the SR 60 Alternative following review of the 2014 Draft EIS/EIR. In particular, comments were received from the California Department of Transportation (Caltrans), USEPA, and U.S. Army Corps of Engineers (USACE) on the SR 60 Alternative related to constructability and safety challenges, access and construction within the Whittier Narrows Dam Basin, and extensive review processes for encroachment permits, traffic, aesthetic impacts, ROW concerns, and non-standard existing facilities (Metro 2020a).

The Project is one of four pillar projects identified by the Metro Board of Supervisors (Metro Board) for acceleration efforts to be completed in time for the 2028 Olympic and Paralympic Games (Metro 2019a). Pillar projects must begin construction no later than the calendar year 2023 to be completed and enter into revenue service by 2028 (Metro 2019b). Complications to refine the SR 60 Alternative's alignment and stations to address these constraints and challenges would impede Project implementation efforts and create risk in the ability to meet 2028 acceleration goals. As such, in February 2020, the Metro Board approved the withdrawal of the SR 60 Alternative from further consideration (Metro 2020a).

- **Washington Alternative, North-South Connection to Washington Boulevard** – Described in the 2014 Draft EIS/EIR (Metro 2014a), the Washington Boulevard Alternative included an aerial track and station on Garfield Avenue to avoid extensive major utilities within the center of the street and impacts to sensitive uses. Following the release of the 2014 Draft EIS/EIR (Metro 2014a), substantial public comments were received regarding the aerial configuration on Garfield Avenue. The majority of the comments were related to impacts during construction, especially on traffic and business disruption and/or relocations. As a result, the Garfield Avenue aerial alignment and station was eliminated from consideration and a

technical study was initiated by Metro to develop a new north-south connection to Washington Boulevard.

Per the May 2017 Post Draft EIS/EIR Technical Report (Metro 2017), a planning process was initiated to consider north-south options for the Washington Alternative. A total of 27 potential connections to Washington Boulevard were considered and screened based on physical constraints, ridership, cost, travel time, access, TOC potential, and economic opportunities. Metro also undertook extensive outreach efforts with project stakeholders (over 110 outreach meetings including community meetings, briefings with coalitions, and stakeholder briefings) to provide project updates and gain input on the refinement of the north-south connection for the Washington Boulevard Alternative. As a result of the outreach and screening process, five route concepts were determined to be most promising: Garfield Avenue (underground), Atlantic Boulevard (at-grade and underground), and Arizona Avenue (at-grade and underground). These routing options were screened and evaluated to determine a north-south connection for the Washington Alternative. The key reasons for elimination of the Garfield Avenue, Atlantic Boulevard at-grade, and Arizona Avenue at-grade and underground routing options are as follows:

- **Garfield Avenue (underground)** – This routing option required a tight horizontal curve west of Via Campo and Wilcox Avenue which could impact existing businesses and residents and require relocation of storm drains and sewer lines. This route would also not serve the Commerce Citadel area which showed the highest ridership catchment area. Given the location of the tunnel and station portal on Garfield Avenue, this route would result in significant impacts during construction including property acquisition, business disruption and traffic/circulation impacts. For these reasons, the Garfield Avenue underground routing concept was not recommended for further consideration.

- **Atlantic Boulevard (at-grade)** – This routing option would serve higher density and activity levels including commercial/retail corridors compared to the other routing options. However, because the catchment area around Atlantic Boulevard is a major arterial, it is not a viable corridor for an at-grade LRT configuration, especially given the presence of numerous sensitive uses nearby (e.g., schools and churches). Based on a grade crossing analysis, the at-grade route option on Atlantic Boulevard would result in significant traffic/circulation and access impacts that could not be mitigated. For these reasons, the Atlantic Boulevard at-grade routing concept was not recommended for further consideration.

- **Arizona Avenue (at-grade)** – The at-grade Arizona Avenue routing option was considered due to the wideness of the street (108-foot-curb-to curb) and its ability to accommodate two sets of tracks just west of the intersection of 3rd Street and Mednik Avenue. However, the at-grade routing concept would have significant engineering challenges and community impacts as it required reduction of existing travel lanes and elimination of a substantial amount of on-street parking along Arizona Avenue. Additionally, an at-grade junction near 3rd Street and Mednik Avenue would require additional property acquisitions and reconfiguration of the intersection, which would result in impacts to traffic and adjacent sensitive uses (schools and churches). For these reasons, the Arizona Avenue at-grade routing concept was not recommended for further consideration.

- **Arizona Avenue (underground)** – The underground Arizona Avenue routing option would begin just west of the intersection of Arizona Avenue and 3rd Street with a portal in the center of the street. The distance required for a transition to connect to the existing at-grade Metro L (Gold) Line would necessitate the removal of the existing at-grade East LA Civic Center Station and Atlantic Station, effectively cutting-off service to the east along the existing at-grade alignment. If a below grade-junction at Arizona Avenue was designed to maintain service to the east, it would require 3 to 5 acres for construction which would result in significant number of residential property acquisitions and disruptions to surrounding sensitive uses (schools). For these reasons, the Arizona Avenue underground routing concept was not recommended for further consideration.

- **Combined Alternative** – The Combined Alternative included the potential build-out and operation of both the SR 60 and Washington Alternatives by allowing service from South El Monte and Whittier to downtown Los Angeles and the regional transit network. The Combined Alternative required additional infrastructure and operational elements when compared to the other alternatives (if they operated as a "stand-alone" line). The alternative would allow for connection between South El Monte, Whittier, and downtown Los Angeles in a "C" configuration via a wye junction (e.g., three-way junction) located near Via Campo. The wye junction would allow trains to alternate train movements between both ends (South El Monte and Whittier) which would create three service lines. The Combined Alternative stations would be the same as both the SR 60 and Washington Alternatives.

  In addition to the environmental constraints and engineering challenges described for the SR 60 Alternative, the Combined Alternative would require additional property acquisitions from La Verne Avenue to Sadler Avenue in the Via Campo neighborhood to accommodate the wye junction. As such, the Combined Alternative would add approximately $1.3-$1.7 billion to the Project's capital cost. In addition, given the junction design, the Combined Alternative could not support five-minute headways, which are required for LRT projects under the MRDC, without interlining tracks, adding more cost for this alternative.

  Similar to the SR 60 Alternative, the Combined Alternative faced significant environmental and engineering challenges as well as the additive operational challenges related to the underground wye junction within the East Los Angeles community near the Via Campo neighborhood. Complications to redesign and refine the Combined Alternative's alignment, stations and wye junction would impede Project implementation efforts and create risk in the ability to meet 2028 acceleration goals. As such, in February 2020, the Metro Board approved the withdrawal of the Combined Alternative from further consideration (Metro 2020a).

- **Transportation Systems Management (TSM) Alternative** – Described in the 2014 Draft EIS/EIR (Metro 2014a), this alternative was intended to address mobility needs within the corridor, but not include construction of a fixed guideway facility. The TSM Alternative included all provisions of the No Build Alternative plus enhancement of east-west bus service in the same corridor with additional north-south bus services.

  In comparison between the TSM and the Build LRT alternatives, the LRT alternatives were more successful in leveraging transit investments as they provided shorter travel times, connectivity without forced transfers, and offered opportunities for future land use benefits. The TSM Alternative also resulted in the lowest reduction in vehicle miles traveled (VMT) compared to the LRT build alternatives.

After the 2014 Draft EIS/EIR (Metro, 2014a), the FTA no longer required a TSM alternative to be evaluated as part of the New Starts program, noting that certain incremental system improvements will occur whether the New Starts project is constructed or not. As such, the final rule eliminated the need to evaluate a project against both a separate no-build and TSM alternative, and instead directed the use of a baseline alternative that is agreed upon by project sponsors and FTA. The baseline alternative involves transit improvements that are lower in cost than the proposed New Starts project (GAO 2001). In 2020, Metro initiated the NextGen Bus Plan with bus service improvements that would serve the corridor similar to the TSM Alternative. As such, the NextGen bus improvements are assumed under baseline conditions (the No Project Alternative evaluated in this Draft EIR) and the TSM Alternative was eliminated from further consideration.

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ATTACHMENT A – ALTERNATIVE ANALYSIS (AA) REPORT ADDENDUM

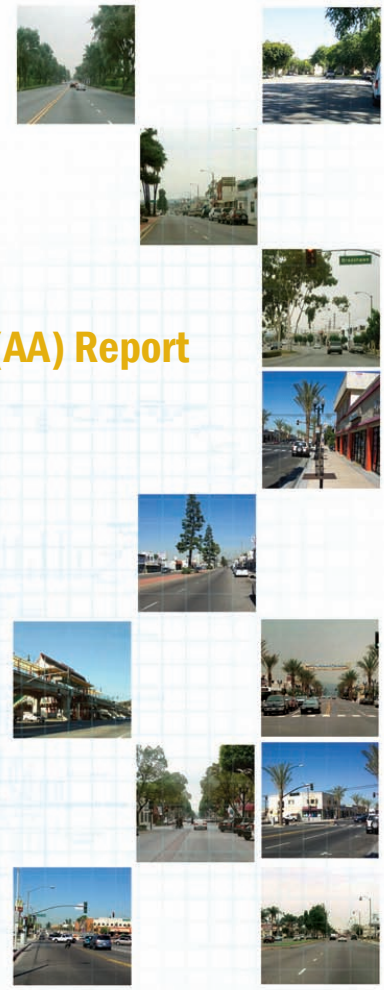
Los Angeles County Metropolitan
Transportation Authority

EASTSIDE TRANSIT CORRIDOR
PHASE 2 STUDY

Alternatives Analysis (AA) Report

ADDENDUM

FINAL



October2009

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A JOINT VENTURE

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Appendices

ES.0 EXECUTIVE SUMMARY

In 2007, the Eastside Transit Corridor Phase 2 Alternatives Analysis (AA) process was initiated for an 80-square mile study area located in eastern Los Angeles County. As shown in Figure ES-1, the study area consists of portions of 14 jurisdictions, including the cities of Bell, Commerce, Downey, El Monte, Industry, Los Angeles, Montebello, Monterey Park, Pico Rivera, Rosemead, Santa Fe Springs, South El Monte, Whittier and portions of unincorporated Los Angeles County.

The overall objective of the Eastside Transit Corridor Phase 2 AA process was to identify and assess a full range of transportation alternatives and recommend a preferred strategy, or phasing of strategies, that addresses PSA mobility needs and capacity requirements in the year 2030 and beyond. The AA process and documentation followed the Federal Transit Administration (FTA) New Starts Program guidelines and standards to not only provide a reasoned basis for the selection of the Recommended Alternatives, but also to ensure that the identified transportation strategy is eligible for federal funding.

Eastside Transit Corridor Phase 2 transportation alternatives were identified and evaluated through a detailed screening process incorporating technical and environmental analysis and public input. The screening process was based on project goals and evaluation criteria identified in consultation with the community and stakeholders. Each evaluation phase refined the results of the previous effort using increasingly detailed engineering, operational and environmental analysis along with continued public input. As illustrated in Figure ES-2, the evaluation process included the following efforts:

1. **Preliminary Screening** – A wide range of 47 Conceptual Alternatives was identified from previous corridor studies and through this project's early scoping process. These 47 Conceptual Alternatives were screened down to 17 Initial Alternatives representing varied alignments (routes) and technologies.
2. **Initial Screening** – Based on a comparative analysis and public feedback, the 17 Initial Alternatives were evaluated and reduced to five Refined Alternatives.
3. **Final Screening** – The five Refined Alternatives were studied and evaluated in detail. Based on the analytical results and public input, four Final Alternatives were identified for further study during conceptual engineering efforts.
4. **Conceptual Engineering Screening** – The four Final Alternatives were refined and studied based on conceptual-level engineering and station design, correspondingly more detailed technical analysis, and additional public and stakeholder input. This effort has resulted in the identification of the two Recommended Alternatives for further study.

Figure ES-1 Project Study Area

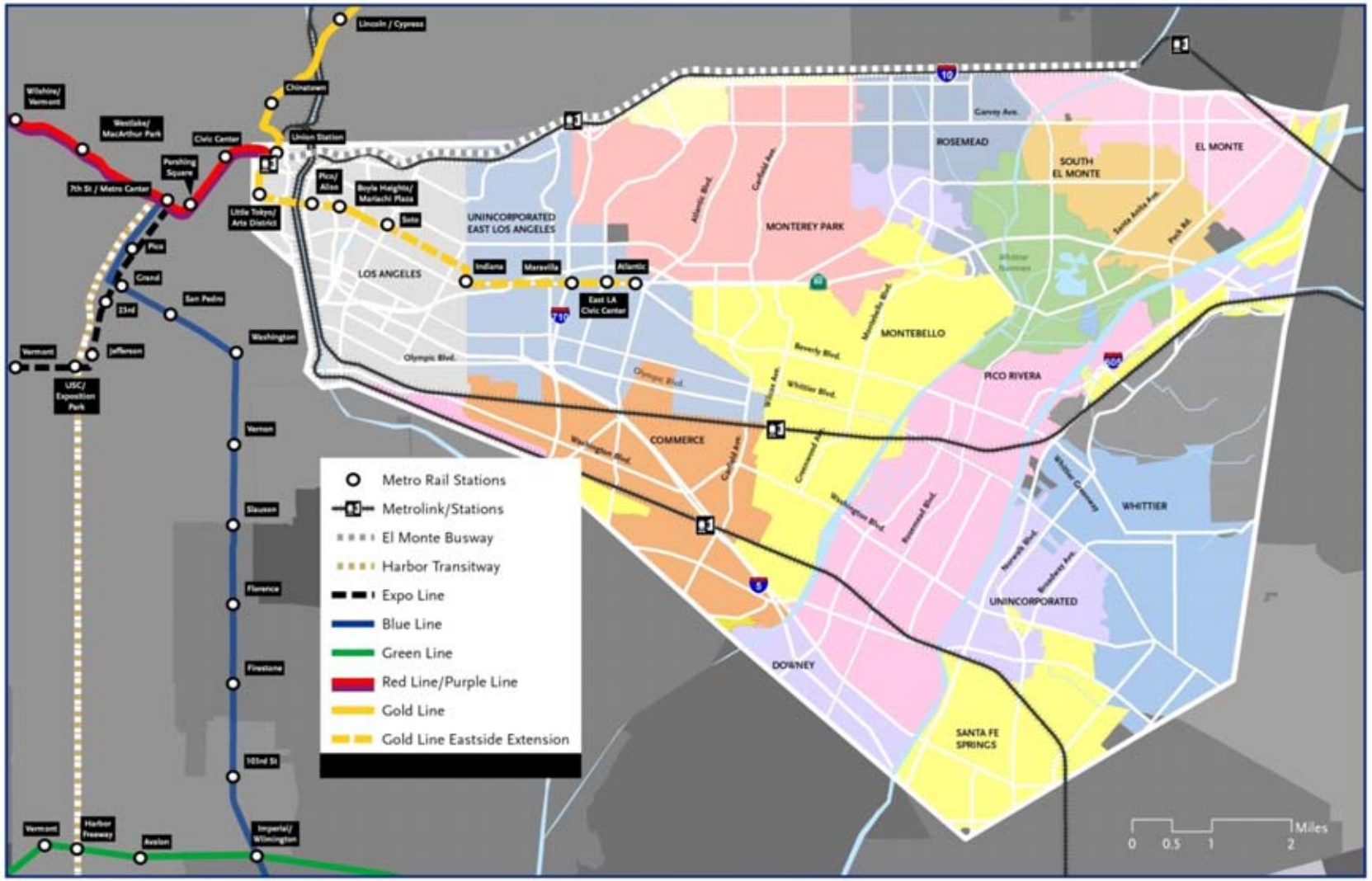
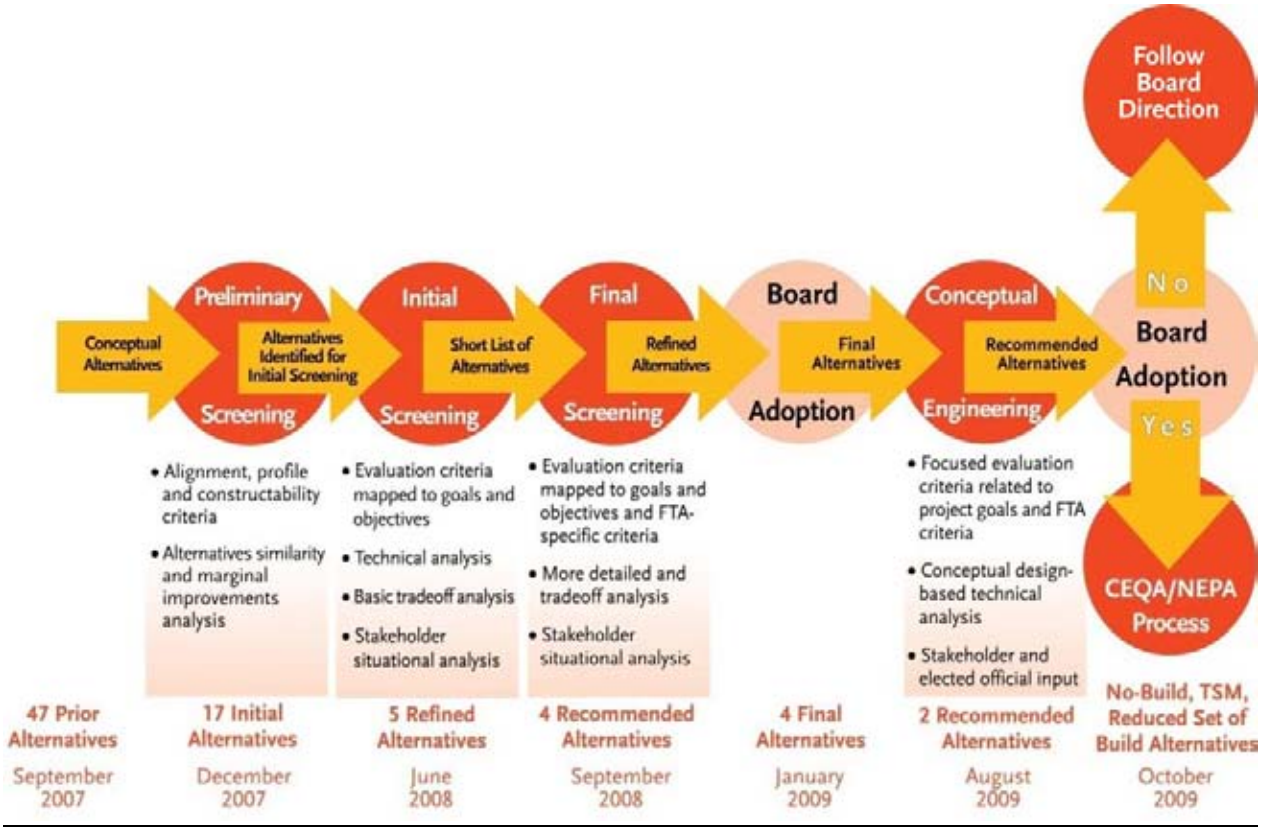


Figure ES-2 Screening Process



The first three screening efforts were documented in the *Eastside Transit Corridor Phase 2 Study Alternatives Analysis Report* completed in January 2009. The AA Report provided a detailed overview of the PSA's transportation needs and how they would be served by each of the five proposed project alternatives under consideration at the time. In January 2009, the Metro Board approved the four Final Alternatives, illustrated in Figure ES-3 on the following page, for further study:

- Alternative 1: State Route (SR) 60 Light Rail Technology
- Alternative 2: Beverly Boulevard Light Rail Technology
- Alternative 3: Beverly Boulevard/Whittier Boulevard Light Rail Technology (North-south connections between Beverly and Whittier Boulevards were considered on Montebello and Rosemead Boulevards.)
- Alternative 4: Washington Boulevard Light Rail Technology

Conceptual Engineering Screening

Conceptual-level engineering and station plans provided a higher level of definition of system design and operational parameters for the four Final Alternatives. This allowed for further refinement of project-related technical information, including operating speeds and travel times, ridership forecasts, travel benefits and capital and operating costs, as well as environmental and community impacts. As part of this effort, the individual alternatives were further examined to identify any alignment, engineering, operating, or environmental issue that could potentially preclude successful construction or operation of the alternatives. These issues would be considered to be fatal flaws and, to the extent that an alternative had such issues, it would be recommended for removal from further study in the Draft EIS/EIR phase and ACE. In addition, the individual alternatives were evaluated against each other to determine, based on the further identification of alignment, engineering, operating or environmental issues, whether some alternatives could be considered technically superior and therefore be the focus of continued study in a Draft EIS/EIR. Those alternatives with no specific fatal flaws but not considered to be technically superior compared to the remaining alternatives, would be recommended for removal from further study in the Draft EIS/EIR Table ES.1 presents the smaller, more focused set of evaluation criteria and performance measures used to clarify the differences between the Final Alternatives, allow for more informed decision-making, and highlight issues to be resolved during the next phase of analysis.

Figure ES-3 Four Final Alternatives

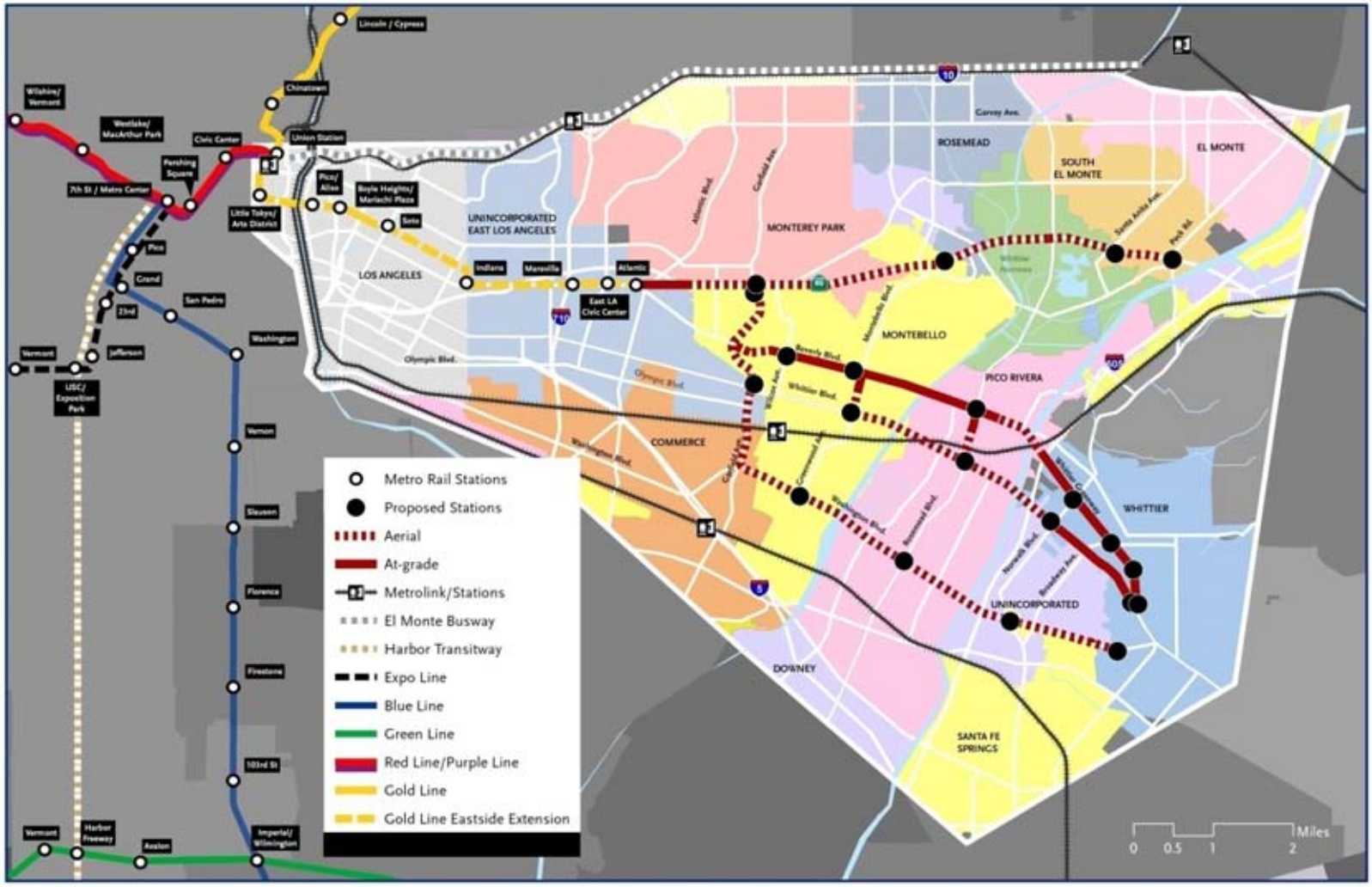


Table ES.1 Conceptual Engineering Evaluation Criteria

Mobility and Accessibility Improvements
1. Population and Employment Growth ▪ Capacity of New Projects ▪ Regional Connectivity 2. Ridership Forecasts ▪ Project Boardings ▪ Net New Transit Riders ▪ Change in Transit Mode Share 3. Travel Times ▪ Total Travel Times for each alternative ▪ Travel Time Savings 4. Cost Analysis (compared to Transportation System Management (TSM)) ▪ Cost Per New Daily Transit Trip ▪ Cost Effectiveness Rating
Project Costs
5. Capital Costs 6. Annual Operations and Maintenance Costs
Design and Operational Concerns
7. Overview of System Design and Operational Issues and Concerns
Environmental Concerns
8. Summary of Environmental and Community Impacts and Benefits
Public Support
9. Public, stakeholder and elected official input

ES.1 Evaluation Summary

The conceptual engineering-based evaluation of the four Final Alternatives has been completed and the results documented in an Addendum to the AA Report. The Conceptual Engineering alignment drawings provided refined design information, allowing for a more detailed assessment of the four Final Alternatives. Horizontal alignment and selective vertical profiles were developed, as well as conceptual-level station plans and designs that were used to finalize each alternative's alignment. The Final Alternatives were refined further to reduce identified impacts where possible. Conceptual engineering efforts provided a higher level of definition of system design and operational parameters. The refinement to the alignments resulted in revisions to operating speeds, travel times, projected ridership and user benefits, and capital and operating costs.

Technical Analysis Results

Conceptual engineering-based evaluation of the four Final Alternatives has been completed and the results are summarized below. Table ES.2 presents a description of the four Final Alternatives, including the north-south connector options on Montebello and Rosemead Boulevards, evaluated during Conceptual Engineering. The SR-60 and Washington Boulevard alternatives, with their predominately aerial operations, have the fastest travel times of the alternatives considered. The Washington Boulevard Alternative has an average travel time of 1.87 miles per minute, and the SR-60 Alternative's speed averages 1.77 miles per minute.

Table ES.2 Description of Alternatives and Resulting Travel Times

Alternative	Number of Stations	Length (miles)	Operational Characteristics	Run Time (min:sec)
1 SR-60 LRT	4	6.92	Aerial:94% Fill*:6%	12:28
2 Beverly Boulevard LRT	8	8.99	At-grade:64% Aerial:29% Fill: 7%	23:58
3 Beverly/Whittier LRT via Montebello Boulevard	8	9.10	At-grade:40% Aerial:52% Fill:8%	24:55
3 Beverly/Whittier LRT via Rosemead Boulevard	8	9.06	At-grade:56% Aerial:37% Fill:7%	23:17
4 Washington Boulevard LRT	6	9.26	Aerial:96% Fill: 4%	17:28

* Retained fill

A summary of the operating and capital costs associated with implementing each of the alternatives, as compared to the Transportation System Management (TSM) Option, is presented below in Table ES.3. The TSM Alternative represents enhancements to current bus service, such as providing more frequent service and limited stop service, along with the addition of new bus and shuttle services.

During Conceptual Engineering, estimated operations and maintenance (O&M) costs increased over those presented in the AA Report due to a number of factors including: revisions to the lengths of the alignments and number of stations; refinements to alignment horizontal and vertical profiles; changes in related run time estimates; and new Metro Operations policy for 2030 calling for the operation of three-car consist trains rather than the one- and two-car consist size used in the AA analysis.

The SR-60 Alternative had the lowest estimated O&M costs due to a high level of aerial operations along with the shortest alignment, the fewest number of stations and the lowest number of vehicles required of the Final Alternatives. The Washington Boulevard Alternative had the second lowest cost, but was higher than the SR-60 Alternative due to being 2.47 miles longer, having two more stations and requiring six more peak fleet vehicles. The three options with the initial segment of Beverly Boulevard were similar in O&M costs, primarily due to a similar length, number of stations and peak fleet vehicle requirement. Of the three options, the Beverly Boulevard Alternative had the lowest operating costs, primarily due to operations within a limited access right-of-way along the Whittier Greenway. The Beverly/Montebello/Whittier Alternative was second lowest of the three due to higher percentage of aerial operations and a shorter alignment length (0.09 miles) than the Beverly/Rosemead/Whittier option.

Table ES.3 Estimated Annual O&M and Capital Costs (Fiscal Year (FY) 2008 dollars)

Alternative	Annual O&M Cost (Millions)	Incremental Cost Over TSM (Millions)	Total Project Capital Cost (Billions)	Construction Cost Per Mile (Millions)	Total Project Cost Per Mile (Millions)
TSM	$143.4	-	$0.4	-	-
1 SR-60 LRT	$169.8	$26.4	$1.8	$131.4	$270.2
2 Beverly Boulevard LRT	$184.5	$41.1	$1.5	$74.8	$162.5
3 Beverly/Whittier LRT via Montebello Blvd.	$184.9	$41.3	$1.6	$95.3	$177.4
3 Beverly/Whittier LRT via Rosemead Blvd.	$184.7	$41.5	$1.5	$83.3	$166.4
4 Washington Boulevard LRT	$181.0	$37.6	$2.2	$133.3	$239.6

The resulting order-of-magnitude capital costs for the Final Alternatives, along with a comparison to the TSM Alternative, are presented above in Table ES.3. During Conceptual Engineering, estimated capital costs increased over those presented in the AA Report due to factors including:

- Refinement of each alternative's horizontal and vertical plans;
- Refinement of the number of stations, their conceptual design and proposed location;

- Identification of the number of required parking structures, their size and possible location;
- Clarification of land acquisition requirements;
- Identification of the need for new bridges crossing the Rio Hondo, San Gabriel River and I-605 Freeway, and Norwalk Boulevard (for the Whittier Greenway section of the Beverly Boulevard Alternative);
- Addition of aerial segments to avoid Southern California Edison (SCE) transmission lines and to more easily cross bridges and the I-605 Freeway;
- Identification of a higher peak fleet size based on Metro Operations policy; and
- More detailed identification of utility impacts.

The alternatives with the highest estimated capital costs were the two options with primarily aerial operations: the SR-60 and Washington Boulevard alternatives. The Washington Boulevard Alternative was identified as more expensive due to a longer alignment (2.47 miles longer) and two more aerial stations than the SR-60 option. The estimated capital costs of the other three alternatives were similar; the Beverly/Montebello/Whittier Alternative was identified as slightly higher in cost due to more miles of aerial operations (2.2 miles more than the Beverly Boulevard Alternative and 1.4 miles more than the Beverly/Rosemead/Whittier Alternative).

The per mile costs are close for the SR-60 and Washington Boulevard alternatives, but the SR-60 option was estimated to cost more due to higher (33 percent) land and right-of-way acquisition requirements for stations and supporting structures. The Beverly Boulevard Alternative had the lowest estimated cost per mile due to the lowest percentage (37 percent) of aerial operations among the options. The Beverly/Rosemead/Whittier Alternative was estimated to cost slightly more per mile based on a higher percentage (44 percent) of aerial operations. The Beverly/ Montebello/Whittier Alternative was identified as even higher in cost due to 60 percent aerial operations.

Ridership projections were prepared utilizing the Metro Travel Demand Model for the Final Alternatives to provide a basis for comparison. Table ES.4 on the following page presents the projected passenger daily and annual boardings along with forecast new transit riders attracted through implementation of each of the proposed alternatives in the year 2030. User benefits have been identified and presented for each alternative.

The forecast daily boardings for the Final Alternatives fall within a close range and the resulting ridership is almost indistinguishable. However, the Washington Boulevard

Alternative is forecast to have the highest level of daily and annual boardings, at 15,660 and 5.1 million, respectively, of the alternatives.

Table ES.4 Forecast Project Boardings and User Benefits (FY 2030)

Alternative	Daily Boardings	Annual Boardings (Millions)	Average Weekday New Riders	User Benefits Per Project Boarding (Minutes)	User Benefits (Hours)
1 SR-60 LRT	12,270	4.0	3,835	17.0	3,474
2 Beverly Boulevard LRT	12,780	4.2	5,020	24.6	5,241
3 Beverly/Whittier LRT via Montebello Boulevard	12,700	4.1	5,190	25.9	5,470
3 Beverly/Whittier LRT via Rosemead Boulevard	12,410	4.0	5,060	25.8	5,336
4 Washington Boulevard LRT	15,660	5.1	6,280	24.1	6,293

The Washington Boulevard Alternative is forecast to attract the highest number of new transit riders, and the SR-60 Alternative the lowest number of new riders. The Beverly Boulevard and Beverly/Whittier Boulevards alternatives are estimated to attract a similar number of new riders. User benefits are defined as the weighted travel time savings for all users of each of the project alternatives. The Washington Boulevard Alternative is forecast to have the greatest user benefits at 6,293 hours or 24.1 minutes per project boarding. The Beverly/Whittier via Montebello Boulevard Alternative is projected to have the next highest user benefits at 5,470 hours, or 25.9 minutes per project boarding. The SR-60 Alternative is forecast to have the lowest level of user benefits at 3,474 hours, or 17.0 minutes per project boarding.

Cost-effectiveness is a measure used by FTA to evaluate the efficiency of a transit project, by comparing the project costs (both capital and operating) with the expected benefits (increased ridership). The efficiency is measured in cost per new transit rider. This cost is based on the annualized total capital project investment and the annual project operating costs, divided by the forecast change in annual transit system ridership. The lower the incremental cost per new transit rider, the more cost-effective the project alternative is. A project with a cost effectiveness of $24.49 per new rider or less has typically received an FTA rating of medium, which represents a minimum acceptable threshold for entering FTA's New Starts Program.

As shown below in Table ES.5, none of the alternatives currently meets the FTA threshold for cost-effectiveness. Two of the alternatives – the Beverly Boulevard and the Beverly/Whittier alternatives – have similar cost effectiveness indices that range between $72.51 and $74.02. The two aerial alternatives have lower indices: the Washington Boulevard Alternative at $82.94 and the SR-60 Alternative, the lowest cost effectiveness rating of the alternatives, at $110.66. The Washington Boulevard Alternative, even with a significantly higher capital cost, is comparable in the cost-effectiveness comparison with the other two lower cost alternatives due to attracting a higher level of ridership. The differences between the alternatives are minor when considering the Incremental Cost per Project Boarding.

Table ES.5 Cost Effectiveness Indices and Other Evaluation Measures (FY 2030)

Evaluation Measure	SR-60	Beverly	Beverly/ Rosemead/ Whittier	Beverly/ Montebello/ Whittier	Washington
Cost Effectiveness Index					
Average Weekday User Benefits (hours)	3,474	5,241	5,470	5,336	6,293
Average Annual User Benefits (hours)	1,129,050	1,703,325	1,777,750	1,734,200	2,045,225
Cost Effectiveness Index	**$110.36**	**$72.51**	**$72.81**	**$74.02**	**$82.94**
Other Evaluation Measures					
Average Weekday New Riders	3,835	5,020	5,060	5,190	6,280
Average Annual New Riders (millions)	1.1	1.6	1.7	1.6	2.0
Incremental Cost Per New Rider	$99.97	$75.75	$76.78	$78.00	$83.10
Incremental Cost Per Project Boarding	$31.25	$29.74	$31.32	$31.89	$33.33

Public Involvement and Agency Coordination

During the Conceptual Engineering phase, a comprehensive public participation program was developed and implemented to involve the public, stakeholders, city representatives and elected officials in the alternative evaluation process. The outreach program included community open houses, council briefings and a series of focus groups as well as ongoing briefings. Public open houses were held prior to the council briefings made to the seven cities through which the alternatives travel: Commerce, Montebello, Monterey Park, Pico Rivera, Rosemead, South El Monte and Whittier. Four alignment-specific focus groups were held with city elected officials, city executive staff members, planning commissioners, chamber of commerce members, college and school district representatives, developers and other key stakeholders. Ongoing briefings were held to keep elected officials, city staff, institutional groups, regulatory agencies and other stakeholders apprised of the latest project information. Agencies briefed included the Federal Transit Administration, Caltrans, and the San Gabriel

Valley and Gateway Cities councils of governments. A legislative briefing for federal, state and local elected officials and their staff was also held in September 2009.

A strong support base developed for two of the alternatives under consideration: the SR-60 and Washington Boulevard alternatives as presented in the Addendum to the AA. Letters and/or resolutions from ten cities documented their support for either of these two options. The SR-60 Alternative is supported by the cities of El Monte, Montebello, Monterey Park, Rosemead and South El Monte in resolutions, as well as through the formation of the SR-60 Coalition. The City of Industry has also indicated support for the SR-60 Alternative. Support for the Washington Boulevard Alternative has been demonstrated by the cities of Commerce, Pico Rivera, Santa Fe Springs and Whittier.

ES.2 Recommended Alternatives

In summary, all of the proposed alternatives have benefits and impacts, as it is challenging to construct a high-capacity light rail transit system in a heavily-developed, urban area with constrained street right-of-way widths lined with one- and two-story buildings. The primary goal of the Eastside Transit Corridor Phase 2 project is to provide a transportation system that better serves the PSA's communities without negatively impacting quality of life. Based on the technical analysis and outreach results documented in the Addendum to the AA Report, two build alternatives, along with the No Build and Baseline/TSM options, are recommended to be carried through the preparation of a Draft EIS/EIR process. A graphic summary comparison is provided, in Table ES.6, to compare all non-fatal flawed proposed alternatives and to demonstrate the technically superior alternatives.

Table ES.6 Comparative Analysis

Key Measures	SR-60	Beverly/Whittier	Washington
Total Ridership	◐	◐	●
Ridership: Boardings per Mile per Day	◐	○	●
Ridership: Boardings per Station	●	◐	●
Ridership: Access by Park-N-Ride Riders	●	◐	◐
Ridership: Access by Pedestrian & Bicycle Riders	○	◐	●
Ridership: Access by Bus Riders	○	●	◐
Accessibility to Transit-Dependent Populations	○	●	◐
Capital Cost	◐	●	○
Cost per Mile	○	●	◐
Travel Time	●	○	◐
Operations & Maintenance Costs	●	○	◐
Required Land Use and Zoning Changes to Support Transit Along Corridor	◐	○	●
Loss of Travel Lanes and/or Vehicle Conflicts	●	○	●
Loss of On-Street Parking	●	○	●
Catalyst for Public/Private Economic Revitalization	◐	●	◐
Right-of-Way Acquisition Note: Property for replacement parking may be necessary and has not yet been analyzed	◐	◐	◐
Community and Neighborhood Impacts (EJ)	●	○	◐
Visual Compatibility and Aesthetic Impacts	◐	○	◐
Section 4(f) Resources (Cultural & Parklands)	◐	◐	●

Key Measures	SR-60	Beverly/Whittier	Washington
Air Quality	●	●	◐
Noise and Vibration Sensitive Land Uses	●	○	◐
Ecosystems	◐	●	●
Water Resources	◐	◐	◐
Geology and Subsurface Conditions	◐	●	●
Hazardous Materials and Waste	○	◐	◐
Community Support	●	○	●

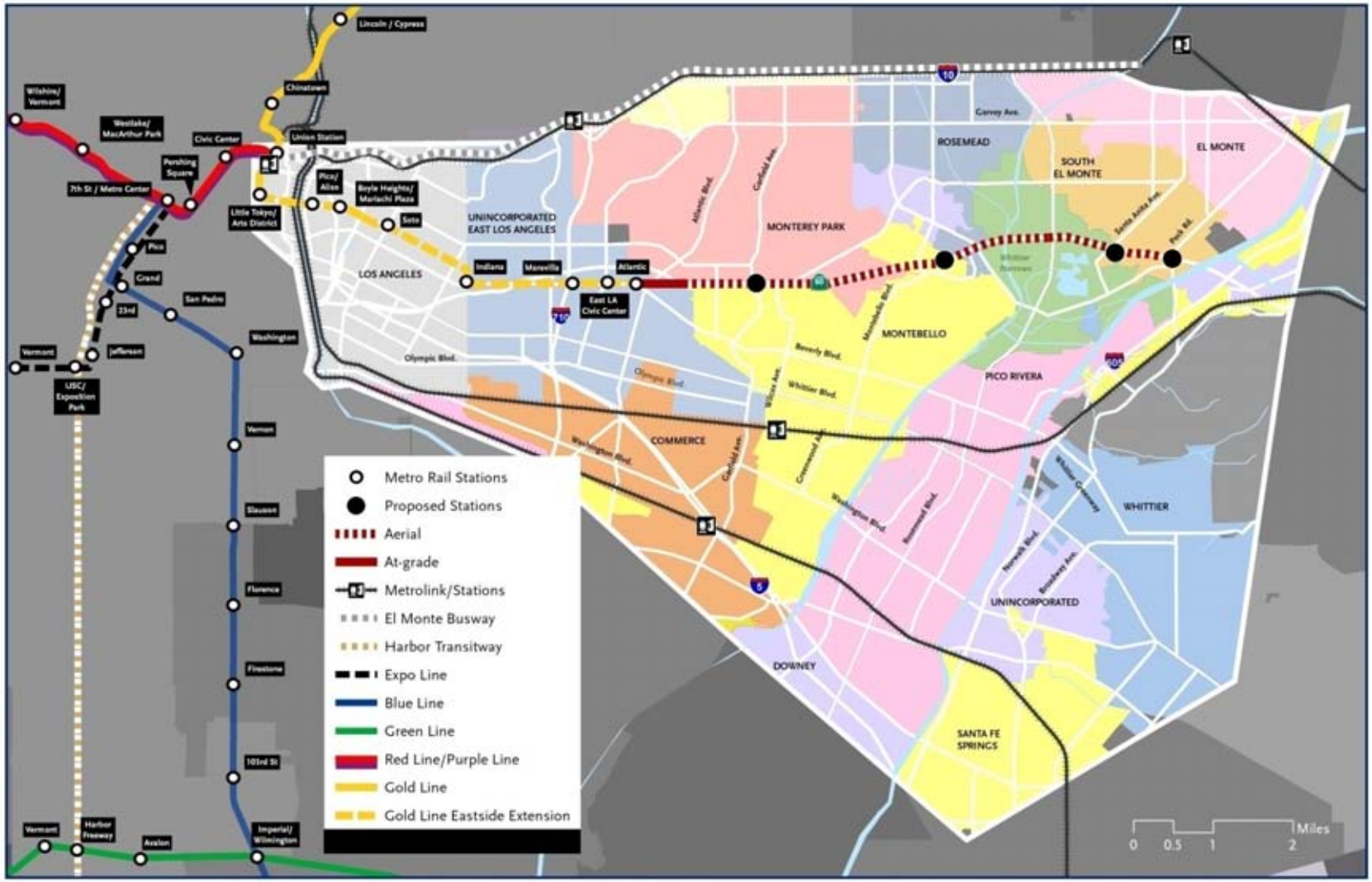
● Favorable rank ◐ Mid rank ○ Low rank

ES.2.1 SR-60 LRT

The SR-60 Alternative, as illustrated in Figure ES-4 on the following page, is recommended to move forward into the Draft EIS/EIR phase based on the following:

- Minimal community impacts would result from the construction and operation of this alternative – the aerial system and stations fit within the SR-60 Freeway right-of-way; however, it should be noted that as currently designed, this alternative will impact 12 residential properties.
- PSA mobility goals of providing improved regional connectivity are achieved with this alternative by connecting with the regional Metro rail system, providing additional transportation capacity to serve increasing travel demand, reducing vehicular travel on the regional highway system and attracting new transit riders.
- This alternative will primarily serve longer work-based trips. Access to this alternative will be enhanced by the provision of a bus feeder network and station-related parking structures. This alternative will also serve educational, shopping and recreational trips.
- Existing development and proposed land use plans along the alignment will be supported. Station areas provide transit oriented development opportunities.

Figure ES-4 SR-60 LRT Alternative



- North-south bus feeder networks and parking structures at every station provide additional accessibility.
- This alternative provides the fastest travel time of all the alternatives.
- This alternative results in good ridership that may be strengthened in the future with the use of the new Metro ridership model under development. The new model includes the Regional Connector, which would improve performance of this alternative by providing east-west, one-seat connections and single transfer, north-south connections desired by people traveling to and from the PSA.
- This alignment has experienced a high level of community, stakeholder and elected official support.

Challenges

- Hazardous Materials – Hazardous materials are present and remediation efforts are underway at the former OII/current Superfund site. Construction of the project adjacent to the site has the potential to disrupt ongoing remediation efforts.
- Flood Control and Parkland Impacts – According to the U.S. Army Corps of Engineers, flood plains are located within the Santa Anita station area. Rail system construction may impact these facilities. Additionally, the alignment travels adjacent to and within a portion of the Whittier Narrows Recreation Center, which also serves a flood control role; therefore, there is also the potential for parkland and flood control impacts.
- High Capital Cost – Options for potentially reducing the costs of this alignment will be explored during the next study phase, which includes development of ACE plans which will examine in more detail the proposed station to refine property requirements; the alignment in the area of the Whittier-Narrows Park to move the alignment out of the park area, if possible; develop a minimum operating segment for construction; review impacts utility relocations in greater detail; and refine capital cost estimates based upon the increased level of alignment detail .
- Terminus Station – Assessing an extension of the alignment further east to the former Crossroads Parkway Station could help recapture lost ridership caused by shortening the alignment and not serving commuters before the I-605/SR-60 interchange.
- Southern California Edison (SCE) Plans – Future engineering efforts will require close coordination with SCE due to their plans for construction of new 500kV transmission lines and towers adjacent to the SR-60/Paramount interchange and in the Peck Road Station Area as part of the Tehachapi Renewable Transmission project.

  Agency Coordination – This alignment will require significant coordination with other agencies including, but not limited to, Caltrans, Federal Highway Administration, U.S. Environmental Protection Agency, SCE and the U.S. Army Corps of Engineers.

ES.2.2 Washington Boulevard LRT

The Washington Boulevard LRT Alternative, as illustrated in Figure ES-5, is to move forward into the Draft EIS/EIR phase based on the following:

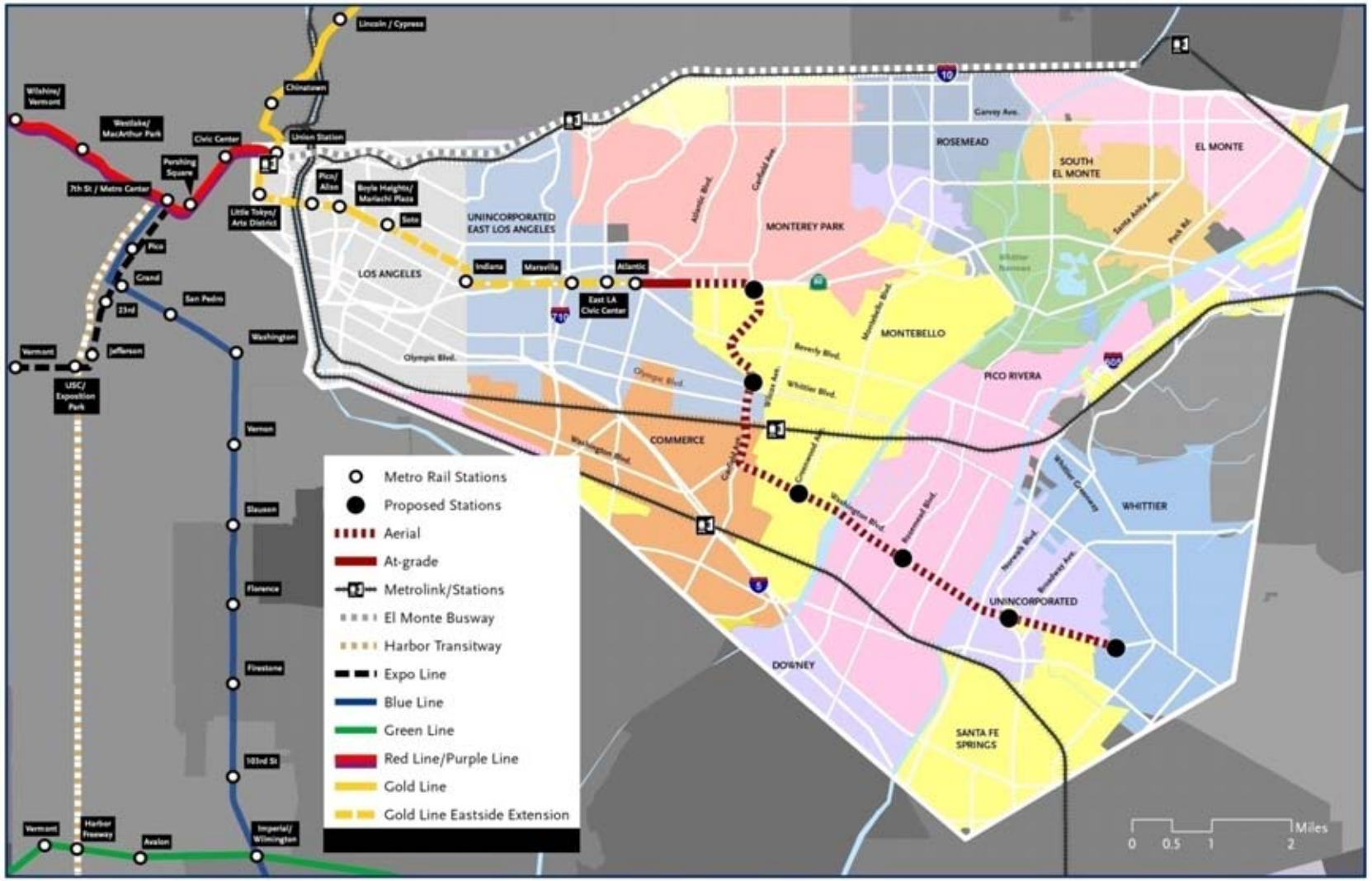
- Minimal community impacts would result from the construction and operation of this alternative due to the scale of the community, and streets along this alignment can accommodate both the aerial system and stations with minimal impacts to quality of life and traffic circulation.
- PSA mobility goals of providing improved regional connectivity are achieved with this alternative by connecting with the regional Metro rail system, providing additional transportation capacity to serve increasing travel demand, reducing vehicular travel on the regional highway system and attracting new transit riders.
- This alternative would build a strong ridership base by providing service for the following trip purposes:
    - Short, frequent trips within the communities it operates through.
    - Work trips to and from Washington Boulevard employment sites.
    - Work and other trips to and from the southern portion of the PSA including the Gateway Cities and I-5 Freeway corridor as well as to communities to the north of the SR-60 Freeway via bus and park-and-ride access at the SR-60/Garfield station.
    - Work trips west to downtown Los Angeles and destinations beyond.
- North-south bus feeder networks and parking structures at most stations provide additional accessibility.
- Existing development and proposed land use plans are transit-supportive along the alignment, particularly at the terminus station area within the City of Whittier.
- This alternative results in the highest ridership and user benefits of all the alternatives. These numbers may increase in the future with the use of the new Metro ridership model under development. This new model includes the Regional Connector, which would improve performance of this alternative by providing east-west, one-seat connections and single transfer, north-south connections desired by people traveling to and from the PSA.
- This alternative attracts the highest number of new transit riders.
- This alternative provides the second fastest travel time of the four alternatives.

- This alternative will provide additional travel capacity with minimal impacts on the PSA's street system, which is heavily-used by cars and large trucks.
- This alternative has experienced a high level of community, stakeholder and elected official support.

Challenges

- High Capital Cost – Options for potentially reducing the cost of this alternative will be explored during the next study phase, which includes development of ACE plans which will examine in more detail: right-of-way requirements; potential at-grade alignment east of the San Gabriel River; station design to reflect property needs for station facilities; refine utility relocation requirements; develop a minimum operating segment for construction; and refine capital cost estimates based upon increased level of alignment detail . Cost reduction considerations will include, but will not be limited to, evaluating some at-grade sections and identifying partnerships to develop shared-use parking structures.
- Agency Coordination – This alignment will require significant coordination with other agencies including, but not limited to, Caltrans, the Federal Highway Administration, SCE, Union Pacific Railroad (UPRR), the U.S. Army Corps of Engineers and the Los Angeles Department of Water and Power.

Figure ES-5 Washington Boulevard LRT Alternative



ES.3 Alternatives Not Recommended for Further Study

ES.3.1 Beverly Boulevard LRT

The Beverly Boulevard LRT Alternative is not recommended to move forward into the Draft EIS/EIR phase based on the following:

- Fatal Flaws – The eastern half of this alignment has several major challenges where it leaves the Beverly Boulevard right-of-way and crosses primarily vacant land to enter the Whittier Greenway, which is a former railroad right-of-way that has been reused as a landscaped recreational trail. The vacant land through which the alignment would traverse is owned by SCE and UPRR. The Whittier Greenway is owned by the City of Whittier.
    - This vacant area serves as SCE's "regional backbone" with existing 220kV transmission lines that are planned for upgrading to 500kV service, including new transmission towers as part of SCE's Tehachapi Renewable Transmission project. SCE representatives have indicated that they cannot permit at-grade or aerial rail operations through the property and that they have potential long-term plans for use of all of their property.
    - The UPRR tracks currently accommodate Metrolink and freight operations, and they too have future plans for their property that preclude any other structures.
    - The Whittier Greenway is lined on both sides by single-family residences, and on the north side by four schools. LRT operations would require acquisition of half of this recreational area. Taking half of this parkland resource for rail use raises 4(f) issues that may not be resolvable. Funding for the Greenway included federal funds from the U. S. Department of the Interior (National Park Service) raising the possibility of 6(f) issues. As owner of the Greenway, the City of Whittier has stated that they oppose the co-use of their recreational resource for LRT operations.
- Community Impacts:
    - Project would provide additional transportation capacity; however existing street system operations would be negatively impacted. There are several constrained sections on Beverly Boulevard that make it difficult for rail operations and necessary vehicular capacity to coexist.
    - Additional regional transportation capacity is provided to the detriment of local communities with impacts to sensitive land uses including visual, traffic, safety, noise and vibration impacts.

- Rider Benefits – Lack of compelling transit rider benefits, since ridership, user benefits, and travel times are not promising enough when balanced against the possible community impacts.
- Lack of community, stakeholder and elected official support.

ES.3.2 Beverly/Whittier Boulevards LRT

The Beverly/Whittier Boulevards LRT Alternative, with north-south travel connections on Montebello or Rosemead Boulevards, is not recommended to move forward into the Draft EIS/EIR phase and ACE due to the following:

A. Community Impacts – This alternative introduces approximately 50 percent aerial rail operations into a constrained street system lined with one- and two-story structures often built to the sidewalk edge, such as in downtown Montebello. Technical and environmental analysis identified significant community impacts, including a high potential for noise and vibration, community cohesion and street system capacity impacts, for this alternative. There are possible parkland impacts related to the final operating segment, terminal station and tail tracks, which would be located adjacent to and possibly within a portion of the Whittier Greenway. Individually, specific potential community impacts can be mitigated. However, the culmination of a high number of potential community impacts can be a high concern for community cohesion. A number of specific potential impacts are as follows:

B. The Beverly/Montebello/Whittier Boulevards alignment has a major pinch point as the aerial rail structure traveling south in the median of Montebello Boulevard turns east onto Whittier Boulevard in downtown Montebello. The resulting alignment radius is so tight that the rail structure comes within several feet of the commercial building located at the northeast corner of Whittier and Montebello Boulevards. In addition, with the commercial buildings along Whittier Boulevard built to the sidewalk edge of this narrow street, the aerial rail structure and station planned for this location would cover approximately 60 percent of the street right-of-way. Construction of a rail system in this location would require the removal of the recently implemented downtown Montebello streetscape improvements.

C. On the Beverly/Rosemead/Whittier Boulevards alignment, there is a major community impact along Rosemead Boulevard just north of Whittier Boulevard. This section is planned for aerial operations running in the median of Rosemead Boulevard

where it must cross-over Union Pacific/Metrolink tracks set on a bridge perpendicular to Rosemead Boulevard. In order to allow sufficient room for the LRT structure to cross over the Metrolink and freight trains, the top of the aerial rail structure would need to be 48 feet above the existing railroad bridge. This portion of the alignment is lined with one- and two-story, single-family homes resulting in significant visual, noise and other impacts.

- Rider Benefits – Lack of compelling transit rider benefits as resulting ridership, user benefits and travel times are not promising enough when balanced against the possible community impacts.
- Lack of community, stakeholder and elected official support.

Next Steps

The recommendations contained herein will be presented to the Metro Board in October 2009 for approval. With Metro Board approval, the two Recommended Alternatives will advance into environmental review in compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

1.0 PURPOSE AND NEED

1.1 Project Study Area

The Los Angeles County Metropolitan Transportation Authority (Metro) has initiated an Alternatives Analysis (AA) study to evaluate possible transportation alternatives for the second phase of the Metro Gold Line Eastside Extension. The first phase of the Metro Gold Line Eastside Extension is a six mile, eight station light rail transit line that is scheduled to begin operations in 2009. This extension will directly interface with the Metro Gold Line service to Pasadena, thereby eliminating any need to transfer at the line's current terminus at Union Station, and will provide residents of East Los Angeles with a direct connection to the region's Metro Rail system. Approximately 30,000 daily riders are expected to utilize the first phase of the Eastside Extension by the year 2030.

The purpose of the Eastside Transit Corridor Phase 2 AA process was to identify and assess a full range of transportation alternatives to extend transit service east from the terminus of the first phase of the Metro Gold Line Eastside Extension, and to recommend a preferred strategy that addresses the Project Study Area (PSA) mobility needs and capacity requirements in the year 2030 and beyond. Initiated in January 2007, the AA process included four phases of screening all possible alternatives down to the most viable alternatives to meet the identified goals and objectives for transportation improvements in the study area. The first three evaluation efforts were documented in the *Eastside Transit Corridor Phase 2 AA Report* completed and approved by the Metro Board in January 2009. The final level of evaluation of the four Final Alternatives identified in the AA Report, based on conceptual level-engineering and station design, is documented in this Addendum to the AA Report.

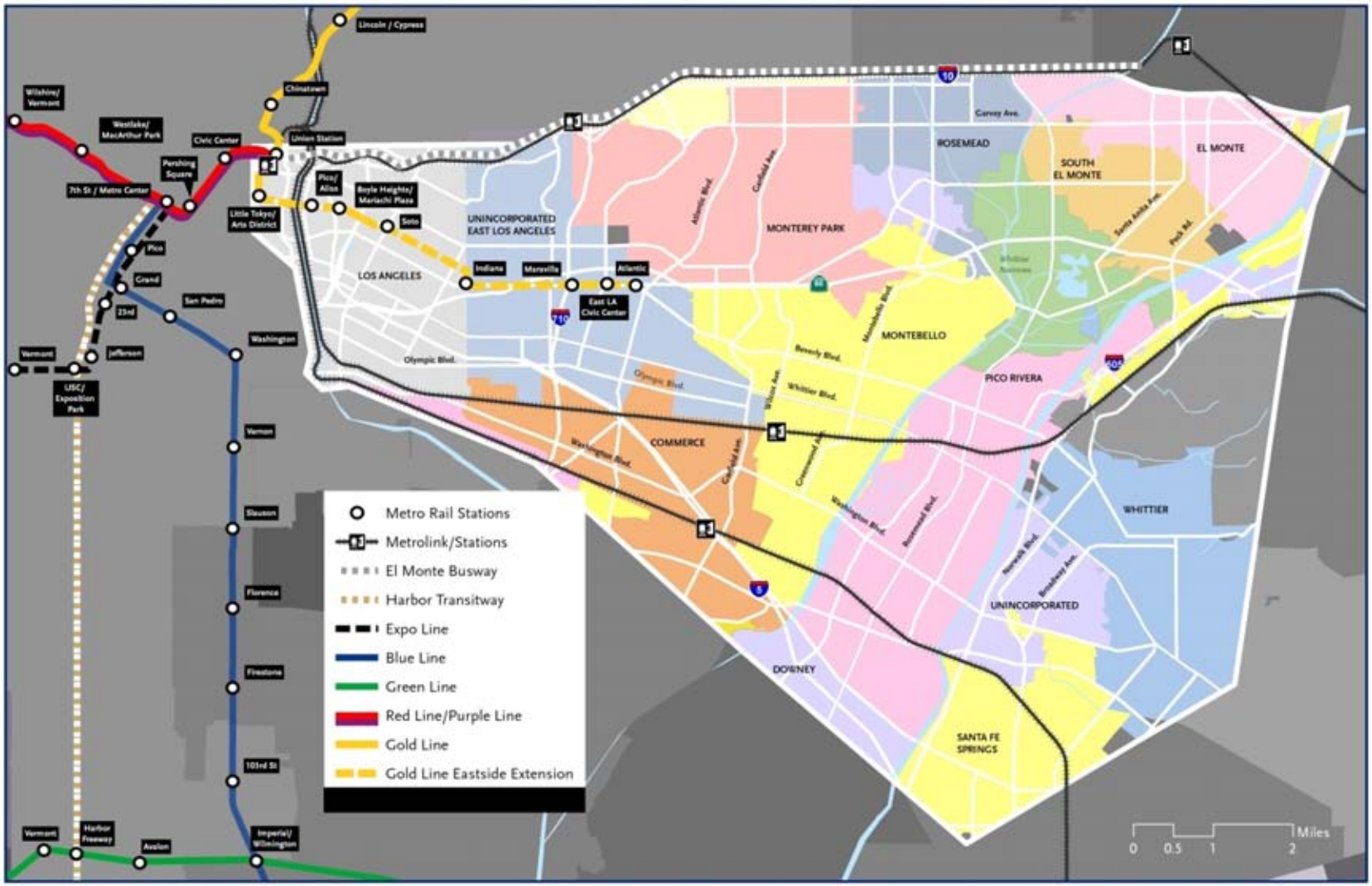
1.1.1 PSA Description

The Eastside Transit Corridor Phase 2 Project Study Area (PSA), which includes the Phase 1 study area, is 80 square miles in area and located in eastern Los Angeles County. (See Figure 1-1 on the following page). The PSA's western boundary is the eastern edge of downtown Los Angeles; the eastern boundary lies east of the I-605 Freeway. It is bounded by the I-10 Freeway to the north, and the I-5 Freeway to the southeast. The Phase 2 PSA includes the cities of Bell, Commerce, Downey, El Monte, Industry, Los Angeles, Montebello, Monterey Park, Pico Rivera, Rosemead, Santa Fe Springs, South El Monte, Whittier and unincorporated portions of Los Angeles County.

Activity Centers and Destinations

The PSA's key activity, employment, and transportation destinations are presented in Table 1.1 and Figures 1-2 and 1-3 on the following pages. The types of activities served by the

Figure 1-1 Project Study Area



alignment alternatives include the following:

- Health and Medical Services – including the Beverly Hospital, Kaiser Permanente medical offices and the Presbyterian Intercommunity Hospital;
- Business/Industrial Parks – are concentrated in the cities of Commerce, El Monte and Industry;
- Commercial Areas – including main street retail districts, such as Downtown Montebello, Whittier Boulevard and Uptown Whittier. In addition, the cities of Commerce, Montebello and Pico Rivera each have large regional retail centers;
- Educational Institutions – including the East Los Angeles Community College, Rio Hondo Community College and Whittier College; and
- Recreational Areas – including the Whittier Narrows Recreation Center, Montebello Golf Course, Whittier Greenway, Palm Park, Pio Pico State Park and many other smaller parks.

Table 1.1 PSA Activity Centers and Destinations

City	#	Activity Center/Destination
Commerce	1	Citadel Regional Shopping Center
	2	Commerce Casino
El Monte	3	El Monte Busway Station
	4	Five Points Plaza
Industry	5	Industry Office Park
Los Angeles	6	Historic Whittier Boulevard Shopping District
Montebello	7	Beverly Bowl
	8	Beverly Hospital
	9	Montebello Golf Course
	10	Montebello Mart Shopping Center
	11	Montebello Town Center
	12	Montebello Town Square Shopping Center
	13	Newmark Street Mall
Monterey Park	14	Atlantic Square Shopping Center
	15	East Los Angeles Community College
	16	Garfield Medical Center
	17	Landmark Shopping Center
	18	Monterey Park Hospital
	19	Monterey Park Mall
	20	Monterey Park Village
	21	Taipei Center
Pico Rivera	22	Pico Rivera Towne Center
Rosemead	23	Jess Gonzales Sports Park
	24	Whittier Narrows Recreation Area
Santa Fe Springs	25	Santa Fe Springs Market Place

Figure 1-2 Activity Centers and Destinations

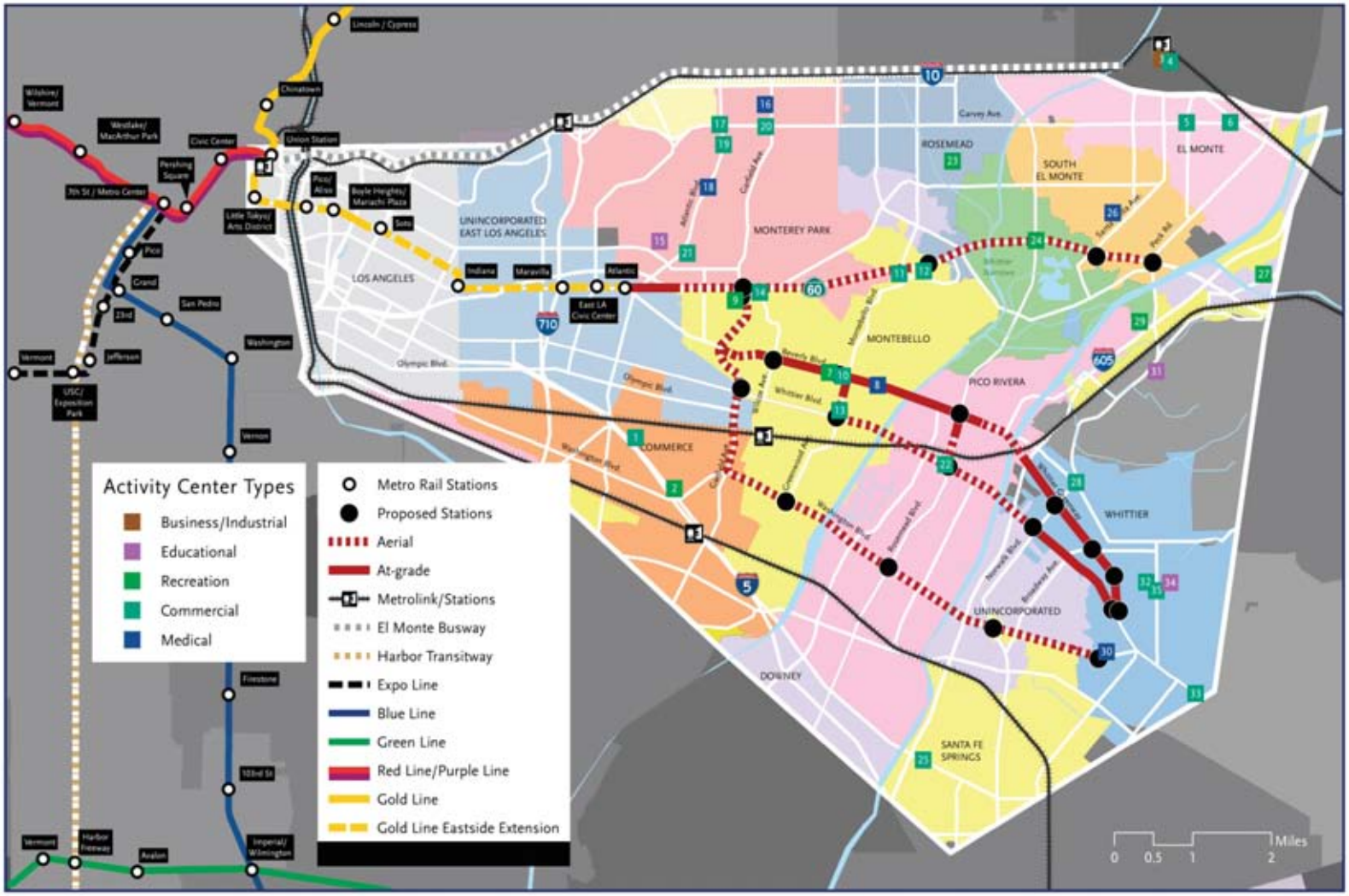


Figure 1-3 Future Development

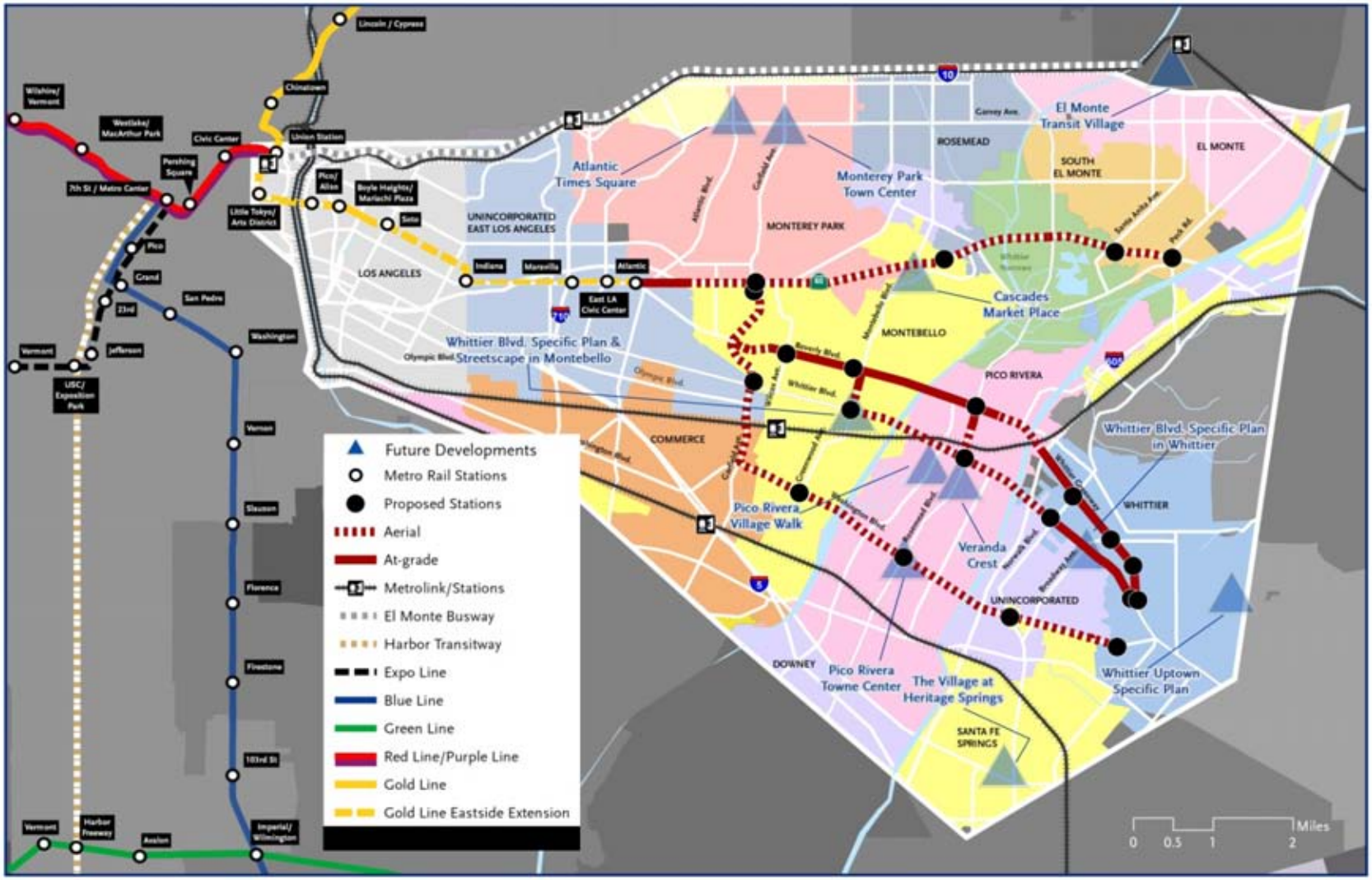


Table 1.1 PSA Activity Centers and Destinations (continued)

City	#	Activity Center/Destination
South El Monte	26	Greater El Monte Community Hospital
Whittier	27	California Country Club
	28	Model Plaza Shopping Center
	29	Pico Rivera Sports Arena
	30	Presbyterian Intercommunity Hospital
	31	Rio Hondo College
	32	Uptown Whittier District
	33	Village Square Shopping Center
	34	Whittier College
	35	Whittier Station Shopping Center

Future Development

As documented in the AA Report, many of the cities in the PSA are planning development projects to meet increasing residential and commercial demands. These future projects are typically ideal locations for public transit services due to the potential to capture a large share of patrons and alleviate traffic congestion. Figure 1-2 and Table 1.2 describe the anticipated future development projects in the PSA. Development information will be updated in future study phases.

Table 1.2 Potential Future Development

City	Future Development	Type
El Monte	El Monte Transit Village Specific Plan	Mixed-Use
Monterey Park	Atlantic Times Square	Mixed-Use
	Cascades Market Place	Retail
	Monterey Park Towne Center	Mixed-Use
Pico Rivera	Pico Rivera Towne Center	Retail
	Pico Rivera Village Walk	Retail
	Veranda Crest	Residential
Santa Fe Springs	The Village at Heritage Springs	Residential

1.1.2 PSA Demographics and Transit Dependency Factors

Since the completion of the Eastside Transit Corridor Phase 2 AA Report in January 2009, there have been no updates or revisions to the demographics reported in that document. Consequently, the same demographics were used in the development of this Addendum to the AA Report. The demographics and transit dependency factors, as previously discussed in the AA, are summarized below:

- 2005 PSA population is 673,000, or approximately seven percent of the Los Angeles County population.

- Population growth in the PSA is projected to increase by 23 percent between 2008 and 2030.
- Low-income households comprise 45 percent of the PSA's total 2005 households.
- 42 percent of the PSA population is age 18 and younger, or age 65 and older.
- Approximately 16 percent of households in the PSA had zero vehicles in 2005, with some tracts in the western portion of the PSA containing 25 percent of households with no vehicles.

In 2030, transit dependency and the number of households with low and medium income levels in the Eastside PSA are forecast to continue growing, and transit-dependent residents will increasingly rely on alternate modes of travel. Figure 1-4 presents transit dependency characteristics in the PSA.

Population and Employment Density

By the year 2030, the PSA population of 673,000 in the year 2005 is expected to increase by 23 percent – making the Eastside home to more people than the current population of the City of San Francisco. The average PSA population density in 2005 was approximately 12,000 people per square mile, compared to a countywide average of 2,431 in 2008. The eastern portion of the PSA has many census tracts with more than 20,000 persons per square mile.

PSA employment is forecast to grow by 15 percent by the year 2030. Currently, employment densities in the PSA range from less than 300 employees per square mile to over 170,000 employees per square mile, with an average employment density of approximately 6,000 employees per square mile. The average employment density is expected to increase to approximately 7,000 employees per square mile in 2030.

Areas of high projected employment density are, for the most part, found outside the Eastside PSA, resulting in the population within the PSA generally traveling west for employment opportunities. A high-capacity, fixed guideway transit investment connecting residents to the Metro Gold Line Eastside Extension would allow for increased mobility and reduced travel time to employment centers served by the Metro rail system.

Figures 1-5 and 1-6 on the following pages present the forecast 2030 population and employment densities, respectively, within the PSA. High forecast population and employment densities will result in more daily trips within the PSA, leading to more congestion and longer travel times, thereby increasing the need for alternative forms of transit.

Figure 1-4 2005 Transit-Dependent Population

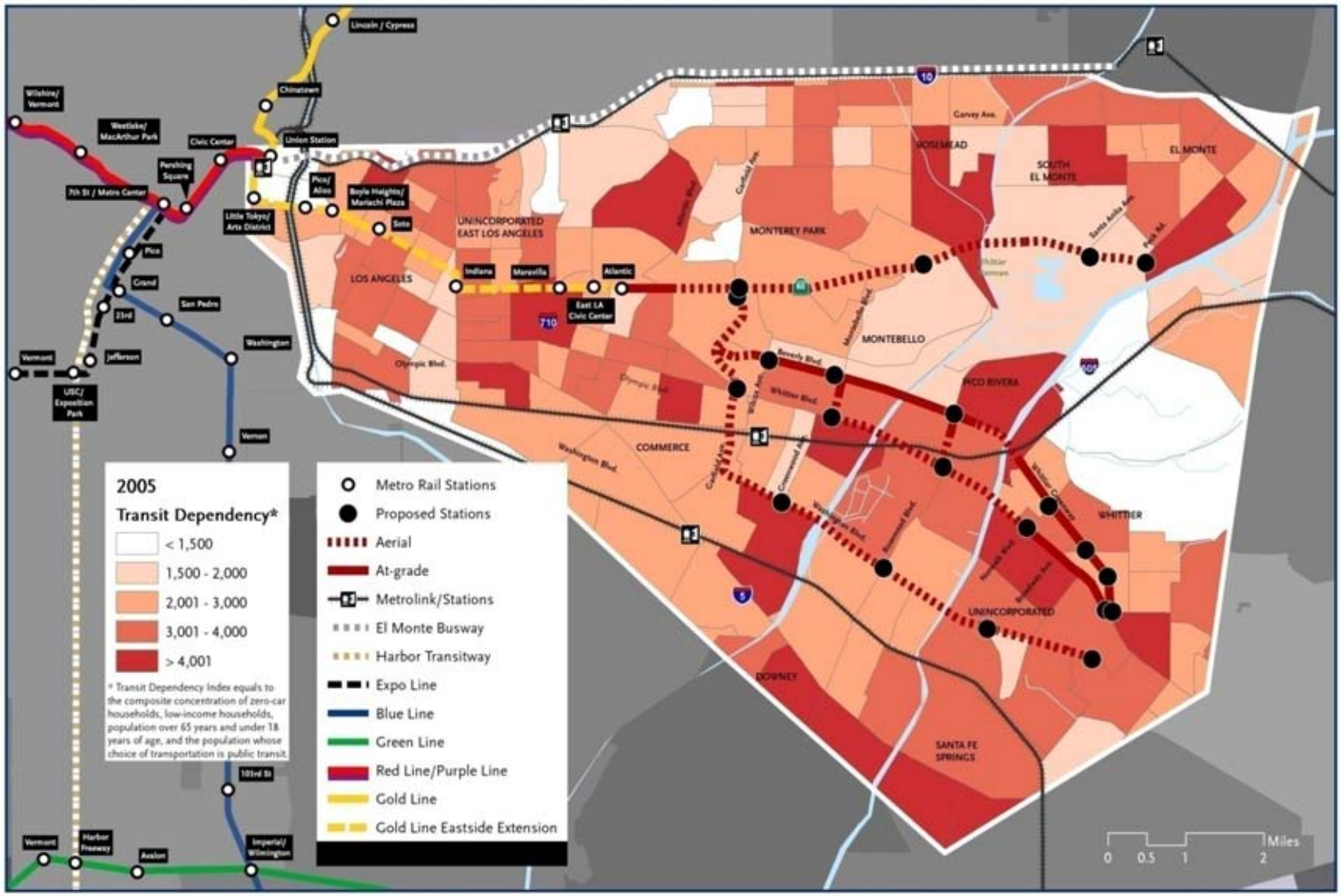


Figure 1-5 2030 Population Density (2030)

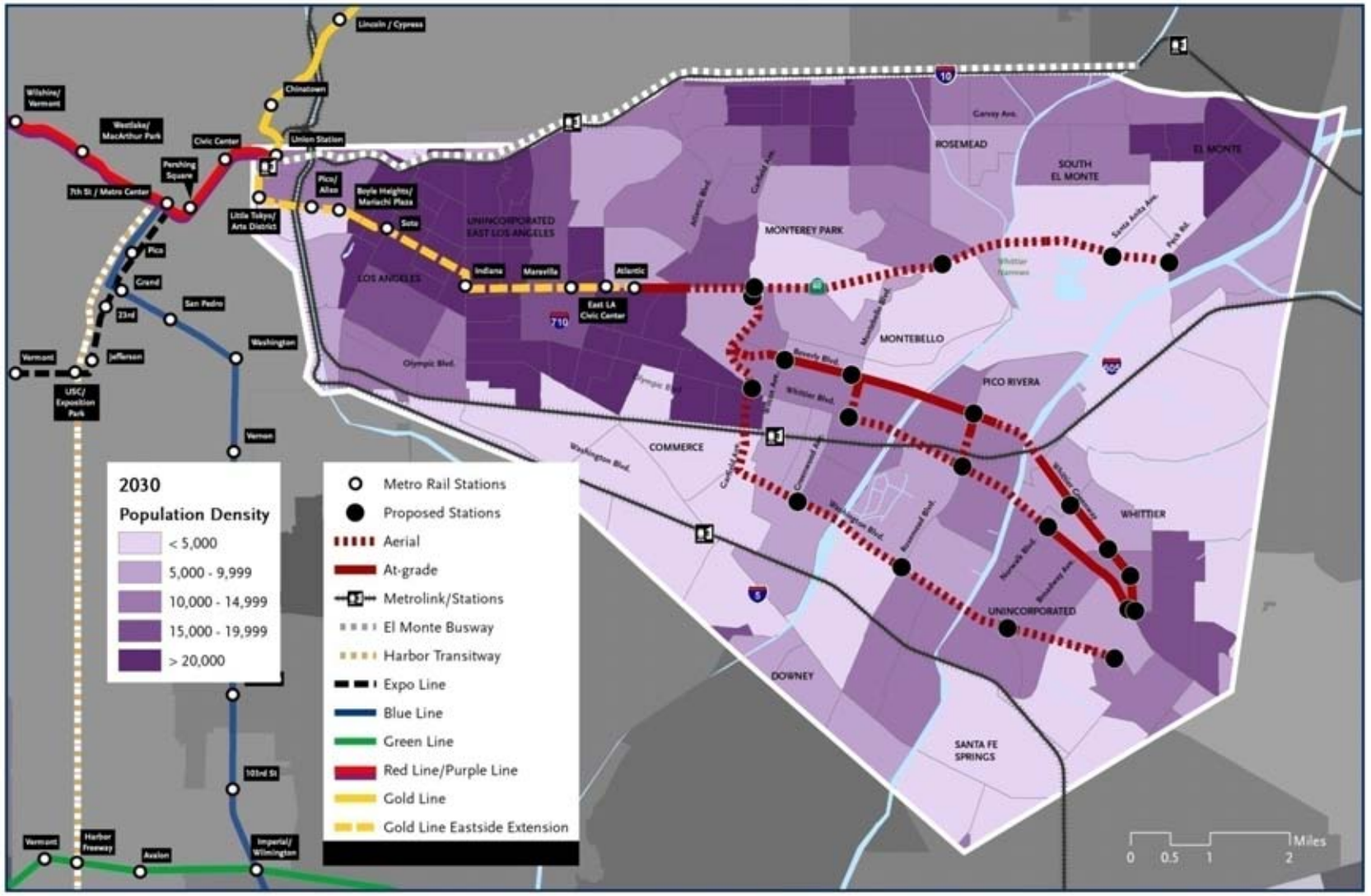
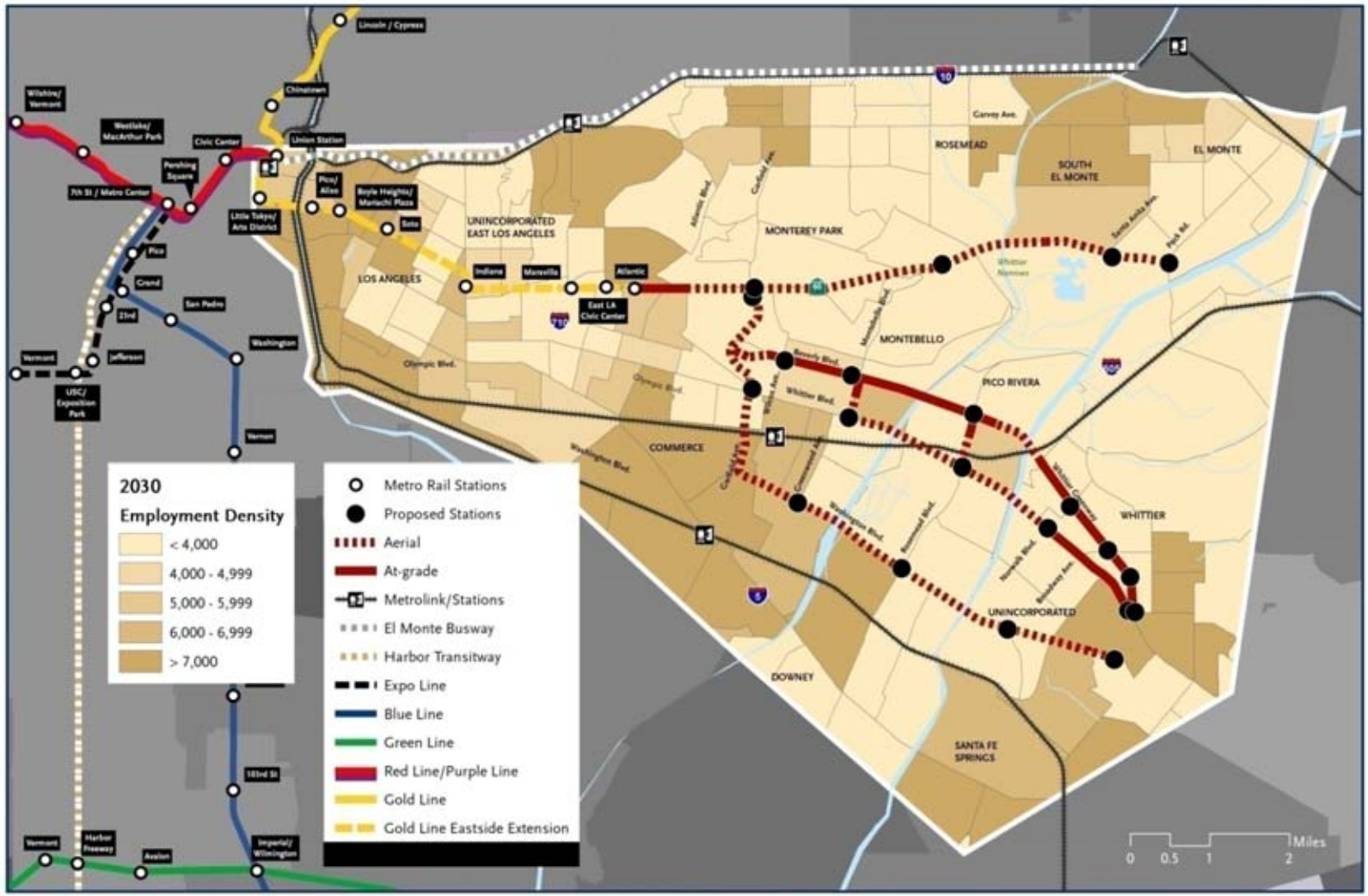


Figure 1-6 2030 Employment Density (2030)



Travel Demand and Patterns

The regional transportation network includes 9,000 lane-miles of freeway, more than 42,000 lane-miles of arterials and several large public transit service providers, yet growth of the transportation system has not kept pace with PSA population growth and the corresponding increases in transportation demand. As the population in the region doubled between 1960 and 2000, highway miles increased by less than 30 percent. The congestion caused by insufficient transportation capacity affects both personal travel and goods movement. If the current trend persists, travel delays are expected to rise to 5.4 million person hours by 2030, more than double the currently experienced delays, and will deeply affect PSA productivity and quality of life. Expanding the public transportation system will provide more choices for commuters and potentially reduce travel demand on the PSA's major highway and arterial systems.

PSA travel patterns identified in Year 2000 factored census data taken from the Census Transportation Planning Package (CTPP) indicate the following:

- One-third of the work trips originating in the PSA, approximately 115,000 daily trips, are destined for areas within the PSA.
- Two-thirds of the work trips originating in the PSA, approximately 230,000 daily trips, are destined for areas external to the PSA.
- Central Los Angeles, including the Central Business District (CBD), is the number one destination for external work trips with more than 50,000 daily trips.
- There are even greater numbers of trips attracted to PSA destinations than work trips produced in the PSA. Many of these trips originate in zones to the north, south and west of the PSA – in areas already served by the Metro Rail system.

With travel demand and patterns already stretching the currently available transportation resources, the forecast increase in PSA daily trips will be challenging to accommodate with the existing transportation system. A fixed guideway transit solution that diverts PSA travel demand and serves the predominant travel patterns will help relieve the region by adding increased transit capacity.

1.2 Existing Transportation System

Existing area freeways and roadways within the PSA are highly congested during peak periods. The heaviest congestion occurs on the I-5, SR-60 and I-10 Freeways in the westbound direction towards the Los Angeles CBD in the morning peak period and in the eastbound direction during the afternoon peak period. In the PM peak period, congestion is also present to a lesser degree in the reverse peak direction. The north/south I-710 and I-605 Freeways are

congested both in the AM and PM peak periods. Additionally, the SR-60 Freeway and Washington Boulevard experience heavy truck traffic due to goods movement throughout the day.

Major arterials in the PSA experience similar morning and evening peak period congestion, which negatively impacts access to local destinations. Peak period congestion also impacts local streets as drivers detour to avoid travel delays, negatively impacting the PSA's neighborhoods. The arterial network also accommodates the extensive bus transit system operating in the PSA, with congestion negatively impacting bus service. As discussed in the AA, seven bus service providers utilize the study area corridors for local and regional bus service, including express, limited, shuttle and paratransit services: Metro Bus, Montebello Bus Lines, Foothill Transit Zone, Norwalk Transit, Monterey Park Spirit Bus Lines, City of Commerce Lines and Whittier Transit.

Highway Conditions

Preliminary projections for Year 2030 show the same congested travel patterns continuing and increasing with a nearly 33 percent growth in travel demand over existing conditions. With no major freeway or highway improvements identified in the financially constrained *2008 Regional Transportation Plan*, building transit network coverage and services will be crucial to address the projected growth in population and employment. In general, as discussed in the AA, the anticipated growth along the freeway segments and on major arterials in the PSA would worsen operating conditions and result in increased congestion and delays.

Travel Time

Traffic congestion and commute times are forecast to increase in the County and PSA. Over the ten-year period from 1990 to 2000, residents of Los Angeles County experienced an 11 percent increase in travel time to and from work. Areas within the PSA experienced an increase in commute times well above County figures, as represented by the cities of Commerce (21 percent growth), Santa Fe Springs (20 percent), and Whittier (17 percent). The mean commuting time for cities in the PSA ranged from approximately 25 to 30 minutes.

Summary

The Southern California Association of Governments (SCAG) estimates that if no transportation system improvements are made within the PSA, congestion will increase significantly between the 2000 and the 2030 Base Years. SCAG projections include the following:

- The average travel speed will decrease from 35.2 mph to 31.9 mph;
- Daily person hours of delay will increase from 2.2 million hours to 5.4 million hours;

- The percentage of PSA peak period evening work trips that take 45 minutes door-to-door for autos and transit would decrease from 88 to 83 percent for residents commuting by car and from 33 to 29 percent for bus transit riders; and

- Average home to work travel times will increase from 21.6 minutes to 25.9 minutes.

Providing alternatives to automobile and bus travel on congested roadways will help offset increased commuter demand and decreased quality of life associated with residential and employment population growth within Los Angeles County.

1.3 The Mobility Problem

The Southern California region is faced with multiple mobility challenges that constrain the region's ability to effectively meet additional travel demand, primarily associated with rapid population growth. As previously discussed, many residents in the Eastside PSA already encounter long travel delays as they travel west to regional employment centers in downtown Los Angeles and beyond. Developing an east-west transit alternative to connect PSA residents with the rest of Los Angeles County through the Metro Rail system will help address the future mobility needs of residents and business by providing vital inter- and intra-connectivity.

If unaddressed, these mobility challenges pose a risk to future PSA population and economic growth, commuter safety, existing infrastructure, goods movement, air quality, and environmental considerations. As discussed in the AA, growth trends in the PSA are expected to lead to significant transportation challenges in 2030, including the following:

- *Increasing travel* – The number of trips taken to and from the PSA are forecast to increase by 33 percent.

- *Increasing travel times* – With average travel speed decreasing by nine percent, average peak-hour travel time will increase by 20 percent, accompanied by a 145 percent increase in daily person hours of delay.

- *Continuing transit-dependent population* – With 45 percent of households categorized as low-income, 42 percent of the PSA population under age 18 or over age 65 and 16 percent of all households with zero vehicles, the PSA has a high level of transit-dependent residents.

- *Continuing freeway congestion* – With no major freeway improvements planned, a growing population and increasing travel forecasts, the level of service on the already congested freeways will continue to decrease.

- *Continuing arterial congestion* – At the 17 major PSA intersections observed during the AA Report work, levels of service are expected to decrease by one or two complete service levels, including almost all locations during the PM peak hour.

- *Heavy truck traffic* – The SR-60, I-5 and I-10 Freeways along with some PSA arterial streets, such as Washington Boulevard, are subject to heavy truck traffic due to port traffic and local manufacturing distribution.

- *Growing population and employment density* – An increasing number of trips within, to and from the PSA will continue to strain the presently available transportation network.

- *Limited travel options* – With limited regional rail system connections, residents of and visitors to the PSA can rely only on available bus systems operating on the same congested street system and three Metrolink stations.

The following sections of this document present and evaluate the proposed transportation system solutions developed to address the mobility challenges faced by the Eastside Transit Corridor Phase 2 Project Study Area.

2.0 ALTERNATIVES CONSIDERED

This section documents the development of the Recommended Set of Alternatives for the Eastside Transit Corridor Phase 2 Alternatives Analysis (AA). A wide range of possible transportation alternatives was identified based on past corridor studies and in consultation with the community and stakeholders during the project's early scoping process. The resulting transportation options were screened and refined through a four-step evaluation process to identify a Recommended Set of Alternatives that best meets the mobility needs and goals for transportation improvements in the Project Study Area (PSA).

2.1 Screening and Selection Process

The overall objective of the Eastside Transit Corridor Phase 2 AA process was to identify and assess a full range of transportation alternatives and recommend a preferred strategy, or phasing of strategies, that addresses study area mobility needs and capacity requirements in the year 2030 and beyond. The AA process and documentation followed the Federal Transit Administration (FTA) New Starts Program guidelines and standards to not only provide a methodical basis for the selection of the Recommended Alternatives, but also to ensure that the identified transportation strategy is eligible for federal funding.

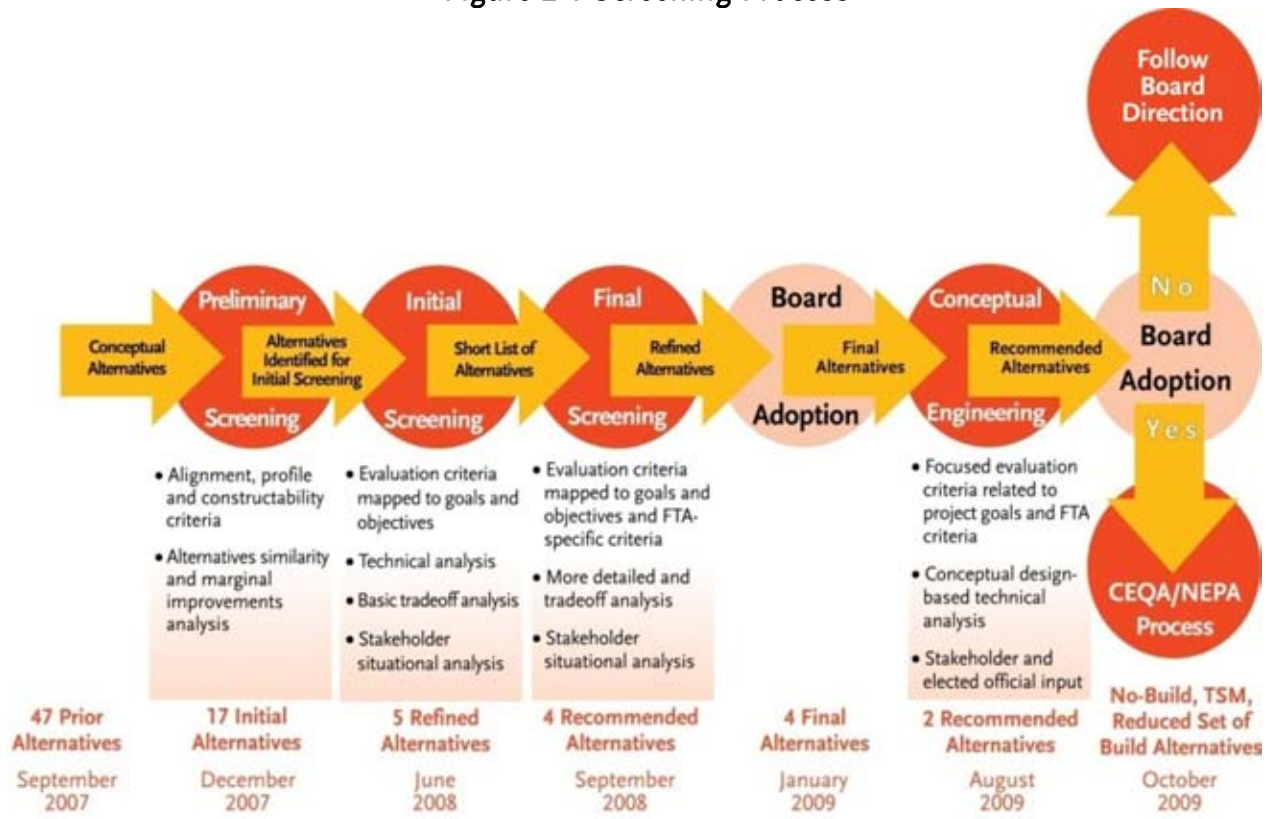
Eastside Transit Corridor Phase 2 transportation alternatives were identified and evaluated through a detailed screening process incorporating technical and environmental analysis and public input. The screening process was based on project goals and evaluation criteria identified in consultation with the community and stakeholders, along with FTA New Starts criteria. Each evaluation phase refined the results of the previous effort using increasingly detailed engineering, operational and environmental analysis along with continued public input. As illustrated in Figure 2.1, the evaluation process included the four efforts listed below. The first three screening efforts were documented in the *Eastside Transit Corridor Phase 2 Study Alternatives Analysis Report* that was completed and adopted by the Metro Board in January 2009. The results of the Conceptual Engineering Screening, along with identification of the Recommended Alternatives, are presented in this addendum to the AA.

1. **Preliminary Screening** – A wide range of 47 Conceptual Alternatives was identified from previous corridor studies and through this project's early scoping process. These 47 Conceptual Alternatives were screened down to 17 Initial Alternatives representing varied alignments (routes) and technologies.
2. **Initial Screening** – Based on a comparative analysis and public feedback, the 17 Initial Alternatives were evaluated and reduced to five Refined Alternatives.
3. **Final Screening** – The five Refined Alternatives were studied and evaluated in detail. Based on the analytical results and public input, four Final Alternatives were identified for further study during conceptual engineering efforts.

4. **Conceptual Engineering Screening** – The four Final Alternatives were refined and studied based on conceptual-level engineering and station design, correspondingly more detailed technical analysis, and additional public and stakeholder input. This effort has resulted in the identification of the two Recommended Alternatives for further study.

The Metro Board of Directors will select the alternatives to be carried through the preparation of the Draft Environmental Impact Statement (EIS) as defined by the National Environmental Policy Act (NEPA) and the Draft Environmental Impact Report (EIR) process as identified in the California Environmental Quality Act (CEQA). Upon completion of the DEIS/DEIR process, the Metro Board will adopt a Locally Preferred Alternative (LPA) to enter the Preliminary Engineering (PE) phase. FTA concurrence to enter PE is necessary, if the project will be seeking federal funding from the New Starts Program.

Figure 2-1 Screening Process



Screening Methodology and Evaluation Criteria

The study's screening process was based on goals and related evaluation criteria developed in accordance with FTA New Starts Guidance, Metro Corridor goals, feedback from PSA stakeholders and the project's Technical Advisory Committee (TAC), and public comments

received during the early scoping process. As documented in the *Eastside Transit Corridor Phase 2 AA Report*, the following six goals were established to guide the evaluation of Eastside Transit Corridor Phase 2 transportation options:

1. Improve mobility, accessibility and connectivity of the transit system and region.
2. Support local land use objectives.
3. Choose a cost-effective solution.
4. Plan for projected growth in an environmentally sustainable manner.
5. Meet the needs of the transit dependent.
6. Respond to community needs and support.

The project goals are consistent with Metro's *Draft 2008 Long Range Transportation Plan* and the *2008 Regional Transportation Plan* prepared by the Southern California Association of Governments (SCAG).

A detailed set of evaluation criteria, with related performance measures, was developed to provide the public and decision-makers with information on the benefits and impacts of the alternatives, as well as the differences between the options. Different levels of evaluation criteria were used during each screening step as the technical information and comments on the alternatives became more specific. The following evaluation categories were used to analyze the proposed transportation options:

1. Transportation System and Mobility Improvements
2. Environmental Impacts including Land Use and Economic Considerations
3. Financial Feasibility
4. Public and Agency Input

Preliminary Screening

During the preliminary screening step, a wide range of 47 Conceptual Alternatives was identified from previous corridor studies and through this project's early scoping process. The alternatives were evaluated based on stakeholder input and a fatal flaw-level of technical analysis, primarily evaluating constructability and alignment profile fit within the study area. In December 2007, preliminary screening resulted in the identification of 17 Initial Alternatives that included varied transit modes, alignments (routes) and potential station locations. The Initial Alternatives included 14 Light Rail Transit (LRT) alternatives and three Bus Rapid Transit (BRT) options for further study.

Initial Screening

The 17 Initial Alternatives, along with the required No Build and Transportation System Management (TSM) options, were subjected to an initial level of technical and environmental analysis to identify the highest performing alternatives. Based on a comparative analysis and public feedback, the 17 Initial Alternatives were refined to a smaller set of five Refined Alternatives that best met the project goals, were technically viable and had stakeholder support. The five alternatives were further refined to incorporate the most promising operational characteristics and features. For example, the Washington Boulevard Alternative was refined to include additional aerial segments to improve travel time and avoid traffic capacity issues identified in the initial screening process. In June 2008, the following five Refined Alternatives were selected for final screening:

- Alternative 1 – SR-60 Light Rail Transit
- Alternative 2 – SR-60 Busway/Bus Rapid Transit
- Alternative 3 – Beverly Boulevard Light Rail Transit
- Alternative 4 – Whittier Boulevard Light Rail Transit
- Alternative 5 – Washington Boulevard Light Rail Transit

Final Screening

The five Refined Alternatives were evaluated through the screening process and criteria documented in the *Eastside Transit Corridor Phase 2 AA Report*. Engineering plans were prepared presenting a single line horizontal alignment with conceptual cross-sections at key locations. Reflecting the availability of more detailed information, the final screening process involved more specific evaluation information including engineering and operational analysis, initial capital and operating cost estimates, ridership forecast modeling, and community and environmental impacts analysis.

Based on technical analysis and public input, it was determined that LRT technology was the most appropriate transit mode for Phase 2 of the Eastside Transit Corridor given the higher ridership projections and resulting capacity needs. A BRT alternative was identified and evaluated during this final screening level. Technical analysis showed that the BRT option produced the lowest ridership of the alternatives and did not provide any cost savings when compared to the LRT alternatives. In addition, LRT travel times were shorter as a result of eliminating the need for transfers.

The AA process was completed in January 2009 and documented in the *Eastside Transit Corridor Phase 2 Study AA Report*. Four Final Alternatives were identified for further refinement and analysis through a conceptual engineering-based evaluation:

- Alternative 1 – SR-60 Light Rail Transit
- Alternative 2 – Beverly Boulevard Light Rail Transit
- Alternative 3 – Beverly Boulevard/Whittier Boulevard Light Rail Transit
- Alternative 4 – Washington Boulevard Light Rail Transit

In summary, the differences between the five Refined Alternatives and the four Final Alternatives were:

- Shortening the SR-60 LRT option to Peck Road and deleting the Crossroads Parkway Station to reduce the cost of this alternative;
- Eliminating the SR-60 Busway/BRT option from further consideration based on the reasons discussed above and resulting low ridership and user benefits;
- Deleting three stations from the Beverly Boulevard LRT option, Beverly/Garfield, Beverly/Poplar, and Beverly/Civic Center, to reduce the travel time for this alternative. In addition, the initial station spacing of this alternative, documented in the AA Report, was too close and did not meet Metro's station spacing policy of approximately one mile between stations.
- Combining the western section of the Beverly Boulevard alignment and the eastern portion of the Whittier Boulevard LRT alignment, with north-south connections on either Montebello Boulevard or Rosemead Boulevard, to form a new Beverly/Whittier Boulevards Alternative. This new option represented a promising combination of the least constrained right-of-way sections of Beverly and Whittier Boulevards, while providing good PSA service coverage.

Conceptual Engineering Screening

During the current screening effort, documented in this Addendum to the AA, Conceptual Engineering drawings provided refined design information to allow for a more detailed analysis of the alternatives. Horizontal double-track alignment and selective vertical profile drawings were prepared and conceptual station plans were designed to identify the best locations for the station platforms and related facilities. Reflecting evolving design information, the Final Alternatives were refined further to identify and reduce impacts where possible. Design refinements made during this phase are documented below in Section 2.2.

Conceptual Engineering provided a higher level of definition of system design and operational parameters, allowing for further refinement of technical information, including operating speeds and travel times, ridership forecasts, travel benefits and costs, as well as environmental and community impacts for each of the four Final Alternatives. As part of this effort, the individual alternatives were examined to identify any alignment, engineering, operating or environmental issue that could potentially preclude successful construction or operation of the alternatives. These issues would be considered to be fatal flaws and, to the extent that an alternative had such issues, it would not be recommended for advancement into the Draft EIS/EIR and Advanced Conceptual Engineering phase.

Table 2.1 presents the evaluation criteria and performance measures used to clarify the differences between the Final Alternatives, allow for more informed decision-making and highlight issues to be resolved during the next phase of analysis. Conceptual Engineering Screening evaluation results are presented below and are summarized in *Section 7, Comparative Analysis of Alternatives* in this report.

Table 2.1 Conceptual Engineering Evaluation Criteria

Mobility and Accessibility Improvements
1. Population and Employment Growth ▪ Capacity of New Projects ▪ Regional Connectivity
2. Ridership Forecasts ▪ Project Boardings ▪ Net New Transit Riders ▪ Change in Transit Mode Share
3. Travel Times ▪ Total Travel Times for each alternative ▪ Travel Time Savings (compared to No Build)
4. Cost Analysis (compared to TSM) ▪ Cost Per New Daily Transit Trip ▪ Cost Effectiveness Rating
Project Costs
5. Capital Costs 6. Annual Operations and Maintenance Costs
Design and Operational Concerns
7. Overview of System Design and Operational Issues and Concerns
Environmental Concerns
8. Summary of Environmental and Community Impacts and Benefits
Public Support
9. Public, stakeholder and elected official input

In addition, the individual alternatives were evaluated against each other to determine, based on the further identification of alignment, engineering, operating and environmental issues, whether some alternatives could be considered technically superior and therefore be the focus of continued study in a Draft EIS/EIR. Those alternatives with no specific fatal flaws, but not considered to be technically superior compared to the remaining alternatives, would be recommended for removal from further study in the Draft EIS/EIR.

2.2 Final Alternatives

In January 2009, four LRT or "build" Final Alternatives were adopted by the Metro Board of Directors to be further studied. These four alternatives were refined and studied through Conceptual Engineering efforts. At this level of analysis, alignment engineering and station design information was prepared to a five percent level of completion. In addition to the four "build" alternatives, two options required for comparison purposes were included: the No Build and the TSM alternatives. Reflective of the addendum role of this document, the Final Alternatives were compared to the No Build and TSM options identified in the *Alternatives Analysis Report,* with a minor refinement to the TSM alternative as discussed below.

Under FTA guidance published in 2000, new direction was given on the definition of the No Build and TSM alternatives in the AA/Major Investment Study (MIS) planning process. This Rule eliminated the requirement for separate No Build and TSM alternatives, and instead required that the proposed "build" options be evaluated against a single "Baseline Alternative" in order to effectively measure resulting mobility improvements. The Baseline Alternative is defined by FTA as all reasonable, cost-effective transit improvements included in the adopted financially constrained regional transportation plan. During the Eastside Transit Corridor Phase 2 AA process, a decision was made to evaluate both a No Build and a Future Baseline/TSM alternative in order to effectively measure the resulting build transportation options.

2.2.1 No Build Alternative

The No Build Alternative is used for comparison purposes to assess the relative benefits and impacts of constructing a new transit project in the PSA versus implementing only currently planned and funded projects. The No Build Alternative includes all of the projects that are identified for construction and implementation in the "Constrained Plan" of Metro's *Draft 2008 Long Range Transportation Plan (2030)*. The currently adopted plan includes the Gold Line Eastside Extension to the Atlantic/Pomona Station, but does not include any project resulting from this study effort. Existing transit service will be maintained as is, and only minor service level adjustments will be made as warranted.

2.2.2 Baseline/TSM Alternative

The TSM Alternative is intended to address the same mobility needs as the build alternatives, but does not include the construction of a fixed guideway facility. Thus, typically the TSM Alternative will have a lower level of capital investment. This option includes all of the provisions of the No Build Alternative, plus the planned enhancements to existing bus service previously presented in the AA Report. During the Conceptual Engineering study phase, a required increase in the number of peak Light Rail Vehicles for the TSM option was identified. AA analysis was based on the use of 2-car consists, while recent Metro operations policy direction was updated to require 3-car consists on the Metro Gold Line in FY 2030. As a result, the TSM capital and operating and maintenance costs were also revised to reflect the cost of the additional vehicles.

The following sections present a brief description of the four Final Alternatives, including:

- **General information** – An overview of each alternative's alignment and operational configuration along with a brief discussion of refinements made during the preparation of the Conceptual Engineering Drawings (Appendix A) to reduce identified impacts where possible.
- **Proposed stations** – Station information, including type (at-grade or aerial, single-center or split-platform), location and system-related facilities. Conceptual-level station plans and cross-sections are included in the Conceptual Engineering Drawings and the separate *Station Concepts Report*.
- **Design and operational issues** – A summary of design concerns identified during preparation of the Conceptual Engineering documents and related technical analysis that will require a more detailed evaluation during the next study phase.

A summary of operational configurations for each of the options is presented below in Table 2.2.

Table 2.2 Operational Description of Alternatives

Operational Segments (miles)	1 SR-60 LRT	2 Beverly Boulevard LRT	3 Beverly/ Whittier LRT via Montebello	3 Beverly/ Whittier LRT via Rosemead	4 Washington Boulevard LRT
At-grade	0.22	5.80	3.63	5.11	0.22
Aerial	6.50	2.60	4.75	3.38	8.97
Retained fill	0.17	0.68	0.68	0.68	0.17
Total length	**6.89**	**9.08**	**9.06**	**9.17**	**9.36**

2.2.3 Final Alternative 1 – SR-60 Light Rail Transit

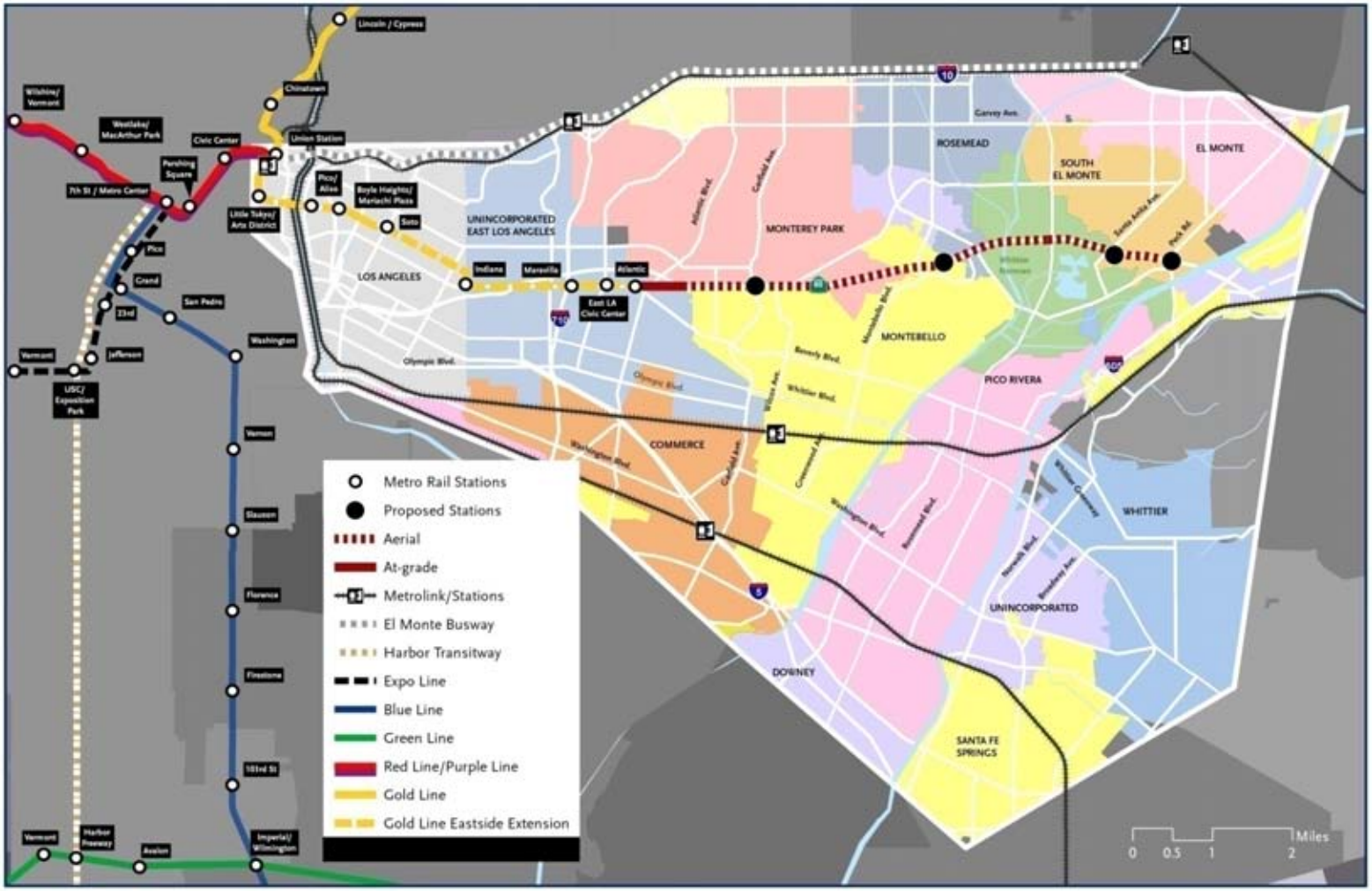
General Description:

As illustrated in Figure 2-2, more than 94 percent of this alternative operates in an aerial configuration and primarily within the SR-60 Freeway right-of-way. The first operational segment is the same for all of the four LRT options: the Phase 2 alignment extends at-grade east from the Metro Gold Line Eastside Extension Atlantic/Pomona Station in the median of Pomona Boulevard, where the alignment transitions to an independent aerial structure within the south side of the SR-60 Freeway right-of-way until Garfield Avenue. The SR-60 Alternative continues east beyond Garfield Avenue in the freeway right-of-way, terminating in the vicinity of the SR-60/Peck Road interchange in the City of South El Monte. The proposed LRT alignment is located on the south side of the freeway between the edge of the eastbound traffic lanes and the SR-60 Freeway property line.

During Conceptual Engineering, alignment and station refinements were made as the design documents advanced from single line alignment drawings to a five percent level of engineering design. Table 2.4, located at the end of this section, provides a detailed overview of the conceptual engineering-based refinements for all of the alternatives. For the SR-60 Alternative, a summary of the refinements made includes the following:

1. Relocation of the SR-60/Garfield Station, from its location straddling Garfield Avenue, to east of Garfield Avenue within the SR-60 Freeway right-of-way to better accommodate station access.
2. Elimination of retained cut operating sections proposed along the former OII/current Superfund site to avoid integrity and stability impacts to the clay liners, soil and vegetation covering the landfill site.
3. Modification of the aerial alignment profile to avoid impacts to the Southern California Edison's (SCE) transmission lines crossing the SR-60 Freeway, and proposed rail system alignment, north of Paramount Boulevard.
4. Modification of the alignment and station location in the Peck Road station area to avoid impacts to SCE existing and future transmission lines; the alignment, station and tail tracks were shifted to the west and the proposed station area taking was reduced to avoid SCE property.
5. Relocation of the Montebello Town Center Station closer to the SR-60 Freeway and at a lower vertical profile allowing for a station platform approximately at the same level as the adjacent Montebello Town Center and bus depot allowing for better pedestrian access to the Town Center, improved station and bus interface, and lower system and station costs.
6. Initial location of traction power substations (TPSS) required for rail operations.

Figure 2-2 SR-60 LRT Alternative



7. Minor relocation of some stations to better fit within the existing community, or to reduce traffic impacts, such as shifting a station taking travel lanes to the street median. Stations initially located on curved alignment sections were shifted to straight alignment sections.

Proposed Stations:

The SR-60 LRT Alternative has four stations designed with bus and parking facilities to intercept vehicular and bus travel operating within the east-west freeway corridor and circulating in a north-south direction crossing the freeway. All of the station areas will require property acquisition to accommodate stations and related facilities, including Park-and-Ride (PNR) structures, and all have the potential for Transit Oriented Development (TOD).

- *SR-60/Garfield* – aerial, center platform station located within the freeway right-of-way east of Garfield Avenue along Via Campo Street (Montebello). Station facilities include on-street bus interface, Kiss-and-Ride (KNR) space and a PNR structure, along with a TOD opportunity.

- *SR-60/Town Center Drive* – aerial, center platform station located on private property adjacent to the Montebello Town Center (Montebello). Station facilities include an off-street bus plaza, KNR space and a PNR structure, along with a TOD opportunity.

- *SR-60/Santa Anita Avenue* – aerial, center platform station located on vacant land on the south side of the freeway to the east of Santa Anita Avenue (South El Monte). Station facilities include on-street bus interface, KNR space and a PNR structure, along with a TOD opportunity.

- *SR-60/Peck Road* – aerial, center platform terminus station located within the freeway right-of-way to the east of Peck Road (South El Monte). Station facilities include an off-street bus plaza, KNR space and two PNR structures, along with several TOD opportunities in the station area.

Design and Operational Concerns

During Conceptual Engineering, the following issues and concerns were identified and are discussed below and illustrated in Figure 2.3. If this alternative moves forward into Advanced Conceptual Engineering and the Draft EIS/EIR phase, they will need to be addressed.

- *Construction within the SR-60 Freeway right-of-way* – Design of LRT facilities must meet Caltrans and Federal Highway Administration (FHWA) standards; requires establishment of a cooperative working agreement with Caltrans and FHWA.

- *Fit with future Southern California Edison projects* – The backbone of SCE's transmission system crosses the alignment in two locations: diagonally just east of

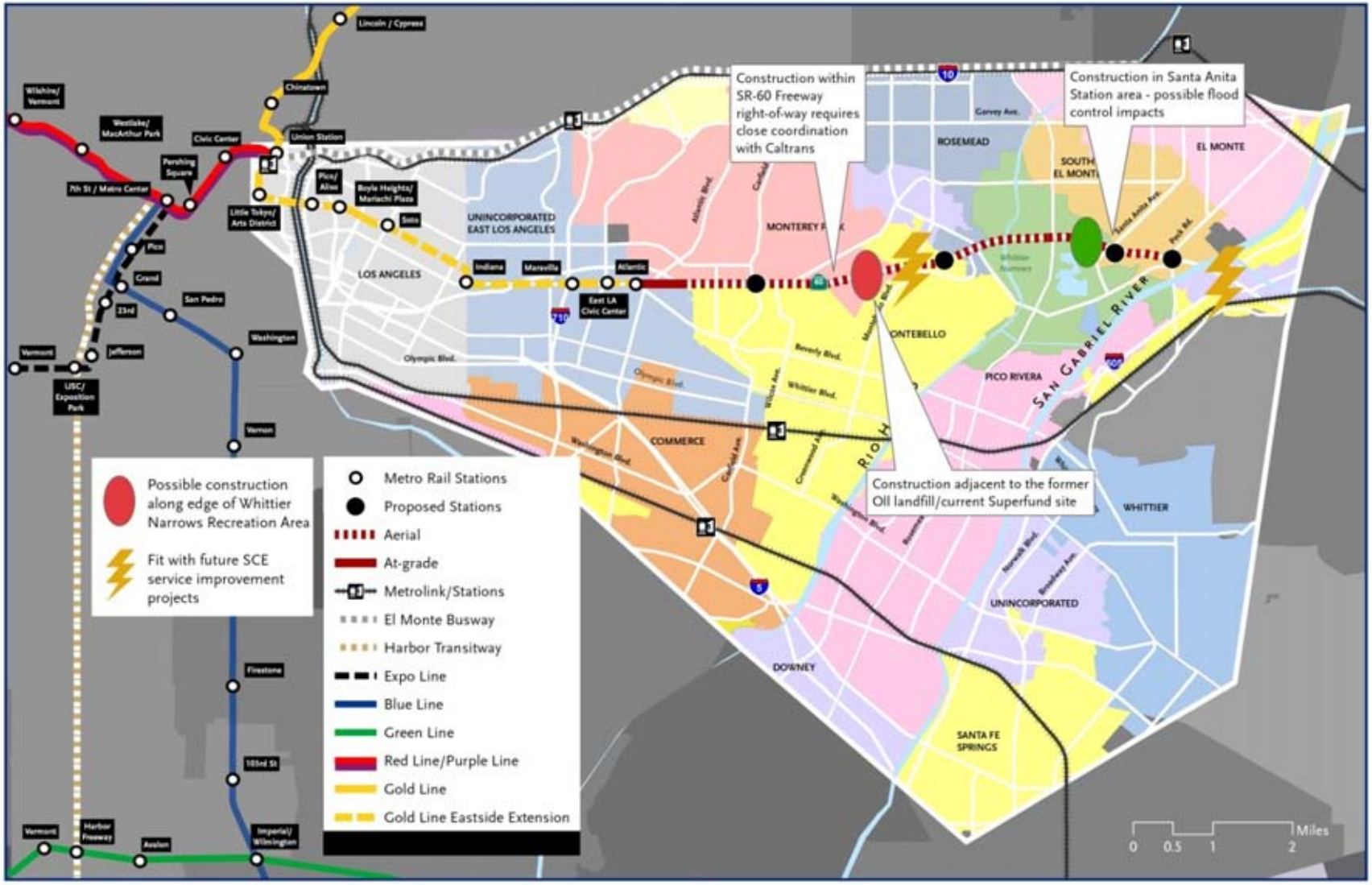
Paramount Boulevard and east of Peck Road. SCE has plans for major service improvements involving the construction and operation of new and upgraded transmission facilities in both locations as part of the Tehachapi Renewable Transmission Project. Project improvements include: adding new lines to a vacant position on existing 220 kV towers, and replacing existing 220kV service with new double-circuit, 500 kV transmission lines and towers within the same right-of-way. Successful design of the rail system interface with the proposed transmission facilities will require a cooperative working relationship with SCE.

- *Construction adjacent to former OII landfill/current Superfund site* – This current Superfund site is located on both sides of the SR-60 Freeway, approximately between Vail Avenue and Paramount Boulevard in the cities of Montebello and Monterey Park. The landfill located on the south parcel has been mitigated with a geotextile and clay monocover placed on the sides and a geosynthetic clay cover located over the top deck, with both covers topped with soil and vegetation. The north parcel contains the leachate treatment and thermal destruction facilities. Initial conversations with on-site U.S. Environmental Protection Agency (EPA) staff indicate that there are viable engineering and environmentally-safe methods to penetrate the site's cap. Piles for columns can be backfilled with impermeable clay, and geotech liners can be connected to the pile. Mitigation will ensure methane will not leak out around the columns.. Further site investigation, development of more detailed engineering plans in cooperation with the U.S. EPA, and identification of cost estimates are required.

- *Construction within the Whittier Narrows Recreation Center Area* – The proposed aerial system will require placement of columns and footings adjacent to, and possibly within, this parkland resource and flood control plain. Further site investigation and development of more detailed engineering plans are required to identify any site-specific impacts and possible mitigation measures.

- *Construction of the Santa Anita Avenue Station* – Located adjacent to the Whittier Narrows Recreation Center Area, portions of this site are owned by the U.S. Army Corps of Engineers (USACE) to accommodate flood control. Further site investigation and development of more detailed engineering plans are required in coordination with USACE to identify any site-specific impacts and possible mitigation measures.

Figure 2-3 SR-60 LRT Alternative – Design and Operational Issues



2.2.4 Final Alternative 2 – Beverly Boulevard Light Rail Transit

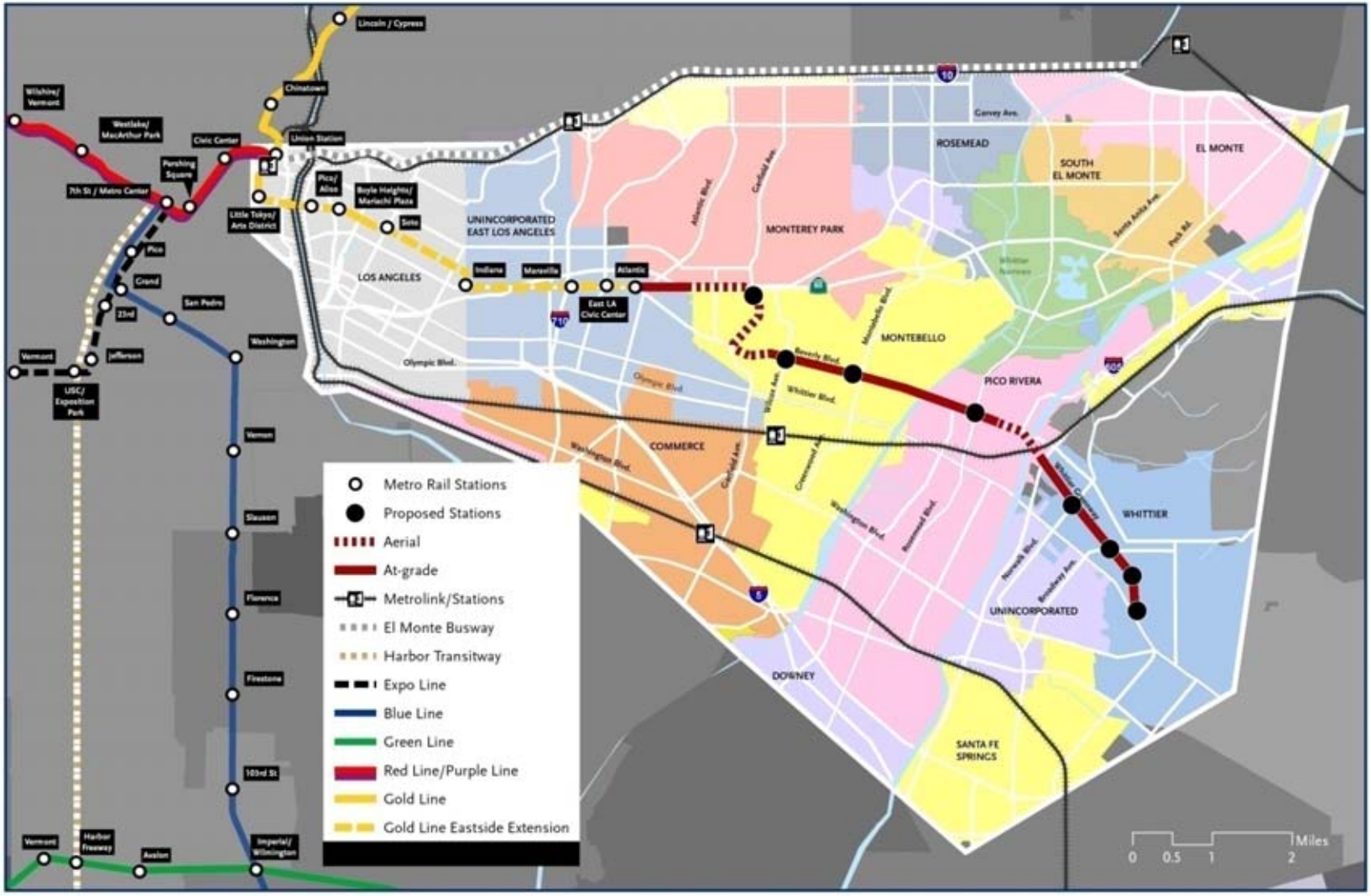
General Description:

As illustrated in Figure 2-4, the Beverly Boulevard LRT Alternative operates primarily at-grade with aerial sections as well as retained fill operations where the alignment transitions between at-grade and aerial configurations. Similar to the other LRT options, this alternative extends at-grade east from the Metro Gold Line Eastside Extension Atlantic/Pomona Station in the median of Pomona Boulevard, where the alignment transitions to aerial operations running in the south side of the SR-60 Freeway right-of-way until Garfield Avenue. At Garfield Avenue, this option turns south to operate in an aerial configuration in the median of Garfield Avenue until Beverly Boulevard, where the alignment turns east and transitions to at-grade, median-running operations along Beverly Boulevard to just east of the San Gabriel River. Here, the alignment turns southeast to cross vacant and storage property to enter the Whittier Greenway via a former railroad bridge over the I-605 Freeway. A former railroad right-of-way, the Whittier Greenway is now owned by the City of Whittier and has been converted to a landscaped bicycling and walking trail. Under this option, the width of the trail will be reduced to half of its size to accommodate the proposed LRT system. The existing trail facilities will be shifted to the north half of the Greenway right-of-way to allow for continuous trail use, and the rail system will be built on the southern side. A fence or wall will be constructed between the rail and trail uses for safety purposes, and adjacent residential properties will have landscaped screening on the rail side of the alignment.

During Conceptual Engineering, alignment and station refinements were made as the design documents advanced from single line alignment drawings to a five percent level of engineering design. Table 2.4, located at the end of this section, provides a detailed overview of the conceptual engineering-based refinements for all of the alternatives. For the Beverly Boulevard, a summary of the refinements made includes the following:

1. Relocation of the SR-60/Garfield Station from the southwest corner of the intersection of Garfield Avenue and Via Campo Street to the southeast corner to provide more room for required station facilities and to reduce impacts on the Montebello Golf Course.
2. Redesign of the alignment as it turns from Garfield Avenue onto Beverly Boulevard: started the transition from aerial to at-grade operations earlier than shown in AA drawings to avoid conflict with SCE transmission lines.
3. Relocation of rail operations to the south side of the Whittier Greenway to allow for continuous trail usage on the northern half.
4. Design of a proposed land bridge at Palm Park located along the Whittier Greenway to allow for park users to cross under the rail tracks.
5. Redesign of some Whittier Greenway stations to address pedestrian and bicyclist safety concerns.
6. Initial location of TPSS required for rail operations.

Figure 2-4 Beverly Boulevard LRT Alternative



7. Minor relocation of some stations to better fit within the existing community, or to reduce traffic impacts, such as shifting a station taking travel lanes to the street median. Stations initially located on curved alignment sections were shifted to straight alignment sections.

Proposed Stations:

The Beverly Boulevard LRT Alternative has eight stations located to best serve the communities through which this option runs. Several of the stations will require acquisition to accommodate stations and related station facilities, including PNR structures. Four of the stations have TOD opportunities.

- ***SR-60/Garfield*** – aerial, center platform station located on the southeast corner of Garfield Avenue and Via Campo Street (Montebello). Property acquisition is required to accommodate station facilities, including KNR space and a PNR structure, along with a TOD opportunity.
- ***Beverly/Wilcox*** – at-grade, split station with single-sided platforms located on both sides of the Beverly Boulevard/Wilcox Avenue intersection (Montebello).
- ***Beverly/Montebello*** – at-grade, split station with single-sided platforms located on both sides of the Beverly and Montebello Boulevards intersection (Montebello). Property acquisition required to accommodate station facilities, including KNR and PNR spaces, along with a TOD opportunity.
- ***Beverly/Rosemead*** – at-grade, split platform station with single-sided platforms located on both sides of the Beverly and Rosemead Boulevards intersection (Pico Rivera). Property acquisition is required to accommodate station facilities, including KNR and PNR spaces, along with a TOD opportunity.
- ***Greenway/Norwalk*** – at-grade, split platform station located on either side of a rebuilt railroad bridge located over Norwalk Boulevard (Whittier). On-street bus and KNR access is provided.
- ***Greenway/Broadway*** – at-grade, split platform station located on both sides of the greenway crossing of Broadway Avenue (Whittier).
- ***Greenway/Philadelphia*** – at-grade, center platform station located east of Philadelphia Street (Whittier).
- ***Greenway/Mar Vista*** – at-grade, center platform terminus station located east of Mar Vista Street (Whittier). Property acquisition is required to accommodate station facilities, including an off-street bus plaza, KNR space and PNR structures, along with a TOD opportunity.

Design and Operational Issues:

During Conceptual Engineering, the following issues and concerns were identified and are discussed below and illustrated in Figure 2.5. If this alternative moves forward into Advanced Conceptual Engineering and the Draft EIS/EIR phase, they will need to be addressed.

- *Whittier Greenway* – This alternative proposes to use the former railroad right-of-way, now owned by the City of Whittier and redesigned as a bike and walk trail, for both rail and recreational uses with a fence or wall between the uses. The Whittier Greenway is identified as a park by the City of Whittier, and federal, state, regional and local funds were used to build the park. Approval by the City of Whittier is required for its proposed joint use for rail operations and recreational trail. The right-of-way runs through single-family residential neighborhoods and adjacent to several schools; safety, visual and noise mitigation measures will be required. During Conceptual Engineering, the Norwalk Boulevard and Broadway stations on the Whittier Greenway were redesigned with split-platforms located on either sides of a street crossing to increase a train operator's view of the surrounding area and to accommodate safety features, such as four-quadrant gates for pedestrians and vehicles.

  In some locations along the northern end of the Greenway, the right-of-way width is constrained and will require construction of retaining walls along the edges of the right-of-way to allow for use of the full width to accommodate both rail and trail facilities.

  Palm Park, which is currently bisected by the Greenway, will be further impacted by rail operations operating on the right-of-way. A "land bridge" is proposed at Palm Park to allow park users to cross under a slightly raised rail alignment on a land bridge designed to complement the existing park setting.

  In 2007, a 9,000-foot long, 48-inch water line was installed on the Greenway from Norwalk Boulevard to Mar Vista Street. Located at a minimum depth of three feet along the centerline of the Greenway right-of-way, relocation of this utility to the northern side of the right-of-way will be required to accommodate rail operations.

- *Traffic impacts* – In some locations, Beverly Boulevard has a constrained right-of-way width ranging from 80 to 100 feet. Elimination of left turns at minor intersections will allow for two through traffic lanes during peak periods, while retaining off-peak parking within the existing roadway right-of-way. Spot widening at stations and principal intersections may be required to maintain needed roadway capacity.

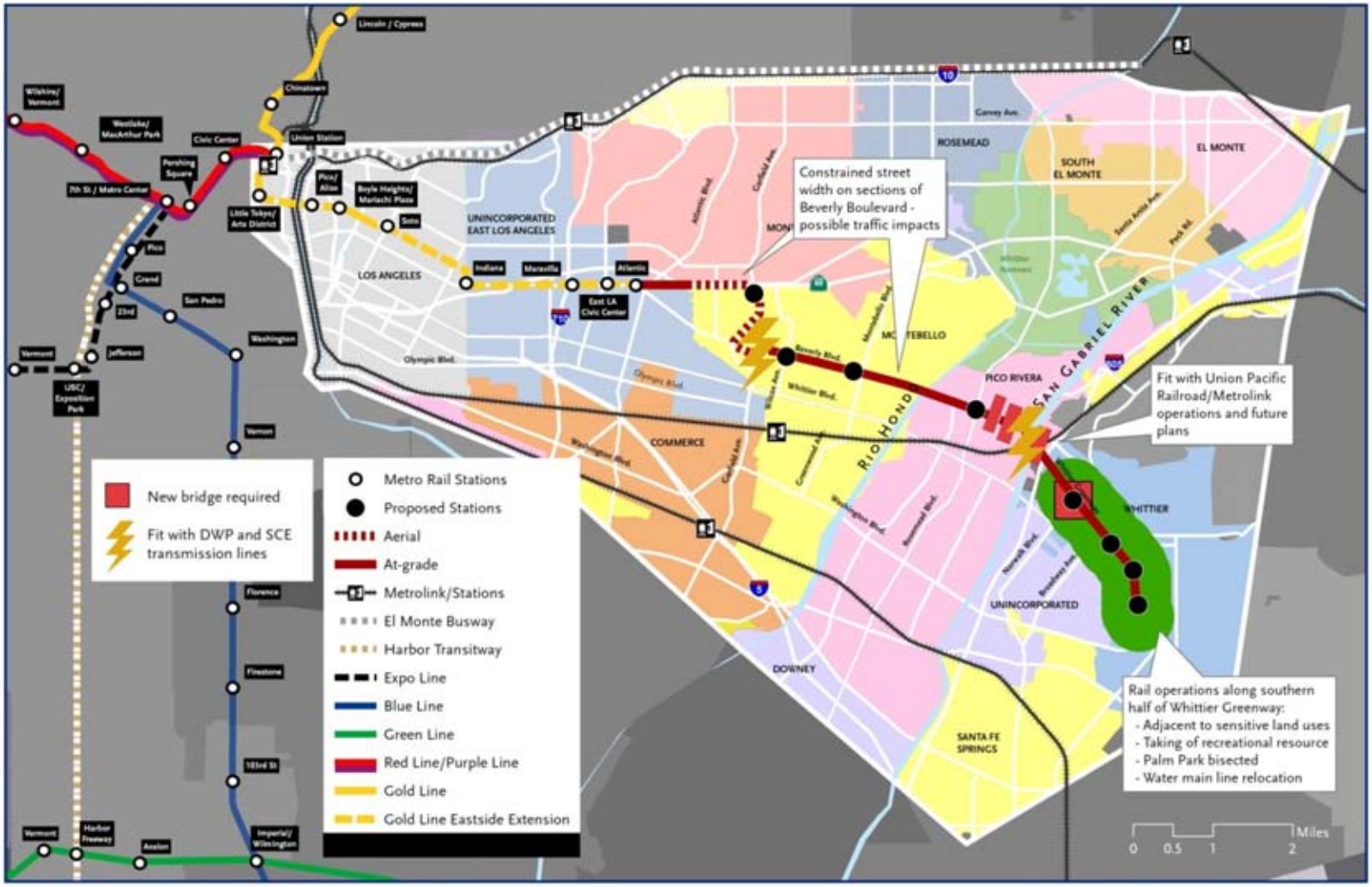
- *Construction within the SR-60 and I-605 Freeway right-of-way* – Design of LRT facilities must meet Caltrans and FHWA standards; requires establishment of a cooperative working agreement with Caltrans and FHWA.

- ***New Bridges*** – This alternative will cross over four bridges: the Rio Hondo Flood Channel, the San Gabriel River, a former railroad bridge over the I-605 Freeway and a former railroad bridge over Norwalk Boulevard. Conceptual Engineering efforts evaluated the existing bridges and developed preliminary determinations of whether the structures could be strengthened to accommodate rail operations or whether replacement was required. As shown in Table 2.3, four new bridges are recommended for this alternative. Possible site-specific construction impacts on flood control facilities will require further analysis and working closely with agencies, including USACE as well as Caltrans and impacted municipalities.
- ***Fit with existing and future Southern California Edison projects*** – Major portions of SCE's transmission system cross this alignment in two locations: on the western end as the alignment turns east from Garfield Avenue on to Beverly Boulevard; and east of the San Gabriel River. Both power alignments currently have 220kV transmission lines and towers. A significant portion of the land east of the San Gabriel River is owned by SCE, who has indicated in initial conversations that their future plans will preclude rail operations through this site. Successful design of the rail system in this area will require a cooperative working relationship with SCE.
- ***Fit with Union Pacific plans*** – The Union Pacific (UP) Railroad owns a portion of the currently vacant land on the east side of the San Gabriel River that will be crossed by this alternative's alignment; any use of this property will require UP's approval and may conflict with their future plans.

Table 2.3 New Bridge Requirements

Alternative	Rio Hondo	San Gabriel River	I-605 Freeway	Norwalk/ Whittier Trail
1 SR-60 LRT	-	-	-	-
2 Beverly Boulevard LRT	✓	✓	✓	✓
3 Beverly/Whittier LRT via Montebello	✓	✓	✓	-
3 Beverly/Whittier LRT via Rosemead	✓	✓	✓	-
4 Washington Boulevard LRT	✓	✓	✓	-

Figure 2-5 Beverly Boulevard LRT Alternative – Design and Operational Issues



2.2.5 Final Alternative 3 – Beverly/Whittier Boulevards Light Rail Transit

General Description:

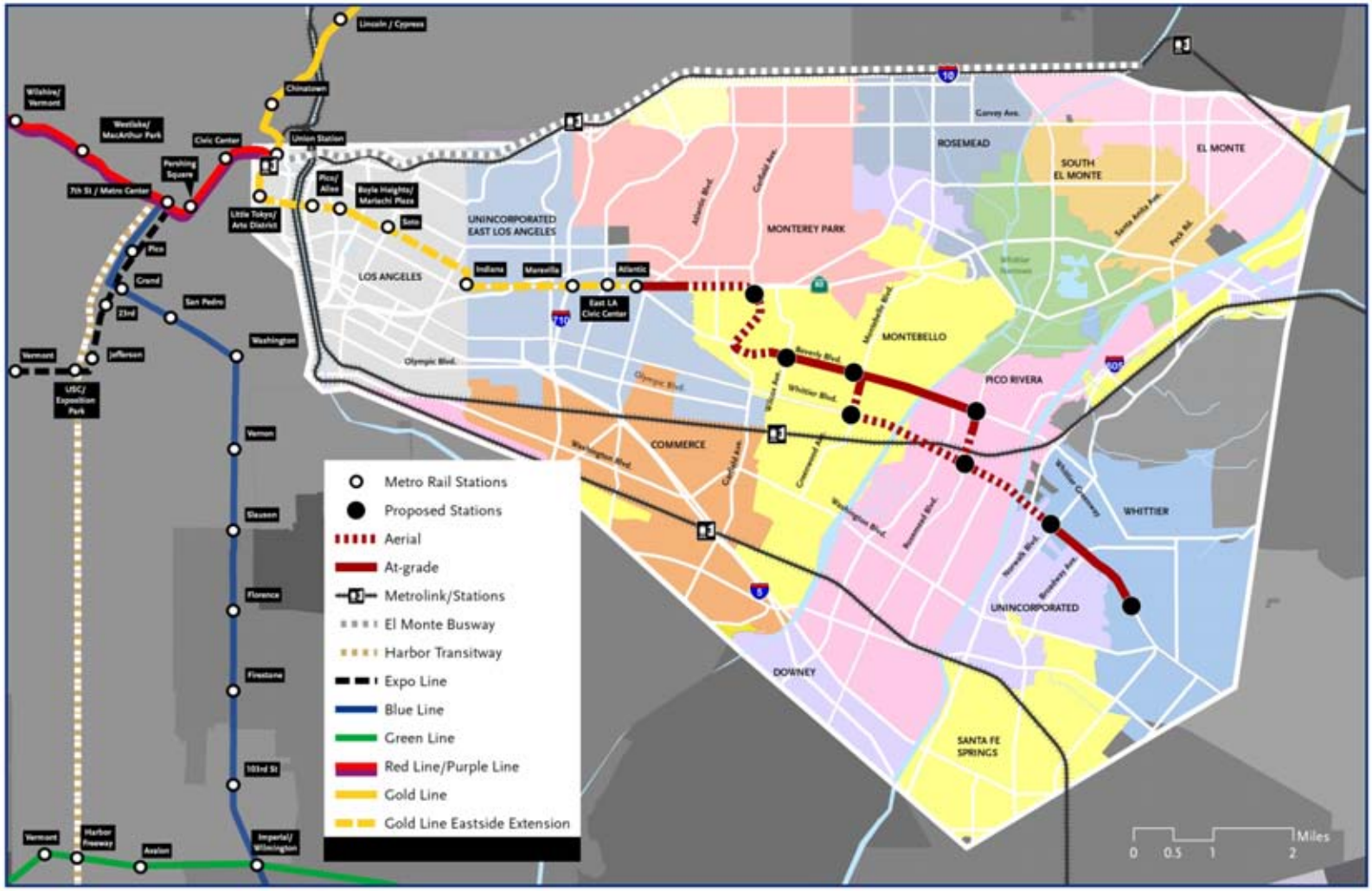
As illustrated in Figure 2-4, the Beverly/Whittier LRT alternative operates in a combination of at-grade and aerial configurations as well as retained fill for operational transitions. This new alternative combines the first half of the Beverly Boulevard Alternative with the eastern half of the previously-studied Whittier Boulevard alignment. North-south connections are proposed on either Montebello or Rosemead Boulevards. Similar to the other LRT options, this alternative extends at-grade east from the Metro Gold Line Eastside Extension Atlantic/Pomona Station in the median of Pomona Boulevard, where the alignment transitions to a combination of aerial and retained fill operations running in the south side of the SR-60 Freeway right-of-way until Garfield Avenue. At Garfield Avenue, this option turns south continuing to operate in an aerial configuration in the median of Garfield Avenue until Beverly Boulevard, where the alignment turns east and transitions to at-grade, median-running operations along Beverly Boulevard. It then turns south to operate on either Montebello Boulevard or Rosemead Boulevard:

- *Montebello Boulevard Option* – The Beverly/Montebello Station becomes a center platform and is pulled back to the western side of the intersection; the at-grade alignment then turns south to travel in the Montebello Boulevard median, where it transitions to an aerial configuration and turns east onto Whittier Boulevard with an aerial Whittier/Montebello Station.

- *Rosemead Boulevard Option* – The Beverly/Montebello Station remains similar to the Beverly Boulevard Alternative (at-grade, split center platform station) and continues east at-grade along Beverly Boulevard to Rosemead Boulevard, where the at-grade, center platform Beverly/Rosemead Station is located to the west of the intersection. The alignment then turns to travel south on Rosemead Boulevard, where it transitions almost immediately to an aerial configuration to travel south over the Union Pacific/Metrolink tracks located north of Whittier Boulevard. This option turns east on Whittier Boulevard with an aerial Whittier/Rosemead Station.

Both options continue east on Whittier Boulevard in aerial operations crossing the Rio Hondo, San Gabriel River and I-605 Freeway, after which the alignment returns to at-grade, median-running operations along Whittier Boulevard from just west of Norwalk Boulevard to a terminus station located at Mar Vista Street adjacent to the Whittier Greenway. In summary, both options operate in a combination of at-grade and aerial configurations. The Beverly/Montebello/Whittier option will operate 40 percent at-grade and 52 percent in an aerial configuration, while 56 percent of the Beverly/Rosemead/Whittier option runs at-grade and 37 percent runs in aerial operations. The remainder of both options, eight and seven percent, respectively, operates in a retained fill configuration in two locations: where the alignments transition between at-grade and aerial operations between the Metro Gold Line Eastside Extension Atlantic/Pomona Station and

Figure 2-6 Beverly/Whittier Boulevards LRT Alternative



the SR-60 Freeway right-of-way, and on Montebello and Rosemead Boulevards, where they transition from at-grade to aerial operations.

During Conceptual Engineering, alignment and station refinements were made as the design documents advanced from single line alignment drawings to a five percent level of engineering design. Table 2.4, located at the end of this section, provides a detailed overview of the conceptual engineering-based refinements for all of the alternatives. For the Beverly/Whittier Boulevards Alternative, a summary of the refinements made includes the following:

1. Relocation of the SR-60/Garfield Station from the southwest corner of the intersection of Garfield Avenue and Via Campo Street to the southeast corner to provide more room for required station facilities and to reduce impacts on the Montebello Golf Course.
2. Redesign of previously at-grade sections on Whittier Boulevard to aerial operations to:
   - Reduce travel impacts within the constrained street width of Montebello Boulevard (56 feet curb-to-curb) in Montebello's downtown area; and
   - Replace proposed at-grade rail operations through a significantly constrained right-of-way under a substandard Union Pacific bridge used by the railroad and Metrolink.
3. Whittier Boulevard median-running operations were shifted to the east side of Whittier Boulevard just north of Mar Vista Street to mitigate impacts to an historic landmark (Paradox Hybrid Walnut Tree) and the median parkway (listed as a park by Whittier).
4. Initial location of TPSS required for rail operations.
5. Minor relocation of some stations to better fit within the existing community, or to reduce traffic impacts, such as shifting a station taking travel lanes to the street median.

Proposed Stations

The Beverly/Whittier Boulevards LRT Alternative has seven stations located to best serve the communities through which this option runs. Several of the stations will require acquisition to accommodate stations and related system facilities, including PNR spaces; five of the stations have TOD opportunities.

Four stations common to both the Montebello and Rosemead options

- ***SR-60/Garfield*** – aerial, center platform station located on the southeast corner of S. Garfield Avenue and Via Campo Street (Montebello). Property acquisition is required to accommodate system access and facilities, including drop-off space and a PNR structure, along with a TOD opportunity.
- ***Beverly/Wilcox*** – at-grade, split platform station with single-sided platforms located on both sides of the Beverly Boulevard/Wilcox Avenue intersection (Montebello).
- ***Whittier/Norwalk*** – aerial, center station in median of Whittier Boulevard to east of Norwalk Boulevard (Whittier). Property acquisition is required at two corner locations to accommodate system access and facilities, including PNR spaces.

- *Whittier/Mar Vista* – at-grade, center platform station located off-street east of Whittier Boulevard (Whittier). Property acquisition is required at this terminus station to provide system facilities, including an off-street shuttle and bus plaza, drop-off space and a PNR structure, along with a TOD opportunity.

Three stations specific to the Montebello Boulevard option

- *Beverly/Montebello* – at-grade, center platform station located on the west side of the Beverly and Montebello Boulevards intersection (Montebello). Property acquisition is required at the northwest corner to accommodate system facilities, including drop-off space and PNR spaces.
- *Whittier/Montebello* – aerial, center platform station located in the median of Whittier Boulevard east of Montebello Boulevard (Montebello).
- *Whittier/Rosemead* – aerial, center platform station located in median of Whittier Boulevard east of Rosemead Boulevard (Pico Rivera). Property acquisition is required at the southeast corner to provide system access and facilities, including a PNR structure, along with a TOD opportunity.

Three stations specific to the Rosemead Boulevard option

- *Beverly/Montebello* – at-grade, split platform station located on both sides of the Beverly and Montebello Boulevards intersection (Montebello). Property acquisition is required at the northwest corner for station access and related facilities, including drop-off and PNR spaces.
- *Beverly/Rosemead* - at-grade, center platform station located on the west side of the Beverly and Rosemead Boulevards intersection (Pico Rivera). Property acquisition is required at the northwest corner for station access and related facilities, including drop-off space and a PNR structure, along with a TOD opportunity.
- *Rosemead/Whittier* – aerial, center platform station located in the median of Whittier Boulevard east of Rosemead Boulevard (Pico Rivera). Property acquisition is required for station access and related facilities, including drop-off and PNR spaces, along with a TOD opportunity.

Design and Operational Concerns:

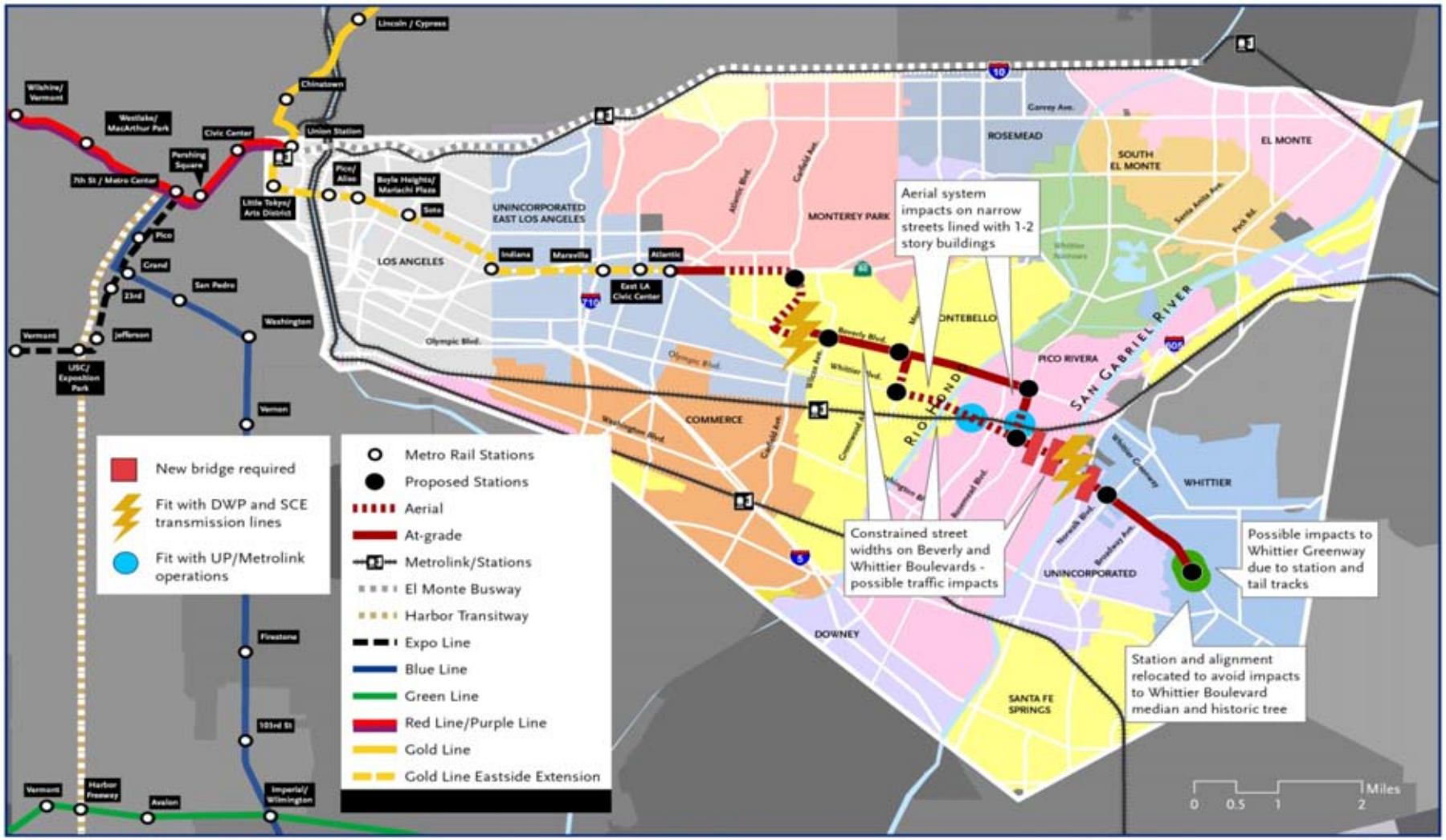
During Conceptual Engineering, the following issues and concerns were identified and are discussed below and illustrated in Figure 2.7. If this alternative moves forward into Advanced Conceptual Engineering and the Draft EIS/EIR phase, they will need to be addressed.

- *Traffic impacts* – In several locations, Beverly and Whittier Boulevards have constrained right-of-way widths ranging from 76 to 90 feet. As identified in the AA Report, elimination of left turns at minor intersections may be required and will be identified during

environmental analysis. Spot widening at stations and principal intersections may be required to provide needed roadway capacity.

- *Aerial system impacts on Downtown Montebello* – Introduction of an aerial system along this street of low-scale buildings may have scale, visual, noise and vibration impacts that will need to be further evaluated in the next phase.
- *Constrained right-of-way along Whittier Boulevard* – Current plans show at-grade operations on Whittier Boulevard between Norwalk Boulevard and west of Broadway. The street and sidewalk widths are narrow in this area of single-family residences; design of rail operations in this area will require more detailed analysis.
- *Construction within the SR-60 and I-605 Freeway right-of-way* – Design of LRT facilities must meet Caltrans and FHWA standards; requires establishment of a cooperative working agreement with Caltrans and FHWA.
- *New Bridges* – This alternative will require three bridge crossings: the Rio Hondo Flood Channel, the San Gabriel River and the I-605 Freeway. Conceptual Engineering efforts evaluated the existing bridges and developed preliminary determinations of whether the structures could be strengthened to accommodate rail operations or whether replacement was required. As shown in Table 2.3, three new bridges are recommended for this alternative. Possible site-specific construction impacts on flood control facilities will require further analysis and working closely with affected agencies, including the USACE as well as Caltrans and impacted municipalities.
- *Fit with existing Southern California Edison projects* – This alignment crosses under the SCE regional transmission system as the alignment turns east from Garfield Avenue on to Beverly Boulevard. During Conceptual Engineering, horizontal and vertical alignment refinements were made to reduce the alignment's closeness to electrical wires. Successful design of the rail system clearance of transmission facilities will require a cooperative working relationship with SCE.
- *Fit with Union Pacific operations* – This alternative will operate in an aerial alignment over the UP Railroad tracks in two locations: just west of Paramount Boulevard, and along the Rosemead Boulevard north-south section north of Whittier Boulevard. Successful design of the LRT system will require a cooperative working relationship with UP.
- *Whittier Greenway* – The end segment of this alternative will run alongside the Whittier Greenway; the end segment includes some operating line, a station and storage tail tracks. Further assessment and design is required to reduce possible impacts to the Greenway, considered parkland and a recreational resource by the City of Whittier, at this location.

Figure 2-7 Beverly/Whittier Boulevards LRT Alternative – Design and Operational Issues



2.2.6 Final Alternative 4 – Washington Boulevard LRT

General Description:

As illustrated in Figure 2-8, the Washington Boulevard LRT Alternative operates predominately (97 percent) in an aerial configuration, with the remaining three percent operating on retained fill. The first operational segment is similar to the LRT options in Alternatives 2 and 3: the alignment extends at-grade east from the Metro Gold Line Eastside Extension Atlantic/Pomona Station in the median of Pomona Boulevard, where it then transitions to aerial operations running in the south side of the SR-60 Freeway right-of-way until Garfield Avenue. After the SR-60/Garfield Station, the Washington Boulevard Alternative turns south in an aerial configuration to operate in the median of Garfield Avenue until Washington Boulevard, where it turns east and continues in median-running, aerial operations on Washington Boulevard to a terminus station located east of Lambert Road with tail tracks for storage extending farther east.

During Conceptual Engineering, alignment and station refinements were made as the design documents advanced from single line alignment drawings to a five percent level of engineering design. Table 2.4, located at the end of this section, provides a detailed overview of the conceptual engineering-based refinements for all of the alternatives. For the Washington Boulevard Alternative, a summary of the refinements made includes the following:

1. Relocation of the SR-60/Garfield Station from the southwest corner of the intersection of Garfield Avenue and Via Campo Street to the southeast corner to provide more room for required station facilities and to reduce impacts on the Montebello Golf Course.
2. Relocation of the terminus station at Lambert Road farther east by 150 feet to reduce impacts on adjacent businesses and to better fit with the City of Whittier's land use plans.
3. Relocation of the alignments to the south side of the Rio Hondo and San Gabriel River bridges to provide a smoother, more direct crossing of the I-605 Freeway. The vertical profile was revised to reduce the alignment's closeness to the SCE transmission lines adjacent to the San Gabriel River.
4. Initial location of TPSS was required for rail operations.
5. Minor relocation of some stations to better fit within the existing community, or to reduce traffic impacts, such as shifting a station taking travel lanes to the street median. Stations initially located on curved alignment sections were shifted to straight alignment sections.

Proposed Stations:

The Washington Boulevard LRT Alternative has six elevated stations located to best serve the communities through which this option runs. Five of the six stations require property acquisition to accommodate stations, access and related facilities, including PNR spaces; four of the stations have TOD opportunities.

- *SR-60/Garfield* – aerial, center platform station located on the southeast corner of S. Garfield Avenue and Via Campo Street (Montebello). Property acquisition is required for station access and facilities, including drop-off space and a PNR structure, along with a related TOD opportunity.
- *Garfield/Whittier* – aerial, center platform station located in the median of Garfield Avenue just north of Whittier Boulevard (unincorporated East Los Angeles). Property acquisition is required for station access and facilities.
- *Washington/Greenwood* – aerial, center platform station located in the median of Washington Boulevard east of Greenwood Avenue (Montebello). Property acquisition is required for station access and facilities, including a PNR structure, along with a related TOD opportunity.
- *Washington/Rosemead* – aerial, center platform station located in the center of Washington Boulevard west of Rosemead Boulevard (Pico Rivera). Property acquisition is required for station access and facilities, including a PNR structure. There are development opportunities within walking distance of the station.
- *Washington/Norwalk* – aerial, center platform station located in the median of Washington Boulevard east of Norwalk Boulevard (Whittier). Property acquisition is required for station access and facilities, including a PNR structure, along with a related TOD opportunity. There are other station area development opportunities.
- *Washington/Lambert* – aerial, center platform station located in the median of Washington Boulevard east of Lambert Road (Whittier). Property acquisition is required at this terminus for station access and facilities, including off-street shuttle access, drop-off space and PNR structures with related TOD opportunities. There are other station area development opportunities as well.

Design and Operational Concerns:

During Conceptual Engineering, the following issues and concerns were identified and are discussed below and illustrated in Figure 2.9. If this alternative moves forward into Advanced Conceptual Engineering and the Draft EIS/EIR phase, they will need to be addressed.

- *Traffic impacts* – Aerial rail operations are seen as a way of maintaining existing street system capacity while providing additional corridor travel capacity, and this is true where there is sufficient street right-of-way. In the study area, Washington Boulevard varies from four to six lanes in width, and along the wider street sections there will be minimal impacts to vehicular traffic due to the introduction of a rail system. In the corridor's constrained street areas, placement of aerial structural system elements, such as columns and station access elements, may negatively impact street circulation. Elimination of left turns at minor intersections will allow for two through traffic lanes during peak periods, while retaining off-peak parking within the existing roadway right-of-

way. Spot widening at stations and principal intersections may be required to provide needed roadway capacity.

- ***Construction within the SR-60 and I-605 Freeway right-of-way*** – Design of LRT facilities must meet Caltrans and FHWA standards; requires establishment of a cooperative working agreement with Caltrans and FHWA.
- ***New Bridges*** – This alternative will require three bridge crossings: the Rio Hondo Flood Channel, the San Gabriel River and the I-605 Freeway. Conceptual Engineering efforts evaluated the existing bridges and developed preliminary determinations of whether the structures could be strengthened to accommodate rail operations or whether replacement was required. As shown in Table 2.3, all new bridges are recommended for this alternative. Possible site-specific construction impacts on flood control facilities will require further analysis and working closely with agencies, including USACE as well as Caltrans and impacted municipalities.
- ***Assessment of at-grade operations*** – During Conceptual Engineering, an initial assessment of the viability of at-grade operations along portions of Washington Boulevard was performed. Currently, this major street plays many travel roles. Washington Boulevard not only serves the communities it runs through, but it is also a regional major truck route, particularly west of the I-605 Freeway, and a commuter alternative to the I-5 Freeway. In addition, Washington Boulevard varies in width from four to six lanes.

  Conceptual-level engineering and operational analysis identified that west of Rosemead Boulevard, at-grade operations were not feasible primarily given the heavy truck traffic and the constrained street width. In four lane-wide locations, the introduction of an at-grade system structure will reduce travel capacity to one through lane in each direction. East of Rosemead Boulevard, particularly east of the I-605 Freeway, the viability of replacing aerial operations on Washington Boulevard with at-grade operations is possible from an engineering perspective, but will impact existing traffic circulation system and future rail system run times. An initial review of at-grade operations, including identification of the current street system operations, was performed between Rosemead Boulevard and the rail system's proposed terminus at the Five Points area of Whittier (Whittier Boulevard, Washington Boulevard, Santa Fe Springs Road and Pickering Avenue). Currently, there are eight signalized intersections, not including signals at Rosemead Boulevard and the Five Points area, each adding 30 seconds to an at-grade rail system's run time. With the introduction of at-grade rail operations, new traffic lights may be required for the safety of rail and vehicular traffic. In addition, there are a high number of non-signalized intersections: mid-block left-turn lanes into both shopping center driveways and minor residential streets; and side streets that "T" into Washington Boulevard via non-signalized left turn lanes. All of the identified traffic issues will increase rail run times and negatively affect the system's attractiveness to existing and new riders.

Figure 2-8 Washington Boulevard LRT Alternative

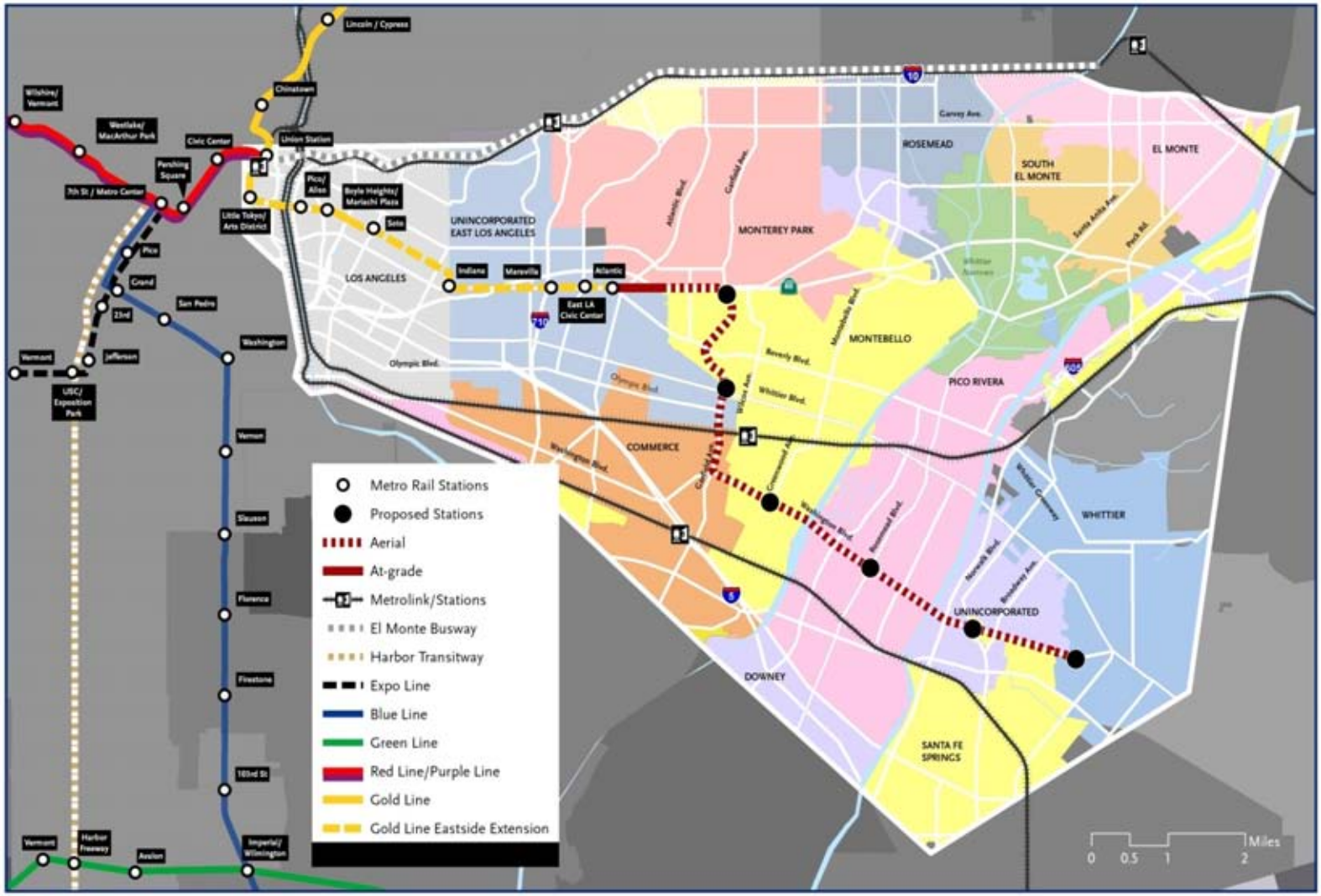


Figure 2-9 Washington Boulevard LRT Alternative – Design and Operational Issues

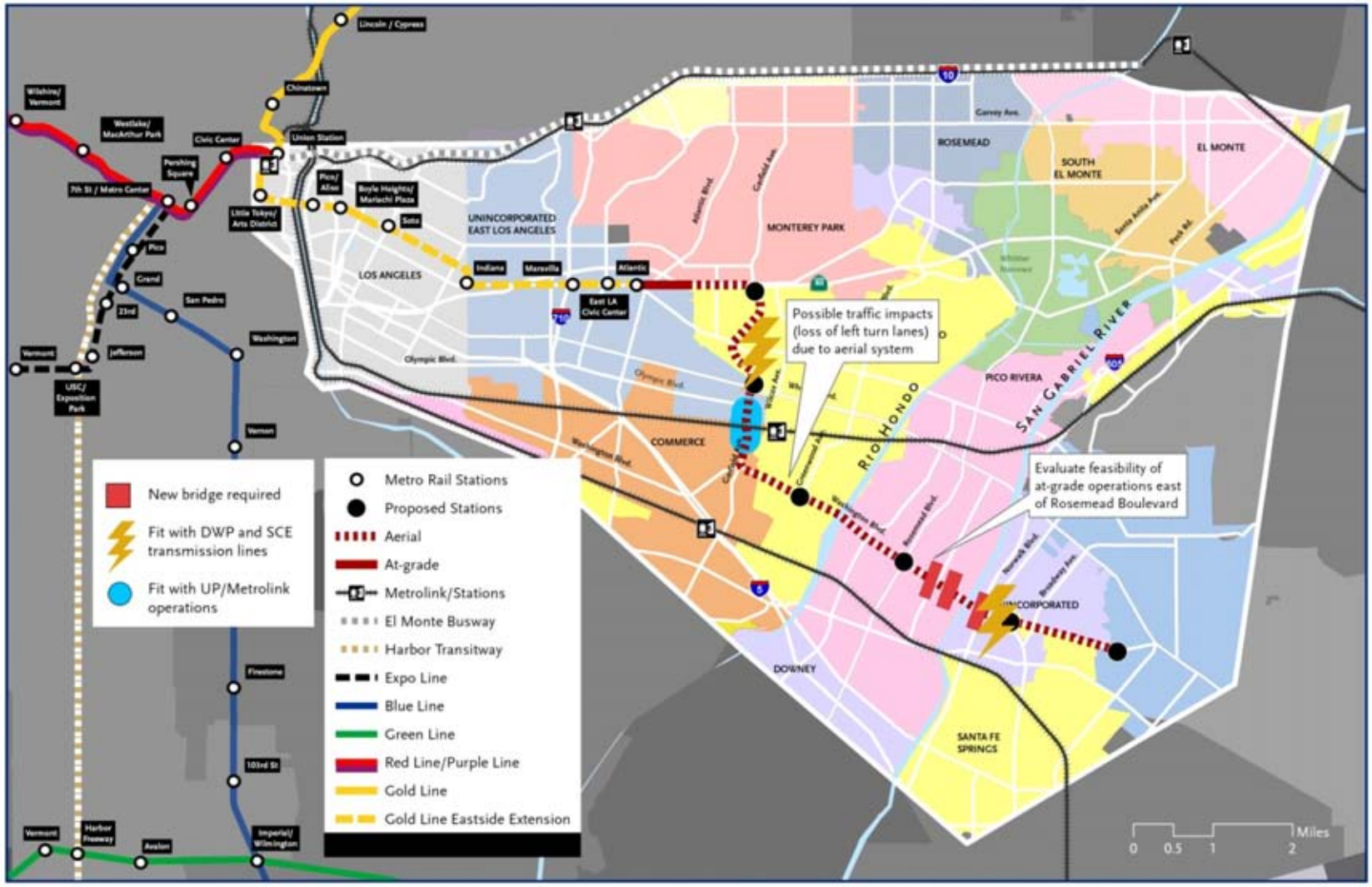


Table 2.4 Conceptual Engineering Alignment and Station Refinements

Alternative	Revision	Background
Alignment Revisions		
1 SR-60 LRT	Alignment shortened by 1.25 miles from AA terminus at Crossroads Parkway to Peck Road	• Reduces project cost by avoiding crossing of complex I-605/SR-60 interchange and SR-60
2 Beverly Boulevard LRT	• SR-60/Garfield station area alignment revised to reflect shifting of station from southwest to southeast corner of Garfield Avenue and Via Campo Street intersection • Beverly Boulevard – lengthened transition from aerial to at-grade operations by 100 ± feet • Smoothed out curves as alignment transitions from Beverly median to cross through primarily vacant land to cross I-605 Freeway • Whittier Greenway – alignment shifted to south side of trail • Whittier Greenway from Bailey Street south to Mar Vista Street – shifted alignment to south side and smoothed out curves (requires some property acquisition)	• Improves system access with new station location • Improves system operation • Meets Metro Design Criteria • Improves system operation by redesigning tight curves • Meets Metro Design Criteria • Allows for continuous recreational use along north side of trail • Improves system operation • Meets Metro Design Criteria
Whittier Boulevard LRT	Deleted from further consideration as a stand-alone alternative	• Avoids significantly constrained street widths in western section of alignment
3A Beverly/Whittier Boulevard LRT via Montebello Boulevard 3B Beverly/Whittier Boulevards LRT via Rosemead Boulevard	New alternative combining western portion of Beverly Boulevard Alternative with eastern portion of Whittier Boulevard Alternative, with north-south connections on either Montebello or Rosemead Boulevards Alignment revisions include: • Montebello option: former at-grade operations now are aerial east from Montebello Boulevard to east to the I-605 Freeway • Rosemead option: remains aerial to east of I-605 Freeway • Mar Vista Station area – former landscaped median-running alignment now crosses Whittier Boulevard to operate along the eastern street edge	• Provides most promising combination of Beverly and Whittier Boulevards options • Provides good study area service coverage • Improves travel time

Table 2.4 Conceptual Engineering Alignment and Station Refinements

Alternative	Revision	Background
Alignment Revisions		
4 Washington Boulevard LRT	• SR-60/Garfield station area alignment revised to reflect shifting station from southwest to southeast corner of Garfield Avenue and Via Campo Street intersection	• Improves system access with new station location
	• San Gabriel River Crossing – just west of river, median-running operations were shifted to the south side of the street right-of-way and then onto a new bridge over the river, continuing in an aerial structure over the I-605 Freeway and returns to median-running after Pioneer Boulevard; profile changes were also made	• Avoids SCE transmission lines and provides smoother crossing of I-605 for system riders
	• Terminus – alignment lengthened by 400 ± feet	• Accommodates new location of Lambert Road Station
Station Revisions		
1 SR-60 LRT	**SR-60/Garfield Station** Shifted station 350 ± feet to the east from initial location in SR-60 Freeway right-of-way spanning Garfield Avenue to location with station entirely within SR-60 right-of-way and facing on to Via Campo Street	Revised location provides improved station access: • Pedestrian access from bus stops • Drop-off space • Future parking access via pedestrian bridge
	Montebello Town Center Station Minor alignment profile revisions	
	Santa Anita Avenue Station • Alignment curve from western approach to this station was smoothed out • Station remained in previous location, but is now on a straight alignment section	• Improves system operation by redesigning tight curves • Station was located on a curve which does not meet Metro or industry engineering design or operating standards
	Peck Road Station • Station and tail tracks will be shifted 125± feet to the west	• Tail track location encroaches on SCE property planned for a transmission improvement project
2 Beverly Boulevard LRT	Deletion of three stations: • Beverly/Garfield • Beverly/Poplar • Beverly Civic Center	Deletion of these stations improved operations of this alternative: • Station spacing was too close – did not meet Metro station spacing criteria • Resulted in faster travel time for this alternative

Table 2.4 Conceptual Engineering Alignment and Station Refinements

Alternative	Revision	Background
Station Revisions		
2 Beverly Boulevard LRT	**SR-60/Garfield Station** • Shifted station from initial location at southwest corner adjacent to Montebello Golf Course to southeast corner of Garfield Avenue/Via Campo Street (Both location options require property acquisition.)	AA station location had: • Constrained site size that could not accommodate station access facilities including drop-off and parking spaces • Poor interface with bus stops • Required possible take of golf course property
	Beverly/Wilcox Station No change	
	Beverly/Montebello Station No change	
	Beverly/Rosemead Station No change	
	Greenway/Norwalk Station • Redesigned with split platforms on either side of former railroad bridge; located within southern half of trail right-of-way • Drop-off space now provided • Improved bus stop access	AA station was single platform located in center of former railroad bridge: • Insufficient bridge right-of-way to accommodate center platform • Poor station access
	Greenway/Broadway Station • Redesigned with split platforms on either side of Broadway; both located within southern half of trail right-of-way • Split platform design improves safety by providing improved operator visibility	AA station was center platform located in center of trail right-of-way on west side of Broadway: • Constrained trail right-of-way did not accommodate center platform and trail • Poor operator visibility in heavy pedestrian area
	Greenway/Philadelphia Station • Station relocated to southern half of right-of-way and shifted slightly to the east to reflect alignment changes	AA station was located in center of trail right-of-way
	Greenway/Mar Vista Station • Station was relocated to the southern half of right-of-way and shifted slightly to the west to reflect alignment changes	AA station was located on a curve in center of trail right-of-way

Table 2.4 Conceptual Engineering Alignment and Station Refinements

Alternative	Revision	Background
Station Revisions		
3 Beverly/Whittier Boulevards LRT	**Common Stations**	
	SR-60/Garfield Station • Shifted station from initial location at southwest corner adjacent to Montebello Golf Course to southeast corner of Garfield Avenue/Via Campo Street (Both location options require property acquisition.)	AA station location had: • Constrained site size that could not accommodate station access facilities including drop-off and parking spaces • Poor interface with bus stops • Required possible take of golf course property
	Beverly/Wilcox Station No change	
	Whittier/Norwalk Station • Now at-grade station shifted 400 ± feet to east of Norwalk Boulevard • Reduces traffic capacity, parking and visibility impacts • Provides better access to future parking at southeast corner of intersection	AA aerial station was located over travel lanes and sidewalk on the south side of Whittier Boulevard; station spanned the intersection
	Whittier/Mar Vista Station • Reflecting new alignment configuration, station was shifted out of the median and located along the eastern side of Whittier Boulevard within private property and a portion of the Greenway Trail • Redesigned with center platform	AA station was designed with split platforms to fit within the Whittier Boulevard landscaped median: • Median is a City of Whittier park • Station negatively impacted the Paradox Hybrid Walnut Tree listed on the National Register of Historic Places
	Montebello Boulevard Alternative Stations	
	Beverly/Montebello Station No change	
	Whittier/Montebello Station • Now aerial station relocated east of Montebello Boulevard on Whittier Boulevard to provide service to Downtown Montebello	AA at-grade station was located west of Montebello Boulevard – the new alignment no longer serves that location
	Whittier/Rosemead Station • Aerial station shifted 100 ± feet east of Rosemead Boulevard to provide room for improved system access	AA station assumed station access from street median: • Station was located too close to intersection to provide safe system access

Table 2.4 Conceptual Engineering Alignment and Station Refinements

Alternative	Revision	Background
Station Revisions		
3 Beverly/Whittier Boulevards LRT (continued)	**Rosemead Boulevard Alternative Stations**	
	Beverly/Rosemead Station • Station was redesigned with center platform and shifted 75± feet west of Rosemead Boulevard to fit with new alignment curving to turn south on Rosemead Boulevard from Beverly Boulevard	AA station was split-platform with platforms located in the median of Beverly Boulevard on both sides of Rosemead Boulevard
	Beverly/Montebello Station No changes	
	Rosemead/Whittier Station • Station shifted 100 ± feet east of Rosemead Boulevard to fit with new alignment curve from Rosemead Boulevard to Whittier Boulevard	AA station accommodated straight-running Whittier Boulevard Alternative alignment
4 Washington Boulevard LRT	**SR-60/Garfield Station** • Shifted station from initial location at southwest corner adjacent to Montebello Golf Course to southeast corner of Garfield Avenue/Via Campo Street (Both location options require property acquisition.)	AA station location had: • Constrained site size that could not accommodate station access facilities including drop-off and parking spaces • Poor interface with bus stops • Required possible take of golf course property
	Garfield/Whittier Station No change in station location Property acquisition has been identified to provide improved access to this aerial station	AA station assumed station access from street median; due to constrained street right-of-way and safety concerns access recommended to be off-street
	Washington/Greenwood Station • Shifted station 300 ± feet east of Greenwood Avenue • Provides strong interface with single site recommended for acquisition to provide drop-off and parking spaces with future TOD opportunity • Reduces possible traffic and truck impacts • Reserves future development opportunities for others	AA station spanned Greenwood Avenue to provide access to proposed PNR/TOD opportunities, with property acquisition, at all four corners of the intersection: • Possible traffic visibility impacts • Possible truck impacts as Greenwood is heavily used by trucks • Development analysis showed limited need for Metro to acquire property for station parking and TOD
	Washington/Rosemead Station No change	

Table 2.4 Conceptual Engineering Alignment and Station Refinements

Alternative	Revision	Background
Station Revisions		
4 Washington Boulevard LRT (continued)	**Washington/Norwalk Station** • Shifted 350 ± feet west, closer to intersection • Provides improved pedestrian, bus, and parking access	AA station was located east of the intersection at a distance that created significant walking distances for riders transferring from buses or accessing the system by walking and car
	Washington/Lambert Station • Shifted station east 400 ± from initial location to east of Lambert Road • Reduces traffic and visibility impacts • Provides better access to future parking at southeast corner of intersection • Provides better interface with future land use plans and adjacent land uses	AA station spanned Washington Boulevard and Lambert Road intersection: • Significant impact on heavily-used intersection • Poor fit with adjacent land uses and employment sites • Poor fit with City of Whittier's Specific Plan for area

3.0 TRANSPORTATION ISSUES AND ANALYSIS

The Eastside Transit Corridor Phase 2 Alternatives Analysis (AA) Report, completed in January 2009, provided a detailed overview of the Project Study Area's (PSA) existing transportation system that would be affected by the five proposed project alternatives under consideration at the time. In January 2009, the Metro Board approved four Final Alternatives for further study. As presented in Section 2 of this report, Metro Board action, along with conceptual engineering and station planning efforts, resulted in physical and operational revisions to the alternatives studied in the AA Report. As a result, the following transportation issues were affected by these refinements and are discussed in detail in this section: travel times, ridership boardings and user benefits. No other transportation system areas documented in the AA Report were impacted.

3.1 Transit Analysis

The following presents a brief description of the physical and operational refinements made to each of the alternatives evaluated during Conceptual Engineering. Section 2 of this document presents a more detailed discussion of the revisions.

No Build Alternative

There were no changes to the No Build Alternative that includes all PSA projects identified for construction in the "Constrained Plan" of Metro's *Draft 2008 Long Range Transportation Plan*.

Transportation System Management Alternative

The Transportation System Management (TSM) Alternative addresses the same mobility needs as the build alternatives, but does not include the construction of a fixed guideway facility. The Eastside Transit Corridor Phase 2 TSM option includes all of the provisions of the No Build Alternative, plus the planned enhancements to existing bus service previously presented in the AA Report. During Conceptual Engineering, an increase in the number of the peak Light Rail Vehicles (LRV) for the TSM and the four Final Alternatives was identified based on Metro Operations policy for 2030.

Build Alternatives

The four Final Alternatives, approved by the Metro Board in January 2009, were refined and evaluated during Conceptual Engineering efforts, and then compared against the TSM Alternative. Each of the Build Alternatives includes all of the TSM Alternative improvements. An

overview of the operational refinements made to each of the alternatives is presented below. A detailed description of the operational revisions is presented in Section 2 of this document.

Alternative 1 - SR-60 Freeway LRT

The SR-60 Freeway Alternative will extend Metro Gold Line Light Rail Transit (LRT) service east to Peck Road within the southern SR-60 Freeway right-of-way. As presented in Section 2, the length of this alignment was reduced by approximately 1.25 miles, and the Crossroads Parkway station was deleted from the option identified and evaluated in the AA Report.

Station area parking requirements for each of the four stations along the alignment were identified based on forecast ridership, access information and community fit. The proposed parking for each of this alternative's four stations is presented below in Table 3.1. The final number of required parking spaces will be refined during the Draft EIS/EIR phase.

Table 3.1 SR-60 LRT Proposed Parking Spaces

Station	Parking Spaces
Garfield	344
Montebello Town Center	417
Santa Anita Boulevard	692
Peck Road	1,983
Total	**3,436**

Alternative 2 – Beverly Boulevard LRT

The Beverly Boulevard Alternative will extend Metro Gold Line LRT service east along the Beverly Boulevard Corridor to a terminus station located at Mar Vista Street in the City of Whittier. As discussed in Section 2 of this report, three stations were deleted from those under consideration in the AA Report: Garfield/Beverly, Beverly/Civic Center and Beverly/Poplar.

Station area parking requirements were identified based on forecast ridership, station access information and community fit. No parking facilities were proposed at three stations due to the single-family community setting and the surrounding area's conduciveness to walking, drop-off and bus access. These stations include Beverly/Wilcox, Whittier Greenway/Norwalk and Whittier Greenway/Broadway. Additionally, the Greenway/Philadelphia station will not have parking facilities due to the lack of an appropriately-sized property and constrained station area circulation patterns. The proposed parking for four of this alternative's stations is presented in Table 3.2. Final parking space requirements will be identified during the Draft EIS/EIR phase.

Table 3.2 Beverly Boulevard LRT Proposed Parking Spaces

Station	Parking Spaces
SR-60/Garfield	444
Beverly/Wilcox	0
Beverly/Montebello	231
Beverly/Rosemead	496
Greenway/Norwalk	0
Greenway/Broadway	0
Greenway/Philadelphia	0
Greenway/Mar Vista	1,070
Total	**2,241**

Alternative 3 – Beverly/Whittier Boulevards LRT

This new alternative combines the first half of the Beverly Boulevard Alternative alignment with the eastern half of the previously-studied Whittier Boulevard Alternative. North-south connections are proposed on either Montebello or Rosemead Boulevards. This option will extend Metro Gold Line LRT service east to a terminus station located at Mar Vista Street in the City of Whittier.

Station area parking requirements were identified based on forecast ridership, station access information and community fit. No parking facilities were proposed at the Beverly/Wilcox or Whittier/Montebello (for the Montebello option) stations due to the single-family community setting and the surrounding area's conduciveness to walking, drop-off and bus access. The proposed parking for four of this alternative's stations is presented below in Table 3.3. The final number of required parking spaces will be identified during the Draft EIS/EIR phase.

Table 3.3 Beverly/Whittier Boulevards LRT Proposed Parking Spaces

Via Montebello Boulevard		Via Rosemead Boulevard	
Station	Parking Spaces	Station	Parking Spaces
SR-60/Garfield	444	SR-60/Garfield	444
Beverly/Wilcox	0	Beverly/Wilcox	0
Beverly/Montebello	231	Beverly/Montebello	231
Whittier/Montebello	0	Beverly/Rosemead	496
Whittier/Rosemead	472	Whittier/Rosemead	472
Whittier/Norwalk	0	Whittier/Norwalk	0
Whittier/Mar Vista	1,236	Whittier/Mar Vista	1,236
Total	**2,283**	**Total**	**2,879**

Alternative 4 – Washington Boulevard LRT

The Washington Boulevard Alternative will extend Metro Gold Line Eastside Extension LRT service east from the Atlantic/Pomona Station, turning south on Garfield Avenue to Washington Boulevard, where it operates east to the Lambert Road area in the City of Whittier.

Station area parking requirements were identified based on forecast ridership, station access information and community fit. The proposed parking for this alternative is presented below in Table 3.4. No parking is proposed at the Garfield/Whittier station as it is designed primarily for walking, drop-off and bus access due to the lack of an appropriately-sized property and constrained station area circulation patterns. Property acquisition at this aerial station, to provide vertical access elements, may result in limited parking opportunities. The final number of required parking spaces will be identified during the Draft EIS/EIR phase.

Table 3.4 Washington Boulevard LRT Proposed Parking Spaces

Station	Parking Spaces
SR-60/Garfield	523
Garfield/Whittier	0
Washington/Greenwood	151
Washington/Rosemead	353
Washington/Norwalk	667
Washington/Lambert	1,008
Total	**2,702**

3.1.1 Operating Assumptions and Plans

The following provides a summary of the general operating assumptions and plans for each of the Eastside Transit Corridor Phase 2 TSM and LRT alternatives. The resulting operating plans and requirements are detailed in *Appendix D: Preliminary Operating Plan Technical Memorandum*.

Operating Assumptions

Existing bus services in the Eastside Transit Corridor Phase 2 PSA are operated by Metro, Montebello Bus Lines, Norwalk Transit System, Monterey Park Spirit Bus and Foothill Transit Zone. Metro is assumed to be the operating agency for the proposed extension that will connect

to Phase 1 of the Metro Gold Line Eastside Extension, which is slated for revenue operations by the end of 2009.

Hours of Operation

When modeling the transportation impacts of each of the proposed alternatives, service frequency for the LRT alternatives was assumed to be the same as that of the Metro Gold Line as presented below in Table 3.5. The service frequencies for LRT operations are based on criteria documented in Metro's *Draft 2008 Long Range Transportation Plan*. The hours of operation for the proposed LRT alternatives, presented in Table 3.5, are comparable to the weekday, Saturday and Sunday and holiday schedules for the rest of the Metro rail system.

Table 3.5 Metro LRT Service Frequency

Day of Week	Frequency	Hours
Weekday	5 minutes	6:30 – 8:30 a.m. 4:00 – 7:00 p.m.
	10 minutes	8:30 a.m. – 4:00 p.m. 7:00 – 8:00 p.m.
	15 minutes	4:00 – 6:30 a.m. 8:00 p.m. – 1:30 a.m.
Weekend	12 minutes	9:00 a.m. – 6:30 p.m.
	15 minutes	7:00 – 9:00 a.m. 6:30 – 7:30 p.m.
	20 minutes	4:00 – 7:00 a.m. 7:30 p.m. – 1:00 a.m.

Vehicle Assumptions

Vehicle capacity and passenger loading standards have been established to determine the service frequency and fleet requirements for each of the LRT alternatives. Based on Metro load factors, each 76-seat LRT vehicle was identified as having a peak hour passenger loading of 144 passengers. During Conceptual Engineering, the number of cars to be operated per train, or consist, was revised per direction from Metro Operations. In 2030, Metro's operations policy, reflecting a forecast increase in ridership capacity needs, requires three-car consists to be operated during the entire span of service. Table 3.6 shows the difference between the consist sizes assumed during the AA process and what is reflected in the operating plans developed during Conceptual Engineering.

Table 3.6 Proposed Train Consist Sizes (2030)

Operating Timeframe	Peak	Base	Evening	Ready Cars
Alternatives Analysis				
Monday-Friday	2	2	1	2
Saturday	2	2	1	2
Sunday	2	2	1	2
Conceptual Engineering				
Monday-Friday	3	3	3	3
Saturday	3	3	3	3
Sunday	3	3	3	3

3.1.2 Run Time Estimates

Travel times for the Final Alternatives were calculated using a computer simulation model calibrated to the performance characteristics of Metro's current fleet of LRT vehicles. Inputs to the run time model included:

- Speed restrictions for operations – speeds utilized reflected proposed LRT operation in three configurations: the median of the PSA's streets with operations guided by the traffic signal system; exclusive right-of-way; or aerial alignment;
- Horizontal curves – utilized alignment curve radii identified during the development of Conceptual Engineering plans;
- Distances between stations – calculated from the Conceptual Engineering plans;
- Dwell times – reflected Metro operations policy of 20 seconds at LRT stations; and
- Vehicle performance characteristics – utilized acceleration and deceleration rates and maximum operating speeds from current LRV fleet type.

During Conceptual Engineering, maximum allowable operating speeds along the various alignment segments were identified and confirmed with Metro Rail Operations staff. Aerial-running sections of the Final Alternatives, such as the SR-60 and Washington Boulevard alternatives, will have a maximum allowable speed of 65 mph; this maximum speed is constrained at some locations by horizontal curves in the alignment. At-grade, street-running operations such as those along Beverly Boulevard will reflect the maximum speed of the streets in which they operate – typically 35 mph. The initial maximum speed proposed along the Whittier Greenway, which is a limited access, at-grade corridor, was 45 mph. Based on field observations, and with the concurrence of Metro Operations staff, the maximum speed along

this section of the Beverly Boulevard Alternative has been reduced to 35 mph to reflect operational safety concerns. An overview of the operating characteristics of the Final Alternatives, based on Conceptual Engineering, station design and operational plans developed for each alternative is presented below in Table 3.7.

Table 3.7 Summary of Operating Characteristics

Alternative	Average Station Spacing (miles)	Average Speed (miles per hour)	Maximum Speed (miles per hour)
1 SR-60 LRT	1.4	33.3	55
2 Beverly Boulevard LRT	1.1	22.5	40
3 Beverly/Whittier LRT via Montebello Boulevard	1.3	23.4	45
3 Beverly/Whittier LRT via Rosemead Boulevard	1.3	21.9	40
4 Washington Boulevard LRT	1.5	31.8	55

Using the operating inputs identified above, station-to-station run times for each of the Final Alternatives were identified and are presented below in Table 3.8. The travel times shown represent the total travel time between the Metro Gold Line Eastside Extension Atlantic/Pomona Station and the terminus station of each alternative. While the resulting run times for the Final Alternatives are comparable to the estimates developed in the AA phase, changes in the number of stations, the lengths of the alignments, modifications to speed assumptions and the inclusion of more detailed vertical design and horizontal curve data resulted in a refinement of run times. The Washington Boulevard Alternative was the only option that remained unchanged from the definition included in the AA Report, and the Conceptual Engineering-based run time analysis resulted in a 52 second increase in travel time. For the Beverly Boulevard Alternative, deletion of three stations while decreasing the operating speed on the Whittier Greenway resulted in a 39 second decrease in travel time.

Table 3.8 Total Run Times

Alternative	Number of Stations	Distance (miles)	Run Time (min:sec)
1 SR-60 LRT	4	6.92	12:28
2 Beverly Boulevard LRT	8	8.99	23:58
3 Beverly/Whittier Boulevards LRT via Montebello Boulevard	8	9.10	24:55
3 Beverly/Whittier Boulevards LRT via Rosemead Boulevard	8	9.06	23:17
4 Washington Boulevard LRT	6	9.26	17:28

The SR-60 LRT Alternative, with the shortest alignment, fewest stations and highest maximum operating speed, was identified as having the lowest travel time between the Metro Gold Line Eastside Extension Atlantic/Pomona Station and its terminus station at Peck Road in the City of South El Monte. The predominately (97 percent) aerial-operating Washington Boulevard Alternative has the second lowest travel time – only five minutes more travel time than the SR-60 Alternative to traverse a longer length (2.34 miles), three more stations and two tight curves. The other two alternatives, with very similar alignment lengths, number of stations and operational speeds were identified as having similar total travel times. There are approximately 1:12 minutes difference between the lowest and the highest run time option: Beverly/Whittier Boulevards via Rosemead Boulevard Alternative and Beverly/Whittier Boulevards via Montebello Boulevard Alternative, respectively. The option with the Rosemead Boulevard north-south connection does have four percent (0.34 miles) more aerial operations, and the Montebello option is slightly longer.

3.1.3 Ridership Results

Ridership projections were prepared utilizing the Metro Travel Demand Model for the Final Alternatives to provide a basis for comparison. Table 3.9 below presents the projected passenger daily and annual boardings along with forecast new transit riders attracted through implementation of each of the proposed alternatives in the year 2030. User benefits have been identified and are presented for each alternative.

Table 3.9 Project Boardings and User Benefits (FY 2030)

Alternative	Daily Boardings	Annual Boardings (Millions)	Daily Net New Riders	User Benefits Per Project Boarding (Minutes)	User Benefits (Hours)
1 SR-60 LRT	12,270	4.0	3,835	17.0	3,474
2 Beverly Boulevard LRT	12,780	4.2	5,020	24.6	5,241
3 Beverly/Whittier Boulevards LRT via Montebello Boulevard	12,700	4.1	5,190	25.9	5,470
3 Beverly/Whittier Boulevards LRT via Rosemead Boulevard	12,410	4.0	5,060	25.8	5,336
4 Washington Boulevard LRT	15,660	5.1	6,280	24.1	6,293

The forecast daily boardings for the Final Alternatives fall within a close range and the resulting ridership is almost indistinguishable among the options. Even when identifying annual boardings (defined by Metro as the daily boardings multiplied by 325 days), the resulting numbers are almost all the same. The exception is the Washington Boulevard Alternative, which is forecast to have the highest level of daily boardings (15,660) and annual boardings (5.1 million) of the alternatives.

3.2 FTA Criteria

Key performance metrics considered by the Federal Transit Administration (FTA) include daily net new transit riders and user benefit hours that the build alternatives provide compared to the TSM Alternative. The identified "net new transit riders" includes all transit riders, whether bus or rail patrons. As shown in Table 3.9, the Washington Boulevard Alternative is forecast to attract the highest number of new transit riders and the SR-60 Alternative the lowest number of new riders. The Beverly Boulevard and Beverly/Whittier Boulevards alternatives are estimated to attract a similar number of new riders.

User benefits are defined as the weighted travel time savings for all users of each of the project alternatives. While the Washington Boulevard Alternative does not have the highest user benefits at a per project boarding level, when the user benefits are calculated at the hour level, the Washington Boulevard was forecast to have the greatest user benefit of 6,293 hours. The Beverly/Whittier Boulevards via Montebello Boulevard Alternative was projected to have the next

highest user benefit of 5,470 hours, and the SR-60 Alternative was forecast to have the lowest level of user benefit with 3,474 hours.

The daily net new transit riders and user benefit hours are used to compute the cost-effectiveness of the build alternatives, or the efficiency of a transit project – how the project costs (both capital and operating) compare to the expected benefits (increased ridership). Cost-effectiveness can be more easily understood as the annual cost incurred to save a transit rider an hour of travel time. As may be expected, the lower the incremental cost per new transit rider, the more cost-effective the project alternative. Generally, a project must have a cost effectiveness index (CEI) of under $25 to qualify for federal New Starts funding.

Table 3.10 Cost Effectiveness Indices and Other Evaluation Measures (2030)

Evaluation Measure	SR-60 LRT	Beverly Boulevard LRT	Beverly/ Rosemead/ Whittier Boulevards LRT	Beverly/ Montebello/ Whittier Boulevards LRT	Washington Boulevard LRT
Cost Effectiveness Index					
Average Weekday User Benefits (hours)	3,474	5,241	5,470	5,336	6,293
Average Annual User Benefits (hours)	1,129,050	1,703,325	1,777,750	1,734,200	2,045,225
Cost Effectiveness Index	**$110.36**	**$72.51**	**$72.81**	**$74.02**	**$82.94**
Other Evaluation Measures					
Average Weekday New Riders	3,835	5,017	5,060	5,191	6,281
Average Annual New Riders (millions)	1.1	1.6	1.7	1.6	2.0
Incremental Cost Per New Rider	$99.97	$75.75	$76.78	$78.00	$83.10
Incremental Cost Per Project Boarding	$31.25	$29.74	$31.32	$31.89	$33.33

As shown above in Table 3.10, none of the alternatives currently meets the FTA threshold for cost-effectiveness. Two of the alternatives – the Beverly Boulevard and the Beverly/Whittier alternatives – have similar cost effectiveness indices that range between $72.51 and $74.01. The two aerial alternatives have lower indices with the Washington Boulevard Alternative at $82.94 and the SR-60 Alternative, the lowest cost efficiency of the alternatives, at $110.36. The Washington Boulevard Alternative, even with a significantly higher capital cost, is comparable in the cost-effectiveness comparison with the three lower cost alternatives due to attracting a higher level of ridership.

4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL ISSUES

The Eastside Transit Corridor Phase 2 transportation alternatives will have direct and indirect effects on the physical environment of the Project Study Area (PSA). In January 2009, the *Eastside Transit Corridor Phase 2 Alternatives Analysis (AA)* was completed and adopted by the Metro Board. As presented in more detail in Section 2, the Final Alternatives refined and evaluated in this report were previously presented and analyzed in the AA Report with the following revisions:

- Alternative 1 SR-60 LRT – shortened by 1.25 miles and one station deleted;
- Alternative 2 Beverly Boulevard LRT – three stations deleted;
- Alternative 3 Beverly/Whittier Boulevards LRT – new alternative formed by combining the western portion of the Beverly Boulevard Alternative with the eastern portion of the former Whittier Boulevard option. New north-south connections were proposed on either Montebello or Rosemead Boulevards. This new alternative has seven stations previously studied in the AA, with no new stations proposed along Montebello or Rosemead Boulevards.
- Alternative 4 Washington Boulevard LRT – no changes identified.

In this Addendum to the AA Report, the environmental review effort focused on areas where more detailed information became available with the refinement of the Final Alternatives during conceptual engineering and station planning efforts. The purpose of this additional impact assessment was to ascertain if, with the additional information, there were any insurmountable technical or environmental challenges, and to identify areas to be studied further during the subsequent preparation of a Draft Environmental Impact Study (DEIS)/Draft Environmental Impact Report (DEIR) under guidance provided by the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

While an overview of all possible environmental impacts is presented, the following potential impact areas are discussed in more detail in this report, based on additional information identified during Conceptual Engineering:

- Right-of-Way Acquisition
- Hazardous Materials and Waste
- Parklands and Section 4(f) Resources

Conceptual engineering-level of environmental analysis for the new north-south, connector sections, proposed along Montebello and Rosemead Boulevards, was based primarily on AA analysis as both of these sections travel through urbanized areas comparable to those previously identified and evaluated for the Beverly and Whittier Boulevards alternatives. The evaluation was supplemented with a windshield-level of analysis to identify any unique conditions not covered by the AA analytical work.

4.1 Land Use and Economic Development

As discussed in the AA Report, the Eastside Transit Corridor Phase 2 transportation alternatives can provide benefits to the PSA by improving access to existing activity centers and focusing new development opportunities. Higher density development near transit stations can accommodate the area's significant forecast growth by encouraging transit usage and reducing vehicular travel and related environmental impacts. Conversely, transit-supportive land uses and high levels of residential and employment density in station areas can support transit system ridership. An analysis of existing land uses along the alternatives performed during the AA identified a range of transit-supportive land uses and densities. The SR-60 Alternative had the lowest level of transit-supportive land uses as well as the lowest levels of population and employment densities. At the other end of the range, the Beverly Boulevard Alternative had the highest level of transit-supportive land uses, and the Beverly/Whittier Alternative had the highest population and employment densities. While a new alternative, a majority of the alignment of the proposed Beverly/Whittier Boulevards Alternative was addressed in the AA Report through work performed for the Beverly Boulevard and Whittier Boulevard alternatives. Field visits confirmed the applicability of the information documented in the AA Report to the new alignment sections along Montebello and Rosemead Boulevards.

During Conceptual Engineering, no stations were identified that had not been previously analyzed in the AA Report. A windshield-level analysis of the land uses and economic development along the proposed connector sections on Montebello and Rosemead Boulevards was performed. Both proposed routes operate through urbanized areas with a diverse mix of land uses. The Montebello Boulevard alignment is lined with small-scale commercial uses, single- and multi-family housing and industrial development. The Rosemead Boulevard connector option passes through a mix of commercial and single-family housing on the northern end, with industrial and commercial land uses located adjacent to the Union Pacific Railroad tracks on the southern end. There may be opportunities for new development in the commercial and industrial areas. With approval of the Recommended Alternatives, further analysis will be performed, including outreach to cities to identify any new land use changes and/or development plans.

4.2 Catalyst for Public/Private Economic Revitalization

As presented in the AA Report, the proposed Eastside Transit Corridor Phase 2 transportation investment can provide opportunities for transit-oriented development (TOD) that can serve as catalysts for public and private economic revitalization. As demonstrated in other projects completed by Metro, investments in transit station area development can provide economic benefits and enhanced quality of life to communities, while accommodating forecast population and employment growth. The AA analysis identified that all of the alternatives had a high number of possible TOD opportunities.

During the Conceptual Engineering phase, initial station planning efforts were completed and are summarized in Section 2 of this report. An initial summary of TOD opportunities at station areas along the proposed alignments has been completed and is presented below in Table 4.1. At this level of analysis, station-related sites offering development opportunities were defined as property that was vacant, used for surface parking, or was underutilized when compared to both the current surrounding land uses and future land use plans. More than 70 percent of the proposed stations have TOD opportunities. During the Draft EIS/EIR phase, a more detailed analysis of economic development opportunities will be provided for the alternatives that move forward.

Table 4.1 Transit Oriented Development (TOD) Opportunities

Alternatives	Total Number of Stations	Stations with Possible TOD Opportunities
1 SR-60 LRT	4	4
2 Beverly Boulevard LRT	8	5
3 Beverly/Whittier Boulevards LRT via Montebello Boulevard	7	6
3 Beverly/Whittier Boulevards LRT via Rosemead Boulevard	7	6
4 Washington Blvd LRT	6	4
Total	32	25

4.3 Right-of-Way Acquisition

A majority of the proposed LRT system and station improvements will be located within the public right-of-way. However, there are locations where additional right-of-way will be required to allow for: stations and access elements (stairs, escalators and elevators), Park-

and-Ride (PNR) facilities, off-street bus and shuttle space, Traction Power Substations (TPSS) and alignment takes required for rail operations and/or for street widening to maintain travel lanes. Based on conceptual engineering and station plans, an updated assessment of the right-of-way requirements was prepared for each of the Final Alternatives.

The PSA contains a diverse mix of land uses including commercial areas, industrial business, residential neighborhoods, parks, schools, flood control facilities and vacant land. A summary of the land uses along each of the alternative shows the following:

- **Alternative 1 SR-60 LRT** – This option will primarily operate within the SR-60 Freeway right-of-way adjacent to large concentrations of mixed use development as well as commercial, residential, recreational, flood control and vacant properties.

- **Alternative 2 Beverly Boulevard LRT** – West of the San Gabriel River, this alternative operates through commercial and some residential neighborhoods; east of the river, the proposed alignment passes through undeveloped land primarily owned by Southern California Edison and the Union Pacific Railroad. It then enters the Whittier Greenway used for recreational facilities, and passes through single-family residential neighborhoods with four schools and has commercial properties located at the terminus in Downtown Whittier.

- **Alternative 3 Beverly/Whittier Boulevards LRT** – Along the Beverly Boulevard portion, this alternative operates primarily through commercial with some residential land uses. The Montebello Boulevard north-south route section runs through a diverse area including small-scale commercial uses, single- and multi-family housing and industrial development, while the Rosemead Boulevard connector option passes through a mix of commercial, single-family houses and manufacturing uses. The Whittier Boulevard alignment section runs through Montebello's historic downtown and then through mixed use areas with commercial, residential and recreational properties.

- **Alternative 4 Washington Boulevard LRT** – West of the I-605 Freeway, this option primarily operates through an area of industrial and commercial properties, with some residential and commercial uses; east of the I-605 Freeway, Washington Boulevard is lined with a mix of commercial and residential properties. The terminus station area contains a mix of commercial, industrial and hospital land uses.

As presented below in Table 4.2, an initial identification of the square footage of land required to implement each of the Final Alternatives was calculated by land use type. The resulting square footage requirements are higher than those identified in the AA Report due to more detailed engineering and station plans. In summary, acquisition impacts identified during Conceptual Engineering include the following:

- The identified possible total square footage requirements range from a low of 830,070 square feet for the Beverly/Whittier Boulevards via Montebello Boulevard option to 1,744,235 square feet for the SR-60 Alternative.

- Commercial and industrial land uses including retail, manufacturing, warehousing and office space, represented the largest takings for all of the alternatives, except for the SR-60 option. Commercial and industrial land use takings range from 74 percent for the Beverly Boulevard Alternative to 100 percent of the proposed acquisition for the Washington Boulevard Alternative.

- Residential land use takings were the lowest: 12 houses may be required along the SR-60 Freeway Alternative just east of Vail Avenue; and one house/commercial property may be acquired on the Montebello Boulevard section of the Beverly/Whittier Boulevards Alternative.

- Park land may be required for the SR-60 (Whittier Narrows Recreation Area) and the Beverly Boulevard (Whittier Greenway) alternatives. The possible park land square footage has been identified, and is included in Table 4.2, but is not added to the total acquisition requirements. Park land cannot be taken; further analysis during the Draft EIS/EIR phase will identify other solutions for the two identified impact areas.

- Vacant land is the largest proposed land use taking (49.5 percent) for the SR-60 Freeway Alternative. It also represents a significant requirement (25.6 percent) for the Beverly Boulevard Alternative due to the proposed taking of vacant land between Beverly Boulevard and the Whittier Greenway to accommodate the alignment transition from operating in the median of Beverly Boulevard to Whittier Greenway operations.

Table 4.2 Summary of Preliminary Right-of-Way Acquisition Requirements (Square feet)

Alternative	Land Use Type				
	Commercial/ Industrial	Residential	Park	Vacant	Total
1 SR-60 LRT	799,815	22,839	(27,705)	863,475	1,686,129
2 Beverly Boulevard LRT	1,181,204	-	(256,210)	64,750	1,245,954
3 Beverly/Whittier LRT via Montebello	793,713	-	-	5,000	798,713
3 Beverly/Whittier LRT via Rosemead	975,135	-	-	5,000	980,135
4 Washington Boulevard LRT	1,278,190	-	-	-	1,278,190

In Table 4.3, the purpose for the proposed land use takings is summarized for the following two categories:

1. Operations – alignment takes required to accommodate rail operations and/or to maintain street travel lanes, and TPSS;
2. Stations and Other Uses – acquisition of land for all other rail system uses including stations, station access facilities (stairs, escalators and elevators), off-street bus and shuttle space, drop-off space and, in some locations, PNR facilities that are integrated with or located adjacent to the proposed stations.

The amount of property acquisition required for future rail operational needs was identified as lower than that needed for station-related functions. The exception was the Beverly Boulevard Alternative, which will require land acquisition for the rail alignment where it transitions from the Beverly Boulevard public right-of-way through primarily vacant land to the Whittier Greenway. Land required for station-related parking facilities is highest for the Washington Boulevard Alternative, where PNR access will attract and serve commuters to the south from the Gateway Cities area and the I-5 Freeway travel corridor. The same is true for the SR-60 Alternative, but many of the proposed parking facilities along this option are integrated with proposed stations due to the availability of larger parcels of land.

Table 4.3 Purpose of Proposed Right-of-Way Acquisitions

Alternative	Operations (Square feet)	Station/PNR/ Other (Square feet)	Total (Square feet)
1 SR-60 LRT	84,307 (5%)	1,601,822 (95%)	1,686,129
2 Beverly Boulevard LRT	236,731 (19%)	1,009,223 (81%)	1,245,954
3 Beverly/Whittier LRT via Montebello	7,987 (1%)	790,726 (99%)	7,987,713
3 Beverly/Whittier LRT via Rosemead	0 (0%)	980,135 (100%)	980,135
4 Washington Boulevard LRT	89,474 (7%)	1,188,716 (93%)	1,278,190

This information will be refined on an alignment- and site-specific level of detail as part of the Draft EIR/EIS and Advanced Conceptual Engineering, which will include a discussion of potential relocations and displacements, and related Federal and State requirements related to relocation policies for transportation projects.

4.4 Community and Neighborhood (Quality of Life and Environmental Justice)

As presented in the AA Report, each alternative's impacts on community cohesion, quality of life and environmental justice were identified and evaluated. AA analysis identified that the SR-60 Alternative had the lowest impacts on community cohesion, while the Beverly Boulevard Alternative had the highest level of impact due to its proposed operations through the residential neighborhoods lining the Whittier Greenway. All of the alternatives will increase access by transit dependent residents to the regional transit system, with the Beverly/Whittier Boulevard Alternative providing the highest level of transit dependent access, and the SR-60 Freeway Alternative the lowest.

During the Conceptual Engineering phase, the most significant change made to the alternatives with a possible community and neighborhood impacts was the introduction of the Montebello and Rosemead Boulevards north-south connector segments. For both options, at-grade rail operations will turn south onto a connector section street from Beverly Boulevard, where they will transition to an aerial configuration that then will turn east onto Whittier Boulevard. Both connector streets have a wide right-of-way designed to serve a heavy level of north-south traffic, with Rosemead Boulevard being slightly wider. Along Montebello Boulevard, there may be community cohesion impacts to the single- and multi-family housing facing the street. There also may be impacts to the primarily single-family residences located along Rosemead Boulevard, though much of the housing primarily faces away from the street. With refinement of the conceptual engineering plans, significant possible quality of life impacts to the rear yards of 12 single-family homes along the SR-60 Alternative were identified. A detailed analysis of community cohesion, quality of life and environmental justice impacts based on site-specific drawings will be prepared during the Draft EIS/EIR phase.

4.5 Visual and Aesthetic

A preliminary analysis of existing visual and aesthetic qualities in the PSA and potential changes to these qualities resulting from implementation of the rail transit system alternatives was documented in the AA Report. All of the alternatives have the potential to affect the visual and aesthetic resources in the PSA:

- SR-60 Freeway Alternative – operating within the freeway right-of-way will have the lowest level of possible visual and aesthetic impacts when compared to the other options traversing through urbanized communities. With refinement of the conceptual engineering plans, visual and aesthetic impacts to 12 houses and possible impacts to the Whittier Narrows Recreation Area were identified.

- Beverly Boulevard Alternative – operating through urbanized neighborhoods and along the Whittier Greenway would have the highest level of possible visual and aesthetic impacts among the alternatives.

  Beverly/Whittier Boulevards Alternative – operating through urbanized communities, some with historic resources, such as those in the Downtown Montebello section of Whittier Boulevard, would have a high level of possible visual and aesthetic impacts. There may be visual and aesthetic impacts with the introduction of aerial rail operations in the medians of Montebello and Rosemead Boulevards.

- Washington Boulevard Alternative – operating primarily through commercial and industrial areas, with some residential neighborhood impacts, this alternative would have the second lowest level of possible visual and aesthetic impacts.

A more detailed visual and aesthetic analysis will be conducted in the subsequent Draft EIS/EIR phase.

4.6 Cultural Resources

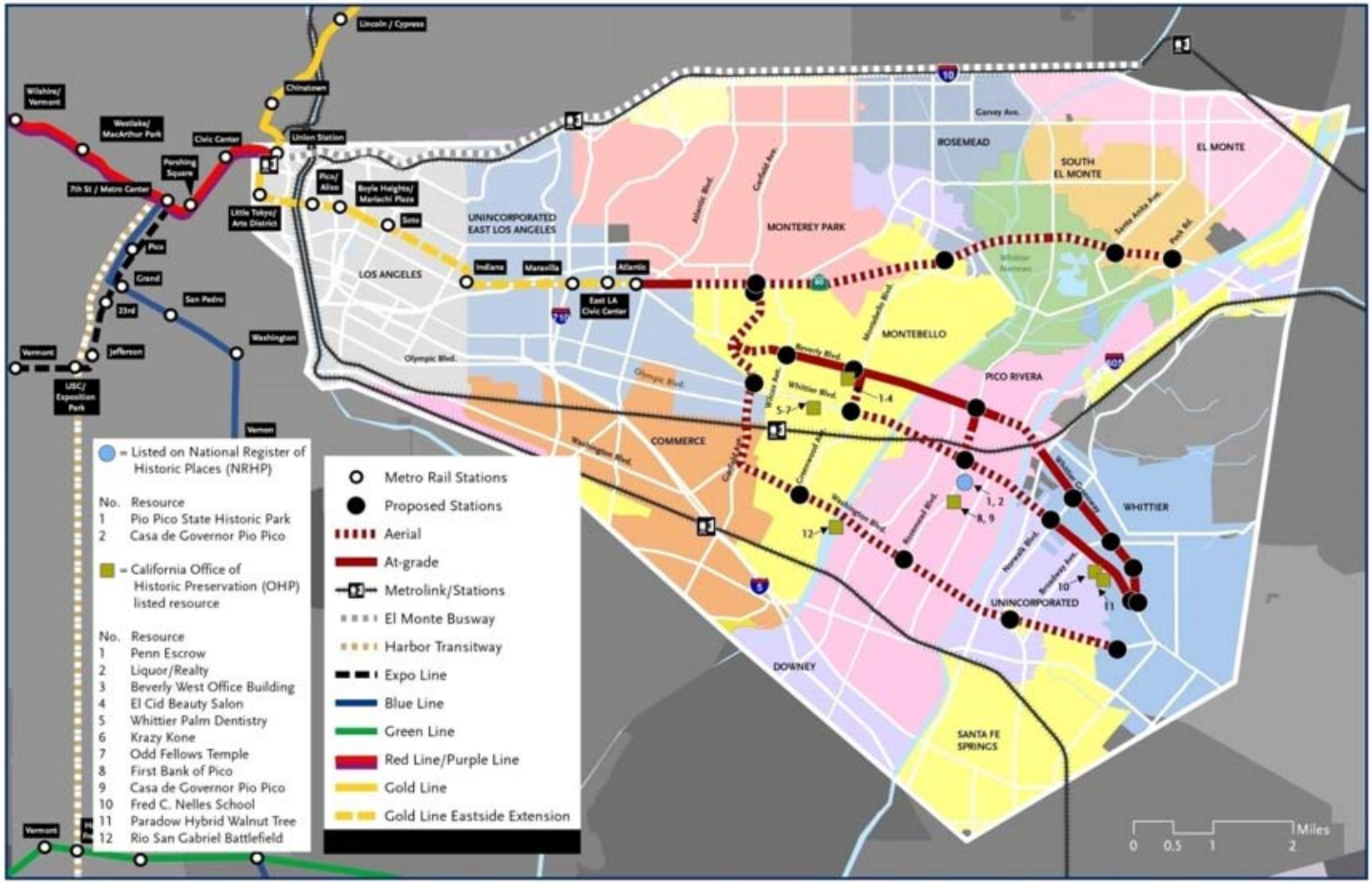
Cultural resources in the vicinity of the proposed alternatives were identified and documented in the AA Report based on a review of readily available information. The AA effort identified cultural resources along all of the alternatives as illustrated in Figure 4-1 on the following page. In summary, the SR-60 alignment had no resources located along the proposed right-of-way, while the eastern section of the Beverly/Whittier Boulevards Alternative had the highest number of cultural resources, primarily located in the City of Whittier.

During the Conceptual Engineering phase, a significant cultural resource was identified as being impacted by a segment of the Beverly/Whittier Boulevards Alternative. Initially, the Whittier Boulevard alignment section was designed to run in the proximity of the Paradox Hybrid Walnut Tree – a National Register, State and Local historic resource located in the median of Whittier Boulevard. The proposed alignment was revised to operate along the north side of Whittier Boulevard to avoid impacting the resource. In the subsequent Draft EIS/EIR effort, a more specific evaluation of cultural resources will be undertaken.

4.7 Air Quality

As documented in the AA Report, none of the proposed rail system alternatives will cause or contribute to local or regional air quality violations or exceedances of attainment status or regulatory standards. Analysis identified that three of the four proposed alternatives will improve monitored emissions when compared to the No Build option. Initial analysis identified that the Washington Boulevard option did increase some emissions, but by less than one percent. These increased emissions included CO_2 and PM_{10}. It should be noted

Figure 4-1 Cultural Resources Near Final Alternatives



That the Southern California Air Basin has been identified as nonattainment for the following pollutants monitored on a Federal and State level: O_3, PM_{10}, $PM_{2.5}$, CO and NO_2 .

During the Conceptual Engineering phase, there were no significant changes to the alternatives such that new air quality violations or exceedances would occur. A detailed evaluation of localized increases in emissions will be conducted during the Draft EIS/EIR phase.

4.8 Noise and Vibration

During the AA process, the PSA's noise and vibration environment was identified in terms of existing ambient noise levels along with the number of noise- and vibration-sensitive land uses along each alternative's alignment. The results of the preliminary noise and vibration analysis showed that the alternatives vary in impacts, with the SR-60 Freeway Alternative as having the lowest possible impact. The Whittier Greenway section of the Beverly Boulevard Alternative, operating through single-family residential neighborhoods and adjacent to elementary and secondary schools, was identified as having the highest potential for noise and vibration impacts.

During the Conceptual Engineering phase, rail operations along the Whittier Greenway segment were shifted to the southern half of the right-of-way, as discussed in Section 2 of this report, placing proposed rail operations closer to adjacent single-family residences, thereby increasing the possibility of noise and vibration impacts. With refinement of the engineering plans as discussed in Section 2, the alignment of the SR-60 Alternative now operates in proximity to 12 single-family residences, resulting in the possibility of noise and vibration impacts. There may be impacts with the introduction of aerial rail operations in the medians of Montebello and Rosemead Boulevards. A site-specific evaluation of noise and vibration impacts and possible mitigation measures will be conducted in the Draft EIS/EIR phase.

4.9 Ecosystems

An initial evaluation of possible impacts to existing ecosystems and biological resources along the proposed rail alignments was documented in the AA Report. A majority of the proposed alignments and stations are located within highly developed, urbanized areas and the identified biological resources were limited to a few parks and open space areas. The AA Report identified the SR-60 Alternative as having possible ecosystem impacts in the Whittier Narrows Recreation Area. While the proposed alignment primarily operates within the freeway right-of-way, it will pass through a portion of this recreational area as it turns south to traverse the SR-60/Santa Anita Avenue Interchange, requiring possible property acquisition or the shared use of parkland for column footings. Placement of the alignment and related

ecosystem issues will be explored in more detail during the preparation of Advanced Conceptual Engineering documents during the Draft EIS/EIR phase.

During Conceptual Engineering, the Beverly Boulevard, Beverly/Whittier Boulevards and Washington Boulevard alignment changes did not pose any additional impacts to existing ecosystems. All of the options traverse urbanized streets and cross the Rio Hondo concrete-lined channel. A detailed evaluation of ecosystem and biological resources will be provided in the Draft EIS/EIR phase.

4.10 Water Resources

A preliminary assessment of potential impacts to water resources caused by implementation of the proposed rail options was documented in the AA Report. All of the alternatives were identified as having the potential to affect water resources through bridge crossings of the San Gabriel River and the Rio Hondo Flood Channel, and possible building of new structures in 100-year flood zones.

During Conceptual Engineering, more detailed information was identified for the SR-60 Alternative. A segment of this option's alignment, located at the Santa Anita Avenue off-ramp, may infringe on the boundaries of the Whittier Narrows Recreation Area, which serves as a reservoir flood control basin as part of the Los Angeles County Drainage Area. The area that may be impacted is located between the northernmost recreational area parking lot and the SR-60 Freeway. Located immediately adjacent to the Whittier Narrows Recreation Area, portions of the proposed Santa Anita Avenue station area were identified as being owned by the U.S. Army Corps of Engineers (USACE), for similar flood control purposes. Further investigation of requirements for building in a flood control basin, in consultation with USACE, will be undertaken during the subsequent Draft EIS/EIR phase.

In addition, Conceptual Engineering efforts evaluated the bridges crossing the San Gabriel River and Rio Hondo Flood Channel to determine whether the structures could be strengthened to accommodate rail operations or whether replacement was required. All of the bridges were identified as requiring strengthening or replacement to accommodate rail operations. As bridge improvements will be located in or near flood control areas, possible site-specific construction impacts will be identified and studied further during the Draft EIS/EIR phase.

4.11 Geology and Subsurface Conditions

As part of the AA effort, a preliminary geological and subsurface conditions analysis along the alignment of each of the alternatives was completed. All of the alternatives were identified as requiring detailed seismic and soils analysis due to proximity to active fault zones. During

Conceptual Engineering, no significant revisions to the alternatives were identified requiring geotechnical analysis. As more detailed engineering drawings are prepared in support of the Draft EIS/EIR phase, site-specific evaluations of geological conditions, including seismicity and soil characteristics, will be undertaken and reflected in the resulting engineering design and drawings.

4.12 Hazardous Materials and Waste

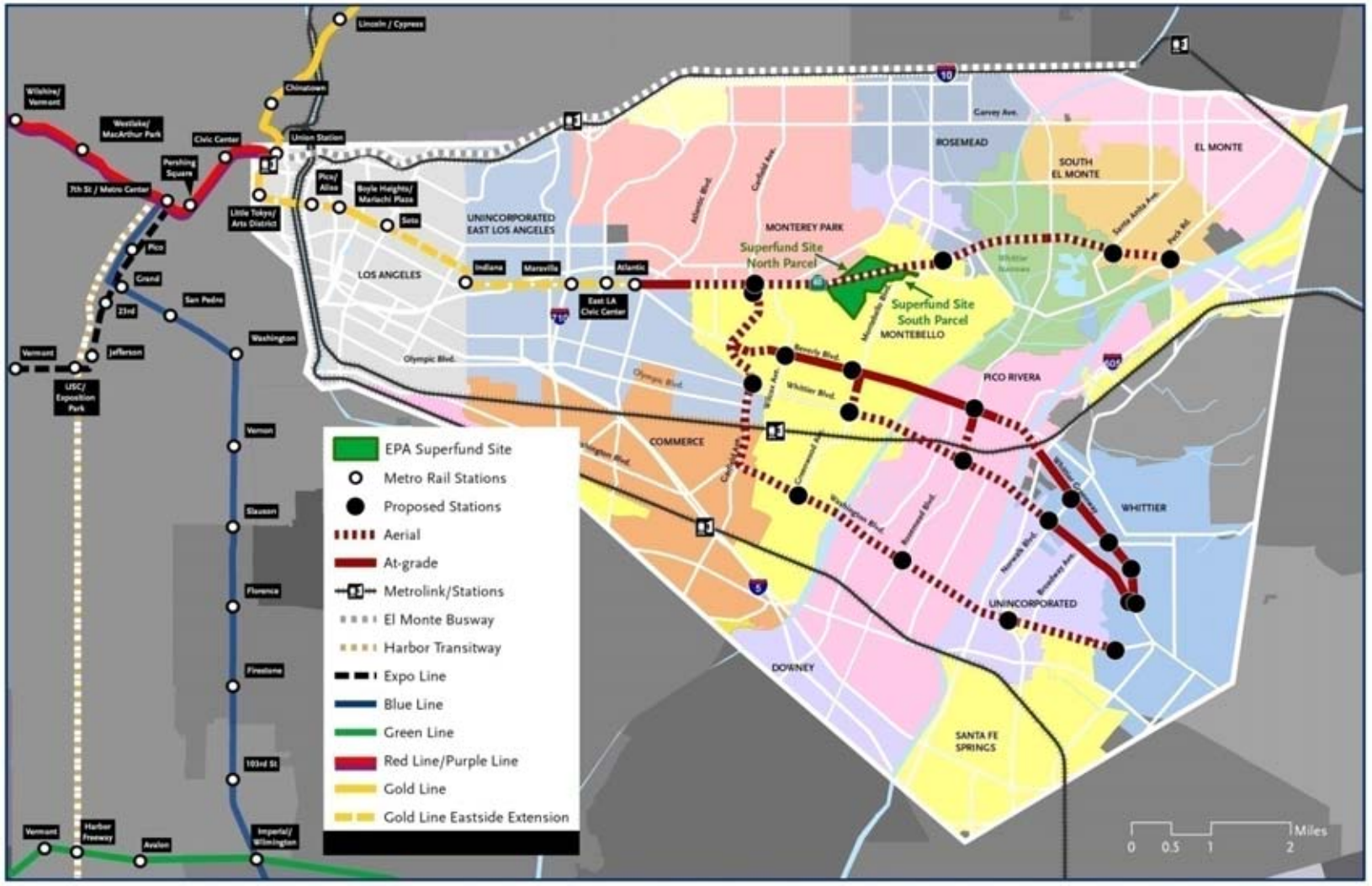
During the AA effort, an initial identification and assessment of existing hazardous materials was performed along the alternative alignments. In general, the at-grade segments of the proposed alternatives were identified as having the lowest level of concern as construction is primarily within the existing road right-of way, while the proposed aerial alternative had a higher level of concern due to the intrusive nature of pile construction required to support the aerial structure and stations.

Alternative 1 SR-60 LRT, operating in an aerial configuration within the SR-60 Freeway right-of-way, was identified as having potential hazardous material impacts due to the alignment's proximity to a Superfund Site – the former Operating Industries, Inc. (OII) landfill. While the Superfund site is located on both the north and south sides of the SR-60 Freeway, as illustrated in Figure 4-2 on the following page, the proposed rail alignment operates within the Caltrans right-of-way, which is not identified as part of the Superfund site. The landfill has a 36-year history of commercial, residential and industrial waste dumping and was designated as a Superfund site in 1986. The U.S. Environmental Protection Agency (EPA) has negotiated Consent Decrees with more than 100 participating companies, including Caltrans and Metro, to implement the agreed-upon remedies. Mitigation included the removal of six million cubic yards of contaminated earth and placement of a clay monocover on the sides of the landfill. A geosynthetic clay (GCL) cover was placed on the top deck, and a six-foot thick layer of clean soil and vegetation was placed over both the clay and GCL covers.

Construction of the SR-60 Freeway Alternative may be affected by remediation operations as the proposed alignment operates along the toe of the steep slope (38 degrees) of capped landfill material that rises approximately 320 feet in elevation above the south side of the freeway. Of key concern is the location and limits of the clay monocover and the viability of penetrating the liner for column construction to support the proposed aerial structure. In addition, the extent (horizontally and vertically) of possible hazardous materials within the SR-60 Freeway right-of-way is unclear.

An initial search of existing records has not clearly identified the exact boundary of the clay cap, though U.S. EPA staff believes it is unlikely that the clay cap remedy would extend beyond the administrative boundaries of the Superfund parcel and onto the Caltrans right-of-way. However, visually the graded slope of the landfill face extends from the shoulder of SR-60 to the top bench of the landfill, and seems to have been constructed uniformly. And while there

Figure 4-2 Superfund Sites in the PSA



is clear documentation on the remediation efforts undertaken on the north and south landfill-related parcels located on either side of the freeway, no clear information has been identified on the mitigation measures taken within the freeway right-of-way. Verbal history from several participants reflects that landfill materials were removed from the freeway alignment prior to construction in the 1960s, but may have been only removed to the depth required for freeway construction, and possibly did not exceed 20 feet in depth. Along the SR-60 Freeway, footings for the proposed aerial rail structure will be approximately 20 feet in depth depending on soil conditions in the pile area. Any waste materials encountered during construction will have to be disposed of off-site under U.S. EPA's direction. During construction, measures to mitigate possible health impacts due to possible exposure to hazardous materials will be identified and implemented to mitigate possible health impacts.

The south parcel, located west of Greenwood Avenue to just west of Paramount Boulevard, contains clay-capped landfill material and approximately 400 wells designed to extract landfill gas and liquid. A network of pipelines along the Greenwood Avenue overpass over the SR-60 conveys these flows to the treatment facilities located on the north parcel. More than 100 sampling wells are used on the south parcel to monitor the effectiveness of the groundwater cleanup measures. U.S. EPA staff reports that the landfill and clay cover have had issues with cracking and settlement of up to 1.5 feet per year; in addition, the stability of the slope in earthquakes should be considered in future analysis.

According to the U.S. EPA, the 45-acre north parcel was impacted to a much lesser degree from landfill operations than the south parcel. The north parcel has recently completed remedial activities. A 10-acre portion of the north parcel received a clay cap and the remaining 35 acres do not require cleanup action. Located in the City of Monterey Park, the north parcel is planned for future construction of the Cascades Marketplace retail center.

The north parcel also houses the leachate treatment facility and the landfill gas thermal destruction facility for the entire OII site. While the plant chemical emissions do not represent an unacceptable risk, if construction is planned at this location, the thermal plume from the two incinerator flares will have to be addressed through plume dispersion modeling and possible retrofitting of the stacks to increase their height.

The site remains on the Federal Comprehensive Environmental Compensation and Liability Act (CERCLA) list with oversight of remediation efforts provided by the U.S. EPA. Initial discussions with staff responsible for this site identified that there are acceptable design methods to seal piles driven through both clay and GCL covers. U.S. EPA staff has encouraged relocation of the rail alignment to the north side of the freeway where 70 feet of right-of-way has been cleared by Caltrans for future expansion of the freeway for two high occupancy vehicle (HOV) lanes.

During the Advanced Engineering and Draft EIS/EIR phase, design of the SR-60 alternative in this area will require detailed research, evaluation and close coordination with and the approval of the U.S. EPA, Caltrans and Federal Highway Administration.

4.13 Energy

During preparation of the AA Report, a general analysis of direct energy consumption was performed based on either a LRT or a BRT alternative, but not for specific alternatives. A detailed evaluation of energy-related impacts and benefits will be provided during the subsequent Draft EIS/EIR phase.

4.14 Parklands and Recreational Resources

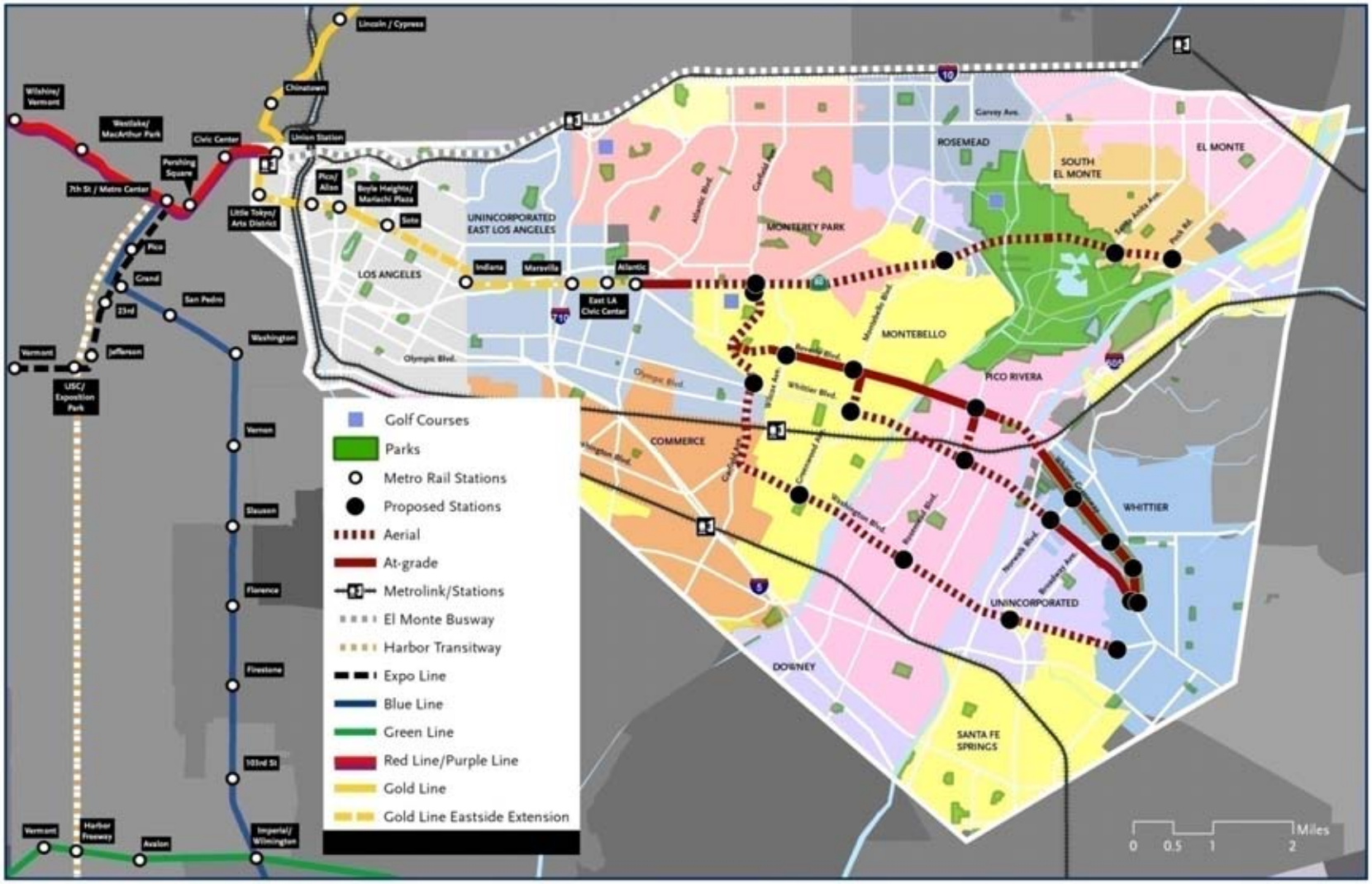
As documented in the AA Report, PSA parkland and recreational facilities were identified along the alignments of each of the proposed alternatives as illustrated in Figure 4-3 and listed in Table 4.4 on the following pages. A preliminary evaluation of the potential benefits of and impacts on resources was developed. Resource impacts may occur during both construction and operation of a LRT line; possible impacts fall into two categories:

- Constructive use effects include noise and vibration impacts, impediment or alteration of access, changes in the visual setting, and the introduction of conflicts with resource patrons; and
- Direct use effects include acquisition of parkland or recreational areas as right-of-way for an Alternative, requiring compliance with applicable Federal, State and Local regulatory laws.

On the federal level, Section 4(f) of the Department of Transportation Act of 1966 prohibits the direct use of parklands and recreational areas for federally funded transportation projects unless no other prudent alternative exists. In addition, Section 6(f) of the Land and Water Conservation Fund Act of 1965 prohibits the conversion of property acquired or developed with Act grants to a non-recreational purpose without the approval of the U.S. Department of the Interior's National Park Service. At the state level, the California Public Park Preservation Act of 1971 requires a public agency that acquires public parkland for non-park uses to either provide compensation sufficient enough to acquire substantially equivalent replacement parkland, or provide replacement parkland of comparable qualities.

A preliminary parkland and recreational resource impact analysis was prepared during the AA phase; the only major revisions made to the alternatives studied in the AA Report were the addition of north-south connector rail segments on Montebello and Rosemead Boulevards. Both proposed routes operate through highly-developed, urbanized areas with no parkland or

Figure 4-3 Parkland and Recreational Facilities in the PSA



recreational resources. The following discussion summarizes the preliminary parkland and recreational resources impact analysis prepared during AA efforts, along with an initial analysis of refinements made during Conceptual Engineering.

- **Alternative 1 SR-60 LRT** – This alternative's proposed alignment may have the following impacts:

    1. Montebello Golf Course – The AA Report identified possible constructive impacts to this resource, including noise and vibration impacts, changes to the visual setting and alteration of access. During Conceptual Engineering, these possible impacts were reduced by moving the alignment and aerial station away from the northeast corner of the golf course, with the alignment now continuing east in the SR-60 Freeway right-of-way and the station now located in the freeway shoulder at Garfield Avenue.
    2. Whittier Narrows Recreational Area – While the proposed alignment primarily operates within the SR-60 Freeway right-of-way, it will pass through a landscaped portion at the northern edge of the park as the aerial alignment turns southeast to traverse through the Santa Anita Avenue Interchange, requiring possible acquisition of parkland for column footings and raising Section 4(f) compliance issues. While the structure may not impact the use of recreational facilities, it may require the removal of trees buffering the park from the freeway. Possible constructive use effects may include noise and vibration impacts and changes to the visual setting. The alignment location and related 4(f) issues will be explored during the Draft EIS/EIR phase.
    3. California Country Club – Possible impacts identified in the AA report to this resource located east of the I-605 Freeway no longer exist due to the shortening of the alternative to Peck Road west of the I-605 Freeway.

- **Alternative 2 Beverly Boulevard LRT** – This alternative has ten parkland or recreational facilities along the proposed alignment; the three resources with the highest level of possible impacts are:

    1. Montebello Golf Course – as discussed above, but with the station relocated to the southeast corner of Garfield Avenue and Via Campo Street.
    2. Palm Park – Located southeast of Norwalk Boulevard, this park is bisected by the Whittier Greenway along which LRT operations are proposed to occur. Rail operations have the potential to divide the park and impede patron access between the two sections. Access impacts are proposed to be mitigated with a "land bridge," allowing pedestrians to cross under a slightly raised rail alignment on a bridge designed to complement the existing park setting.

3. Whittier Greenway – Formerly a railroad right-of-way, the Whittier Greenway is now owned by the City of Whittier and has been rebuilt as a landscaped bicycle and walking trail. Under this alternative, the proposed at-grade, rail alignment will traverse the southern portion of the Whittier Greenway Trail, with the recreational facilities proposed to be relocated and reconstructed on the northern section of the right-of-way. This alternative may require acquisition of half of the Whittier Greenway Trail.

   Project funding was provided by the U.S. Department of the Interior (National Park Service), State of California (statewide bond funds), Metro grant funds and City of Whittier Department of Parks and Recreation funding. Impacts of relocating the Trail, including possible Sections 4(f) and 6(f) issues, will require detailed analysis during the Draft EIS/EIR phase.

- **Alternative 3 Beverly/Whittier LRT** – This Beverly Boulevard portion of this alternative has only one resource with possible constructive and direct impacts – the Montebello Golf Course as discussed above under Alternative 2. There are no parkland or recreational resources located along the proposed Montebello and Rosemead Boulevards north-south connecting sections. Along the Whittier Boulevard segment of this alternative, two recreational resources have possible visual impacts:

  1. Montebello Park – At-grade, street-running operations will travel in front of this park located on Whittier Boulevard one block west of Greenwood Avenue.
  2. Pio Pico State Historic Park – The aerial alignment will operate on the far side of the street from this park located on Whittier Boulevard, between the San Gabriel River and I-605 Freeway. Possible constructive use effects include noise and vibration impacts and changes to the visual setting.
  3. During Conceptual Engineering, possible impacts to Roadside Park – the landscaped median of Whittier Boulevard located within the City of Whittier – were removed by shifting the alignment away from its proposed location running through the park to the northern side of Whittier Boulevard. The end segment of this alternative, including a station and storage tail tracks, will run alongside the Whittier Greenway. Further assessment and design is required to reduce possible impacts to this recreational resource.

- **Alternative 4 Washington Boulevard LRT** – This option has two resources with possible impacts:

  1. Montebello Golf Course – as discussed above.
  2. Chet Holifield Park – This park and community center is located one block south of Washington Boulevard on Greenwood Avenue.

Table 4.4 Parkland and Recreational Facilities

Alignment Alternative	Parkland/ Recreational Facility	Location	City	Approximate Distance to Line/Station
SR-60 LRT	Montebello Golf Course	901 Via San Clemente	Montebello	Adjacent to SR-60
	Whittier Narrows Recreation Area	SR-60 between Rio Hondo and N. Santa Anita Avenue	Rosemead	Adjacent to SR-60
Beverly Boulevard LRT	Montebello Golf Course	901 Via San Clemente	Montebello	Adjacent to SR-60
	Ashiya Park	2700 W. Beverly Boulevard	Montebello	North and south side of Beverly, east of Garfield
	Henry Acuna Park	600 N. 18th Street	Montebello	500 feet north of alignment
	Grant Rea Park	600 Rea Drive	Montebello	Adjacent to Beverly to the north
	Rio Hondo Park	4632 Orange Street	Pico Rivera	500 feet south of Beverly, east of the river
	Pio Pico Park	9258 Beverly Boulevard	Pico Rivera	Adjacent to Beverly, on the south side
	Amigo Park	5700 Juarez Avenue	Whittier	500 feet southwest of Whittier Greenway on west side of I-605
	Guirado Park	5760 Pioneer Boulevard	Whittier	500 feet south of Whittier Greenway on east side of I-605 Whittier Greenway bisects Palm Park
	Palm Park	5703 Palm Avenue	Whittier	
	Whittier Greenway	From Beverly at Rio Hondo to end of alignment	Whittier	From Beverly at Rio Hondo to end of alignment
Beverly/Whittier Boulevards LRT	All of the above parks for Beverly			
	Pio Pico State Park	9258 Beverly Boulevard	Pico Rivera	Adjacent to Beverly, on the south side

Table 4.4 Parkland and Recreational Facilities (continued)

Alignment Alternative	Parkland/ Recreational Facility	Location	City	Approximate Distance to Line/Station
Washington Boulevard LRT	Montebello Golf Course	901 Via San Clemente	Montebello	Adjacent to SR-60
	Ashiya Park	2700 W. Beverly Boulevard	Montebello	North and south side of Beverly, east of Garfield
	Chet Holifield Park	1060 S. Greenwood Avenue	Montebello	500 feet south of Washington

In summary, all of the alternatives provide the benefit of increased public accessibility to the identified PSA parkland and recreational resources. The two alternatives with the highest potential for resource impacts were: the SR-60 Alternative due to traversing a portion of the Whittier Narrows Recreation Area, and the Beverly Boulevard Alternative due to operations within the Whittier Greenway. Further investigation of impacts on parkland and recreational facilities will be undertaken during the Draft EIS/EIR phase.

4.15 Summary of Environmental Issues

An initial environmental analysis of a full range of alternatives was prepared and documented in the *Eastside Transit Corridor Phase 2 AA Report*. In January 2009, the Metro Board approved four Final Alternatives to be refined and evaluated further through conceptual engineering and station planning efforts. In this Addendum to the AA Report, the initial environmental review was updated to reflect possible impact areas where more detailed information became available.

At this preliminary level of analysis, with alignment engineering and station design information at a five percent level of completeness, there are minor differences in the level of environmental impacts between the Final Alternatives as summarized below in Table 4.5. And while there does not appear to be any insurmountable technical or environmental challenges, there are remaining areas of concern requiring further analysis during the subsequent Draft EIS/EIR effort:

- **SR-60 LRT Alternative** – This option's alignment operates adjacent to a current Superfund site where the location and extent of hazardous materials is not fully known. Initial analysis has identified that there are viable engineering and environmentally-acceptable methods to construct columns and related footings in this area. Significant challenges remain requiring detailed research, evaluation and close coordination with and the approval of the U.S. EPA, Caltrans and FHWA. In addition,

this alternative traverses through a portion of the Whittier Narrows Recreational Area where construction of an aerial LRT system may require shared use or acquisition of small portions of parkland to allow for column placement.

- **Beverly Boulevard LRT Alternative** – This alternative has two areas of concern:

    1. Construction of a rail system along the Whittier Greenway will impact two existing park facilities within the City of Whittier: the Whittier Greenway and Palm Park. Currently, a landscaped bicycle and pedestrian trail occupies the full width of the Greenway's right-of-way; placement of a rail system along the Greenway will require approximately half of the right-of-way, requiring relocation and reduction in the size of the recreational facility. There are possible section 4(f) and 6(f) issues: 4(f) as the rail system will require partial acquisition or an agreement for joint use with the City of Whittier; and 6(f) as the facility was built with National Park Service funds from the U.S. Department of the Interior.

        Palm Park is located astride the Whittier Greenway, and the proposed rail operations will bisect the park, negatively impacting use of the facility. A proposed land bridge may mitigate user impacts.

    2. As this alternative transitions from Beverly Boulevard to operate within the Whittier Greenway, the alignment crosses an area of primarily vacant land owned by Southern California Edison and the Union Pacific Railroad. Initial discussions with these entities have identified that both have future plans that may preclude LRT operations in this area.

During preparation of the subsequent Draft EIS/EIR, more detailed plans will be prepared and site-specific impacts and possible mitigation measures will be identified and evaluated.

Table 4.5 Summary of Environmental Impacts

Resource Area	Environmental Impact
Land Use and Economic Development	All of the alternatives support PSA land use and economic development plans.
	The Beverly Boulevard option has the highest level of transit-supportive land uses; the Whittier section of the Beverly/Whittier alternative has the highest levels of population and employment densities; while the SR-60 option has the lowest levels of transit-supportive land uses, population density and employment density.
Catalyst for Public/Private Economic Revitalization	All of the alternatives provide transit oriented development opportunities.
Right-of-Way Acquisition	All of the alternatives will require property acquisition to accommodate rail system operations, stations and related facilities, including park-and-ride structures and off-street bus and shuttle space. The SR-60 Alternative requires the most property acquisition for construction of parking structures to support access to and use of this option. In addition, acquisition of a portion or all of 12 single-family residential properties may be required.
	The Beverly Boulevard Alternative requires the second highest amount of land as the eastern half of the alignment leaves the public right-of-way and operates through properties owned by Southern California Edison, the Union Pacific Railroad, the City of Whittier and others.
Community and Neighborhood Impacts (Quality of Life and Environmental Justice)	All of the alternatives have possible community cohesion impacts; the SR-60 option has the fewest, and the Whittier Greenway segment of the Beverly Alternative has the highest.
	All of the alternatives increase transit service to the PSA's transit dependent residents, with the Beverly and Beverly/Whittier alternatives providing the highest levels of access.
Visual and Aesthetic	All of the alternatives have possible visual and aesthetic impacts.
Cultural Resources	The SR-60 alternative has no resource impacts; the Whittier segment of the Beverly/Whittier option has the highest number of resources and possible impacts.

Table 4.5 Summary of Environmental Impacts (continued)

Resource Area	Environmental Impact
Air Quality	A majority of the alternatives improve regional air quality over the No Build option; the Washington Boulevard Alternative does increase some emissions.
Noise and Vibration	All of the alternatives will have possible noise and vibration impacts. Due to their settings, the SR-60 option will have the lowest impact and the Whittier Greenway section of the Beverly alternative will have the highest potential for impacts.
Ecosystems	Due to the PSA's highly-developed, urbanized setting, the alternatives will have minor to no impacts on biological resources; the SR-60 option may impact a small portion of the Whittier Narrows Recreation Park.
Water Resources	All of the alternatives have potential water resource impacts: the SR-60 option due to the flood control land within the Santa Anita station; and the other options due to new bridge construction in flood control areas adjacent to the San Gabriel River and Rio Hondo Flood Channel.
Geology and Subsurface Conditions	All of the alternatives require alignment- and site-specific analysis of seismic and soil conditions.
Hazardous Materials and Waste	The SR-60 Alternative has potential impacts on the former OII landfill/current Superfund site. Initial conversations with U.S. EPA indicate that there are viable engineering and environmentally-acceptable methods to penetrate the site's clay and GCL caps for column and footing placement to support the aerial LRT system. Further site research, engineering and cost information is required.
Energy	None of the alternatives increase PSA energy consumption when compared to the No Build option.
Parklands and Recreational Resources	Two alternatives may have impacts on park resources. The Beverly Boulevard Alternative will require acquisition or shared use of approximately half of the Whittier Greenway, and relocation of existing recreational facilities, and the alignment will bisect Palm Park and impact its use. The SR-60 option may require acquisition or shared use of a small portion of the Whittier Narrows Recreation Area to accommodate aerial system columns and footings.

5.0 COST ANALYSIS

This section presents the resulting conceptual engineering-level of capital and operating and maintenance cost estimates for the Final Alternatives, along with the Transportation System Management Alternative (TSM) required for comparison purposes. The cost analysis prepared as part of this Addendum to the Eastside Phase 2 Alternatives Analysis (AA) Report reflects the four Final Alternatives approved by the Metro Board in January 2009 to be further studied through Conceptual Engineering. The following capital and operating and maintenance costs reflect the engineering, station and operational refinements made to the Final Alternatives as documented in Sections 2 and 3 of this report. In addition, the costs related to the TSM Alternative were updated as part of this effort. The methodology used to develop the Conceptual Engineering capital and operating and maintenance costs is the same methodology developed and approved for the AA Report.

5.1 Capital Costs Analytical Overview

Capital costs are the expenses associated with the design and construction of the proposed alternatives, and they fall into two categories:

1. Construction Costs – including guideway and track elements; stations, parking structures and station access elements (elevators and escalators); maintenance and storage facilities; site work (demolition and utility work); and system equipment such as train control, traffic signals and crossing protection, traction power substations and traction power distribution.

2. Total Project Costs – acquisition of land and/or right-of-way; purchase of vehicles and provision of professional services such as engineering, project and construction management; insurance; permits; surveying; testing and finance charges.

Conceptual engineering-level capital costs were developed by estimating the quantities for individual line items required to build and operate each alternative based on engineering and station drawings, and then by applying standardized unit costs. Quantity take-offs, including right-of-way requirements and route measurements, were based on the conceptual engineering and station plans provided in *Appendix A – Conceptual Engineering Drawings*. In some cases, system elements were not specified at this level of engineering, such as the number of elevators and escalators required at each aerial station. These major cost elements were priced separately for inclusion in the capital cost estimates. It should be noted that the resulting capital cost estimates do not include costs associated with environmental mitigation measures or joint development.

The unit costs used in preparing the capital cost estimates were derived primarily from similar Metro projects with recent construction bid information, and were documented in the methodology report developed for the AA. *Appendix C – Basis of Capital Cost Estimate Refinement & Capital Cost Estimates Spreadsheet* document*s* the unit costs used to develop the capital costs for the Eastside Phase 2 Final Alternatives. The capital costs were derived by multiplying the unit costs by the quantities such as length of the track and number of stations. A capital cost for each alternative is presented in the technical memorandum in Standardized Cost Categories (SCC), developed by the Federal Transit Administration for comparing project costs on a national basis.

Contingencies were applied to the unit costs as a percentage of the category and then included to develop the total project cost for each alternative. The contingency percentages were supplied by Metro as documented in the previous AA Report. When performing any cost estimate, especially at this early level of design, unforeseen costs arise due to circumstances beyond the defined scope of work. Two types of contingencies provide a way to account for these unforeseen costs:

- Allocated contingencies are applied to each cost category and reflect items that are not definable at a conceptual level of design. As the engineering moves forward and the project scope is further clarified, the contingencies will be reduced.
- Unallocated contingencies are used to reflect unforeseen costs arising while the project is under construction, and are defined as overall costs to the project.

5.2 Capital Costs

During Conceptual Engineering, order-of-magnitude capital cost estimates were developed for the four Final Alternatives. The No Build Alternative was not included in this effort as it does not have any associated capital or operating and maintenance costs – all No Build costs are considered to be within Metro's financial capability as reflected in the adopted *FY 2008 Adopted Budget (Activity Based Gold Line Cost Model)* and the *Draft 2008 Long Range Transportation Plan*. Capital costs for the TSM Alternative were updated from those identified in the AA Report to reflect an increase in the background Light Rail Vehicle (LRV) fleet size.

Vehicle Requirements

Rail vehicle requirements for each alternative were identified based on Metro Operations policies and each option's length, forecast run time and projected ridership. For the Eastside Transit Corridor Phase 2, rail cars were identified in addition to those already planned for the Metro Gold Line Eastside Phase 1 operations to its terminus at the Atlantic/Pomona Station. The final Phase 2 fleet size reflects Metro Operation's policy for FY 2030 that requires three-

car consists, rather than the two-car consists previously planned for and costed in the AA Report. Among the four Final Alternatives, the number of new vehicles required varies from six to 21.

Storage and Maintenance Facilities

The capital cost estimates presented below include a placeholder cost for the construction of an incremental storage and heavy maintenance facility required for each alternative to support operations. The capital cost was calculated using the existing Metro Gold Line yard (50 LRVs) as the basis. Capital cost estimates include a placeholder to accommodate the peak fleet size for each Phase 2 alternative. The final decision of where to locate new support facilities and how to allocate their cost will be made based on further policy and cost analysis within the larger framework of Metro's entire light rail system needs.

Summary

The resulting order-of-magnitude capital costs for the Final Alternatives, along with a comparison to the TSM Alternative, are presented below in Table 5.1. These costs are presented in FY 2008 dollars. During Conceptual Engineering, estimated capital costs increased over those presented in the AA Report due to refinements documented in Section 2 of this report. The revisions include a number of general factors including:

- Refinement of the engineering horizontal and vertical plans;
- Refinement of the number of stations and their conceptual design;
- Refinement of the number of required parking structures, their size and preliminary location;
- Refinement of land acquisition requirements;
- Identification of the need for new bridges crossing the Rio Hondo, San Gabriel River, I-605 Freeway and Norwalk Boulevard (for the Whittier Greenway section of the Beverly Boulevard Alternative only);
- Refinement and addition of aerial segments to avoid Southern California Edison transmission lines, and to more easily cross study area bridges and the I-605 Freeway;
- Requirement for a higher peak fleet size by revised Metro policy; and
- More detailed identification of utility impacts.

Table 5.1 Estimated Capital Costs (FY 2008 dollars)

Alternative	Total Project Capital Cost (billions)	Incremental Cost Increase Over TSM
TSM	$0.5	-
1 SR-60 LRT	$1.8	$1.3
2 Beverly Boulevard LRT	$1.5	$1.0
3 Beverly/Montebello/Whittier LRT	$1.6	$1.1
3 Beverly/Rosemead/Whittier LRT	$1.5	$1.0
4 Washington Boulevard LRT	$2.2	$1.7

The alternatives with the highest estimated capital costs were the two options with primarily aerial operations: the SR-60 and Washington Boulevard alternatives. The Washington Boulevard option was identified as more expensive due a longer alignment (2.47 miles longer than SR-60) and two more aerial stations than the SR-60 option. The estimated capital costs of the other three alternatives were similar; the Beverly/Montebello/Whittier Alternative was identified as slightly higher in cost due to more miles of aerial operations (2.2 miles more than the Beverly Boulevard option and 1.4 miles more than Beverly/Rosemead/Whittier).

Table 5.2 Estimated Capital Costs Per Mile (FY 2008 dollars)

Alternative	Construction Cost Per Mile (millions)	Total Project Cost Per Mile (millions)
1 SR-60 LRT	$131.4	$270.2
2 Beverly Boulevard LRT	$74.8	$162.5
3 Beverly/Montebello/Whittier LRT	$95.3	$177.4
3 Beverly/Rosemead/Whittier LRT	$83.3	$166.4
4 Washington Boulevard LRT	$133.3	$239.6

Table 5.2 presents the estimated capital costs on a per mile basis allowing for a more detailed identification of the differences between the Final Alternatives. The per mile costs are close for the SR-60 and Washington Boulevard aerial alternatives, but the SR-60 option was estimated to cost more due to higher (33 percent) land and right-of-way acquisition requirements for stations and supporting structures. The Beverly Boulevard Alternative had the lowest estimated cost per mile due to the lowest percentage (37 percent) of aerial operations among the options. The Beverly/Rosemead/Whittier Alternative was estimated to cost slightly more per mile based on a higher percentage (44 percent) of aerial operations. The Beverly/Montebello/Whittier Alternative was identified as even higher in cost due to 60 percent of its alignment operating in an aerial configuration.

During subsequent Advanced Conceptual Engineering efforts, system components and requirements will become more detailed, and revised capital cost assessments will be prepared and evaluated in the Draft EIS/EIR document.

5.3 Operating and Maintenance Costs

Operating and maintenance (O&M) costs are those related to the day-to-day operations of the proposed transportation service including labor, vehicle maintenance and overall transit facility maintenance. During Conceptual Engineering, O&M costs were identified using a fully-allocated, five-variable cost model (HDR O&M Cost Model). Since Metro currently operates Light Rail Transit, O&M cost estimates were developed using Metro Gold Line financial and operating data from Metro's *FY 2008 Adopted Budget (Activity Based Gold Line Cost Model).* A second phase of the Metro Gold Line Eastside Extension would have an impact on Metro local and express bus operations. Metro's bus operating costs for FY 2008 were used from Metro's *FY 2008 Adopted Budget (Activity Based Bus Cost Model)*. Financial and other operating costs for the other affected bus systems (i.e. the Norwalk Transit System, Monterey Park Spirit Bus, Foothill Transit Zone and Montebello Bus Lines) that are within the study area were developed based on FY 2006 National Transit Database (NTD) reports. These costs were adjusted to FY 2008 dollars. The model used meets FTA guidelines for estimating operating costs.

As documented in *Appendix E – Preliminary Operating Plan and Maintenance Cost Estimate Technical Memorandum*, the cost allocation model assumes that each expense incurred by a transit system alternative is "driven" by supply variables, such as vehicle revenue-miles, train revenue-hours and peak-vehicles. A unit cost is developed for each supply variable by disaggregating operating expense data (i.e. National Transit Database [NTD] data), and assigning cost drivers (e.g. annual revenue rail hours or miles) to each expense object. To derive unit costs, the total expenses assigned to each supply variable are divided by the annual quantity supplied. To determine total O&M costs, the unit cost for each supply variable is multiplied by the projected annual units of service. The following equation summarizes the fully-allocated cost model used to estimate annual O&M costs for the Eastside Transit Corridor Phase 2 alternatives:

Estimated Annual O&M Cost	=	Route-Mile Unit Cost x Projected Route-Miles	+	Garage/Yard Unit Cost x Projected Garages/Yards	+	Bus/Train-Hour Unit Cost x Projected Bus/Train-Hours	+	Car/Bus-Mile Unit Cost x Projected Car/Bus-Miles	+	Peak LRV/Buses Unit Cost x Projected Peak LRV/Buses

Where:

- Route-Miles = Total number of directional route miles.

- Garages/Yards = Total number of maintenance and storage facilities.
- Annual Revenue Car/Bus-Miles = Total annual miles of revenue service operated by all trains or buses.
- Annual Revenue Bus-/Train-Hours = Total annual hours of revenue service operated by all bus or train lines.
- Peak LRV Cars/Buses = Maximum number of passenger Light Rail Vehicles or buses scheduled to be simultaneously in service.

The unit costs derived from the model then were applied to the projected LRT and bus operating statistics generated for each project alternative to estimate the total O&M costs. A comparison of the incremental O&M costs for each of the Final Alternatives relative to the TSM Alternative is presented in Table 5.3. The annual O&M cost estimates are presented in (rounded) FY 2008 dollars based on the 2030 design year operating plans and ridership projections.

Table 5.3 Estimated Annual O&M Costs (FY 2008 dollars)

Alternative	Total Annual O&M Cost (millions)	Incremental Cost over TSM
TSM	$143.4	-
1 SR-60 LRT	$169.9	$26.4
2 Beverly Boulevard LRT	$184.5	$41.1
3 Beverly/Montebello/Whittier LRT	$184.7	$41.3
3 Beverly/Rosemead/Whittier LRT	$184.9	$41.5
4 Washington Boulevard LRT	$181.0	$37.6

During Conceptual Engineering, estimated O&M costs increased over those presented in the AA Report due to a number of factors including:

- Revisions to the length of the alignments and the number of stations;
- Refinements to alignment vertical and horizontal profiles;
- Reduction in the vehicle speed on Whittier Greenway from 45 mph to 35 mph to reflect the single-family residential setting, high number of schools and constrained street crossings of the Beverly Boulevard Alternative ;
- Changes in related run time estimates; and

- Increase in train consist sizes for all alternatives – as discussed above and presented in Table 5.4, Metro Operations Policy for 2030 calls for three-car consists, rather than the one- and two-car consist size used in the AA analysis.

Table 5.4 Proposed Train Consist Sizes (FY 2030)

Operating Timeframe	Peak	Base	Evening	Ready Cars
Alternatives Analysis				
Monday-Friday	2	2	1	2
Saturday	2	2	1	2
Sunday	2	2	1	2
Conceptual Engineering				
Monday-Friday	3	3	3	3
Saturday	3	3	3	3
Sunday	3	3	3	3

The SR-60 Alternative had the lowest estimated O&M costs due to a high level of aerial operations along with the shortest alignment, the fewest number of stations and the lowest number of vehicles required of the Final Alternatives. The Washington Boulevard Alternative had the second lowest cost, but was higher than the SR-60 Alternative due to being 2.47 miles longer, having two more stations and requiring six more peak fleet vehicles. The three options with the initial segment of Beverly Boulevard were similar in O&M costs, primarily due to a similar length, the same number of stations and same requirement for peak fleet vehicles. Of the three options, the Beverly Boulevard Alternative had the lowest operating costs due to operations within a limited access right-of-way along the Whittier Greenway. The Beverly/Montebello/Whittier Boulevards Alternative was second lowest of the three due to higher percentage of aerial operations and a shorter alignment length (0.09 miles) than the Beverly/Rosemead/Whittier Boulevards option.

During subsequent Advanced Conceptual Engineering efforts, system components and requirements will become more detailed, and revised operating and maintenance cost assessments will be prepared and evaluated in the Draft EIS/EIR document.

6.0 PUBLIC INVOLVEMENT AND AGENCY COORDINATION

In January 2009, the Metro Board of Directors approved the Eastside Transit Corridor Phase 2 Alternatives Analysis (AA) Report and adopted four build alternatives for further analysis. In addition to technical analysis, this effort included a comprehensive public participation program designed to support the ongoing technical work, ensuring that cities in the Project Study Area (PSA), stakeholders and interested parties were well informed of the results of the Metro Board approved AA Study.

As part of this effort, an eight-month outreach action plan was developed to engage all affected and interested parties and facilitate discussions focusing on which of the four alternatives should be recommended for further environmental and advanced conceptual engineering analysis. The eight-month outreach action plan efforts are organized and summarized below in two categories: public involvement and project briefings.

6.1 Public Involvement Efforts

Public involvement included community open houses, council meeting updates and a series of focus groups.

Council Briefings & Open Houses

To initiate the public participation program, council briefings were held with each of the seven corridor cities that the four alternatives traverse. To encourage public participation, public open houses were held prior to the council briefings, allowing the residents, businesses and elected officials time to review the summary of the AA findings and Board-adopted Final Alternatives. These city council briefings/public open house meetings were conducted between April 8 and May 12, 2009. A total of 207 people participated in the open house sessions, where attendees had the opportunity to view project boards and ask questions or raise concerns directly to the project team members stationed around the room. Comment cards were also provided to document public input. Following the open house sessions, a PowerPoint presentation was made to the city councils, including a brief question and answer session. The presentation and display boards included information on the project development process, alternatives, technology, project schedule and strategy to reduce and refine the four alternatives. The seven briefings are summarized in Table 6.1.

Table 6.1 City Council Meeting and Open Houses

Meeting Type / Name	Meeting Date	Location	No. of Attendees	No. of Written Comments Received
Montebello City Council Open House	April 8, 2009	City Hall, Montebello	41	6
South El Monte City Council Open House	April 14, 2009	City Hall, South El Monte	61	7
Pico Rivera City Council Open House	April 14, 2009	City Hall, Pico Rivera	16	2
Monterey Park City Council Open House	April 15, 2009	City Hall, Monterey Park	23	7
Commerce City Council Open House	April 21, 2009	City Hall, Commerce	16	0
Rosemead City Council Open House	April 28, 2009	City Hall, Rosemead	18	0
Whittier City Council Open House	May 12, 2009	City Hall, Whittier	32	5

Totals: Attendees: 207 / Comments: 27

Notification for the open house portion of the meetings was completed using a variety of methods, including:

- Bilingual postcard mailed to the project database, consisting of interested stakeholders who participated in previous meetings, elected officials, resource agencies, city staff as well as property owners along the four alternatives (approximately 1,500 records).
- Electronic postcard e-blast to project database records with e-mail data
- Postcard hard copies delivered to local chambers and city hall counters
- Project website/helpline

- City websites
- City outreach database e-blast
- City cable television announcement
- Local area chambers of commerce

Focus Groups

Following the council briefings/public open houses, Metro conducted a series of four workshops. Each workshop focused on an individual alternative, providing a forum for detailed discussions of the proposed alignment configurations, station/parking locations, land use opportunities and constraints and other issues. Invitation letters were mailed to a targeted list of key stakeholders that was vetted through each of the seven corridor cities. Participants included city elected officials, executive staff members, planning commissioners, chamber of commerce members, community leaders, developers, college and school district representatives and other key stakeholders. Table 6.2 provides a summary of the four focus group meetings. See Appendix F for a detailed list of invitees.

Table 6.2 Summary of Focus Group Meetings

Meeting Type/Name	Meeting Date	Location	No. of Attendees	No. of Comments Received
Focus Group Meeting #1 – Washington Alignment	June 2, 2009	El Rancho High School, Pico Rivera	29	Group Input
Focus Group Meeting #2 – Beverly and Beverly/Whittier Alignments	June 3, 2009	Whittier Train Depot, Whittier	27	Group Input
Focus Group Meeting #3 – SR-60 Alignment	June 4, 2009	South El Monte Senior Center, South El Monte	59	Group Input
Focus Group Meeting #4 – Montebello Alignments	July 9, 2009	Montebello Senior Center, Montebello	29	Group Input

Totals: Attendees: 144

The first three focus groups were alignment-specific, focusing on the Washington Boulevard alignment, Beverly and Whittier Boulevards alignments and the SR-60 alignment. The fourth focus group was a special request from the City of Montebello to discuss all four alternatives that traverse their city.

Each workshop began with an introductory video, "Transit for Everyone," which demonstrates the characteristics of light rail and other transit modes and how they can be integrated into a community. A short PowerPoint presentation was also given by Metro staff and consultants that summarized the evaluation process and reviewed the alternatives still under consideration. Following the video and presentation, participants were broken up into groups of four to eight people at a table and shown aerial maps of the alternatives. A facilitator at each table led the discussion of the alternatives from the terminus station of the Gold Line Eastside Extension Phase 1 to the end of the particular alignment being discussed. Scribes at each of the table took notes to document the key discussion points. At the conclusion of the meeting, a representative from each group was asked to share the key points that came out of the discussion at their table.

Community Open Houses

After garnering input from the focus groups and some technical review of the proposed alignments, Metro scheduled three community meetings. The first community meeting, conducted on July 29, focused exclusively on tenants and property owners located along each of the four proposed alternatives. The other two community meetings will be held for the general public on October 20th and 22nd, 2009.

The first community meeting, held on July 29 at the Montebello Golf Course, provided a forum to educate businesses and property owners on the proposed alignments, project development process and right-of-way issues. Approximately 8,000 invitation letters were mailed to tenants and property owners located within 300 feet of each of the four proposed alternatives.

The meeting was set up open house style with stations covering various topics related to the project. Attendees had the opportunity to review project background and overview information, alignment-specific display boards, view an introductory video, "Transit for Everyone," and hear a project presentation. The meeting was attended by 125 people and included a broad representation of both residents and business owners. The stations covered the following topics:

1. Project Overview
2. Alternatives Analysis and Draft Environmental Impact Statement (EIS)/ Environmental Impact Report (EIR) Process
3. SR-60 Alignment
4. Beverly Boulevard Alignment

5. Beverly/Whittier Boulevards Alignment
6. Washington Boulevard Alignment
7. Project Presentation
8. Light Rail Transit (LRT) Characteristics

The station generating the largest interest was the Beverly Boulevard Alignment, which had numerous attendees expressing their opposition to building on the Whittier Greenway Trail, a pedestrian and bicycle trail that opened in the City of Whittier in early 2009.

Two additional Community Open Houses are planned for October 20th and 22nd, 2009. The purpose of these meetings is to inform the general public of the results of the technical analysis and public outreach effort, and provide information on the next steps.

The format is a combination of an open house session, with a formal presentation. During the open house session, participants have the opportunity to view project display boards, and ask questions and/or raise concerns directly to project team members stationed around the room. After the open house session, a PowerPoint presentation is provided to describe the goals and purpose of the project and meeting. At the conclusion of the presentation, participants are encouraged to submit written comments using the comment cards provided.

To encourage participation in the Community Open Houses scheduled for October 20th and 22nd, the following mediums will be utilized:

- Metro Eastside Transit Corridor Phase 2 project database (1,500 records)
- Project website
- Project helpline
- E-blast invitation
- Invitation deliveries to local chambers and city hall offices/counters
- City websites
- City outreach database e-blast
- City cable television announcement
- Local area chambers of commerce
- Meeting notices in local newspapers
- Take Ones on Gold Line and local buses

6.2 Project Briefings

In addition to the meetings held as part of public involvement, ongoing briefings were held with elected officials, city staff, institutional groups, regulatory agencies and selected key stakeholders to keep them apprised of the latest project developments and findings. The following summarizes the efforts to maintain frequent communication with stakeholders as the project moves forward in the study.

Elected Official Briefings

Legislative Briefings

A Legislative Briefing was held in September 2009 to provide local, state, and federal elected officials and their staff with a detailed briefing on the status of the Eastside Transit Corridor Phase 2 study.

Council of Government (COG) Briefings

In an effort to keep stakeholders in such a large project area abreast of all developments, a total of four briefings were conducted to the Gateway and San Gabriel Valley Councils of Government (COG). The first two briefings took place on March 31 and April 2 with executive directors of both San Gabriel Valley and Gateway COGs, respectively. The two subsequent meetings were with the Transportation Committees during their regularly scheduled meetings. Project updates were provided to the San Gabriel Valley Transportation Committee during their April 16 meeting and the Gateway Transportation Committee was briefed on May 6th. These meetings served as project updates during the initiation of this outreach program. A follow-up briefing is planned for September/October 2009 with the executive directors for both COGs to provide a project status, including which alternatives Metro staff is recommending for further study and which will proceed into the Draft EIS/EIR phase.

Technical Advisory Committee Meetings

The Technical Advisory Committee (TAC) is comprised of key city staff, state, federal and regional regulatory agencies and was organized as part of the AA process for the purpose of keeping them informed of the study's progress, technical evaluation methodology, scope of work and community outreach efforts. During the eight-month outreach action plan effort, one TAC meeting was scheduled in March 2009 and a second meeting is planned for October 2009.

On March 17, 2009, a presentation was given to the TAC participants that outlined the findings of the AA study, and the four Final Alternatives as adopted by the Metro Board in January 2009. The presentation also included an overview of the environmental and conceptual engineering process together with the eight-month outreach action plan and strategy to refine and reduce the number of alternatives prior to initiating the environmental review work. In October, a meeting is planned to update TAC on the status of the Eastside Transit Corridor Phase 2 project, including the two build alternatives that staff is not recommending for further study as well as the two build alternatives that are being recommended for entry into the Draft EIS/EIR phase.

City and Stakeholder Briefings

Over the course of the AA study and the subsequent eight-month outreach action plan, the project team conducted numerous city and stakeholder briefings to provide the latest information and updates. In addition, one-on-one briefings were used to coordinate with city staff on the physical components of each alternative as it pertained to their city. Meeting participants included City Managers, Directors of Public Works, Planning, Community Development, Transportation and City Engineers. Involving the various department heads at each city ensured that the discussions were productive and covered the range of study disciplines needed for planning and design.

Smaller group briefings were also conducted to inform interested and key stakeholders of the project status and the project development process. These individual meetings were valuable in building project consensus and helping to navigate through the corridor issues, especially as they relate to specific groups. A total of 21 stakeholder briefings were conducted with local service and business organizations, including: chambers of commerce, business associations, hospitals, academic institutions, shopping centers, churches and schools. (For a detailed list of briefings, refer to Project Meeting Record, Appendix G). Table 6.3 provides a summary of the city and stakeholder briefings.

Table 6.3 Summary of City and Stakeholder Briefings

Meeting Type/Name	No. of Meetings	No. of Attendees	No. of Written Comments Received
Elected Official Briefings	4	18	2
Technical Advisory Committee Meetings	1	28	Group Input
Stakeholder & City Meetings	21	182	8

6.3 Outreach Summary

The Eastside Transit Corridor Phase 2 transportation alternatives were identified and evaluated through a detailed screening process incorporating technical and environmental analysis and public input. During the preliminary screening step, 47 Conceptual Alternatives were identified from previous corridor studies and through this project's early scoping process. Following an initial screening, 17 Initial Alternatives were identified. Based on a

comparative analysis and public feedback, the Initial Alternatives were refined to a smaller set of five Refined Alternatives that best met the project goals, were technically viable, and had stakeholder support. The five Refined Alternatives were evaluated through the screening process and criteria documented in the Eastside Transit Corridor Phase 2 AA Report. The final screening process involved more specific evaluation information, including engineering and operational analysis, initial capital and operating cost estimates, ridership forecast modeling, community and environmental impacts analysis, and public input. In January 2009, the Metro Board of Directors adopted four Final Alternatives for further analysis through additional environmental evaluation and public outreach effort: SR-60, Beverly Boulevard, Beverly/Whittier Boulevards and Washington Boulevard.

Initial public support during the AA centered on the Whittier Boulevard Alternative due in part to the direct route to Uptown Whittier, seen by many as a popular terminus area. In addition, Whittier Boulevard is a major retail corridor. However, supportive comments also noted concern for potential impacts to businesses during construction, right-of-way requirements and increased congestion. The SR-60 and Washington Boulevard routes were mentioned as good alternatives to avoid impacts on Whittier Boulevard. The Beverly Boulevard Alternative was the least supported route.

Following adoption of the four build Final Alternatives by the Metro Board of Directors in January 2009, an intensive public involvement plan was developed to further evaluate and refine the alternatives prior to the initiation of the Draft EIS/EIR. This effort was focused on outreach to elected officials, city staff, affected property owners, business leaders and key community stakeholders for the purpose of further technical evaluation and in-depth alternative discussions. At meetings and briefings, physical components of each alignment were discussed, including configuration, station locations, parking, land use potential, ridership, travel times, system costs, noise, property and traffic impacts.

During the refinement of the four Final Alternatives, elected officials and stakeholders had the opportunity to study the four alternatives in greater detail and consider their city's General Plans, including the Circulation Element and land use policies. In addition, comments received during this period at open houses, focus groups and individual stakeholder briefings showed significant support for both the SR-60 and Washington Boulevard alternatives. This support was a catalyst for the corridor cities to solidify their positions and adopt resolutions or letters of support for these two alternatives. The cities of Monterey Park, Rosemead, Montebello, South El Monte and El Monte formed a coalition around the SR-60 Alternative. The City of Industry has also stated their support for the SR-60 Alternative. And in a similar effort, the cities of Commerce, Pico Rivera, Santa Fe Springs and Whittier articulated their support for the Washington Boulevard Alternative.

Only the City of Pico Rivera included the Beverly/Whittier Boulevards Alternative as a secondary option. The City of Whittier voiced their opposition to the Beverly Boulevard, Beverly/Whittier Boulevards, and SR-60 alternatives in their resolution. Once the City

Councils formalized their support for the SR-60 and Washington Boulevard Alternatives, respective constituencies generally aligned themselves with their local government. As such, the community of Whittier initiated the "Save the Greenway Committee" to communicate their opposition to the Beverly Boulevard Alternative and their support for the Washington Boulevard Alternative. Through resolutions, letters and public comments submitted over the past eight months, support for the SR-60 and Washington Boulevard alternatives is nearly 6 to 1 compared with the Beverly Boulevard and Beverly/Whittier Boulevards Alternatives. Table 6.4 summarizes the support of the alternatives by each city.

Table 6.4 Support of Project Alternatives by City

City	SR-60 LRT	Washington Boulevard LRT	Beverly /Whittier Boulevards LRT	Beverly Boulevard LRT
Commerce		Support		
El Monte	Support			
City of Industry	Support			
Monterey Park	Support			
Montebello	Support			
Pico Rivera		Support	Support (2^{nd} choice)	
Rosemead	Support			
Santa Fe Springs		Support		
South El Monte	Support			
Whittier		Support		

The collection of community input reflects an overwhelming support for both the SR-60 and Washington Boulevard Alternatives and a strong opposition to the Beverly/Whittier Boulevards and Beverly Boulevard Alternatives. The comments supporting the SR-60 and Washington Boulevard alternatives highlighted the connectivity potential and limited impacts to traffic, homes and businesses. Supporters of the SR-60 specifically mentioned the connectivity to the Montebello Town Center, Rio Hondo Community College and Whittier

Narrows Park, a regional park that holds major community events. Likewise, supporters of the Washington Alternative mentioned the connectivity to the large employment base in City of Commerce, Pico Rivera Town Center and Presbyterian Intercommunity Hospital, a major healthcare provider and employer in the City of Whittier.

The opposition to the Beverly/Whittier Alternative was primarily because of potential impacts to Whittier Boulevard, a major thoroughfare that is highly congested. According to the comments received, additional traffic impacts to this street would be detrimental to not only the motorist but to the business community. Comments received indicated that recent construction projects such as the reconstruction of the Rio Hondo Bridge and Whittier Boulevard improvements in Montebello have severely impacted the business community and Beverly Hospital. The Montebello Chamber of Commerce voiced strong opposition to the Beverly/Whittier Boulevards Alternative due to the potential right of way impacts at the northwest and southwest corners of the Beverly Boulevard and Montebello Boulevard intersection. Lastly, the Beverly Boulevard Alternative received the most opposition from the Whittier community; primarily because a segment of the alternative runs on the Whittier Greenway Trail in the City of Whittier. This trail opened this year with huge support and community participation. According to the comments received, the community would like to see this alternative removed from further consideration due in large part to pedestrian safety. The trail is heavily used by cyclists, runners and families who believe that sharing the trail with the light rail system could pose significant safety risks to the local community. In addition, the lack of parking along the route caused concern for overflow parking into the residential areas. The comments also demonstrated the community's concern that the alignment would have negative noise impacts, right of way issues, impacts to property values and privacy, due to the proximity of the alignment to local schools and residential areas. In an effort to show a united community effort against this alternative, Whittier residents formed the "Save the Greenway Committee."

7.0 COMPARATIVE ANALYSIS OF ALTERNATIVES

The Eastside Transit Corridor Phase 2 Alternatives Analysis (AA) Report completed in January 2009 provided a detailed overview of the Project Study Area's (PSA) transportation needs and how they would be served by the five proposed project alternatives under consideration at the time. In January 2009, the Metro Board approved four Final Alternatives and the initiation of Conceptual Engineering to refine and further evaluate the approved alternatives. This Addendum to the AA Report has documented the Conceptual Engineering-based effort intended to provide decision-makers and the public with an informed basis for selecting the most viable transportation strategy, or phasing of strategies, that would address the Eastside Transit Corridor's mobility needs and capacity requirements in year 2030 and beyond, while being sensitive to community, environmental and economic development concerns.

In summary, all of the proposed alternatives have benefits and impacts, as it is challenging to construct a high-capacity, light rail transit system in a heavily-developed, urban area with constrained street right-of-way widths lined with one- and two-story buildings. The primary goal of the Eastside Transit Corridor Phase 2 project is to provide a transportation system that better serves the PSA's communities without negatively impacting quality of life. Based on the technical analysis and outreach results documented in this report, two build alternatives, along with the No Build and Baseline/TSM options, are recommended to be carried through the preparation of a Draft EIS/EIR process. A discussion of the findings related to the four Final Alternatives is presented below. A graphic summary comparison is provided, in Table 7.1, to compare all of the non-fatal flawed, proposed alternatives and to demonstrate the technically superior alternatives.

7.1 Recommended Alternatives

Two of the Final Alternatives are recommended for further study: the SR-60 LRT and Washington Boulevard LRT options as discussed below.

7.1.1 SR-60 LRT

The SR-60 Alternative is recommended to move forward based on the following:

- This alignment provides the fastest travel speed and time of all of the alternative

Table 7.1 Comparative Analysis of Alternatives

Key Measures	SR-60	Beverly/Whittier	Washington
Total Ridership	◐	◐	●
Ridership: Boardings per Mile per Day	◐	○	●
Ridership: Boardings per Station	●	◐	●
Ridership: Access by Park-N-Ride Riders	●	◐	◐
Ridership: Access by Pedestrian & Bicycle Riders	○	◐	●
Ridership: Access by Bus Riders	○	●	◐
Accessibility to Transit-Dependent Populations	○	●	◐
Capital Cost	◐	●	○
Cost per Mile	○	●	◐
Travel Time	●	○	◐
Operations & Maintenance Costs	●	○	◐
Required Land Use and Zoning Changes to Support Transit Along Corridor	◐	○	●
Loss of Travel Lanes and/or Vehicle Conflicts	●	○	●
Loss of On-Street Parking	●	○	●
Catalyst for Public/Private Economic Revitalization	◐	●	◐
Right-of-Way Acquisition Note: Property for replacement parking may be necessary and has not yet been analyzed	◐	◐	◐
Community and Neighborhood Impacts (EJ)	●	○	◐
Visual Compatibility and Aesthetic Impacts	◐	○	◐
Section 4(f) Resources (Cultural & Parklands)	◐	◐	●

Key Measures	SR-60	Beverly/Whittier	Washington
Air Quality	●	●	◐
Noise and Vibration Sensitive Land Uses	●	○	◐
Ecosystems	◐	●	●
Water Resources	◐	◐	◐
Geology and Subsurface Conditions	◐	●	●
Hazardous Materials and Waste	○	◐	◐
Community Support	●	○	●

● Favorable rank ◐ Mid rank ○ Low rank

- PSA mobility goals of providing improved regional connectivity are achieved with this alternative by connecting with the regional Metro rail system, providing additional transportation capacity to serve increasing travel demand, reducing vehicular travel on the regional highway system and attracting new transit riders.
- North-south bus feeder networks and parking structures at every station provide additional accessibility.
- This alternative will primarily serve longer work-based trips. Access to this alternative will be enhanced by the provision of a bus feeder network and station-related parking structures. This option will also serve educational, shopping and recreational trips.
- This alternative will support both existing development, such as the Montebello Town Center and the Montebello Square shopping centers, and proposed land use plans, including the Cascades Market Place in Monterey Park. It also provides improved access to PSA recreational facilities such as the Whittier Narrows Recreation Area.
- This alternative results in good ridership that may be strengthened in the future with the use of the new Metro ridership model under development, including the Regional Connector, which would improve performance of this alternative by providing east-west one-seat connections and single transfer north-south connections desired by people traveling to and from the PSA.

- Minimal community impacts would result from the construction and operation of this alignment. Located in an aerial configuration within the SR-60 Freeway right-of-way, this alternative would have minimal visual, traffic, safety, noise and vibration impacts. However, it should be noted that as currently designed, this alternative will impact 12 residential properties.
- This alignment has experienced a high level of community, stakeholder and elected official support.

Challenges

- Hazardous Materials – Hazardous materials are present and remediation efforts are underway at the former OII/current Superfund site. Construction of the project adjacent to the site has the potential to disrupt ongoing remediation efforts.
- Flood Control and Parkland Impacts – According to the U.S. Army Corps of Engineers, flood plains and flood control facilities are located within the Santa Anita station area. System construction may impact these facilities. Additionally, the alignment travels adjacent to and within a portion of the Whittier Narrows Recreation Center, which also serves a flood control role; therefore, there is also the potential for parkland impacts.
- High Capital Cost – Options for potentially reducing the costs of this alignment will be explored during the next study phase, which includes environmental analysis and Advanced Conceptual Engineering. Considerations will include, but will not be limited to, identifying partnerships to develop shared-used parking structures.
- Terminus Station – Assessing an extension of the alignment further east to the former Crossroads Parkway Station could help recapture lost ridership caused by shortening the alignment and not serving commuters before the I-605/SR-60 interchange.
- Southern California Edison (SCE) Plans – Future engineering efforts will require close coordination with SCE due to their plans for construction of new 500kV transmission lines and towers adjacent to the SR-60/Paramount interchange and in the Peck Road Station Area as part of the Tehachapi Renewable Transmission project.
- Agency Coordination – This alignment will require significant coordination with other agencies including, but not limited to, Caltrans, Federal Highway Administration, U.S. Environmental Protection Agency, SCE and the U.S. Army Corps of Engineers.

7.1.2 Washington Boulevard LRT

The Washington Boulevard LRT Alternative is recommended to move forward based on the following:

- This alternative attracts the highest number of new transit riders, and provides the second fastest travel time of the four alternatives.
- PSA mobility goals of providing improved regional connectivity by connecting to the regional Metro rail system are achieved by providing additional transportation capacity to serve increasing travel demand, and by attracting new riders to transit.
- This alternative would build a strong ridership base by providing service for the following trip purposes:
    - Short, frequent trips within the communities it operates through.
    - Commuter trips to and from Washington Boulevard employment sites.
    - Commuter and other trips to and from the southern portion of the PSA, including the Gateway Cities and I-5 Freeway corridor, as well as to communities north of the SR-60 Freeway via bus and park-and-ride access at the SR-60/Garfield Station.
- North-south bus feeder networks and parking structures at every station, except the Garfield/Whittier Station, provide additional accessibility. Proposed property acquisition at this aerial station, to provide vertical access elements, may result in limited parking opportunities.
- Existing development and proposed land use plans are transit-supportive along this alignment, particularly at the terminus station area within the City of Whittier.
- This alternative results in the highest ridership and user benefits of all the alternatives. These numbers may increase in the future with the use of the new Metro ridership model under development, including the Regional Connector, which would improve performance of this alternative by providing east-west one-seat connections and single transfer north-south connections desired by people traveling to and from the PSA.
- This alternative will provide additional travel capacity with minimal impacts on the PSA's street system, which is heavily-traveled, particularly by trucks.
- Minimal community impacts, such as traffic, safety, noise and vibration impacts, would result from the construction and operation of this alternative. Located in an

aerial configuration within the medians of Garfield and Washington Boulevards, both with wide right-of-ways, this alternative's route is lined primarily with two- to three-story commercial and industrial uses.

- This alternative has experienced a high level of community, stakeholder and elected official support.

Challenges

- High Capital Cost – Options for potentially reducing the cost of this alternative will be explored during the next study phase, which includes Advanced Conceptual Engineering (ACE) and environmental analysis. Considerations will include, but will not be limited to, having some at-grade sections and identifying partnerships to develop shared-use parking structures.
- Agency Coordination – This alignment will require significant coordination with other agencies including, but not limited to, Caltrans, Federal Highway Administration, SCE, the Los Angeles Department of Water and Power Union Pacific Railroad and the U.S. Army Corps of Engineers.

7.2 Alternatives Not Recommended for Further Study

Two of the Final Alternatives are not recommended for further study: the Beverly Boulevard LRT and the Beverly/Whittier Boulevards LRT options as discussed below.

7.2.1 Beverly Boulevard LRT

The Beverly Boulevard LRT Alternative is not recommended to move forward into the Draft EIS/EIR and ACE phase due to the following:

- Fatal Flaws – The eastern half of this alignment has several major challenges where it leaves the Beverly Boulevard right-of-way and crosses primarily vacant land to enter the Whittier Greenway:
    - The vacant land through which the alignment would traverse is owned by SCE and the Union Pacific Railroad (UPRR). This area serves as SCE "regional backbone" with existing 220kV transmission lines that are planned for upgrading to 500kV service, including new transmission towers as part of SCE's Tehachapi Renewable Transmission project. SCE representatives have indicated that they cannot permit at-grade or aerial rail operations through their

property due to their current service improvement projects and long-term plans.

- The UPRR tracks currently accommodate Metrolink and freight operations, and they have future plans for their property that preclude the inclusion of other rail structures.

- The Whittier Greenway is a former railroad right-of-way that has been redesigned as a landscaped recreational trail. It is lined on both sides by single-family residences, and on the north side by four schools. LRT operations would require the acquisition of half of this recreational area now owned by the City of Whittier. Funding for this recreational resource included federal funds from the U. S. Department of the Interior (National Park Service), raising the possibility of 6(f) issues. Taking half of this parkland resource for rail operations also raises 4(f) issues that may not be resolvable. The City of Whittier has stated their position against the use of their recreational resource for LRT operations.

- Community Impacts:

  - Additional regional transportation capacity is provided to the detriment of the communities along the alignment with impacts to sensitive land uses, including possible visual, traffic, safety, noise and vibration impacts.

  - Additional transportation capacity is provided, but it negatively impacts street system operations; there are several constrained sections on Beverly Boulevard making it difficult for rail operations and necessary vehicular capacity to coexist.

- Rider Benefits – Lack of compelling transit rider benefits; ridership, user benefits, and travel times are not promising enough when balanced against possible community impacts.

- Lack of community, stakeholder and elected official support.

7.2.2 Beverly/Whittier Boulevards LRT

The Beverly/Whittier Alternative, with north-south travel connections on Montebello or Rosemead Boulevards, is not recommended to move forward into the Draft EIS/EIR and ACE phase due to the following:

- Community Impacts – This alternative introduces approximately 50 percent aerial rail operations into a constrained street system lined with one- and two-story structures

often built to the sidewalk edge, such as in downtown Montebello. Technical and environmental analysis identified significant community impacts, including a high potential for noise and vibration, community cohesion and street system capacity impacts, for this alternative. There are possible parkland impacts related to the final operating segment, terminal station and tail tracks, which would be located adjacent to and possibly within a portion of the Whittier Greenway. Individually, specific potential community impacts can be mitigated. However, the culmination of a high number of potential community impacts can be a high concern for community cohesion. A number of specific potential impacts are as follows:

- The Beverly/Montebello/Whittier Boulevards alignment has a major pinch point as the aerial rail structure traveling south in the median of Montebello Boulevard turns east onto Whittier Boulevard in downtown Montebello. The resulting alignment radius is so tight that the rail structure comes within several feet of the commercial building located at the northeast corner of Whittier and Montebello Boulevards. In addition, with the commercial buildings along Whittier Boulevard built to the sidewalk edge of this narrow street, the aerial rail structure and station planned for this location would cover approximately 60 percent of the street right-of-way. Construction of a rail system in this location would require the removal of the recently implemented downtown Montebello streetscape improvements.

- On the Beverly/Rosemead/Whittier Boulevards alignment, there is a major community impact along Rosemead Boulevard just north of Whittier Boulevard. This section is planned for aerial operations running in the median of Rosemead Boulevard where it must cross over Union Pacific/Metrolink tracks set on a bridge perpendicular to Rosemead Boulevard. In order to allow sufficient room for the LRT structure to cross over Metrolink and freight trains, the top of the aerial rail structure would need to be 48 feet above the existing railroad bridge. This portion of the alignment is lined with one- and two-story, single family homes resulting in significant visual, noise and other impacts.

- Rider Benefits – Lack of compelling transit rider benefits; resulting ridership, user benefits and travel times are not promising enough when balanced against possible community impacts.

- Lack of community, stakeholder and elected official support.

The recommendations contained herein will be presented to the Metro Board in October 2009 for approval. With Metro Board approval, the two Recommended Alternatives will advance into environmental review in compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

APPENDIX A:

Conceptual Engineering Drawings

APPENDIX B:

Phase 2 Ridership Technical Report

RIDERSHIP TECHNICAL REPORT

This appendix summarizes the ridership forecasting effort for the alternatives supporting the Conceptual Engineering portion of the Eastside Transit Corridor Phase 2 Study for Los Angeles County Metropolitan Transportation Authority. A list of alternatives for which forecasts were prepared is presented along with an overview of the methodology used and the Quality Assurance/Quality Control (QA/QC) procedures followed at the time the forecasts were produced.

Alternatives/Results
Forecasts were prepared for the following (Section headings where results can be found in this Appendix are shown in parentheses):

Project No Build with corridor equilibrated headways from the Interim Model version Regional No Build
Baseline or Transportation System Management (TSM) alternative
Light Rail Transit (LRT) on SR-60 with terminus at Peck (Section 1.0)
LRT with revised Beverly run times (Section 2.0)
LRT with Beverly-Montebello-Whittier alignment (Section 3.1)
LRT with Beverly-Rosemead-Whittier alignment (Section 3.2)
LRT with revised Washington run times (Section 4.0)

For each of these alternatives results for an average weekday in 2030 have been summarized in this Appendix. These results, listed by the section numbers above, include:

Project boardings (total and station level) and transportation system user benefits estimates in the "Summary" section
Station level boardings by time period and mode of access for each build alternative

Given the schedule and budget constraints of the Conceptual Engineering effort, the "single" TSM assumption to compare to all corridors (Washington, Beverly, SR-60, etc.) was carried forward from the Alternatives Analysis. Comparisons to more refined "corridor specific" TSMs (e.g., a TSM with service specific to SR 60 will be compared to the SR 60 build alternative) will be necessary prior to any forecast reviews with FTA.

Travel Forecasting Methodology
The interim version of the Metro Transportation Analysis Model, developed by Metro staff and Parsons Brinkerhoff, was used for the Conceptual Engineering round of forecasts. This version of the model was validated by comparing transit boardings from the observed boarding data for the calibration year (2001 with 2006 validation for BRT routes) and by comparing district-to-district transit flows to data obtained from the regional on-board survey. Key findings from this effort, which are as presented in the Eastside Transit Corridor Phase 2 Ridership Technical Report (October 2008), follow:

Metro bus boardings by service type and urban rail ridership by route appear to be reasonable.
Urban rail ridership by line match observed values to within plus or minus 20 percent and overall urban rail ridership is matched to within 1 percent.
Bus Rapid Transit (BRT) ridership is underestimated by 24 percent.

These model results suggest that the Interim Metro Transportation Analysis Model has a reasonable understanding of the overall demand for transit. Given that the model includes significant adjustments to the underlying trip tables and the that some specific services such as the BRT and Transitway routes are not well-represented, development of the final model is still necessary.
In the meantime, the Interim model should be sufficient to support on-going rail planning given the understanding that there is a band of uncertainty of at least 20 percent around each result. It should be noted that nationwide experience with forecasting models suggest that 20 percent uncertainty is not unusual, even for forecasts to support projects in more advanced stages of development.

In the Conceptual Engineering round of forecasts there was a shorter SR 60 LRT alternative that was evaluated with a terminus at Peck Road. This shortening of the line led to a greater than expected reduction in park and ride trips. After some analysis and consultation with Metro staff direction was given to model this alternative with two park and ride lots at SR-60/Peck Road as a temporary measure to overcome some issues with the station choice algorithm in the Interim Model.

Quality Assurance/Quality Control Procedures
AECOM typically employs the following QA/QC procedures for travel demand forecasting projects.

Inputs and/or assumptions received for use in forecasts (e.g., proposed alternative service plans, etc.) are typically reviewed for reasonableness and applicability. Forecasts prepared by staff (the Originator) are considered draft, labeled so, and are typically reviewed by the travel forecasting task manager (the Discipline Reviewer/Technical Department Manager) prior to transmission to the overall project manager or client.

In cases where forecasts support projects seeking Federal Transit Administration (FTA) Section 5309 New Starts or Small Starts funding, FTA's QA/QC procedures are followed, including the Front-Line Quality Control Checks on User Benefits, the latest (at the time of the forecasts) Guidance and Reporting Instructions for the Section 5309 New Starts Criteria, and applicable risk analysis procedures.

Draft forecasts are typically reviewed using an informal "Delphi Process" where the client and/or other stakeholders assess the forecast for reasonableness given local conditions and assumptions. In cases where forecasts support projects seeking New Starts or Small Starts funding, this process includes FTA review of forecasting assumptions, procedures, and results.

These procedures were generally followed for the Conceptual Engineering alternatives at the time the forecasts were produced except that the review component with FTA was not present given schedule and budget constraints. While FTA's QA/QC procedures were generally followed, further analysis will be required with comparable Baseline alternatives if the project becomes a potential candidate for the New Starts program.

In addition to these procedures another round of QA/QC (utilizing the Study Report QC Report Checklist) is anticipated when the Conceptual Engineering alternatives are documented.

PHASE 2 RIDERSHIP RESULTS

Summary

Los Angeles Eastside Transit Corridor Phase 2 Project
Year 2030 Project Boardings and User Benefits

REGULAR FORECASTS

Run →	DEIS/DEIR Beverly					DEIS/DEIR Beverly-Rosemead-Whittier					DEIS/DEIR Beverly-Montebello-Whittier				
Daily Gold Line Boardings	**61,962**					**61,538**					**61,667**				
Pomona Freeway Flyer Boardings															
Beverly Rapid Boardings															
Whittier Rapid Boardings															
Washinton Rapid Boardings															
Project Boardings	**12,780**					**12,406**					**12,696**				
	HBW	**HBO**	**NHB**	**HBU**	**Total**	**HBW**	**HBO**	**NHB**	**HBU**	**Total**	**HBW**	**HBO**	**NHB**	**HBU**	**Total**
New Riders	-	-	-	-	5,017	-	-	-	-	5,060	-	-	-	-	5,191
User Benefits (hours)	2,560	2,093	382	207	5,241	2,536	2,178	395	228	5,336	2,599	2,221	407	244	5,470
User Benefits per Project Boarding (min)	-	-	-	-	24.6	-	-	-	-	25.8	-	-	-	-	25.9
% of benefits that are coverage related	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of benefits capped prices	-1.1%	-4.9%	-0.5%	-1.5%	-2.6%	-0.8%	-4.8%	-0.5%	-1.1%	-2.4%	-0.7%	-4.7%	-0.4%	-1.1%	-2.3%

NOTE: User Benefits for TSM are w.r.t. Project No Build. Build alternatives are w.r.t TSM.

Los Angeles Eastside Transit Corridor Phase 2 Project
Year 2030 Project Boardings and User Benefits

REGULAR FORECASTS

Run →	DEIS/DEIR Washington					SR-60 LRT (Double Peck Terminus)				
Daily Gold Line Boardings	**65,155**					**62,004**				
Pomona Freeway Flyer Boardings										
Beverly Rapid Boardings										
Whittier Rapid Boardings										
Washinton Rapid Boardings										
Project Boardings	**15,660**					**12,267**				
	HBW	**HBO**	**NHB**	**HBU**	**Total**	**HBW**	**HBO**	**NHB**	**HBU**	**Total**
New Riders	-	-	-	-	6,281	-	-	-	-	3,835
User Benefits (hours)	3,384	2,227	408	274	6,293	2,224	897	135	218	3,474
User Benefits per Project Boarding (min)	-	-	-	-	24.1	-	-	-	-	17.0
% of benefits that are coverage related	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of benefits capped prices	-2.1%	-5.0%	-1.1%	-1.0%	-3.0%	-0.7%	-1.7%	-0.5%	-0.4%	-0.9%

NOTE: User Benefits for TSM are w.r.t. Project No Build. Build alternatives are w.r.t TSM.

1.0 SR-60 LRT

LACMTA Eastside Phase 2

2030 Average Weekday Summary - Alternative 1 (SR-60) LRT (Double Peck Terminus)

	Station Name	Eastbound (Read Up)		Eastbound Boardings			Westbound (Read Down)		Westbound Boardings			Total Boardings		
		Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily
Phase 2	Peck/SR60 (Second Station)	0.1	0.1	0	0	0	-	-	821	442	1,263	821	442	**1,263**
	Peck/SR60	0.7	1.7	107	52	159	0.1	0.1	851	456	1,307	958	508	**1,466**
	Santa Anita/SR60	2.4	3.9	42	29	71	0.7	1.7	603	331	934	645	360	**1,005**
	Paramount/SR60	2.3	3.8	123	98	221	2.4	3.9	724	312	1,036	847	410	**1,256**
	Garfield/SR60	1.5	3.5	214	125	339	2.3	3.8	1,012	373	1,385	1,226	498	**1,724**
	Subtotal	**7.0**	**13.0**	**486**	**303**	**789**	**5.5**	**9.5**	**4,011**	**1,914**	**5,924**	**4,496**	**2,217**	**6,713**
Phase 1	Pomona/Atlantic (Atlantic)	0.4	1.5	1,261	304	1,565	1.5	3.5	1,683	549	2,232	2,944	853	**3,796**
	Third St./Mednick (East LA Civic Center)	0.4	2.0	171	34	205	0.4	1.5	528	146	674	699	180	**879**
	Third St./Ford (Maravilla)	1.4	4.0	188	113	301	0.4	2.0	418	158	576	606	271	**877**
	Third St./Indiana (Indiana)	1.3	3.3	435	150	584	1.4	4.0	1,154	351	1,504	1,588	500	**2,088**
	First St./Soto (Soto)	0.6	1.6	637	214	851	1.3	3.3	1,413	452	1,864	2,050	666	**2,715**
	First St./Boyle (Mariachi/Plaza)	0.4	1.4	281	118	399	0.6	1.6	410	166	576	691	284	**975**
	First St./Utah (Pico/Aliso)	0.8	2.8	76	34	110	0.4	1.4	129	63	192	205	97	**302**
	First St./Alameda (Little Tokyo)	0.5	3.0	1,121	278	1,398	0.8	2.8	1,119	497	1,616	2,240	774	**3,014**
	Subtotal	**5.8**	**19.6**	**4,169**	**1,244**	**5,413**	**6.8**	**20.1**	**6,852**	**2,379**	**9,231**	**11,021**	**3,623**	**14,644**
Existing Gold Line Stations	Union Station	0.6	3.0	7,662	1,697	9,359	0.5	3.0	6,901	1,961	8,862	14,563	3,658	**18,221**
	Chinatown	1.6	3.0	738	138	876	0.6	3.0	524	170	694	1,262	308	**1,569**
	Lincoln Heights/Cypress Park	0.6	1.0	904	383	1,287	1.6	3.0	512	193	704	1,416	576	**1,991**
	Heritage Square/Arroyo	0.9	2.0	737	317	1,054	0.6	1.0	394	94	487	1,131	410	**1,541**
	Southwest Museum	1.5	4.0	517	148	664	0.9	2.0	135	56	191	652	203	**855**
	Highland Park	2.1	3.0	1,843	451	2,294	1.5	4.0	527	262	789	2,370	713	**3,083**
	Mission	1.5	3.0	517	77	593	2.1	3.0	267	94	361	783	171	**954**
	Filmore	0.6	1.0	513	118	631	1.5	3.0	487	169	656	1,000	287	**1,286**
	Del Mar	0.5	2.0	1,143	473	1,616	0.6	1.0	1,001	349	1,349	2,144	822	**2,965**
	Memorial Park	1.1	2.0	1,078	282	1,359	0.5	2.0	997	290	1,287	2,075	572	**2,646**
	Lake Ave.	1.0	2.0	939	216	1,155	1.1	2.0	566	175	741	1,505	391	**1,896**
	Allen Ave.	1.7	3.0	488	131	618	1.0	2.0	183	70	253	670	201	**871**
	Sierra Madre Villa	-	-	1,483	468	1,951	1.7	3.0	626	198	823	2,109	665	**2,774**
	Subtotal	**13.7**	**29.0**	**18,560**	**4,894**	**23,454**	**14.2**	**32.0**	**13,116**	**4,079**	**17,194**	**31,676**	**8,973**	**40,648**
		26.5	**61.6**	**23,214**	**6,441**	**29,655**	**26.5**	**61.6**	**23,978**	**8,371**	**32,349**	**47,192**	**14,812**	**62,004**

Project Boardings **12,267**

2030 Average Weekday Station Access Volumes - Alternative 1 (SR-60) LRT (Double Peck Terminus)

	Station Name	By Access (Production End Station Activity)						By Egress (Attraction End Station Activity)						Equivalent Boardings					
		Walk	Bus	PNR	KNR	Rail	Total	Walk	Bus	PNR	KNR	Rail	Total	Walk	Bus	PNR	KNR	Rail	Total
Phase 2	Peck/SR60 (Second Station)	208	34	2,163	121	0	2,526	-	-	-	-	-	-	104	17	1,082	60	0	1,263
	Peck/SR60	211	46	2,231	125	0	2,614	271	46	-	-	0	317	241	46	1,116	63	0	1,466
	Santa Anita/SR60	0	41	1,650	123	0	1,814	0	195	-	-	0	195	0	118	825	61	0	1,005
	Paramount/SR60	276	614	849	141	0	1,879	85	548	-	-	0	633	180	581	424	70	0	1,256
	Garfield/SR60	277	1,283	685	124	0	2,369	315	763	-	-	0	1,078	296	1,023	343	62	0	1,724
	Subtotal	**972**	**2,017**	**7,578**	**634**	**0**	**11,202**	**670**	**1,553**	**-**	**-**	**0**	**2,223**	**821**	**1,785**	**3,789**	**317**	**0**	**6,713**
Phase 1	Pomona/Atlantic (Atlantic)	566	2,119	437	84	0	3,206	1,714	2,672	-	-	0	4,386	1,140	2,395	219	42	0	3,796
	Third St./Mednick (East LA Civic Center)	908	241	0	83	0	1,232	420	105	-	-	0	525	664	173	0	41	0	879
	Third St./Ford (Maravilla)	923	303	0	110	0	1,336	281	136	-	-	0	417	602	220	0	55	0	877
	Third St./Indiana (Indiana)	2,433	624	0	101	0	3,157	698	321	-	-	0	1,019	1,565	472	0	50	0	2,088
	First St./Soto (Soto)	2,007	951	0	62	0	3,020	1,145	1,265	-	-	0	2,410	1,576	1,108	0	31	0	2,715
	First St./Boyle (Mariachi/Plaza)	887	70	0	33	0	990	926	33	-	-	0	959	906	52	0	17	0	975
	First St./Utah (Pico/Aliso)	340	12	0	16	0	368	223	12	-	-	0	235	282	12	0	8	0	302
	First St./Alameda (Little Tokyo)	263	92	0	19	0	374	3,757	1,896	-	-	0	5,653	2,010	994	0	10	0	3,014
	Subtotal	**8,325**	**4,412**	**437**	**509**	**0**	**13,683**	**9,164**	**6,440**	**-**	**-**	**0**	**15,604**	**8,745**	**5,426**	**219**	**254**	**0**	**14,644**
Existing Gold Line Stations	Union Station	104	3,651	36	50	5,231	9,073	1,515	1,967	-	-	23,886	27,368	810	2,809	18	25	14,558	18,221
	Chinatown	659	951	0	17	0	1,628	1,416	94	-	-	0	1,510	1,038	523	0	9	0	1,569
	Lincoln Heights/Cypress Park	1,096	379	386	61	0	1,921	689	1,372	-	-	0	2,061	892	875	193	31	0	1,991
	Heritage Square/Arroyo	1,150	471	589	105	0	2,315	388	378	-	-	0	766	769	425	295	52	0	1,541
	Southwest Museum	762	606	0	99	0	1,467	109	133	-	-	0	242	435	369	0	50	0	855
	Highland Park	2,172	1,951	1,121	229	0	5,473	434	258	-	-	0	692	1,303	1,105	561	114	0	3,083
	Mission	500	617	0	237	0	1,354	418	135	-	-	0	553	459	376	0	119	0	954
	Filmore	660	393	0	150	0	1,203	1,038	331	-	-	0	1,369	849	362	0	75	0	1,286
	Del Mar	616	387	1,868	165	0	3,036	2,779	115	-	-	0	2,894	1,697	251	934	82	0	2,965
	Memorial Park	762	1,347	0	151	0	2,260	1,464	1,568	-	-	0	3,032	1,113	1,458	0	75	0	2,646
	Lake Ave.	1,309	642	0	235	0	2,185	1,106	500	-	-	0	1,606	1,207	571	0	117	0	1,896
	Allen Ave.	671	374	0	258	0	1,303	391	47	-	-	0	438	531	211	0	129	0	871
	Sierra Madre Villa	307	955	2,381	257	0	3,901	579	1,067	-	-	0	1,646	443	1,011	1,191	129	0	2,774
	Subtotal	**10,768**	**12,725**	**6,382**	**2,014**	**5,231**	**37,119**	**12,326**	**7,966**	**-**	**-**	**23,886**	**44,177**	**11,547**	**10,345**	**3,191**	**1,007**	**14,558**	**40,648**
	Total	**20,066**	**19,154**	**14,397**	**3,157**	**5,231**	**62,004**	**22,160**	**15,958**	**-**	**-**	**23,886**	**62,004**	**21,113**	**17,556**	**7,199**	**1,578**	**14,558**	**62,004**

LACMTA Eastside Phase 2

2030 Average Weekday Project Boardings by Station - Alternative 1 (SR-60) LRT (Double Peck Terminus)

	Station Name	Eastbound (Read Up)		Eastbound Boardings			Westbound (Read Down)		Westbound Boardings			Total Boardings		
		Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily
Phase 2	Peck/SR60 (Second Station)	0.1	0.1	0	0	0	-	-	821	442	1,263	821	442	**1,263**
	Peck/SR60	0.7	1.7	111	52	162	0.1	0.1	851	456	1,307	962	507	**1,469**
	Santa Anita/SR60	2.4	3.9	41	29	70	0.7	1.7	602	331	933	643	360	**1,003**
	Paramount/SR60	2.3	3.8	122	98	219	2.4	3.9	724	312	1,036	845	410	**1,255**
	Garfield/SR60	1.5	3.5	215	127	341	2.3	3.8	1,012	372	1,384	1,227	499	**1,726**
	Subtotal	8.6	15.7	**488**	**305**	**793**	**7.1**	**12.2**	**4,010**	**1,913**	**5,923**	**4,498**	**2,218**	**6,716**
Phase 1	Pomona/Atlantic (Atlantic)	0.4	1.5	118	58	176	1.5	3.5	561	243	804	679	301	**980**
	Third St./Mednick (East LA Civic Center)	0.4	2.0	13	23	36	0.4	1.5	29	24	54	42	48	**90**
	Third St./Ford (Maravilla)	1.4	4.0	8	8	15	0.4	2.0	7	3	10	15	11	**25**
	Third St./Indiana (Indiana)	1.3	3.3	21	15	36	1.4	4.0	52	41	92	72	56	**128**
	First St./Soto (Soto)	0.6	1.6	14	12	27	1.3	3.3	137	89	226	151	101	**252**
	First St./Boyle (Mariachi/Plaza)	0.4	1.4	3	3	6	0.6	1.6	25	16	40	28	19	**47**
	First St./Utah (Pico/Aliso)	0.8	2.8	1	1	2	0.4	1.4	5	5	10	5	6	**11**
	First St./Alameda (Little Tokyo)	0.5	3.0	3	2	5	0.8	2.8	501	224	725	504	226	**730**
	Subtotal	**5.8**	**19.6**	**181**	**122**	**302**	**6.8**	**20.1**	**1,316**	**645**	**1,961**	**1,496**	**767**	**2,263**
Existing Gold Line Stations	Union Station	0.6	3.0	86	36	123	0.5	3.0	1,974	781	2,755	2,060	817	**2,877**
	Chinatown	1.6	3.0	4	1	5	0.6	3.0	21	12	33	24	13	**38**
	Lincoln Heights/Cypress Park	0.6	1.0	4	5	9	1.6	3.0	75	37	112	79	42	**121**
	Heritage Square/Arroyo	0.9	2.0	4	4	9	0.6	1.0	17	3	19	21	7	**28**
	Southwest Museum	1.5	4.0	3	2	4	0.9	2.0	1	1	2	4	2	**6**
	Highland Park	2.1	3.0	9	5	14	1.5	4.0	4	7	11	13	13	**25**
	Mission	1.5	3.0	2	1	2	2.1	3.0	4	3	6	6	3	**9**
	Filmore	0.6	1.0	1	1	2	1.5	3.0	12	6	18	13	6	**20**
	Del Mar	0.5	2.0	3	4	7	0.6	1.0	25	15	40	28	19	**47**
	Memorial Park	1.1	2.0	3	2	4	0.5	2.0	35	17	52	38	18	**56**
	Lake Ave.	1.0	2.0	2	1	3	1.1	2.0	13	7	20	15	8	**23**
	Allen Ave.	1.7	3.0	1	1	2	1.0	2.0	4	2	6	5	3	**8**
	Sierra Madre Villa	-	-	3	1	4	1.7	3.0	18	9	27	21	10	**31**
	Subtotal	**13.7**	**29.0**	**123**	**63**	**187**	**14.2**	**32.0**	**2,202**	**899**	**3,101**	**2,325**	**962**	**3,288**
		28.1	**64.3**	**792**	**490**	**1,282**	**28.1**	**64.3**	**7,528**	**3,457**	**10,985**	**8,320**	**3,947**	**12,267**

Project Boardings **12,267**

2.0 Beverly Boulevard LRT

LACMTA Eastside Phase 2

2030 Average Weekday Summary - DEIS/DEIR Beverly

	Station Name	Eastbound (Read Up)		Eastbound Boardings			Westbound (Read Down)		Westbound Boardings			Total Boardings		
		Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily
Phase 2	Whittier Greenway/Mar Vista	0.4	1.0	208	106	314	-	-	690	281	971	898	387	**1,285**
	Whittier Greenway/Philadelphia	0.6	1.6	252	102	353	0.4	1.0	508	172	679	759	273	**1,032**
	Whittier Greenway/Broadway	0.7	1.8	71	40	111	0.6	1.6	102	33	134	173	72	**245**
	Whittier Greenway/Norwalk	1.8	4.7	112	55	167	0.7	1.8	197	77	274	309	132	**440**
	Beverly/Rosemead	1.5	4.7	236	105	341	1.8	4.7	533	316	849	769	420	**1,189**
	Beverly/Montebello	1.0	3.3	317	163	480	1.5	4.7	430	290	720	747	452	**1,199**
	Beverly/Wilcox	1.5	3.3	314	136	450	1.0	3.3	506	228	734	819	364	**1,183**
	Garfield/SR60	1.5	3.6	198	76	273	1.5	3.3	592	288	880	790	364	**1,153**
	Subtotal	**9.0**	**24.0**	**1,706**	**781**	**2,487**	**7.5**	**20.4**	**3,557**	**1,682**	**5,239**	**5,263**	**2,463**	**7,725**
Phase 1	Pomona/Atlantic (Atlantic)	0.4	1.5	859	261	1,119	1.5	3.6	1,280	483	1,763	2,139	743	**2,882**
	Third St./Mednick (East LA Civic Center)	0.4	2.0	183	43	226	0.4	1.5	521	158	678	704	200	**904**
	Third St./Ford (Maravilla)	1.4	4.0	161	102	263	0.4	2.0	338	161	499	499	263	**762**
	Third St./Indiana (Indiana)	1.3	3.3	448	159	607	1.4	4.0	1,127	334	1,461	1,575	493	**2,068**
	First St./Soto (Soto)	0.6	1.6	672	223	895	1.3	3.3	1,369	427	1,796	2,041	650	**2,691**
	First St./Boyle (Mariachi/Plaza)	0.4	1.4	288	120	408	0.6	1.6	405	163	568	692	283	**975**
	First St./Utah (Pico/Aliso)	0.8	2.8	80	36	115	0.4	1.4	128	62	189	207	97	**304**
	First St./Alameda (Little Tokyo)	0.5	3.0	1,158	296	1,454	0.8	2.8	871	433	1,304	2,029	729	**2,758**
	Subtotal	**5.8**	**19.6**	**3,847**	**1,238**	**5,085**	**6.8**	**20.2**	**6,038**	**2,219**	**8,256**	**9,885**	**3,457**	**13,341**
Existing Gold Line Stations	Union Station	0.6	3.0	8,130	1,840	9,970	0.5	3.0	6,201	1,704	7,905	14,331	3,544	**17,875**
	Chinatown	1.6	3.0	743	139	882	0.6	3.0	527	166	692	1,269	305	**1,574**
	Lincoln Heights/Cypress Park	0.6	1.0	913	393	1,306	1.6	3.0	505	189	694	1,418	581	**1,999**
	Heritage Square/Arroyo	0.9	2.0	740	320	1,060	0.6	1.0	396	91	487	1,136	411	**1,547**
	Southwest Museum	1.5	4.0	519	148	667	0.9	2.0	140	54	193	658	202	**860**
	Highland Park	2.1	3.0	1,857	458	2,314	1.5	4.0	522	266	788	2,379	723	**3,102**
	Mission	1.5	3.0	536	77	613	2.1	3.0	273	89	362	809	166	**975**
	Filmore	0.6	1.0	538	121	658	1.5	3.0	500	169	669	1,038	290	**1,327**
	Del Mar	0.5	2.0	1,160	486	1,646	0.6	1.0	1,010	351	1,361	2,169	837	**3,006**
	Memorial Park	1.1	2.0	1,085	287	1,372	0.5	2.0	1,006	291	1,297	2,091	578	**2,669**
	Lake Ave.	1.0	2.0	947	219	1,165	1.1	2.0	569	172	741	1,515	391	**1,906**
	Allen Ave.	1.7	3.0	490	130	620	1.0	2.0	181	72	253	671	202	**873**
	Sierra Madre Villa	-	-	1,767	590	2,357	1.7	3.0	633	198	831	2,400	788	**3,187**
	Subtotal	**13.7**	**29.0**	**19,421**	**5,206**	**24,627**	**14.2**	**32.0**	**12,460**	**3,810**	**16,270**	**31,881**	**9,015**	**40,896**
		28.5	**72.6**	**24,974**	**7,224**	**32,198**	**28.5**	**72.6**	**22,054**	**7,710**	**29,764**	**47,028**	**14,934**	**61,962**

Project Boardings **12,780**

2030 Average Weekday Station Access Volumes - DEIS/DEIR Beverly

	Station Name	By Access (Production End Station Activity)						By Egress (Attraction End Station Activity)						Equivalent Boardings					
		Walk	Bus	PNR	KNR	Rail	Total	Walk	Bus	PNR	KNR	Rail	Total	Walk	Bus	PNR	KNR	Rail	Total
Phase 2	Whittier Greenway/Mar Vista	258	301	1,305	77	0	1,941	323	305	0	0	0	628	291	303	653	39	0	1,285
	Whittier Greenway/Philadelphia	112	287	869	59	0	1,327	271	466	0	0	0	737	192	376	435	30	0	1,032
	Whittier Greenway/Broadway	150	31	0	69	0	250	142	97	0	0	0	239	146	64	0	34	0	245
	Whittier Greenway/Norwalk	342	88	0	54	0	484	96	300	0	0	0	396	219	194	0	27	0	440
	Beverly/Rosemead	402	226	1,035	66	0	1,729	242	407	0	0	0	649	322	316	517	33	0	1,189
	Beverly/Montebello	319	406	459	54	0	1,238	493	667	0	0	0	1,160	406	536	230	27	0	1,199
	Beverly/Wilcox	389	875	0	62	0	1,326	329	711	0	0	0	1,040	359	793	0	31	0	1,183
	Garfield/SR60	292	521	870	118	0	1,802	262	242	0	0	0	504	277	382	435	59	0	1,153
	Subtotal	**2,264**	**2,735**	**4,538**	**560**	**0**	**10,097**	**2,159**	**3,194**	**0**	**0**	**0**	**5,353**	**2,212**	**2,964**	**2,269**	**280**	**0**	**7,725**
Phase 1	Pomona/Atlantic (Atlantic)	598	1,458	532	84	0	2,672	1,623	1,468	0	0	0	3,091	1,110	1,463	266	42	0	2,882
	Third St./Mednick (East LA Civic Center)	941	322	0	81	0	1,343	375	89	0	0	0	464	658	205	0	40	0	904
	Third St./Ford (Maravilla)	937	161	0	103	0	1,201	282	40	0	0	0	322	610	100	0	52	0	762
	Third St./Indiana (Indiana)	2,472	559	0	101	0	3,131	748	256	0	0	0	1,004	1,610	408	0	50	0	2,068
	First St./Soto (Soto)	2,037	948	0	62	0	3,047	1,144	1,190	0	0	0	2,334	1,590	1,069	0	31	0	2,691
	First St./Boyle (Mariachi/Plaza)	894	70	0	34	0	998	919	33	0	0	0	952	906	52	0	17	0	975
	First St./Utah (Pico/Aliso)	342	12	0	16	0	370	225	13	0	0	0	238	284	12	0	8	0	304
	First St./Alameda (Little Tokyo)	266	85	0	20	0	370	3,403	1,742	0	0	0	5,145	1,834	913	0	10	0	2,758
	Subtotal	**8,486**	**3,613**	**532**	**501**	**0**	**13,132**	**8,719**	**4,831**	**0**	**0**	**0**	**13,550**	**8,602**	**4,222**	**266**	**250**	**0**	**13,341**
Existing Gold Line Stations	Union Station	106	3,907	36	50	5,508	9,608	1,448	1,961	0	0	22,732	26,141	777	2,934	18	25	14,120	17,875
	Chinatown	662	955	0	18	0	1,635	1,415	97	0	0	0	1,512	1,039	526	0	9	0	1,574
	Lincoln Heights/Cypress Park	1,101	382	389	61	0	1,932	697	1,369	0	0	0	2,066	899	875	194	31	0	1,999
	Heritage Square/Arroyo	1,155	474	593	105	0	2,327	389	377	0	0	0	766	772	426	297	52	0	1,547
	Southwest Museum	766	608	0	99	0	1,473	112	134	0	0	0	246	439	371	0	50	0	860
	Highland Park	2,183	1,960	1,136	228	0	5,508	435	260	0	0	0	695	1,309	1,110	568	114	0	3,102
	Mission	500	656	0	241	0	1,397	415	137	0	0	0	552	458	396	0	120	0	975
	Filmore	662	455	0	151	0	1,268	1,041	345	0	0	0	1,386	852	400	0	75	0	1,327
	Del Mar	618	389	1,924	165	0	3,096	2,801	115	0	0	0	2,916	1,710	252	962	82	0	3,006
	Memorial Park	765	1,352	0	154	0	2,271	1,476	1,591	0	0	0	3,067	1,121	1,472	0	77	0	2,669
	Lake Ave.	1,313	645	0	238	0	2,196	1,106	509	0	0	0	1,615	1,209	577	0	119	0	1,906
	Allen Ave.	672	375	0	261	0	1,309	388	48	0	0	0	436	530	212	0	131	0	873
	Sierra Madre Villa	308	967	3,169	268	0	4,713	581	1,080	0	0	0	1,661	445	1,024	1,585	134	0	3,187
	Subtotal	**10,813**	**13,126**	**7,247**	**2,039**	**5,508**	**38,733**	**12,305**	**8,022**	**0**	**0**	**22,732**	**43,059**	**11,559**	**10,574**	**3,623**	**1,020**	**14,120**	**40,896**
	Total	**21,563**	**19,474**	**12,317**	**3,100**	**5,508**	**61,962**	**23,183**	**16,047**	**0**	**0**	**22,732**	**61,962**	**22,373**	**17,761**	**6,158**	**1,550**	**14,120**	**61,962**

LACMTA Eastside Phase 2

2030 Average Weekday Summary - DEIS/DEIR Beverly

	Station Name	Eastbound (Read Up)		Eastbound Boardings			Westbound (Read Down)		Westbound Boardings			Total Boardings		
		Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily
Phase 2	Whittier Greenway/Mar Vista	0.4	1.0	208	106	314	-	-	690	281	971	898	387	**1,285**
	Whittier Greenway/Philadelphia	0.6	1.6	254	99	353	0.4	1.0	508	171	679	762	270	**1,032**
	Whittier Greenway/Broadway	0.7	1.8	67	41	108	0.6	1.6	101	32	134	168	73	**241**
	Whittier Greenway/Norwalk	1.8	4.7	111	54	165	0.7	1.8	197	77	274	308	131	**439**
	Beverly/Rosemead	1.5	4.7	236	105	342	1.8	4.7	533	315	848	769	420	**1,189**
	Beverly/Montebello	1.0	3.3	317	165	482	1.5	4.7	430	290	719	747	454	**1,201**
	Beverly/Wilcox	1.5	3.3	317	134	452	1.0	3.3	506	229	735	823	363	**1,186**
	Garfield/SR60	1.5	3.6	196	76	272	1.5	3.3	591	287	879	787	364	**1,151**
	Subtotal	9.0	24.0	**1,706**	**781**	**2,488**	**7.5**	**20.4**	**3,556**	**1,682**	**5,238**	**5,262**	**2,463**	**7,725**
Phase 1	Pomona/Atlantic (Atlantic)	0.4	1.5	116	58	174	1.5	3.5	412	191	603	528	249	**777**
	Third St./Mednick (East LA Civic Center)	0.4	2.0	45	32	77	0.4	1.5	26	22	49	71	54	**125**
	Third St./Ford (Maravilla)	1.4	4.0	20	14	33	0.4	2.0	6	3	10	26	17	**43**
	Third St./Indiana (Indiana)	1.3	3.3	66	29	94	1.4	4.0	53	25	78	119	54	**173**
	First St./Soto (Soto)	0.6	1.6	54	25	79	1.3	3.3	121	66	187	175	91	**266**
	First St./Boyle (Mariachi/Plaza)	0.4	1.4	14	7	20	0.6	1.6	25	15	39	39	21	**60**
	First St./Utah (Pico/Aliso)	0.8	2.8	3	2	5	0.4	1.4	5	4	9	8	6	**14**
	First St./Alameda (Little Tokyo)	0.5	3.0	8	4	11	0.8	2.8	297	158	455	304	162	**466**
	Subtotal	**5.8**	**19.6**	**325**	**169**	**494**	**6.8**	**20.1**	**945**	**485**	**1,430**	**1,270**	**654**	**1,924**
Existing Gold Line Stations	Union Station	0.6	3.0	297	94	390	0.5	3.0	1,593	513	2,106	1,889	607	**2,496**
	Chinatown	1.6	3.0	19	2	21	0.6	3.0	24	13	37	43	15	**58**
	Lincoln Heights/Cypress Park	0.6	1.0	14	12	26	1.6	3.0	79	30	109	93	42	**135**
	Heritage Square/Arroyo	0.9	2.0	18	10	28	0.6	1.0	20	2	22	38	12	**50**
	Southwest Museum	1.5	4.0	11	5	15	0.9	2.0	2	1	2	12	5	**18**
	Highland Park	2.1	3.0	40	14	54	1.5	4.0	6	8	14	46	22	**68**
	Mission	1.5	3.0	8	1	9	2.1	3.0	5	3	7	13	3	**16**
	Filmore	0.6	1.0	5	1	6	1.5	3.0	16	6	22	21	7	**28**
	Del Mar	0.5	2.0	16	7	23	0.6	1.0	32	16	49	49	23	**72**
	Memorial Park	1.1	2.0	15	3	18	0.5	2.0	45	18	63	59	21	**81**
	Lake Ave.	1.0	2.0	12	2	15	1.1	2.0	18	8	25	30	10	**40**
	Allen Ave.	1.7	3.0	6	1	7	1.0	2.0	5	3	7	11	4	**15**
	Sierra Madre Villa	-	-	18	4	21	1.7	3.0	23	10	33	40	14	**54**
	Subtotal	**13.7**	**29.0**	**479**	**155**	**635**	**14.2**	**32.0**	**1,865**	**631**	**2,496**	**2,344**	**786**	**3,130**
		28.5	**72.6**	**2,510**	**1,106**	**3,616**	**28.5**	**72.5**	**6,366**	**2,797**	**9,163**	**8,876**	**3,903**	**12,780**

Project Boardings **12,780**

3.0 Beverly/Whittier Boulevards LRT

3.1 Montebello Boulevard Option

LACMTA Eastside Phase 2

2030 Average Weekday Summary - DEIS/DEIR Beverly-Montebello-Whittier

	Station Name	Eastbound (Read Up)		Eastbound Boardings			Westbound (Read Down)		Westbound Boardings			Total Boardings		
		Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily
Phase 2	Whittier Greenway/Mar Vista	1.7	4.3	281	127	408	-	-	909	342	1,250	1,189	469	**1,658**
	Whittier Greenway/Norwalk	1.3	2.6	127	81	208	1.7	4.3	257	84	341	384	164	**548**
	Whittier/Rosemead	1.5	3.3	359	146	504	1.3	2.6	556	246	802	915	391	**1,306**
	Whittier/Montebello	0.6	2.9	238	50	287	1.5	3.3	429	191	619	666	240	**906**
	Beverly/Montebello	1.0	3.2	248	160	408	0.6	2.9	321	240	560	569	399	**968**
	Beverly/Wilcox	1.5	3.3	298	129	427	1.0	3.2	469	209	678	767	338	**1,104**
	Garfield/SR60	1.4	3.7	188	78	266	1.5	3.3	563	315	878	751	393	**1,144**
	Subtotal	**9.0**	**23.3**	**1,738**	**769**	**2,506**	**7.6**	**19.6**	**3,502**	**1,625**	**5,126**	**5,239**	**2,393**	**7,632**
Phase 1	Pomona/Atlantic (Atlantic)	0.4	1.5	821	248	1,069	1.4	3.7	1,240	486	1,725	2,061	733	**2,794**
	Third St./Mednick (East LA Civic Center)	0.4	2.0	180	41	221	0.4	1.5	513	151	664	693	192	**885**
	Third St./Ford (Maravilla)	1.4	4.0	163	95	258	0.4	2.0	340	150	490	503	245	**747**
	Third St./Indiana (Indiana)	1.3	3.3	451	157	607	1.4	4.0	1,126	333	1,459	1,577	489	**2,066**
	First St./Soto (Soto)	0.6	1.6	668	226	894	1.3	3.3	1,367	424	1,791	2,035	649	**2,684**
	First St./Boyle (Mariachi/Plaza)	0.4	1.4	288	121	409	0.6	1.6	405	163	568	693	284	**976**
	First St./Utah (Pico/Aliso)	0.8	2.8	79	37	116	0.4	1.4	128	61	189	207	98	**305**
	First St./Alameda (Little Tokyo)	0.5	3.0	1,159	295	1,454	0.8	2.8	863	428	1,291	2,022	723	**2,744**
	Subtotal	**5.8**	**19.6**	**3,809**	**1,217**	**5,025**	**6.7**	**20.3**	**5,980**	**2,195**	**8,175**	**9,789**	**3,411**	**13,200**
Existing Gold Line Stations	Union Station	0.6	3.0	8,136	1,843	9,978	0.5	3.0	6,174	1,683	7,857	14,310	3,526	**17,835**
	Chinatown	1.6	3.0	742	140	882	0.6	3.0	521	167	688	1,262	307	**1,569**
	Lincoln Heights/Cypress Park	0.6	1.0	913	392	1,305	1.6	3.0	507	186	693	1,420	578	**1,998**
	Heritage Square/Arroyo	0.9	2.0	739	320	1,059	0.6	1.0	400	91	491	1,139	411	**1,550**
	Southwest Museum	1.5	4.0	518	148	666	0.9	2.0	139	56	195	657	204	**861**
	Highland Park	2.1	3.0	1,857	457	2,314	1.5	4.0	522	267	788	2,379	724	**3,102**
	Mission	1.5	3.0	535	78	613	2.1	3.0	273	87	360	808	165	**973**
	Filmore	0.6	1.0	521	120	641	1.5	3.0	489	170	659	1,010	290	**1,299**
	Del Mar	0.5	2.0	1,158	488	1,646	0.6	1.0	1,005	350	1,354	2,163	837	**3,000**
	Memorial Park	1.1	2.0	1,086	288	1,373	0.5	2.0	1,006	287	1,293	2,091	575	**2,666**
	Lake Ave.	1.0	2.0	946	218	1,164	1.1	2.0	564	176	740	1,510	394	**1,904**
	Allen Ave.	1.7	3.0	491	131	622	1.0	2.0	178	72	249	669	202	**871**
	Sierra Madre Villa	0.0	0.0	1,781	594	2,374	1.7	3.0	640	197	837	2,420	791	**3,211**
	Subtotal	**13.7**	**29.0**	**19,420**	**5,214**	**24,634**	**14.2**	**32.0**	**12,415**	**3,787**	**16,202**	**31,835**	**9,001**	**40,836**
		28.5	**71.9**	**24,966**	**7,199**	**32,165**	**28.5**	**71.9**	**21,896**	**7,606**	**29,502**	**46,862**	**14,805**	**61,667**

Project Boardings **12,696**

2030 Average Weekday Station Access Volumes - DEIS/DEIR Beverly-Montebello-Whittier

	Station Name	By Access (Production End Station Activity)						By Egress (Attraction End Station Activity)						Equivalent Boardings					
		Walk	Bus	PNR	KNR	Rail	Total	Walk	Bus	PNR	KNR	Rail	Total	Walk	Bus	PNR	KNR	Rail	Total
Phase 2	Whittier Greenway/Mar Vista	279	359	1,762	99	0	2,500	486	329	0	0	0	815	383	344	881	50	0	1,658
	Whittier Greenway/Norwalk	386	126	0	85	0	596	149	351	0	0	0	500	267	238	0	42	0	548
	Whittier/Rosemead	420	331	774	68	0	1,594	298	719	0	0	0	1,017	359	525	387	34	0	1,306
	Whittier/Montebello	246	427	238	38	0	948	180	684	0	0	0	864	213	555	119	19	0	906
	Beverly/Montebello	254	363	553	51	0	1,221	426	288	0	0	0	714	340	325	276	26	0	968
	Beverly/Wilcox	378	854	0	56	0	1,288	329	591	0	0	0	920	354	722	0	28	0	1,104
	Garfield/SR60	288	487	909	113	0	1,797	259	231	0	0	0	490	274	359	455	57	0	1,144
	Subtotal	**2,251**	**2,947**	**4,236**	**510**	**0**	**9,944**	**2,128**	**3,192**	**0**	**0**	**0**	**5,320**	**2,190**	**3,069**	**2,118**	**255**	**0**	**7,632**
Phase 1	Pomona/Atlantic (Atlantic)	595	1,339	559	82	0	2,574	1,617	1,396	0	0	0	3,013	1,106	1,367	279	41	0	2,794
	Third St./Mednick (East LA Civic Center)	942	303	0	80	0	1,325	358	87	0	0	0	445	650	195	0	40	0	885
	Third St./Ford (Maravilla)	937	133	0	103	0	1,173	284	37	0	0	0	321	610	85	0	52	0	747
	Third St./Indiana (Indiana)	2,476	557	0	101	0	3,134	745	252	0	0	0	997	1,610	405	0	50	0	2,066
	First St./Soto (Soto)	2,038	948	0	63	0	3,049	1,142	1,177	0	0	0	2,319	1,590	1,062	0	32	0	2,684
	First St./Boyle (Mariachi/Plaza)	895	70	0	34	0	999	920	33	0	0	0	953	907	52	0	17	0	976
	First St./Utah (Pico/Aliso)	342	12	0	16	0	370	226	13	0	0	0	239	284	12	0	8	0	305
	First St./Alameda (Little Tokyo)	267	85	0	20	0	371	3,382	1,735	0	0	0	5,117	1,824	910	0	10	0	2,744
	Subtotal	**8,491**	**3,446**	**559**	**499**	**0**	**12,995**	**8,673**	**4,731**	**0**	**0**	**0**	**13,404**	**8,582**	**4,089**	**279**	**250**	**0**	**13,200**
Existing Gold Line Stations	Union Station	106	3,910	36	50	5,525	9,628	1,444	1,954	0	0	22,644	26,042	775	2,932	18	25	14,085	17,835
	Chinatown	662	955	0	18	0	1,635	1,407	96	0	0	0	1,503	1,034	526	0	9	0	1,569
	Lincoln Heights/Cypress Park	1,101	382	389	61	0	1,933	696	1,366	0	0	0	2,062	898	874	195	31	0	1,998
	Heritage Square/Arroyo	1,156	473	593	105	0	2,327	392	381	0	0	0	773	774	427	297	52	0	1,550
	Southwest Museum	766	608	0	99	0	1,473	113	135	0	0	0	248	439	372	0	50	0	861
	Highland Park	2,184	1,960	1,135	228	0	5,508	437	259	0	0	0	696	1,311	1,110	568	114	0	3,102
	Mission	500	656	0	242	0	1,398	412	135	0	0	0	547	456	395	0	121	0	973
	Filmore	662	396	0	151	0	1,209	1,042	347	0	0	0	1,389	852	371	0	75	0	1,299
	Del Mar	618	388	1,922	165	0	3,093	2,792	114	0	0	0	2,906	1,705	251	961	82	0	3,000
	Memorial Park	765	1,352	0	154	0	2,271	1,472	1,588	0	0	0	3,060	1,119	1,470	0	77	0	2,666
	Lake Ave.	1,313	644	0	239	0	2,196	1,105	507	0	0	0	1,612	1,209	576	0	119	0	1,904
	Allen Ave.	672	375	0	261	0	1,309	386	46	0	0	0	432	529	211	0	131	0	871
	Sierra Madre Villa	308	968	3,203	268	0	4,748	585	1,088	0	0	0	1,673	447	1,028	1,602	134	0	3,211
	Subtotal	**10,815**	**13,068**	**7,278**	**2,042**	**5,525**	**38,728**	**12,282**	**8,017**	**0**	**0**	**22,644**	**42,943**	**11,548**	**10,542**	**3,639**	**1,021**	**14,085**	**40,836**
	Total	**21,557**	**19,461**	**12,073**	**3,051**	**5,525**	**61,667**	**23,084**	**15,939**	**0**	**0**	**22,644**	**61,667**	**22,320**	**17,700**	**6,036**	**1,526**	**14,085**	**61,667**

LACMTA Eastside Phase 2

2030 Average Weekday Summary - DEIS/DEIR Beverly-Montebello-Whittier

	Station Name	Eastbound (Read Up)		Eastbound Boardings			Westbound (Read Down)		Westbound Boardings			Total Boardings		
		Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily
Phase 2	Whittier Greenway/Mar Vista	1.7	4.3	282	127	409	-	-	909	341	1,250	1,191	469	**1,659**
	Whittier Greenway/Norwalk	1.3	2.6	127	80	207	1.7	4.3	257	83	340	383	163	**547**
	Whittier/Rosemead	1.5	3.3	362	145	507	1.3	2.6	556	246	802	918	391	**1,310**
	Whittier/Montebello	0.6	2.9	235	48	283	1.5	3.3	428	191	620	664	239	**903**
	Beverly/Montebello	1.0	3.2	247	160	407	0.6	2.9	321	240	561	568	401	**968**
	Beverly/Wilcox	1.5	3.3	301	126	427	1.0	3.2	468	209	677	769	335	**1,104**
	Garfield/SR60	1.4	3.7	188	79	267	1.5	3.3	562	315	878	750	395	**1,145**
	Subtotal	9.0	23.3	**1,741**	**767**	**2,508**	**7.6**	**19.6**	**3,501**	**1,626**	**5,128**	**5,243**	**2,393**	**7,636**
Phase 1	Pomona/Atlantic (Atlantic)	0.4	1.5	46	31	77	1.4	3.7	27	23	50	73	54	**127**
	Third St./Mednick (East LA Civic Center)	0.4	2.0	21	13	33	0.4	1.5	7	3	10	27	16	**44**
	Third St./Ford (Maravilla)	1.4	4.0	68	29	97	0.4	2.0	54	25	79	121	54	**175**
	Third St./Indiana (Indiana)	1.3	3.3	55	25	81	1.4	4.0	123	66	188	178	91	**269**
	First St./Soto (Soto)	0.6	1.6	15	7	21	1.3	3.3	25	15	40	40	21	**61**
	First St./Boyle (Mariachi/Plaza)	0.4	1.4	3	2	5	0.6	1.6	5	4	9	8	6	**14**
	First St./Utah (Pico/Aliso)	0.8	2.8	8	4	12	0.4	1.4	293	154	447	301	158	**459**
	First St./Alameda (Little Tokyo)	0.5	3.0	268	91	359	0.8	2.8	1,382	478	1,860	1,650	569	**2,219**
	Subtotal	**5.8**	**19.6**	**483**	**201**	**684**	**6.7**	**20.3**	**1,916**	**768**	**2,684**	**2,399**	**969**	**3,368**
Existing Gold Line Stations	Union Station	0.6	3.0	363	44	407	0.5	3.0	462	239	701	825	283	**1,108**
	Chinatown	1.6	3.0	15	12	26	0.6	3.0	79	30	109	94	42	**135**
	Lincoln Heights/Cypress Park	0.6	1.0	19	10	29	1.6	3.0	20	2	22	39	13	**51**
	Heritage Square/Arroyo	0.9	2.0	11	5	16	0.6	1.0	2	1	2	13	5	**19**
	Southwest Museum	1.5	4.0	42	14	55	0.9	2.0	6	8	14	48	22	**69**
	Highland Park	2.1	3.0	8	1	9	1.5	4.0	5	3	7	13	3	**17**
	Mission	1.5	3.0	5	1	6	2.1	3.0	16	6	22	21	7	**28**
	Filmore	0.6	1.0	17	7	24	1.5	3.0	33	17	50	50	24	**74**
	Del Mar	0.5	2.0	15	3	18	0.6	1.0	46	18	64	61	21	**82**
	Memorial Park	1.1	2.0	13	3	16	0.5	2.0	19	8	26	32	10	**42**
	Lake Ave.	1.0	2.0	7	2	8	1.1	2.0	5	3	7	11	4	**16**
	Allen Ave.	1.7	3.0	19	3	22	1.0	2.0	24	11	34	43	14	**57**
	Sierra Madre Villa	-	-	0	0	0	1.7	3.0	0	0	0	0	0	**0**
	Subtotal	**13.7**	**29.0**	**534**	**104**	**638**	**14.2**	**32.0**	**716**	**344**	**1,059**	**1,249**	**448**	**1,698**
		28.5	**71.9**	**2,758**	**1,072**	**3,831**	**28.5**	**71.9**	**6,133**	**2,739**	**8,871**	**8,891**	**3,811**	**12,702**

Project Boardings **12,696**

3.2 Rosemead Boulevard Option

LACMTA Eastside Phase 2

2030 Average Weekday Summary - DEIS/DEIR Beverly-Rosemead-Whittier

	Station Name	Eastbound (Read Up)		Eastbound Boardings			Westbound (Read Down)		Westbound Boardings			Total Boardings		
		Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily
Phase 2	Whittier Greenway/Mar Vista	1.7	4.4	266	124	390	-	-	806	289	1,095	1,072	413	**1,485**
	Whittier Greenway/Norwalk	1.3	2.8	99	82	181	1.7	4.4	240	76	316	339	158	**496**
	Whittier/Rosemead	0.8	3.0	288	96	384	1.3	2.8	494	160	654	781	256	**1,037**
	Beverly/Rosemead	1.4	4.5	160	108	267	0.8	3.0	448	287	734	607	394	**1,001**
	Beverly/Montebello	1.0	3.3	330	157	487	1.4	4.5	422	287	709	752	444	**1,196**
	Beverly/Wilcox	1.5	3.3	306	128	434	1.0	3.3	485	203	688	791	331	**1,122**
	Garfield/SR60	1.5	3.7	194	78	271	1.5	3.3	554	304	857	747	381	**1,128**
	Subtotal	**9.2**	**25.0**	**1,641**	**772**	**2,413**	**7.7**	**21.3**	**3,447**	**1,605**	**5,052**	**5,088**	**2,377**	**7,464**
Phase 1	Pomona/Atlantic (Atlantic)	0.4	1.5	860	251	1,111	1.5	3.7	1,286	507	1,793	2,146	758	**2,904**
	Third St./Mednick (East LA Civic Center)	0.4	2.0	178	40	217	0.4	1.5	518	150	668	696	189	**885**
	Third St./Ford (Maravilla)	1.4	4.0	159	97	256	0.4	2.0	340	152	491	498	249	**747**
	Third St./Indiana (Indiana)	1.3	3.3	452	156	608	1.4	4.0	1,126	333	1,459	1,578	489	**2,067**
	First St./Soto (Soto)	0.6	1.6	666	223	889	1.3	3.3	1,367	425	1,792	2,032	648	**2,680**
	First St./Boyle (Mariachi/Plaza)	0.4	1.4	288	120	407	0.6	1.6	405	163	567	692	282	**974**
	First St./Utah (Pico/Aliso)	0.8	2.8	79	35	114	0.4	1.4	127	63	190	206	97	**303**
	First St./Alameda (Little Tokyo)	0.5	3.0	1,157	297	1,454	0.8	2.8	865	429	1,294	2,022	726	**2,748**
	Subtotal	**5.8**	**19.6**	**3,837**	**1,217**	**5,053**	**6.8**	**20.3**	**6,033**	**2,220**	**8,253**	**9,869**	**3,437**	**13,306**
Existing Gold Line Stations	Union Station	0.6	3.0	8,102	1,832	9,934	0.5	3.0	6,178	1,688	7,865	14,279	3,520	**17,799**
	Chinatown	1.6	3.0	740	141	880	0.6	3.0	524	169	693	1,263	310	**1,573**
	Lincoln Heights/Cypress Park	0.6	1.0	913	392	1,305	1.6	3.0	503	187	690	1,416	578	**1,994**
	Heritage Square/Arroyo	0.9	2.0	739	319	1,058	0.6	1.0	400	90	490	1,139	409	**1,548**
	Southwest Museum	1.5	4.0	518	149	667	0.9	2.0	139	55	194	657	204	**860**
	Highland Park	2.1	3.0	1,855	456	2,311	1.5	4.0	525	264	789	2,380	720	**3,100**
	Mission	1.5	3.0	533	78	611	2.1	3.0	274	92	366	807	170	**977**
	Filmore	0.6	1.0	520	120	640	1.5	3.0	483	167	650	1,003	287	**1,290**
	Del Mar	0.5	2.0	1,160	487	1,647	0.6	1.0	1,009	350	1,359	2,169	837	**3,006**
	Memorial Park	1.1	2.0	1,085	288	1,372	0.5	2.0	1,004	287	1,291	2,088	575	**2,663**
	Lake Ave.	1.0	2.0	947	219	1,165	1.1	2.0	563	175	738	1,510	393	**1,903**
	Allen Ave.	1.7	3.0	491	130	621	1.0	2.0	183	72	254	673	202	**875**
	Sierra Madre Villa	0.0	0.0	1,769	587	2,355	1.7	3.0	634	197	830	2,402	783	**3,185**
	Subtotal	**13.7**	**29.0**	**19,368**	**5,195**	**24,563**	**14.2**	**32.0**	**12,416**	**3,791**	**16,206**	**31,784**	**8,985**	**40,769**
		28.7	**73.6**	**24,845**	**7,183**	**32,028**	**28.7**	**73.6**	**21,895**	**7,615**	**29,510**	**46,740**	**14,798**	**61,538**

Project Boardings **12,406**

2030 Average Weekday Station Access Volumes - DEIS/DEIR Beverly-Rosemead-Whittier

	Station Name	By Access (Production End Station Activity)						By Egress (Attraction End Station Activity)						Equivalent Boardings					
		Walk	Bus	PNR	KNR	Rail	Total	Walk	Bus	PNR	KNR	Rail	Total	Walk	Bus	PNR	KNR	Rail	Total
Phase 2	Whittier Greenway/Mar Vista	268	356	1,481	84	0	2,189	474	306	0	0	0	780	371	331	741	42	0	1,485
	Whittier Greenway/Norwalk	365	117	0	66	0	548	141	303	0	0	0	444	253	210	0	33	0	496
	Whittier/Rosemead	278	415	489	54	0	1,236	145	693	0	0	0	838	211	554	245	27	0	1,037
	Beverly/Rosemead	301	191	1,088	69	0	1,649	202	151	0	0	0	353	251	171	544	35	0	1,001
	Beverly/Montebello	297	411	414	50	0	1,173	499	719	0	0	0	1,218	398	565	207	25	0	1,196
	Beverly/Wilcox	378	814	0	59	0	1,251	328	665	0	0	0	993	353	740	0	30	0	1,122
	Garfield/SR60	288	486	864	116	0	1,755	258	243	0	0	0	501	273	364	432	58	0	1,128
	Subtotal	**2,174**	**2,791**	**4,337**	**499**	**0**	**9,801**	**2,045**	**3,082**	**0**	**0**	**0**	**5,127**	**2,110**	**2,936**	**2,168**	**250**	**0**	**7,464**
Phase 1	Pomona/Atlantic (Atlantic)	592	1,500	543	83	0	2,718	1,628	1,461	0	0	0	3,089	1,110	1,481	271	42	0	2,904
	Third St./Mednick (East LA Civic Center)	939	300	0	81	0	1,320	363	86	0	0	0	449	651	193	0	40	0	885
	Third St./Ford (Maravilla)	937	131	0	104	0	1,171	283	39	0	0	0	322	610	85	0	52	0	747
	Third St./Indiana (Indiana)	2,471	556	0	101	0	3,128	752	253	0	0	0	1,005	1,611	405	0	50	0	2,067
	First St./Soto (Soto)	2,035	948	0	62	0	3,045	1,137	1,178	0	0	0	2,315	1,586	1,063	0	31	0	2,680
	First St./Boyle (Mariachi/Plaza)	893	70	0	34	0	997	918	33	0	0	0	951	905	52	0	17	0	974
	First St./Utah (Pico/Aliso)	342	12	0	16	0	370	223	13	0	0	0	236	283	12	0	8	0	303
	First St./Alameda (Little Tokyo)	266	85	0	20	0	370	3,386	1,739	0	0	0	5,125	1,826	912	0	10	0	2,748
	Subtotal	**8,475**	**3,601**	**543**	**500**	**0**	**13,119**	**8,689**	**4,803**	**0**	**0**	**0**	**13,492**	**8,582**	**4,202**	**271**	**250**	**0**	**13,306**
Existing Gold Line Stations	Union Station	106	3,896	35	50	5,480	9,568	1,443	1,951	0	0	22,635	26,029	774	2,924	18	25	14,058	17,799
	Chinatown	661	955	0	18	0	1,634	1,414	97	0	0	0	1,511	1,038	526	0	9	0	1,573
	Lincoln Heights/Cypress Park	1,100	381	388	61	0	1,931	694	1,363	0	0	0	2,057	897	872	194	31	0	1,994
	Heritage Square/Arroyo	1,155	474	593	105	0	2,326	390	379	0	0	0	769	773	426	296	52	0	1,548
	Southwest Museum	765	608	0	99	0	1,472	113	135	0	0	0	248	439	372	0	50	0	860
	Highland Park	2,182	1,958	1,135	228	0	5,504	437	259	0	0	0	696	1,309	1,109	568	114	0	3,100
	Mission	500	656	0	241	0	1,397	419	137	0	0	0	556	460	396	0	121	0	977
	Filmore	662	395	0	151	0	1,208	1,031	340	0	0	0	1,371	846	368	0	76	0	1,290
	Del Mar	617	388	1,923	165	0	3,093	2,803	115	0	0	0	2,918	1,710	251	962	83	0	3,006
	Memorial Park	764	1,352	0	154	0	2,270	1,471	1,584	0	0	0	3,055	1,118	1,468	0	77	0	2,663
	Lake Ave.	1,313	645	0	239	0	2,196	1,104	505	0	0	0	1,609	1,208	575	0	119	0	1,903
	Allen Ave.	672	375	0	261	0	1,309	393	47	0	0	0	440	532	211	0	131	0	875
	Sierra Madre Villa	308	967	3,167	267	0	4,710	582	1,078	0	0	0	1,660	445	1,023	1,583	134	0	3,185
	Subtotal	**10,806**	**13,049**	**7,242**	**2,041**	**5,480**	**38,618**	**12,292**	**7,992**	**0**	**0**	**22,635**	**42,919**	**11,549**	**10,521**	**3,621**	**1,020**	**14,058**	**40,769**
	Total	**21,455**	**19,441**	**12,122**	**3,040**	**5,480**	**61,538**	**23,027**	**15,876**	**0**	**0**	**22,635**	**61,538**	**22,241**	**17,659**	**6,061**	**1,520**	**14,058**	**61,538**

LACMTA Eastside Phase 2

2030 Average Weekday Summary - DEIS/DEIR Beverly-Rosemead-Whittier

	Station Name	Eastbound (Read Up)		Eastbound Boardings			Westbound (Read Down)		Westbound Boardings			Total Boardings		
		Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily
Phase 2	Whittier Greenway/Mar Vista	1.7	4.4	264	123	387	-	-	806	289	1,095	1,070	412	**1,482**
	Whittier Greenway/Norwalk	1.3	2.8	102	82	184	1.7	4.4	240	76	316	342	157	**500**
	Whittier/Rosemead	0.8	3.0	287	95	382	1.3	2.8	493	160	653	781	255	**1,036**
	Beverly/Rosemead	1.4	4.5	158	108	266	0.8	3.0	447	287	734	605	395	**1,000**
	Beverly/Montebello	1.0	3.3	328	157	485	1.4	4.5	421	287	708	749	444	**1,193**
	Beverly/Wilcox	1.5	3.3	310	127	437	1.0	3.3	486	204	689	795	331	**1,126**
	Garfield/SR60	1.5	3.7	193	79	272	1.5	3.3	553	303	857	746	382	**1,129**
	Subtotal	9.2	25.0	**1,642**	**771**	**2,413**	**7.7**	**21.3**	**3,447**	**1,605**	**5,052**	**5,089**	**2,377**	**7,465**
Phase 1	Pomona/Atlantic (Atlantic)	0.4	1.5	44	30	74	1.4	3.7	26	22	49	70	52	**123**
	Third St./Mednick (East LA Civic Center)	0.4	2.0	20	13	32	0.4	1.5	7	3	10	26	16	**42**
	Third St./Ford (Maravilla)	1.4	4.0	65	28	93	0.4	2.0	52	25	77	117	53	**170**
	Third St./Indiana (Indiana)	1.3	3.3	53	24	78	1.4	4.0	120	64	184	173	89	**262**
	First St./Soto (Soto)	0.6	1.6	14	6	20	1.3	3.3	24	15	39	38	21	**59**
	First St./Boyle (Mariachi/Plaza)	0.4	1.4	3	2	5	0.6	1.6	5	4	9	8	6	**14**
	First St./Utah (Pico/Aliso)	0.8	2.8	8	4	12	0.4	1.4	290	153	443	297	157	**454**
	First St./Alameda (Little Tokyo)	0.5	3.0	254	88	342	0.8	2.8	1,358	477	1,835	1,613	565	**2,178**
	Subtotal	**5.8**	**19.6**	**462**	**195**	**657**	**6.7**	**20.3**	**1,882**	**763**	**2,645**	**2,344**	**959**	**3,302**
Existing Gold Line Stations	Union Station	0.6	3.0	344	47	391	0.5	3.0	442	241	683	786	287	**1,074**
	Chinatown	1.6	3.0	14	11	25	0.6	3.0	77	29	106	91	41	**132**
	Lincoln Heights/Cypress Park	0.6	1.0	18	10	28	1.6	3.0	19	2	22	37	12	**49**
	Heritage Square/Arroyo	0.9	2.0	11	5	15	0.6	1.0	2	1	2	12	5	**18**
	Southwest Museum	1.5	4.0	39	13	53	0.9	2.0	6	8	13	45	21	**66**
	Highland Park	2.1	3.0	8	1	9	1.5	4.0	5	3	7	13	3	**16**
	Mission	1.5	3.0	5	1	6	2.1	3.0	15	6	21	20	7	**27**
	Filmore	0.6	1.0	16	7	23	1.5	3.0	32	16	48	48	23	**71**
	Del Mar	0.5	2.0	14	3	17	0.6	1.0	44	18	62	58	21	**79**
	Memorial Park	1.1	2.0	12	3	15	0.5	2.0	18	7	25	30	10	**40**
	Lake Ave.	1.0	2.0	6	1	8	1.1	2.0	5	2	7	11	4	**15**
	Allen Ave.	1.7	3.0	17	3	20	1.0	2.0	23	10	33	39	13	**53**
	Sierra Madre Villa	-	-	0	0	0	1.7	3.0	0	0	0	0	0	**0**
	Subtotal	**13.7**	**29.0**	**505**	**105**	**609**	**14.2**	**32.0**	**688**	**342**	**1,030**	**1,192**	**447**	**1,639**
		28.7	**73.6**	**2,608**	**1,071**	**3,679**	**28.6**	**73.6**	**6,017**	**2,711**	**8,728**	**8,624**	**3,783**	**12,407**

Project Boardings **12,406**

4.0 Washington Boulevard LRT

LACMTA Eastside Phase 2

2030 Average Weekday Summary - DEIS/DEIR Washington

	Station Name	Eastbound (Read Up)		Eastbound Boardings			Westbound (Read Down)		Westbound Boardings			Total Boardings		
		Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily
Phase 2	Washington/Lambert	1.4	2.1	410	184	594	-	-	1,013	417	1,430	1,423	601	**2,024**
	Washington/E. of Norwalk	1.7	2.7	313	160	472	1.4	2.1	710	371	1,080	1,022	530	**1,552**
	Washington/Rosemead	1.5	2.9	281	93	374	1.7	2.7	451	205	655	731	298	**1,029**
	Washington/So. Greenwood	1.9	3.4	412	209	620	1.5	2.9	401	224	624	812	432	**1,244**
	Garfield/Whittier	1.4	2.8	698	293	991	1.9	3.4	829	327	1,156	1,527	619	**2,146**
	Garfield/SR60	1.5	3.6	261	132	393	1.4	2.8	736	375	1,110	996	507	**1,503**
	Subtotal	**9.4**	**17.5**	**2,373**	**1,070**	**3,442**	**7.9**	**13.9**	**4,138**	**1,917**	**6,055**	**6,511**	**2,986**	**9,497**
Phase 1	Pomona/Atlantic (Atlantic)	0.4	1.5	944	280	1,224	1.5	3.6	1,373	529	1,901	2,316	809	**3,125**
	Third St./Mednick (East LA Civic Center)	0.4	2.0	206	60	266	0.4	1.5	540	177	716	746	237	**982**
	Third St./Ford (Maravilla)	1.4	4.0	200	114	313	0.4	2.0	400	152	552	600	265	**865**
	Third St./Indiana (Indiana)	1.3	3.3	473	171	644	1.4	4.0	1,124	340	1,464	1,597	511	**2,107**
	First St./Soto (Soto)	0.6	1.6	677	237	914	1.3	3.3	1,374	435	1,808	2,050	672	**2,722**
	First St./Boyle (Mariachi/Plaza)	0.4	1.4	296	127	423	0.6	1.6	412	167	579	708	294	**1,001**
	First St./Utah (Pico/Aliso)	0.8	2.8	79	37	116	0.4	1.4	131	63	193	210	99	**309**
	First St./Alameda (Little Tokyo)	0.5	3.0	1,191	299	1,490	0.8	2.8	929	456	1,385	2,120	755	**2,875**
	Subtotal	**5.8**	**19.6**	**4,064**	**1,324**	**5,387**	**6.8**	**20.2**	**6,281**	**2,316**	**8,597**	**10,344**	**3,640**	**13,984**
Existing Gold Line Stations	Union Station	0.6	3.0	8,341	1,924	10,265	0.5	3.0	6,404	1,778	8,182	14,745	3,702	**18,447**
	Chinatown	1.6	3.0	748	141	889	0.6	3.0	529	171	699	1,277	312	**1,588**
	Lincoln Heights/Cypress Park	0.6	1.0	921	397	1,318	1.6	3.0	522	196	718	1,443	593	**2,036**
	Heritage Square/Arroyo	0.9	2.0	748	323	1,070	0.6	1.0	401	90	491	1,149	413	**1,561**
	Southwest Museum	1.5	4.0	523	151	673	0.9	2.0	140	55	194	662	205	**867**
	Highland Park	2.1	3.0	1,876	463	2,339	1.5	4.0	526	268	794	2,402	731	**3,133**
	Mission	1.5	3.0	542	78	619	2.1	3.0	272	92	364	814	169	**983**
	Filmore	0.6	1.0	524	122	645	1.5	3.0	490	170	659	1,013	291	**1,304**
	Del Mar	0.5	2.0	1,167	492	1,659	0.6	1.0	1,015	355	1,369	2,182	846	**3,028**
	Memorial Park	1.1	2.0	1,094	291	1,385	0.5	2.0	1,013	294	1,307	2,107	585	**2,692**
	Lake Ave.	1.0	2.0	954	220	1,174	1.1	2.0	569	176	745	1,523	396	**1,919**
	Allen Ave.	1.7	3.0	494	131	624	1.0	2.0	179	73	252	673	203	**876**
	Sierra Madre Villa	0.0	0.0	1,799	607	2,405	1.7	3.0	642	199	840	2,440	805	**3,245**
	Subtotal	**13.7**	**29.0**	**19,728**	**5,336**	**25,064**	**14.2**	**32.0**	**12,699**	**3,913**	**16,611**	**32,427**	**9,249**	**41,675**
		28.9	**66.1**	**26,164**	**7,729**	**33,893**	**28.9**	**66.1**	**23,117**	**8,145**	**31,262**	**49,281**	**15,874**	**65,155**

Project Boardings **15,660**

2030 Average Weekday Station Access Volumes - DEIS/DEIR Washington

	Station Name	By Access (Production End Station Activity)						By Egress (Attraction End Station Activity)						Equivalent Boardings					
		Walk	Bus	PNR	KNR	Rail	Total	Walk	Bus	PNR	KNR	Rail	Total	Walk	Bus	PNR	KNR	Rail	Total
Phase 2	Washington/Lambert	448	259	2,012	141	0	2,860	846	341	0	0	0	1,187	647	300	1,006	71	0	2,024
	Washington/E. of Norwalk	407	273	1,255	124	0	2,059	209	836	0	0	0	1,045	308	555	628	62	0	1,552
	Washington/Rosemead	302	208	676	109	0	1,294	165	598	0	0	0	763	233	403	338	54	0	1,029
	Washington/So. Greenwood	465	123	296	62	0	945	671	872	0	0	0	1,543	568	497	148	31	0	1,244
	Garfield/Whittier	776	1,305	0	80	0	2,161	1,324	807	0	0	0	2,131	1,050	1,056	0	40	0	2,146
	Garfield/SR60	290	944	1,058	125	0	2,417	266	322	0	0	0	588	278	633	529	63	0	1,503
	Subtotal	**2,686**	**3,112**	**5,297**	**641**	**0**	**11,736**	**3,482**	**3,775**	**0**	**0**	**0**	**7,257**	**3,084**	**3,444**	**2,648**	**320**	**0**	**9,497**
Phase 1	Pomona/Atlantic (Atlantic)	623	1,619	604	85	0	2,931	1,695	1,623	0	0	0	3,318	1,159	1,621	302	43	0	3,125
	Third St./Mednick (East LA Civic Center)	977	427	0	81	0	1,485	382	97	0	0	0	479	679	262	0	41	0	982
	Third St./Ford (Maravilla)	945	301	0	100	0	1,346	291	92	0	0	0	383	618	197	0	50	0	865
	Third St./Indiana (Indiana)	2,531	603	0	101	0	3,234	700	280	0	0	0	980	1,615	442	0	50	0	2,107
	First St./Soto (Soto)	2,081	913	0	62	0	3,057	1,169	1,217	0	0	0	2,386	1,625	1,065	0	31	0	2,722
	First St./Boyle (Mariachi/Plaza)	910	71	0	33	0	1,014	955	33	0	0	0	988	932	52	0	17	0	1,001
	First St./Utah (Pico/Aliso)	346	12	0	16	0	374	230	13	0	0	0	243	288	13	0	8	0	309
	First St./Alameda (Little Tokyo)	277	95	0	20	0	392	3,506	1,851	0	0	0	5,357	1,891	973	0	10	0	2,875
	Subtotal	**8,688**	**4,041**	**604**	**499**	**0**	**13,833**	**8,927**	**5,207**	**0**	**0**	**0**	**14,134**	**8,808**	**4,624**	**302**	**250**	**0**	**13,984**
Existing Gold Line Stations	Union Station	114	4,181	39	54	5,829	10,216	1,519	2,045	0	0	23,113	26,677	816	3,113	19	27	14,471	18,447
	Chinatown	670	962	0	18	0	1,650	1,429	97	0	0	0	1,526	1,050	529	0	9	0	1,588
	Lincoln Heights/Cypress Park	1,114	387	395	61	0	1,957	700	1,414	0	0	0	2,114	907	900	197	31	0	2,036
	Heritage Square/Arroyo	1,164	480	600	107	0	2,351	388	383	0	0	0	771	776	432	300	53	0	1,561
	Southwest Museum	770	614	0	100	0	1,484	113	137	0	0	0	250	441	376	0	50	0	867
	Highland Park	2,200	1,978	1,149	230	0	5,558	443	264	0	0	0	707	1,322	1,121	575	115	0	3,133
	Mission	504	665	0	243	0	1,412	419	134	0	0	0	553	461	400	0	121	0	983
	Filmore	665	396	0	151	0	1,213	1,048	347	0	0	0	1,395	857	372	0	76	0	1,304
	Del Mar	621	391	1,940	167	0	3,119	2,821	115	0	0	0	2,936	1,721	253	970	83	0	3,028
	Memorial Park	769	1,367	0	154	0	2,289	1,486	1,608	0	0	0	3,094	1,127	1,487	0	77	0	2,692
	Lake Ave.	1,321	650	0	240	0	2,211	1,116	510	0	0	0	1,626	1,219	580	0	120	0	1,919
	Allen Ave.	676	378	0	263	0	1,316	388	47	0	0	0	435	532	213	0	131	0	876
	Sierra Madre Villa	309	978	3,253	269	0	4,810	584	1,096	0	0	0	1,680	447	1,037	1,627	135	0	3,245
	Subtotal	**10,897**	**13,427**	**7,375**	**2,057**	**5,829**	**39,586**	**12,453**	**8,198**	**0**	**0**	**23,113**	**43,764**	**11,675**	**10,813**	**3,688**	**1,028**	**14,471**	**41,675**
	Total	**22,272**	**20,580**	**13,277**	**3,197**	**5,829**	**65,155**	**24,862**	**17,180**	**0**	**0**	**23,113**	**65,155**	**23,567**	**18,880**	**6,638**	**1,598**	**14,471**	**65,155**

LACMTA Eastside Phase 2

2030 Average Weekday Summary - DEIS/DEIR Washington

	Station Name	Eastbound (Read Up)		Eastbound Boardings			Westbound (Read Down)		Westbound Boardings			Total Boardings		
		Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Dist (mi)	Time (min)	Peak	Off-Peak	Daily	Peak	Off-Peak	Daily
Phase 2	Washington/Lambert	1.4	2.1	407	185	592	-	-	1,013	417	1,430	1,420	602	**2,022**
	Washington/E. of Norwalk	1.7	2.7	315	161	475	1.4	2.1	710	370	1,080	1,024	531	**1,556**
	Washington/Rosemead	1.5	2.9	276	94	370	1.7	2.7	450	204	655	727	298	**1,025**
	Washington/So. Greenwood	1.9	3.4	414	209	623	1.5	2.9	401	223	624	814	432	**1,247**
	Garfield/Whittier	1.4	2.8	695	294	989	1.9	3.4	829	326	1,155	1,524	620	**2,144**
	Garfield/SR60	1.5	3.6	263	130	393	1.4	2.8	735	374	1,110	999	504	**1,503**
	Subtotal	**9.4**	**17.5**	**2,369**	**1,072**	**3,441**	**7.9**	**13.9**	**4,139**	**1,916**	**6,054**	**6,508**	**2,988**	**9,496**
Phase 1	Pomona/Atlantic (Atlantic)	0.4	1.5	157	86	243	0.4	1.5	459	216	675	616	303	**919**
	Third St./Mednick (East LA Civic Center)	0.4	2.0	65	50	115	0.4	2.0	32	26	58	97	76	**173**
	Third St./Ford (Maravilla)	1.4	4.0	36	17	53	1.4	4.0	7	4	11	43	22	**64**
	Third St./Indiana (Indiana)	1.3	3.3	91	45	136	1.3	3.3	50	28	78	141	73	**213**
	First St./Soto (Soto)	0.6	1.6	74	39	113	0.6	1.6	141	74	215	215	112	**328**
	First St./Boyle (Mariachi/Plaza)	0.4	1.4	19	10	29	0.4	1.4	31	17	48	50	27	**77**
	First St./Utah (Pico/Aliso)	0.8	2.8	4	3	7	0.8	2.8	6	5	11	10	8	**18**
	First St./Alameda (Little Tokyo)	0.5	3.0	12	6	18	0.5	3.0	333	177	510	345	183	**528**
	Subtotal	**5.8**	**19.6**	**458**	**256**	**713**	**5.8**	**19.6**	**1,059**	**547**	**1,606**	**1,516**	**803**	**2,319**
Existing Gold Line Stations	Union Station	0.6	3.0	460	158	618	0.5	3.0	1,836	568	2,405	2,296	726	**3,023**
	Chinatown	1.6	3.0	26	4	30	0.6	3.0	28	15	43	54	19	**73**
	Lincoln Heights/Cypress Park	0.6	1.0	21	17	37	1.6	3.0	95	36	131	116	53	**169**
	Heritage Square/Arroyo	0.9	2.0	26	13	39	0.6	1.0	24	3	27	50	16	**65**
	Southwest Museum	1.5	4.0	15	6	21	0.9	2.0	2	1	2	16	7	**23**
	Highland Park	2.1	3.0	60	18	78	1.5	4.0	7	10	17	67	28	**95**
	Mission	1.5	3.0	12	1	13	2.1	3.0	6	3	9	17	4	**22**
	Filmore	0.6	1.0	7	1	8	1.5	3.0	19	8	27	26	9	**35**
	Del Mar	0.5	2.0	24	10	35	0.6	1.0	38	20	58	62	30	**92**
	Memorial Park	1.1	2.0	22	5	27	0.5	2.0	52	22	75	74	27	**101**
	Lake Ave.	1.0	2.0	19	4	23	1.1	2.0	22	9	31	41	13	**53**
	Allen Ave.	1.7	3.0	9	2	11	1.0	2.0	6	3	8	14	5	**19**
	Sierra Madre Villa	0.0	0.0	27	5	33	1.7	3.0	29	13	42	57	18	**75**
	Subtotal	**13.7**	**29.0**	**727**	**243**	**971**	**14.2**	**32.0**	**2,162**	**712**	**2,874**	**2,890**	**955**	**3,845**
		28.9	**66.1**	**3,554**	**1,571**	**5,125**	**27.9**	**65.5**	**7,360**	**3,175**	**10,535**	**10,914**	**4,746**	**15,660**

Project Boardings **15,660**

APPENDIX C

Basis of Capital Cost Estimate Refinement & Capital Cost Estimate Spreadsheets

1.0 COST ESTIMATE METHODOLOGY

Definition of Alternatives

Capital cost estimates were prepared for the four transit alternatives based upon the Conceptual Engineering drawings developed (Appendix A).

Capital Cost Methodology

The Conceptual Engineering cost estimates were based upon the methodology developed for and used in the Eastside Transit Corridor Phase 2 Alternatives Analysis Report (January 2009). These unit costs categories are summarized in Table 1 below.

Table 1

Unit Cost Category
Guideway:
At-grade in mixed traffic
Aerial Typical Span
Aerial Long Span LRT Bridge
Track:
Direct fixation
Embedded
Switches No. 8 Diamond Double Crossover Fixed
Switches No. 8 Diamond Single Crossover Fixed
Stations:
At-grade station, Center Platform
At-grade station, Split Platform
LRT Station Elevated Center Platform
Support Facility:
Heavy Maintenance
Sitework:
Site Utilities: Aerial Guideway
Site Utilities: At-Grade Guideway within Street
Site structures: Sound Walls
Landscaping & Bike Path
Systems & Controls:
Signal Substation & Cables

Ductbank & Pullboxes
Traction Power: Hardware Procurement
Traction Power: Building Installation
Traction power distribution: Overhead Catenary System (OCS) Pole
Traction power distribution: Ductbank Pullboxes
Traction power distribution: OCS Poles Foundations
Communications: Communications Equipment Installation
Communications: Ductbank & Pullboxes
Fare Collection: Ticket Vending Machines, Total Corridor Length Times Cost Multiplier
Central Control
ROW & Land Purchase:
Right Of Way Purchase
Vehicles:
Light Rail
Bus
Professional Services:
Preliminary Engineering
Final Design
Project Management for Design and Construction

In addition to using the unit costs developed for the Alternatives Analysis Report, several new unit cost categories were identified to reflect refinements considered in the Conceptual Engineering Plans. These are summarized in Table 2 below.

Table 2

Unit Cost Category
Guideway:
At-grade exclusive right-of-way
Double Mechanically Stabilized Earth (MSE) Walls
Retaining Walls
Track:
Ballasted
Switches No. 8 Diamond Single Crossovers
Switches No. 8 Diamond Double Crossovers

Stations:
Automobile Parking Lot Structure Stall
Elevators & Escalators
Sitework:
Demolition, Clearing Within Street
Site structures: Retaining walls
Landscaping Street Scape, Urban Design Features
Sitework:
Demolition, Clearing Within Street
Site Utilities: Aerial Guideway
Site Utilities: At-Grade Guideway within Street
Retaining walls
Landscaping Street Scape, Urban Design Features
Systems & Controls:
Traffic Signals: Major Intersection
Traffic Signals: Minor Intersection
Traffic Signals: Aerial Intersection
Traffic Signals: Grade Crossings

These new unit prices were taken from recent contractor negotiated bids on both the Exposition Corridor and Orange Lines and then escalated to 2008 dollars. To ensure the unit prices were consistent with industry pricing, the unit costs were compared against other light rail projects currently being built and planned in the United States[1]. Several of the new unit prices were developed from Caltrans Cost Data. The development of these additional unit costs are shown in Section 4.

Quantities

These unit costs were then multiplied by their subsequent quantities in units of either Route Feet, Square Feet, or Each. Combined together, the cost were developed for each of the identified cost categories. Quantities were identified from three sources.

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- Conceptual Engineering Drawings dated July 20, 2009, Appendix A
- Ridership Technical Report, Appendix B

[1]1.) UTA Draper Corridor, Salt Lake City Utah 2.) CTA Circle Line Alternative, Chicago Illinois 3.) San Diego MTS Mission Valley East, San Diego CA

- Operating and Maintenance Cost Estimate Technical Memorandum, Appendix E

Cost Categories

Unit costs were aggregated into larger categories of cost consistent with the Federal Transit Administration's (FTA's) Standardized Cost Categories (SCC). The cost categories sub-totals were rounded to the nearest hundred thousand dollars. This rounding reflects the accuracy of costing the work at the conceptual engineering. Future refinements to the alignments and additional engineering scope will be reflected in the estimates accuracy and a reduction of the rounding.

Consistent with the use of FTA's SCC, contingencies were applied to each of the categories reflecting the current level of the development of the design for each alternative. The development and basis of these contingencies are from the Cost Methodology developed for the Alternatives Analysis level cost estimates for consistency.

2.0 Results

Capital Cost estimates for the various alternatives are indicated in Table 3.

Table 3 – Cost Estimates

Alternative	Construction Cost*	Project Costs**
SR 60	$901,964	$1,877,336
Beverly Boulevard	$707,846	$1,482,225
Beverly/Montebello/Whittier Boulevard.	$884,829	$1,590,633
Beverly/Rosemead/Whittier Boulevard.	$785,023	$1,508,697
Washington Boulevard	$1,247,314	$2,202,862

* 2008 Year Of Cost X $1,000. Includes Construction with Allocated Contingencies

**2008 Year Of Cost X $1,000. Includes ROW, Vehicles, Professional Services, Unallocated Contingencies

3.0 Discussion

The Conceptual Engineering Capital Cost estimate developed was based upon alignment refinements that were made to each of the alternative originally identified in the Eastside Transit Corridor Phase 2 Alternatives Analysis Report. Refinements that affected the capital cost estimates are identified below by alternative.

SR-60 Alternative:

1. Alignment length was reduced from Crossroads Station to Peck Road Station. The alignment was reduced to increase the cost effectiveness ratio. The 1.25 mile length reduction decreased the costs in the systems and guideway categories.
2. Stations were reduced from 5 to 4 stations, reducing the costs in stations category. The reduction was a product of the alignment reduction.
3. Parking spaces at each of the stations was increased and assumed to be structured parking due to right of way constraints. The parking requirements increased due to the refinement in ridership forecasting. This dictated the number of parking spaces required at each station. The change to structured parking also increased the costs in the stations category.
4. Real estate requirements were decreased at two stations. Crossroads Station was removed and a reduction in real estate at Santa Anita Station. But overall Right of Way was increased, due to the increase in parking forecasted. Most of SR-60's ridership would come from Park and Ride facilities and demanded a large allocation for parking real estate at each of the 4 stations.
5. Additional real estate was also required due to the need to take residential housing along the SR60 alignment. This change occurred because the need to acquire slopes along the Caltrans ROW.
6. Number of light rail train vehicles were increased, based upon the direction of Metro Operating Planning staff, to assume 3 car trains for weekday peak hours, spare, and gap trains.

Beverly Boulevard Alternative:

1. At-grade crossings in the Whittier Greenway were identified and priced. All intersections along the alignment were priced to reflect the requirements that installing light rail would entail. Including the replacement of mast arms, street lights and traffic cabinets.
2. Number of light rail train vehicles was increased, based upon the direction of Metro Operations Planning staff, to assume 3 car trains for weekday peak hours, spare, and gap trains.
3. Parking spaces at each of the stations was increased and assumed to be structured parking due to right of way constraints. The parking requirements increased due to the refinement in ridership forecasting. This dictated the number of parking

spaces required at each station. The change to structured parking also increased the costs to the stations category.
4. Additional real estate was required for the increase in parking demand as well as the identified Traction Power Substation (TPSS) stationing along the alignment.

Beverly/Whittier Boulevard Alternative (Via Montebello Boulevard):

1. At grade to aerial guideway transitions were added along Montebello Boulevard between Beverly and Whittier Boulevards. Aerial transitions and elevated guideway were used to decrease the travel time for the alignment. This increased the cost of retained fill Mechanically Stabilized Earth(MSE) walls for the guideway.
2. The aerial alignments changed the at grade stations to elevated at Montebello Station and Rosemead Boulevards Stations on Whittier Boulevard. This increased the station costs of the alignment.
3. Number of light rail train vehicles has been increased based upon direction by Metro Operations Planning staff to assume 3-car trains for weekday peak hours, spare, and gap trains.
4. The parking requirements increased due to the refinement in ridership forecasting. Parking spaces at each of the stations was increased because of the increase. The new spaces are assumed to be structured parking due to the alignments right of way constraints. The change to structured parking also increased the costs in the stations category.
5. Additional real estate was required for the increase in parking demand as well as the identified TPSS stationing along the alignment.

Beverly/Whittier Boulevard Alternative (Via Rosemead Boulevard):

1. Aerial alignment was added along Whittier Boulevard between Rosemead Boulevard and Norwalk. Aerial guideway was used to decrease the travel time for the alignment. This increased the costs of the guideway costs.
2. At-grade aerial transition were added along Rosemead Boulevard between Beverly and Whittier Boulevards was added. Aerial transitions and elevated guideway were used to decrease the travel time for the alignment. This increased the cost of retained fill MSE walls for the guideway.
3. The aerial alignments changed the at grade station to elevated at Rosemead Station on Whittier Boulevard. This increased the station costs of the alignment.
4. Parking spaces at each of the stations was increased and assumed to be structured parking due to right of way constraints. The parking requirements increased due to the refinement in ridership forecasting. This dictated the number of parking spaces required at each station. The change to structured parking also increased the costs to the stations category.

5. Number of light rail train vehicles has been increased based upon direction by Metro staff, to assume 3-car trains for weekday peak hours, spare, and gap trains.
6. Additional real estate was required for the increase in parking demand as well as the identified TPSS stationing along the alignment.

Washington Boulevard Alternative:

1. Number of light rail train vehicles has been increased based upon direction by Metro Operations Planning staff to assume 3-car trains for weekday peak hours, spare, and gap trains.
2. Parking spaces at each of the stations was increased and assumed to be structured parking due to right of way constraints. The parking requirements increased due to the refinement in ridership forecasting. This dictated the number of parking spaces required at each station. The change to structured parking also increased the costs to the stations category.
3. Additional real estate was required for the increase in parking demand as well as the identified TPSS stationing along the alignment.

4.0 Unit Costs

At-grade Exclusive Right-of-Way $480/RF

At-grade Exclusive ROW is assumed to cover building the railbed. It does not include any part of the track structure, which is covered in ballasted track. Constituent tasks include demolition, excavation, underdrain placement, subgrade preparation & subbase installation. The unit of measure is route feet. Unit Prices based upon costs identified in the Exposition Corridor Phase 2 Draft Environmental Impact Report (DEIR). Costs were escalated to year 2008 dollars.

Mechanically Stabilized Earth (MSE) Wall $2,600/RF

A MSE Wall is assumed to be a retained fill structure using two walls held together by a geotextile fabric placed between the fill lifts and hold up the track section. The unit of measure is route feet. Unit Price based upon Caltrans 2008 Bid Costs See Figure 1.

Cast In Place 6'-Foot Retaining Wall $700/RF

A cast in place wall is a single 6'-foot retaining wall made of concrete. Components of the unit cost include excavation, form placement, rebar, pouring concrete and backfill. The unit of measure is in route feet. Unit Prices based upon costs identified in the Exposition Corridor Phase 2 DEIR. Costs were escalated to year 2008 dollars.

Ballasted Track $460/RF

This unit cost is composed of the cost of two rail track feet. Included in this cost is the placement of crushed rock (ballasting), rail ties, and continuously welded rail. The price is in route feet. Unit prices based upon costs identified in the Exposition Corridor Phase 2 DEIR. Costs were escalated to year 2008 dollars.

Switches No. 8 Diamond Single Crossovers $980,000/EA

This unit price includes the placement of single directional switch used to allow trains to cross from one track to another. Unit cost is identified per each element. Unit prices are based upon costs identified in the Exposition Corridor Phase 2 DEIR. Costs were escalated to 2008 Dollars.

Switches No. 8 Diamond Double Crossovers $580,000/EA

This unit price includes the placement of a bi-directional switch used to allow trains to cross from one track to another. Unit cost is identified per each element. Unit prices are based upon costs identified in the Exposition Corridor Phase 2 DEIR. Costs were escalated to 2008 Dollars.

Automobile Parking Lot Structure Stall $23,000/EA

Parking Lot Structure Stall includes the cost to build an above ground multistory parking structure. Unit costs were identified on a per-each-parking-space required basis. Unit Prices based upon costs identified in the Exposition Corridor Phase 2 DEIR Costs were escalated to 2008 Dollars and compared against recent Metrolink Parking Structure Bids.

Elevators & Escalators $250,000/EA

Elevators & Escalators include the cost to install elevators and escalators into the Aerial Station. Unit prices are based upon costs identified in the Exposition Corridor Phase 2 DEIR. Costs were escalated to year 2008 dollars

Demolition, Clearing Within Existing Roadways $150/RF

Demolition included the cost to remove the existing street and to place at-grade track within the street ROW. Costs include sawcut, asphalt & aggregate base removal and curb and gutter removal. Unit costs are identified on a route foot basis. Unit prices were based upon Caltrans Bid Costs. See Figure 2.

Site Structures: Retaining Walls $180/RF

Site retaining walls are assumed to be single three-foot tall concrete masonry block walls. Constituent tasks for building include excavation, rebar placement, block placement and backfill. This cost is in route feet. Unit prices based upon costs identified in the Exposition Corridor Phase 2 DEIR. Costs were escalated to year 2008 Dollars.

Landscape, Streetscape, Urban Design Features $400/RF

Landscape, Streetscape and Urban Design Features cover all costs for placement of beautification elements along the corridor rail. This includes planter boxes, trees and shrubbery, irrigation, street lights, trash cans, and fencing. This cost is in route feet. Unit

prices are based on costs identified on Metro Gold Line Eastside Extension for urban design elements. Costs were escalated to year 2008 Dollars.

Traffic Signals: Minor Intersection $150,000/EA

Traffic signals at minor intersection (4 lanes) include the cost to replace street and traffic light pole and mast arms, resignalize the intersection and replace traffic loop detectors. The cost was assumed to cover 4 pole arms. The cost is counted by the number of minor intersections identified prices are based upon Caltrans 2008 bid costs.

Traffic Signals: Major Intersection $300,000/EA

Traffic signals at major intersection (6 lanes) include the cost to replace & relocate street and traffic light poles and mast arms, resignalize the intersection and replace traffic loop detectors. The cost was assumed to cover replacing 4 poles and mast arms. The cost is counted by the number of major intersections identified on the plans. Unit prices are based upon Caltrans 2008 bid costs.

Traffic Signals: Aerial Intersection $60,000/EA

Traffic signals at aerial intersection include the cost to replace and relocate street and traffic light masts arms. The cost was assumed to cover replacing 4 mast arms per intersection. The cost is counted by number of major intersections identified on the plans. Unit prices are based upon Caltrans 2008 bid costs.

Traffic Signals: Grade Crossings $250,000/EA

Traffic signal grade crossings include the cost to install 4 quadrant gates, 2 pedestrian gates per intersection and resignalizing the intersection. The cost was determined by the number of grade crossings identified in the plans. Unit prices are based on costs established on current Metrolink Sealed Corridor Grade Crossing Projects.

5.0 Cost Estimate Summary

6.0 Cost Estimate Analysis By Alternative

AECOM

JOB TITLE Eastside Phase II

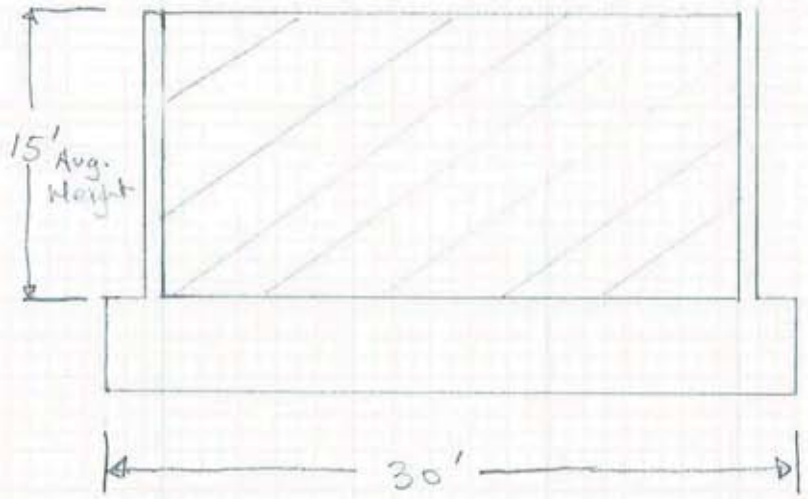
JOB NO. _____ CALCULATION NO. _____ ORIGINATOR K Brudlk DATE July 2, 2009

SHEET _____ OF _____ REVIEWER _____ DATE _____

Figure I Transition Structure Estimate

Assumptions 1) 15' Avenge Height of MSE Wall

* 2.) Caltrans Cost Contracts 2008
State of California Business
& Housing Agency
http://www.dot.ca.gov/hq/esc/oe/awards/2008ccdb.pdf



MSE Wall $160/S.F. Per Caltrans Contract Costs 2008 *

30' x $160/S.F. = $1800/L.F.

Structural Backfill $150/cyd Per Caltrans Contract Costs 2008 *

$50 \times \frac{15 \times 30}{27} = \$833/L.F.$

$2633 L.F. MSE Wall

≈ $2600 L.F.

AECOM

JOB TITLE East side Phase II

JOB NO. _____ CALCULATION NO. _____ ORIGINATOR K Bartelle DATE July 2, 2009

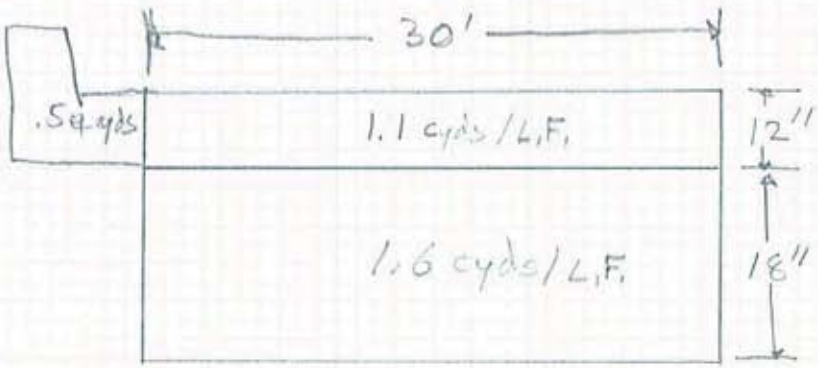
SHEET _____ OF _____ REVIEWER _____ DATE _____

Figure 2

Demolition of Street

Assume 1.) 30' Demolition

2) Curb & Gutter Removal Both Sides of Street



	Quantity	Unit	*Unit Cost	Sub-total
Saw cut	2	L.F.	$2	$4
Remove AC & Base	2.7	C.YDS	$50	$135
Remove Concrete Curb & Gutter	.10	CYDS	$50	$5.3
			Total	$144/L.F.

≅ 150/L.F

*Unit Costs Per Caltrans Cost Contracts 2008 State of California Business & Housing Agency

5.0 Cost Estimate Summary

		SR-60	Beverly Blvd	Beverly Whittie	Beverly Roseme	Washington Blvd
10 GUIDEWAY & TRACK ELEMENTS (X$1000)						
10.01	Guideway: Exclusive At-grade	0.00	7,500.00	875.00	875.00	0.00
10.03	Guideway: At-grade in mixed traffic	750.00	12,750.00	12,375.00	17,874.99	750.00
10.04	Guideway: Aerial structure & Retained Fill	581,875.00	245,500.00	434,125.00	315,000.00	817,875.00
10.08	Guideway: Retained Cut or Fill	2,875.00	12,375.00	12,000.00	11,750.00	2,875.00
10.09	Track: Direct fixation	25,781.00	13,195.00	21,010.50	15,631.00	35,322.00
10.10	Track: Embedded	1,073.87	17,052.00	16,544.50	23,852.50	1,116.50
10.11	Track: Ballasted	0.00	5,785.50	710.50	609.00	0.00
10.12	Track: Switches	4,567.50	6,597.50	6,090.00	7,003.50	6,902.00
	Sub-Total:	**616,922.37**	**320,755.00**	**503,730.50**	**392,595.99**	**864,840.50**
20 STATIONS, STOPS, TERMINALS (X$1000)						
20.01	At-grade station, stop, shelter, mall, terminal, platform	0.00	42,000.00	20,750.00	32,000.00	0.00
20.02	Aerial station, stop, shelter, mall, terminal, platform	36,000.00	9,000.00	27,000.00	9,000.00	54,000.00
20.06	Automobile parking multi-story structure	98,750.00	64,375.00	68,500.00	77,375.00	80,125.00
20.07	Elevators, Escalators	3,750.00	937.50	2,875.00	1,000.00	5,625.00
	Total:	**138,500.00**	**116,312.50**	**119,125.00**	**119,375.00**	**139,750.00**
30 SUPPORT FACILITIES (X$1000)						
30.03	Heavy Maintenance Facility	19,550.00	39,123.00	44,200.00	39,100.00	27,140.00
	Sub-Total:	**19,550.00**	**39,123.00**	**44,200.00**	**39,100.00**	**27,140.00**
40 SITEWORK & SPECIAL CONDITIONS (X$1000)						
40.01	Demolition, Clearing, Earthwork	260.00	3,510.00	3,510.00	4,940.00	260.00
40.02	Site Utilities	21,060.00	30,680.00	29,770.00	31,590.00	28,470.00
40.03	Hazmat	0.00	0.00	0.00	0.00	0.00
40.04	Environmental	0.00	0.00	0.00	0.00	0.00
40.05	Site Structures	52.00	6,760.00	829.30	1,197.14	52.00
40.06	Pedestrian / bike access and accommodation, landscaping	650.00	23,270.00	23,504.00	23,670.40	24,570.00
	Sub-Total:	**22,022.00**	**64,220.00**	**57,613.30**	**61,397.54**	**53,352.00**
50 SYSTEMS (X$1000)						
50.01	Train control and signals (Route Feet)	20,800.00	33,410.00	25,870.00	33,800.00	36,660.00
50.02	Traffic signals and crossing protection (Route Feet)	650.00	8,710.00	5,460.00	6,890.00	7,800.00
50.03	Traction power supply: substations (Route Feet)	22,230.00	27,820.00	27,690.00	28,080.00	30,420.00
50.04	Traction power distribution: catenary and third rail (Route Feet)	30,550.00	34,580.00	38,090.00	38,610.00	41,730.00
50.05	Communications (Route Feet)	26,260.00	32,890.00	32,760.00	33,280.00	36,010.00
50.06	Fare collection system and equipment (Each)	4,420.00	8,944.00	7,800.00	7,800.00	6,760.00
50.07	Central Control (Each)	3,120.00	3,120.00	3,120.00	3,120.00	3,120.00
	Sub-Total:	**108,030.00**	**149,474.00**	**140,790.00**	**151,580.00**	**162,500.00**
	Construction Costs Total:	**905,024.37**	**689,884.50**	**865,458.80**	**764,048.54**	**1,247,582.50**
60 ROW, LAND, IMPROVEMENTS (X$1000)		472,080.00	348,880.00	223,580.00	274,400.00	357,840.00
70 Vehicles (X$1000)		66,150.00	132,300.00	132,300.00	132,300.00	91,875.00
80 Professional Services (X$1000)		248,506.60	190,079.31	236,977.02	210,654.46	342,358.15
90 10% Contingency (X$1000)		169,176.10	136,114.38	145,831.58	138,140.30	203,965.56
	10-50 Total Construction Costs (X$1000)	**905,024.37**	**689,884.50**	**865,458.80**	**764,048.54**	**1,247,582.50**
	Total Project Costs:	**1,860,937.06**	**1,497,258.19**	**1,604,147.40**	**1,519,543.30**	**2,243,621.21**

6.0 Cost Estimate Analysis By Alternative

MAIN WORKSHEET-BUILD ALTERNATIVE

(Rev.11, May 2, 2008)

Metro Eastside Phase II

Alternative 1 Route 60LRT

Today's Date **8/27/09**

Yr of Base Year $ 2008

Yr of Revenue Ops 2008

	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	YOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	**6.89**	499,358	117,564	**616,922**	**$ 89,571**	**68%**	**33%**	**616,922**
10.01 Guideway: At-grade exclusive right-of-way	0.00	0.00	0	0				0
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	0.00	0.00	0	0				0
10.03 Guideway: At-grade in mixed traffic	0.22	600.00	150	750	$ 3,443			750
10.04 Guideway: Aerial structure	6.50	465500.00	116,375	581,875	$ 89,530			581,875
10.05 Guideway: Built-up fill	0.00	0.00	0	0				0
10.06 Guideway: Underground cut & cover	0.00	0.00	0	0				0
10.07 Guideway: Underground tunnel	0.00	0.00	0	0				0
10.08 Guideway: Retained cut or fill	0.17	2300.00	575	2,875	$ 16,867			2,875
10.09 Track: Direct fixation		25,400	381	25,781				25,781
10.10 Track: Embedded		1,058	16	1,074				1,074
10.11 Track: Ballasted		0	0	0				0
10.12 Track: Special (switches, turnouts)		4,500	68	4,568				4,567
10.13 Track: Vibration and noise dampening		0	0	0				0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	**4**	110,800	27,700	**138,500**	**$ 34,625**	**15%**	**7%**	**138,500**
20.01 At-grade station, stop, shelter, mall, terminal, platform	0	0	0	0				0
20.02 Aerial station, stop, shelter, mall, terminal, platform	4	28800	7,200	36,000	$ 9,000			36,000
20.03 Underground station, stop, shelter, mall, terminal, platform	0	0	0	0				0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	0	0	0	0				0
20.05 Joint development		0	0	0				0
20.06 Automobile parking multi-story structure		79,000	19,750	98,750				98,750
20.07 Elevators, escalators		3,000	750	3,750				3,750
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	6.89	17,000	2,550	**19,550**	**$ 2,838**	**2%**	**1%**	**19,550**
30.01 Administration Building: Office, sales, storage, revenue counting				0				0
30.02 Light Maintenance Facility				0				0
30.03 Heavy Maintenance Facility		17,000	2,550	19,550				19,550
30.04 Storage or Maintenance of Way Building				0				0
30.05 Yard and Yard Track				0				0
40 SITEWORK & SPECIAL CONDITIONS	6.89	16,940	5,082	**22,022**	**$ 3,197**	**2%**	**1%**	**22,022**
40.01 Demolition, Clearing, Earthwork		200	60	260				260
40.02 Site Utilities, Utility Relocation		16,200	4,860	21,060				21,060
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments		0	0	0				0
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks		0	0	0				0
40.05 Site structures including retaining walls, sound walls		40	12	52				52
40.06 Pedestrian / bike access and accommodation, landscaping		500	150	650				650
40.07 Automobile, bus, van accessways including roads, parking lots				0				0
40.08 Temporary Facilities and other indirect costs during construction				0				0
50 SYSTEMS	6.89	83,100	24,930	**108,030**	**$ 15,685**	**12%**	**6%**	**108,030**
50.01 Train control and signals		16,000	4,800	20,800				20,800
50.02 Traffic signals and crossing protection		500	150	650				650
50.03 Traction power supply: substations		17,100	5,130	22,230				22,230
50.04 Traction power distribution: catenary and third rail		23,500	7,050	30,550				30,550
50.05 Communications		20,200	6,060	26,260				26,260
50.06 Fare collection system and equipment		3,400	1,020	4,420				4,420
50.07 Central Control		2,400	720	3,120				3,120
Construction Subtotal (10 - 50)	6.89	727,198	177,826	**905,024**	**$ 131,401**	**100%**	**49%**	**905,024**
60 ROW, LAND, EXISTING IMPROVEMENTS	6.89	337,200	134,880	**472,080**	**$ 68,542**		**25%**	**472,080**
60.01 Purchase or lease of real estate		337,200	134,880	472,080				472,080
60.02 Relocation of existing households and businesses				0				0
70 VEHICLES (number)	**18**	63,000	3,150	**66,150**	**$ 3,675**		**4%**	**66,150**
70.01 Light Rail	18	63,000	3,150	66,150	$ 3,675			66,150
70.02 Heavy Rail				0				0
70.03 Commuter Rail				0				0
70.04 Bus				0				0
70.05 Other				0				0
70.06 Non-revenue vehicles				0				0
70.07 Spare parts				0				0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	6.89	218,052	30,455	**248,507**	**$ 36,081**	**27%**	**13%**	**248,507**
80.01 Preliminary Engineering		21,805	3,271	25,076				25,076
80.02 Final Design		50,879	7,632	58,511				58,511
80.03 Project Management for Design and Construction		72,684	10,903	83,587				83,587
80.04 Construction Administration & Management		36,342	5,451	41,793				41,793
80.05 Professional Liability and other Non-Construction Insurance				0				0
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.		7,268	800	8,068				8,068
80.07 Surveys, Testing, Investigation, Inspection		14,537	2,181	16,717				16,717
80.08 Start up		14,537	218	14,755				14,755
Subtotal (10 - 80)	6.89	1,345,450	346,311	**1,691,761**	**$ 245,628**		**91%**	**1,691,761**
90 UNALLOCATED CONTINGENCY				**169,176**			**9%**	**169,176**
Subtotal (10 - 90)	6.89			**1,860,937**	**$ 270,190**		**100%**	**1,860,937**
100 FINANCE CHARGES				**0**			**0%**	**0**
Total Project Cost (10 - 100)	6.89			**1,860,937**	**$ 270,190**		**100%**	**1,860,937**

Allocated Contingency as % of Base Yr Dollars w/o Contingency	25.74%
Unallocated Contingency as % of Base Yr Dollars w/o Contingency	12.57%
Total Contingency as % of Base Yr Dollars w/o Contingency	38.31%
Unallocated Contingency as % of Subtotal (10 - 80)	10.00%
YOE Construction Cost per Mile (X000)	$131,401
YOE Total Project Cost per Mile Not Including Vehicles (X000)	$260,586
YOE Total Project Cost per Mile (X000)	$270,190

Alternative 1 Route 60LRT

	Unit	Quantity	Unit Cost	Base Year Dollars w/o Contingency (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)		**35466.00**		$ 499,000
10.01 Guideway: At-grade exclusive right-of-way		0.00		$ -
Ballasted Track		0.00	$ 480	$ -
				$ -
				$ -
				$ -
				$ -
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)		0.00		$ -
				$ -
				$ -
				$ -
				$ -
				$ -
10.03 Guideway: At-grade in mixed traffic		1150.00		$ 600,000
Embedded Track in Roadway Semi Exclusive R/W	RF	1150.00	$ 560	$ 644,000
				$ -
				$ -
				$ -
10.04 Guideway: Aerial structure		34316.00		$ 465,500,000
Typical Span*	RF	33656.00	$ 13,400	$ 450,990,400
Long Span LRT Bridge	RF	660.00	$ 22,000	$ 14,520,000
				$ -
				$ -
				$ -
10.05 Guideway: Built-up fill		0.00		$ -
None				$ -
				$ -
				$ -
10.06 Guideway: Underground cut & cover		0.00		$ -
None				$ -
				$ -
10.07 Guideway: Underground tunnel		0.00		$ -
None				$ -
				$ -
10.08 Guideway: Retained cut or fill		900.00		$ 2,300,000
MSE Walls	RF	900.00	$ 2,600	$ 2,340,000
				$ -
				$ -
10.09 Track: Direct fixation		35,216.00		$ 25,400,000
10.04 +10.09	RF	35216.00	$ 720	$ 25,355,520
				$ -
				$ -
				$ -
				$ -
10.10 Track: Embedded		1,150.00		$ 1,058,000
10.03	RF	1150.00	$ 920	$ 1,058,000
				$ -
				$ -
				$ -
				$ -
10.11 Track: Ballasted				$ -
Ballasted Track	RF	0.00	$ 460	$ -
				$ -
				$ -
				$ -
				$ -
10.12 Track: Special (switches, turnouts)				$ 4,500,000
No. 8 Diamond Double Crossover Fixed	EA	1.00	$ 980,000	$ 980,000
No. 8 Diamond Single Crossover Fixed	EA	6.00	$ 580,000	$ 3,480,000
				$ -
10.13 Track: Vibration and noise dampening				$ -
None				$ -
				$ -
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)		**4**		**$ 110,800**
20.01 At-grade station, stop, shelter, mall, terminal, platform		0.00		$ -
				$ -
				$ -
				$ -
				$ -
				$ -
20.02 Aerial station, stop, shelter, mall, terminal, platform		4.00		$ 28,800,000
LRT Station Elevated	EA	4.00	$ 7,200,000	$ 28,800,000
				$ -
20.03 Underground station, stop, shelter, mall, terminal, platform		0.00		$ -
None				$ -
				$ -
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.		0.00		$ -
				$ -
				$ -
20.05 Joint development				$ -
				$ -
				$ -
20.06 Automobile parking multi-story structure				$ 79,000,000
Parking Lot At Grade	EA		$ 4,000	$ -
Parking Lot Structure Stalls	EA	3436.00	$ 23,000	$ 79,028,000
				$ -
20.07 Elevators, escalators				$ 3,000,000

Assume 1 Elevator & 2 Escalators Per Aerial Station	EA	12.00	$ 250,000	$ 3,000,000
				$ -
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS		35466.00		$ 17,000
30.01 Administration Building: Office, sales, storage, revenue counting				
30.02 Light Maintenance Facility				
30.03 Heavy Maintenance Facility	SF	27000	$ 630	$ 17,010,000
30.04 Storage or Maintenance of Way Building				
30.05 Yard and Yard Track				
40 SITEWORK & SPECIAL CONDITIONS		35466.00		$ 16,940
40.01 Demolition, Clearing, Earthwork				$ 200,000
Demolition, Clearing Within Street		1150.00	$ 150	$ 172,500
				$ -
				$ -
				$ -
				$ -
40.02 Site Utilities, Utility Relocation		36,366.00		$ 16,200,000
Aerial Guideway	RF	35216.00	$ 440	$ 15,495,040
At-Grade Guideway within Street	RF	1150.00	$ 580	$ 667,000
				$ -
				$ -
				$ -
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments				$ -
				$ -
				$ -
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks				$ -
				$ -
				$ -
				$ -
				$ -
40.05 Site structures including retaining walls, sound walls				$ 40,000
				$ -
Retaining Walls (Assume 20% At Grade Alignment Requires 3' Walls)	RF	230.00	$ 180.00	$ 41,400
40.06 Pedestrian / bike access and accommodation, landscaping				$ 500,000
				$ -
Landscaping Street Scape, Urban Design Features	RF	1150.00	$ 400.00	$ 460,000
				$ -
				$ -
				$ -
40.07 Automobile, bus, van accessways including roads, parking lots				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
40.08 Temporary Facilities and other indirect costs during construction				$ -
				$ -
				$ -
50 SYSTEMS		35466.00		$ 83,100
50.01 Train control and signals				$ 16,000,000
Signal Substation & Cables	RF	35466.00	$ 450	$ 15,959,700
Ductbank & Pullboxes	RF	35466.00	$ 130	$ 4,610,580
50.02 Traffic signals and crossing protection				$ 500,000
Major Intersection	EA	1.00	$ 300,000	$ 300,000
Minor Intersection	EA	1.00	$ 150,000	$ 150,000
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
50.03 Traction power supply: substations				$ 17,100,000
Hardware Procurement	RF	35466.00	$ 430	$ 15,250,380
Building Installation	RF	35466.00	$ 52	$ 1,844,232
				$ -
50.04 Traction power distribution: catenary and third rail				$ 23,500,000
Catenary OCS Pole		35466.00	$ 470	$ 16,669,020
Ductbank Pullboxes		35466.00	$ 130	$ 4,610,580
OCS Poles Foundations		35466.00	$ 62	$ 2,198,892
50.05 Communications				$ 20,200,000
Communications Equipment Installation		35466.00	$ 440	$ 15,605,040
Ductbank & Pullboxes		35466.00	$ 130	$ 4,610,580
				$ -
50.06 Fare collection system and equipment				$ 3,400,000
Ticket Vending Machines, Total Corridor Length Times Cost Multiplier*	EA	4.00	$ 860,000	$ 3,440,000
				$ -
50.07 Central Control				$ 2,400,000
	EA	1.00	$ 2,400,000	$ 2,400,000
				$ -
Construction Subtotal (10 - 50)		35466.00		$ 726,840
60 ROW, LAND, EXISTING IMPROVEMENTS				$ 337,200
60.01 Purchase or lease of real estate				$ 337,200,000
				$ -
ROW	SF	1686129.00	$ 200	$ 337,225,800
				$ -
				$ -
				$ -
60.02 Relocation of existing households and businesses				$ -
				$ -
				$ -
				$ -
				$ -
				$ -

70 VEHICLES (number)		**18**		$ 63,000
70.01 Light Rail	EA	18	$ 3,500,000	$ 63,000,000
70.02 Heavy Rail				
70.03 Commuter Rail				
70.04 Bus			$ 450,000	$ -
70.05 Other				
70.06 Non-revenue vehicles				
70.07 Spare parts				
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)		35466.00		$ 218,100
80.01 Preliminary Engineering	21,805	3% 10-50		$ 21,805,200
80.02 Final Design	50,879	7% 10-50		$ 50,878,800
80.03 Project Management for Design and Construction	72,684	10% 10-50		$ 72,684,000
80.04 Construction Administration & Management	36,342	5% 10-50		$ 36,342,000
80.05 Professional Liability and other Non-Construction Insurance		0% 10-50		
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.	7,268	1% 10-50		$ 7,268,400
80.07 Surveys, Testing, Investigation, Inspection	14,537	2% 10-50		$ 14,536,800
80.08 Start up	14,537	1.5% 10-50		$ 14,536,800
				$ 1,345,140

* All Unit Prices Taken From Expo Phase 2 Cost Estimate

MAIN WORKSHEET-BUILD ALTERNATIVE

(Rev.11, May 2, 2008)

Metro Eastside Phase II

Alternative 2 Beverly Blvd.

Today's Date **7/17/09**

Yr of Base Year $ 2008

Yr of Revenue Ops 2008

	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	YOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	**9.21**	264,500	56,255	**320,755**	**$ 34,812**	**46%**	**21%**	**320,755**
10.01 Guideway: At-grade exclusive right-of-way	2.35	6000.00	1,500	7,500	$ 3,191			7,500
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	0.00	0.00	0	0				0
10.03 Guideway: At-grade in mixed traffic	3.45	10200.00	2,550	12,750	$ 3,697			12,750
10.04 Guideway: Aerial structure	2.60	196400.00	49,100	245,500	$ 94,409			245,500
10.05 Guideway: Built-up fill	0.00	0.00	0	0				0
10.06 Guideway: Underground cut & cover	0.00	0.00	0	0				0
10.07 Guideway: Underground tunnel	0.00	0.00	0	0				0
10.08 Guideway: Retained cut or fill	0.81	9900.00	2,475	12,375	$ 15,195			12,375
10.09 Track: Direct fixation		13,000	195	13,195				13,195
10.10 Track: Embedded		16,800	252	17,052				17,052
10.11 Track: Ballasted		5,700	86	5,786				5,785
10.12 Track: Special (switches, turnouts)		6,500	98	6,598				6,597
10.13 Track: Vibration and noise dampening		0	0	0				0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	**8**	93,050	23,263	**116,313**	**$ 14,539**	**17%**	**8%**	**116,313**
20.01 At-grade station, stop, shelter, mall, terminal, platform	7	33600	8,400	42,000	$ 6,000			42,000
20.02 Aerial station, stop, shelter, mall, terminal, platform	1	7200	1,800	9,000	$ 9,000			9,000
20.03 Underground station, stop, shelter, mall, terminal, platform	0	0	0	0				0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	0	0	0	0				0
20.05 Joint development		0	0	0				0
20.06 Automobile parking multi-story structure		51,500	12,875	64,375				64,375
20.07 Elevators, escalators		750	188	938				938
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	9.21	34,020	5,103	**39,123**	**$ 4,246**	**6%**	**3%**	**39,123**
30.01 Administration Building: Office, sales, storage, revenue counting				0				0
30.02 Light Maintenance Facility				0				0
30.03 Heavy Maintenance Facility		34,020	5,103	39,123				39,123
30.04 Storage or Maintenance of Way Building				0				0
30.05 Yard and Yard Track				0				0
40 SITEWORK & SPECIAL CONDITIONS	9.21	49,400	14,820	**64,220**	**$ 6,970**	**9%**	**4%**	**64,220**
40.01 Demolition, Clearing, Earthwork		2,700	810	3,510				3,510
40.02 Site Utilities, Utility Relocation		23,600	7,080	30,680				30,680
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments		0	0	0				0
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks		0	0	0				0
40.05 Site structures including retaining walls, sound walls		5,200	1,560	6,760				6,760
40.06 Pedestrian / bike access and accommodation, landscaping		17,900	5,370	23,270				23,270
40.07 Automobile, bus, van accessways including roads, parking lots		0	0	0				0
40.08 Temporary Facilities and other indirect costs during construction		0	0	0				0
50 SYSTEMS	9.21	114,980	34,494	**149,474**	**$ 16,223**	**22%**	**10%**	**149,474**
50.01 Train control and signals		25,700	7,710	33,410				33,410
50.02 Traffic signals and crossing protection		6,700	2,010	8,710				8,710
50.03 Traction power supply: substations		21,400	6,420	27,820				27,820
50.04 Traction power distribution: catenary and third rail		26,600	7,980	34,580				34,580
50.05 Communications		25,300	7,590	32,890				32,890
50.06 Fare collection system and equipment		6,880	2,064	8,944				8,944
50.07 Central Control		2,400	720	3,120				3,120
Construction Subtotal (10 - 50)	9.21	555,950	133,935	**689,885**	**$ 74,875**	**100%**	**46%**	**689,884**
60 ROW, LAND, EXISTING IMPROVEMENTS	9.21	249,200	99,680	**348,880**	**$ 37,865**		**23%**	**348,880**
60.01 Purchase or lease of real estate		249,200	99,680	348,880				348,880
60.02 Relocation of existing households and businesses		0	0	0				0
70 VEHICLES (number)	**36**	126,000	6,300	**132,300**	**$ 3,675**		**9%**	**132,300**
70.01 Light Rail	36	126,000	6,300	132,300	$ 3,675			132,300
70.02 Heavy Rail				0				0
70.03 Commuter Rail				0				0
70.04 Bus				0				0
70.05 Other				0				0
70.06 Non-revenue vehicles				0				0
70.07 Spare parts				0				0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	9.21	166,785	23,294	**190,079**	**$ 20,630**	**28%**	**13%**	**190,079**
80.01 Preliminary Engineering		16,679	2,502	19,180				19,180
80.02 Final Design		38,917	5,837	44,754				44,754
80.03 Project Management for Design and Construction		55,595	8,339	63,934				63,934
80.04 Construction Administration & Management		27,798	4,170	31,967				31,967
80.05 Professional Liability and other Non-Construction Insurance				0				0
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.		5,560	612	6,171				6,171
80.07 Surveys, Testing, Investigation, Inspection		11,119	1,668	12,787				12,787
80.08 Start up		11,119	167	11,286				11,286
Subtotal (10 - 80)	9.21	1,097,935	263,209	**1,361,144**	**$ 147,728**		**91%**	**1,361,144**
90 UNALLOCATED CONTINGENCY				**136,114**			**9%**	**136,114**
Subtotal (10 - 90)	9.21			**1,497,258**	**$ 162,501**		**100%**	**1,497,258**
100 FINANCE CHARGES				**0**			**0%**	**0**
Total Project Cost (10 - 100)	9.21			**1,497,258**	**$ 162,501**		**100%**	**1,497,258**

Allocated Contingency as % of Base Yr Dollars w/o Contingency	23.97%
Unallocated Contingency as % of Base Yr Dollars w/o Contingency	12.40%
Total Contingency as % of Base Yr Dollars w/o Contingency	36.37%
Unallocated Contingency as % of Subtotal (10 - 80)	10.00%
YOE Construction Cost per Mile (X000)	$74,875
YOE Total Project Cost per Mile Not Including Vehicles (X000)	$148,142
YOE Total Project Cost per Mile (X000)	$162,501

Alternative 2 Beverly Blvd.

	Unit	Quantity	Unit Cost	Base Year Dollars w/o Contingency (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)		**44349.00**		$ 264,500
10.01 Guideway: At-grade exclusive right-of-way		12409.00		$ 6,000,000
Ballasted Track		12409.00	$ 480.00	$ 5,956,320
				$ -
				$ -
				$ -
				$ -
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)		0.00		$ -
				$ -
				$ -
				$ -
				$ -
				$ -
10.03 Guideway: At-grade in mixed traffic		18210.00		$ 10,200,000
Embedded Track in Roadway Semi Exclusive R/W	RF	18210.00	$ 560.00	$ 10,197,600
				$ -
				$ -
				$ -
10.04 Guideway: Aerial structure		13730.00		$ 196,400,000
Typical Span*	RF	12290.00	$ 13,400.00	$ 164,686,000
Long Span LRT Bridge	RF	1440.00	$ 22,000.00	$ 31,680,000
				$ -
				$ -
				$ -
10.05 Guideway: Built-up fill		0.00		$ -
None				$ -
				$ -
				$ -
10.06 Guideway: Underground cut & cover		0.00		$ -
None				$ -
				$ -
10.07 Guideway: Underground tunnel		0.00		$ -
None				$ -
				$ -
10.08 Guideway: Retained cut or fill		4300.00		$ 9,900,000
MSE Walls	RF	3600.00	$ 2,600.00	$ 9,360,000
Retaining Walls	RF	700.00	$ 700.00	$ 490,000
				$ -
10.09 Track: Direct fixation		18,030.00		$ 13,000,000
10.04 +10.09	RF	18030.00	$ 720.00	$ 12,981,600
				$ -
				$ -
				$ -
				$ -
10.10 Track: Embedded		18,210.00		$ 16,800,000
10.03	RF	18210.00	$ 920.00	$ 16,753,200
				$ -
				$ -
				$ -
				$ -
10.11 Track: Ballasted				$ 5,700,000
Ballasted Track	RF	12409.00	$ 460.00	$ 5,708,140
				$ -
				$ -
				$ -
				$ -
10.12 Track: Special (switches, turnouts)				$ 6,500,000
No. 8 Diamond Double Crossover Power Operated Ballasted	EA	1.00	$ 760,000.00	$ 760,000
No. 8 Diamond Single Crossover Power Operated Embedded	EA	6.00	$ 480,000.00	$ 2,880,000
No. 8 Diamond Single Crossover Power Operated Ballasted	EA	4.00	$ 420,000.00	$ 1,680,000
No. 8 Diamond Single Crossover Power Operated Fixed	EA	2.00	$ 580,000.00	$ 1,160,000
10.13 Track: Vibration and noise dampening				$ -
None				$ -
				$ -
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)		**8**		**$ 93,050**
20.01 At-grade station, stop, shelter, mall, terminal, platform		7.00		$ 33,600,000
At-grade station, Center Platform		2.00	$ 3,800,000.00	$ 7,600,000
At-grade station, Split Platform		5.00	$ 5,200,000.00	$ 26,000,000
				$ -
				$ -
				$ -
20.02 Aerial station, stop, shelter, mall, terminal, platform		1.00		$ 7,200,000
LRT Station Elevated	EA	1.00	$ 7,200,000.00	$ 7,200,000
				$ -
20.03 Underground station, stop, shelter, mall, terminal, platform		0.00		$ -
None				$ -
				$ -
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.		0.00		$ -
				$ -
				$ -
20.05 Joint development				$ -
				$ -
				$ -
20.06 Automobile parking multi-story structure				$ 51,500,000
	EA			$ -
Parking Lot Structure Stalls	EA	2241.00	$ 23,000.00	$ 51,543,000
				$ -

20.07 Elevators, escalators				$ 750,000
Assume 1 Elevator & 2 Escalators Per Aerial Station	EA	3.00	$ 250,000.00	$ 750,000
				$ -
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS		44349.00		$ 34,020
30.01 Administration Building: Office, sales, storage, revenue counting				
30.02 Light Maintenance Facility				
30.03 Heavy Maintenance Facility	SF	54000	$ 630	$ 34,020,000
30.04 Storage or Maintenance of Way Building				
30.05 Yard and Yard Track				
40 SITEWORK & SPECIAL CONDITIONS				$ 49,400
40.01 Demolition, Clearing, Earthwork				$ 2,700,000
Demolition, Clearing Within Street		18210.00	$ 150.00	$ 2,731,500
				$ -
				$ -
				$ -
				$ -
40.02 Site Utilities, Utility Relocation		47,949.00		$ 23,600,000
Aerial Guideway	RF	17330.00	$ 440.00	$ 7,625,200
At-Grade Guideway within Street	RF	18210.00	$ 580.00	$ 10,561,800
Relocate Greenway	LF	12409.00	$ 440.00	$ 5,459,960
				$ -
				$ -
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments				$ -
Remove Contaminated Soil In ROW	RF	0.00	$ 160.00	$ -
				$ -
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks				$ -
Environmental Mitigation Within ROW	RF	0.00	$ 70.00	$ -
				$ -
				$ -
				$ -
40.05 Site structures including retaining walls, sound walls				$ 5,200,000
Soundwalls	RF	11859.00	$ 380.00	$ 4,506,420
Retaining Walls (Assume 20% At Grade Alignment Requires 3' Walls)	RF	3642.00	$ 180.00	$ 655,560
40.06 Pedestrian / bike access and accommodation, landscaping				$ 17,900,000
Landscaping & Bike Path	RF	12629.00	$ 340.00	$ 4,293,860
Landscaping Street Scape, Urban Design Features	RF	34100.00	$ 400.00	$ 13,640,000
				$ -
				$ -
				$ -
40.07 Automobile, bus, van accessways including roads, parking lots				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
40.08 Temporary Facilities and other indirect costs during construction				$ -
				$ -
				$ -
50 SYSTEMS		44349.00		$ 114,980
50.01 Train control and signals				$ 25,700,000
Signal Substation & Cables	RF	44349.00	$ 450.00	$ 19,957,050
Ductbank & Pullboxes	RF	44349.00	$ 130.00	$ 5,765,370
50.02 Traffic signals and crossing protection				$ 6,700,000
Major Intersection	EA	6.00	$ 300,000.00	$ 1,800,000
Minor Intersection	EA	17.00	$ 150,000.00	$ 2,550,000
Grade Crossings	EA	8.00	$ 250,000.00	$ 2,000,000
Aerial Intersection	EA	5.00	$ 60,000.00	$ 300,000
				$ -
				$ -
				$ -
				$ -
				$ -
50.03 Traction power supply: substations				$ 21,400,000
Hardware Procurement	RF	44349.00	$ 430.00	$ 19,070,070
Building Installation	RF	44349.00	$ 52.00	$ 2,306,148
				$ -
50.04 Traction power distribution: catenary and third rail				$ 26,600,000
Catenary OCS Pole		44349.00	$ 470.00	$ 20,844,030
Ductbank Pullboxes		44349.00	$ 130.00	$ 5,765,370
OCS Poles Foundations		44349.00	$ 62.00	$ 2,749,638
50.05 Communications				$ 25,300,000
Communications Equipment Installation		44349.00	$ 440.00	$ 19,513,560
Ductbank & Pullboxes		44349.00	$ 130.00	$ 5,765,370
				$ -
50.06 Fare collection system and equipment				$ 6,880,000
Ticket Vending Machines	EA	8.00	$ 860,000.00	$ 6,880,000
				$ -
50.07 Central Control				$ 2,400,000
	EA	1.00	$ 2,400,000.00	$ 2,400,000
				$ -
Construction Subtotal (10 - 50)		44349.00		$ 555,950
60 ROW, LAND, EXISTING IMPROVEMENTS		44349.00		$ 249,200
60.01 Purchase or lease of real estate				$ 249,200,000
				$ -
ROW	SF	1245954.00	$ 200.00	$ 249,190,800
				$ -
				$ -
				$ -
60.02 Relocation of existing households and businesses				$ -
				$ -
				$ -
				$ -

				$ -
				$ -
70 VEHICLES (number)		**36**		$ 126,000
70.01 Light Rail	EA	36	$ 3,500,000	$ 126,000,000
70.02 Heavy Rail				
70.03 Commuter Rail				
70.04 Bus			$ 450,000	$ -
70.05 Other				
70.06 Non-revenue vehicles				
70.07 Spare parts				
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)		44349.00		$ 166,785
80.01 Preliminary Engineering	16,679	3% 10-50		$ 16,679
80.02 Final Design	38,917	7% 10-50		$ 38,917
80.03 Project Management for Design and Construction	55,595	10% 10-50		$ 55,595
80.04 Construction Administration & Management	27,798	5% 10-50		$ 27,798
80.05 Professional Liability and other Non-Construction Insurance		0% 10-50		
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.	5,560	1% 10-50		$ 5,560
80.07 Surveys, Testing, Investigation, Inspection	11,119	2% 10-50		$ 11,119
80.08 Start up	11,119	1.5% 10-50		$ 11,119
				$ 1,097,935

MAIN WORKSHEET-BUILD ALTERNATIVE

(Rev.11, May 2, 2008)

Metro Eastside Phase II

Alternative 3A Beverly Whittier Montebello Blvd.

Today's Date **8/27/09**

Yr of Base Year $ 2008

Yr of Revenue Ops 2008

	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	YOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	**9.08**	411,200	92,531	**503,731**	**$ 55,482**	**58%**	**31%**	**503,731**
10.01 Guideway: At-grade exclusive right-of-way	0.27	700.00	175	875	$ 3,213			875
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	0.00	0.00	0	0				0
10.03 Guideway: At-grade in mixed traffic	3.36	9900.00	2,475	12,375	$ 3,687			12,375
10.04 Guideway: Aerial structure	4.75	347300.00	86,825	434,125	$ 91,395			434,125
10.05 Guideway: Built-up fill	0.00	0.00	0	0				0
10.06 Guideway: Underground cut & cover	0.00	0.00	0	0				0
10.07 Guideway: Underground tunnel	0.00	0.00	0	0				0
10.08 Guideway: Retained cut or fill	0.70	9600.00	2,400	12,000	$ 17,124			12,000
10.09 Track: Direct fixation		20,700	311	21,011				21,011
10.10 Track: Embedded		16,300	245	16,545				16,545
10.11 Track: Ballasted		700	11	711				711
10.12 Track: Special (switches, turnouts)		6,000	90	6,090				6,090
10.13 Track: Vibration and noise dampening		0	0	0				0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	**7**	95,300	23,825	**119,125**	**$ 17,018**	**14%**	**7%**	**119,125**
20.01 At-grade station, stop, shelter, mall, terminal, platform	4	16600	4,150	20,750	$ 5,188			20,750
20.02 Aerial station, stop, shelter, mall, terminal, platform	3	21600	5,400	27,000	$ 9,000			27,000
20.03 Underground station, stop, shelter, mall, terminal, platform	0	0	0	0				0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	0	0	0	0				0
20.05 Joint development		0	0	0				0
20.06 Automobile parking multi-story structure		54,800	13,700	68,500				68,500
20.07 Elevators, escalators		2,300	575	2,875				2,875
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	9.08	34,000	10,200	**44,200**	**$ 4,868**	**5%**	**3%**	**44,200**
30.01 Administration Building: Office, sales, storage, revenue counting				0				0
30.02 Light Maintenance Facility				0				0
30.03 Heavy Maintenance Facility		34,000	10,200	44,200				44,200
30.04 Storage or Maintenance of Way Building				0				0
30.05 Yard and Yard Track				0				0
40 SITEWORK & SPECIAL CONDITIONS	9.08	44,318	13,295	**57,613**	**$ 6,346**	**7%**	**4%**	**57,613**
40.01 Demolition, Clearing, Earthwork		2,700	810	3,510				3,510
40.02 Site Utilities, Utility Relocation		22,900	6,870	29,770				29,770
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments		0	0	0				0
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks		0	0	0				0
40.05 Site structures including retaining walls, sound walls		638	191	829				829
40.06 Pedestrian / bike access and accommodation, landscaping		18,080	5,424	23,504				23,504
40.07 Automobile, bus, van accessways including roads, parking lots		0	0	0				0
40.08 Temporary Facilities and other indirect costs during construction		0	0	0				0
50 SYSTEMS	9.08	108,300	32,490	**140,790**	**$ 15,507**	**16%**	**9%**	**140,790**
50.01 Train control and signals		19,900	5,970	25,870				25,870
50.02 Traffic signals and crossing protection		4,200	1,260	5,460				5,460
50.03 Traction power supply: substations		21,300	6,390	27,690				27,690
50.04 Traction power distribution: catenary and third rail		29,300	8,790	38,090				38,090
50.05 Communications		25,200	7,560	32,760				32,760
50.06 Fare collection system and equipment		6,000	1,800	7,800				7,800
50.07 Central Control		2,400	720	3,120				3,120
Construction Subtotal (10 - 50)	9.08	693,118	172,341	**865,459**	**$ 95,324**	**100%**	**54%**	**865,459**
60 ROW, LAND, EXISTING IMPROVEMENTS	9.08	159,700	63,880	**223,580**	**$ 24,626**		**14%**	**223,580**
60.01 Purchase or lease of real estate		159,700	63,880	223,580				223,580
60.02 Relocation of existing households and businesses		0	0	0				0
70 VEHICLES (number)	**36**	126,000	6,300	**132,300**	**$ 3,675**		**8%**	**132,300**
70.01 Light Rail	36	126,000	6,300	132,300	$ 3,675			132,300
70.02 Heavy Rail	0	0	0	0				0
70.03 Commuter Rail	0	0	0	0				0
70.04 Bus	0	0	0	0				0
70.05 Other				0				0
70.06 Non-revenue vehicles				0				0
70.07 Spare parts				0				0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	9.08	207,935	29,042	**236,977**	**$ 26,101**	**27%**	**15%**	**236,976**
80.01 Preliminary Engineering		20,794	3,119	23,913				23,912
80.02 Final Design		48,518	7,278	55,796				55,796
80.03 Project Management for Design and Construction		69,312	10,397	79,709				79,708
80.04 Construction Administration & Management		34,656	5,198	39,854				39,854
80.05 Professional Liability and other Non-Construction Insurance				0				0
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.		6,931	762	7,694				7,694
80.07 Surveys, Testing, Investigation, Inspection		13,862	2,079	15,942				15,942
80.08 Start up		13,862	208	14,070				14,070
Subtotal (10 - 80)	9.08	1,186,753	271,563	**1,458,316**	**$ 160,622**		**91%**	**1,458,315**
90 UNALLOCATED CONTINGENCY				**145,832**			**9%**	**145,831**
Subtotal (10 - 90)	9.08			**1,604,147**	**$ 176,684**		**100%**	**1,604,146**
100 FINANCE CHARGES				**0**			**0%**	**0**
Total Project Cost (10 - 100)	9.08			**1,604,147**	**$ 176,684**		**100%**	**1,604,146**

Allocated Contingency as % of Base Yr Dollars w/o Contingency	22.88%
Unallocated Contingency as % of Base Yr Dollars w/o Contingency	12.29%
Total Contingency as % of Base Yr Dollars w/o Contingency	35.17%
Unallocated Contingency as % of Subtotal (10 - 80)	10.00%
YOE Construction Cost per Mile (X000)	$95,324
YOE Total Project Cost per Mile Not Including Vehicles (X000)	$162,113
YOE Total Project Cost per Mile (X000)	$176,684

Alternative 3A Beverly Montebello Whittier Blvd.

	Unit	Quantity	Unit Cost	Base Year Dollars w/o Contingency (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)		**44238.00**		$ 411,200
10.01 Guideway: At-grade exclusive right-of-way		1438.00		$ 700,000
Ballasted Track		1438.00	$ 480.00	$ 690,240
				$ -
				$ -
				$ -
				$ -
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)		0.00		$ -
				$ -
				$ -
				$ -
				$ -
				$ -
10.03 Guideway: At-grade in mixed traffic		17720.00		$ 9,900,000
Embedded Track in Roadway Semi Exclusive R/W	RF	17720.00	$ 560.00	$ 9,923,200
				$ -
				$ -
				$ -
10.04 Guideway: Aerial structure		25080.00		$ 347,300,000
Typical Span*	RF	23780.00	$ 13,400.00	$ 318,652,000
Long Span LRT Bridge	RF	1300.00	$ 22,000.00	$ 28,600,000
				$ -
				$ -
				$ -
10.05 Guideway: Built-up fill		0.00		$ -
None				$ -
				$ -
				$ -
10.06 Guideway: Underground cut & cover		0.00		$ -
None				$ -
				$ -
10.07 Guideway: Underground tunnel		0.00		$ -
None				$ -
				$ -
10.08 Guideway: Retained cut or fill		3700.00		$ 9,600,000
MSE Walls	RF	3700.00	$ 2,600.00	$ 9,620,000
				$ -
				$ -
10.09 Track: Direct fixation		28,780.00		$ 20,700,000
10.04 +10.09	RF	28780.00	$ 720.00	$ 20,721,600
				$ -
				$ -
				$ -
				$ -
10.10 Track: Embedded		17,720.00		$ 16,300,000
10.03	RF	17720.00	$ 920.00	$ 16,302,400
				$ -
				$ -
				$ -
				$ -
10.11 Track: Ballasted				$ 700,000
Ballasted Track	RF	1438.00	$ 460.00	$ 661,480
				$ -
				$ -
				$ -
				$ -
10.12 Track: Special (switches, turnouts)				$ 6,000,000
No. 8 Diamond Double Crossover Power Operated Ballasted	EA	1.00	$ 760,000.00	$ 760,000
No. 8 Diamond Single Crossover Power Operated Embedded	EA	6.00	$ 480,000.00	$ 2,880,000
No. 8 Diamond Single Crossover Power Operated Ballasted	EA	0.00	$ 420,000.00	$ -
No. 8 Diamond Single Crossover Power Operated Fixed	EA	4.00	$ 580,000.00	$ 2,320,000
10.13 Track: Vibration and noise dampening				$ -
None				$ -
				$ -
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)		**7**		**$ 95,300**
20.01 At-grade station, stop, shelter, mall, terminal, platform		4.00		$ 16,600,000
At-grade station, Center Platform		3.00	$ 3,800,000.00	$ 11,400,000
At-grade station, Split Platform		1.00	$ 5,200,000.00	$ 5,200,000
				$ -
				$ -
				$ -
20.02 Aerial station, stop, shelter, mall, terminal, platform		3.00		$ 21,600,000
LRT Station Elevated	EA	3.00	$ 7,200,000.00	$ 21,600,000
				$ -
20.03 Underground station, stop, shelter, mall, terminal, platform		0.00		$ -
None				$ -
				$ -
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.		0.00		$ -
				$ -
				$ -
20.05 Joint development				$ -
				$ -
				$ -
20.06 Automobile parking multi-story structure				$ 54,800,000
	EA		$ 4,000.00	$ -
Parking Lot Structure Stalls	EA	2383.00	$ 23,000.00	$ 54,809,000
				$ -

20.07 Elevators, escalators				$ 2,300,000
Assume 1 Elevator & 2 Escalators Per Aerial Station	EA	9.00	$ 250,000.00	$ 2,250,000
				$ -
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS		44238.00		$ 34,000
30.01 Administration Building: Office, sales, storage, revenue counting				
30.02 Light Maintenance Facility				
30.03 Heavy Maintenance Facility	SF	54000	$ 630	$ 34,020,000
30.04 Storage or Maintenance of Way Building				
30.05 Yard and Yard Track				
40 SITEWORK & SPECIAL CONDITIONS		44238.00		$ 44,318
40.01 Demolition, Clearing, Earthwork				$ 2,700,000
Demlolition, Clearing Within Street		17720.00	$ 150.00	$ 2,658,000
				$ -
				$ -
				$ -
				$ -
40.02 Site Utilities, Utility Relocation		46,500.00		$ 22,900,000
Aerial Guideway	RF	28780.00	$ 440.00	$ 12,663,200
At-Grade Guideway within Street	RF	17720.00	$ 580.00	$ 10,277,600
Relocate 48" DW Line	LF		$ 270.00	$ -
				$ -
				$ -
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments				$ -
Remove Contaminated Soil In ROW	RF		$ 160.00	$ -
				$ -
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks				$ -
Environmental Mitigation Within ROW	RF		$ 70.00	$ -
				$ -
				$ -
				$ -
40.05 Site structures including retaining walls, sound walls				$ 637,920
Soundwalls	RF	0.00	$ 380.00	$ -
Retaining Walls (Assume 20% At Grade Alignment Requires 3' Walls)	RF	3544.00	$ 180.00	$ 637,920
40.06 Pedestrian / bike access and accommodation, landscaping				$ 18,080,000
Bike Path	RF	0.00	$ 280.00	$ -
Landscaping Street Scape, Urban Design Features	RF	45200.00	$ 400.00	$ 18,080,000
				$ -
				$ -
				$ -
40.07 Automobile, bus, van accessways including roads, parking lots				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
40.08 Temporary Facilities and other indirect costs during construction				$ -
				$ -
				$ -
50 SYSTEMS		44238.00		$ 108,300
50.01 Train control and signals				$ 19,900,000
Signal Substation & Cables	RF	44238.00	$ 450.00	$ 19,907,100
Ductbank & Pullboxes	RF	44238.00	$ 130.00	$ 5,750,940
50.02 Traffic signals and crossing protection				$ 4,200,000
Major Intersection	EA	4.00	$ 300,000.00	$ 1,200,000
Minor Intersection	EA	15.00	$ 150,000.00	$ 2,250,000
Grade Crossings	EA	0.00	$ 250,000.00	$ -
Areial Intersection	EA	12.00	$ 60,000.00	$ 720,000
				$ -
				$ -
				$ -
				$ -
				$ -
50.03 Traction power supply: substations				$ 21,300,000
Hardware Procurement	RF	44238.00	$ 430.00	$ 19,022,340
Building Installation	RF	44238.00	$ 52.00	$ 2,300,376
				$ -
50.04 Traction power distribution: catenary and third rail				$ 29,300,000
Catenary OCS Pole	RF	44238.00	$ 470.00	$ 20,791,860
Ductbank Pullboxes	RF	44238.00	$ 130.00	$ 5,750,940
OCS Poles Foundations	RF	44238.00	$ 62.00	$ 2,742,756
50.05 Communications				$ 25,200,000
Communications Equipment Installation	RF	44238.00	$ 440.00	$ 19,464,720
Ductbank & Pullboxes	RF	44238.00	$ 130.00	$ 5,750,940
				$ -
50.06 Fare collection system and equipment				$ 6,000,000
Ticket Vending Machines, Total Corridor Length Times Cost Multiplier*	EA	7.00	$ 860,000.00	$ 6,020,000
				$ -
50.07 Central Control				$ 2,400,000
	EA	1.00	$ 2,400,000.00	$ 2,400,000
				$ -
Construction Subtotal (10 - 50)		44238.00		$ 693,118
60 ROW, LAND, EXISTING IMPROVEMENTS		44238.00		$ 159,700
60.01 Purchase or lease of real estate				$ 159,700,000
	SF			$ -
ROW	SF	798713.00	$ 200.00	$ 159,742,600
				$ -
				$ -
				$ -
60.02 Relocation of existing households and businesses				$ -
				$ -
				$ -
				$ -

				$ -
				$ -
70 VEHICLES (number)		**36**		$ 126,000
70.01 Light Rail	EA	36	$ 3,500,000	$ 126,000,000
70.02 Heavy Rail				
70.03 Commuter Rail				
70.04 Bus				$ -
70.05 Other				
70.06 Non-revenue vehicles				
70.07 Spare parts				
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)				$ 200,000
80.01 Preliminary Engineering	20,794	3% 10-50		$ 20,794
80.02 Final Design	48,518	7% 10-50		$ 48,518
80.03 Project Management for Design and Construction	69,312	10% 10-50		$ 69,312
80.04 Construction Administration & Management	34,656	5% 10-50		$ 34,656
80.05 Professional Liability and other Non-Construction Insurance		0% 10-50		
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.	6,931	1% 10-50		$ 6,931
80.07 Surveys, Testing, Investigation, Inspection	13,862	2% 10-50		$ 13,862
80.08 Start up	13,862	1.5% 10-50		$ 13,862
				$ 1,178,818

* All Unit Prices Taken From Expo Phase 2 Cost Estimate

MAIN WORKSHEET-BUILD ALTERNATIVE

(Rev.11, May 2, 2008)

Metro Eastside Phase II

Alternative 3B Beverly, Whittier, Rosemead, Blvd.

Today's Date **8/27/09**

Yr of Base Year $ 2008

Yr of Revenue Ops 2008

	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	YOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	**9.17**	322,800	69,796	**392,596**	**$ 42,806**	**51%**	**26%**	**392,596**
10.01 Guideway: At-grade exclusive right-of-way	0.27	700.00	175	875	$ 3,286			875
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	0.00	0.00	0	0				0
10.03 Guideway: At-grade in mixed traffic	4.84	14300.00	3,575	17,875	$ 3,690			17,875
10.04 Guideway: Aerial structure	3.38	252000.00	63,000	315,000	$ 93,229			315,000
10.05 Guideway: Built-up fill	0.00	0.00	0	0				0
10.06 Guideway: Underground cut & cover	0.00	0.00	0	0				0
10.07 Guideway: Underground tunnel	0.00	0.00	0	0				0
10.08 Guideway: Retained cut or fill	0.68	9400.00	2,350	11,750	$ 17,233			11,750
10.09 Track: Direct fixation		15,400	231	15,631				15,631
10.10 Track: Embedded		23,500	353	23,853				23,852
10.11 Track: Ballasted		600	9	609				609
10.12 Track: Special (switches, turnouts)		6,900	104	7,004				7,003
10.13 Track: Vibration and noise dampening		0	0	0				0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	**7**	95,500	23,875	**119,375**	**$ 17,054**	**16%**	**8%**	**119,375**
20.01 At-grade station, stop, shelter, mall, terminal, platform	6	25600	6,400	32,000	$ 5,333			32,000
20.02 Aerial station, stop, shelter, mall, terminal, platform	1	7200	1,800	9,000	$ 9,000			9,000
20.03 Underground station, stop, shelter, mall, terminal, platform	0	0	0	0				0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	0	0	0	0				0
20.05 Joint development		0	0	0				0
20.06 Automobile parking multi-story structure		61,900	15,475	77,375				77,375
20.07 Elevators, escalators		800	200	1,000				1,000
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	9.17	34,000	5,100	**39,100**	**$ 4,263**	**5%**	**3%**	**39,100**
30.01 Administration Building: Office, sales, storage, revenue counting				0				0
30.02 Light Maintenance Facility				0				0
30.03 Heavy Maintenance Facility		34,000	5,100	39,100				39,100
30.04 Storage or Maintenance of Way Building				0				0
30.05 Yard and Yard Track				0				0
40 SITEWORK & SPECIAL CONDITIONS	9.17	47,229	14,169	**61,398**	**$ 6,694**	**8%**	**4%**	**61,398**
40.01 Demolition, Clearing, Earthwork		3,800	1,140	4,940				4,940
40.02 Site Utilities, Utility Relocation		24,300	7,290	31,590				31,590
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments		0	0	0				0
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks		0	0	0				0
40.05 Site structures including retaining walls, sound walls		921	276	1,197				1,197
40.06 Pedestrian / bike access and accommodation, landscaping		18,208	5,462	23,670				23,670
40.07 Automobile, bus, van accessways including roads, parking lots		0	0	0				0
40.08 Temporary Facilities and other indirect costs during construction		0	0	0				0
50 SYSTEMS	9.17	116,600	34,980	**151,580**	**$ 16,527**	**20%**	**10%**	**151,580**
50.01 Train control and signals		26,000	7,800	33,800				33,800
50.02 Traffic signals and crossing protection		5,300	1,590	6,890				6,890
50.03 Traction power supply: substations		21,600	6,480	28,080				28,080
50.04 Traction power distribution: catenary and third rail		29,700	8,910	38,610				38,610
50.05 Communications		25,600	7,680	33,280				33,280
50.06 Fare collection system and equipment		6,000	1,800	7,800				7,800
50.07 Central Control		2,400	720	3,120				3,120
Construction Subtotal (10 - 50)	9.17	616,129	147,920	**764,049**	**$ 83,306**	**100%**	**50%**	**764,048**
60 ROW, LAND, EXISTING IMPROVEMENTS	9.17	196,000	78,400	**274,400**	**$ 29,918**		**18%**	**274,400**
60.01 Purchase or lease of real estate		196,000	78,400	274,400				274,400
60.02 Relocation of existing households and businesses		0	0	0				0
70 VEHICLES (number)	**36**	126,000	6,300	**132,300**	**$ 3,675**		**9%**	**132,300**
70.01 Light Rail	36	126,000	6,300	132,300	$ 3,675			132,300
70.02 Heavy Rail				0				0
70.03 Commuter Rail				0				0
70.04 Bus				0				0
70.05 Other				0				0
70.06 Non-revenue vehicles				0				0
70.07 Spare parts				0				0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	9.17	184,839	25,816	**210,654**	**$ 22,968**	**28%**	**14%**	**210,654**
80.01 Preliminary Engineering		18,484	2,773	21,256				21,256
80.02 Final Design		43,129	6,469	49,598				49,598
80.03 Project Management for Design and Construction		61,613	9,242	70,855				70,855
80.04 Construction Administration & Management		30,806	4,621	35,427				35,427
80.05 Professional Liability and other Non-Construction Insurance				0				0
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.		6,161	678	6,839				6,839
80.07 Surveys, Testing, Investigation, Inspection		12,323	1,848	14,171				14,171
80.08 Start up		12,323	185	12,507				12,507
Subtotal (10 - 80)	9.17	1,122,968	258,435	**1,381,403**	**$ 150,618**		**91%**	**1,381,402**
90 UNALLOCATED CONTINGENCY				**138,140**			**9%**	**138,140**
Subtotal (10 - 90)	9.17			**1,519,543**	**$ 165,679**		**100%**	**1,519,543**
100 FINANCE CHARGES				**0**			**0%**	**0**
Total Project Cost (10 - 100)	9.17			**1,519,543**	**$ 165,679**		**100%**	**1,519,543**

Allocated Contingency as % of Base Yr Dollars w/o Contingency	23.01%
Unallocated Contingency as % of Base Yr Dollars w/o Contingency	12.30%
Total Contingency as % of Base Yr Dollars w/o Contingency	35.31%
Unallocated Contingency as % of Subtotal (10 - 80)	10.00%
YOE Construction Cost per Mile (X000)	$83,306
YOE Total Project Cost per Mile Not Including Vehicles (X000)	$151,254
YOE Total Project Cost per Mile (X000)	$165,679

Alternative 3B Beverly Rosemead Whittier Blvd.

	Unit	Quantity	Unit Cost	Base Year Dollars w/o Contingency (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)		**44826.00**		$ 322,800
10.01 Guideway: At-grade exclusive right-of-way		1406.00		$ 700,000
Ballasted Track		1406.00	$ 480.00	$ 674,880
				$ -
				$ -
				$ -
				$ -
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)		0.00		$ -
				$ -
				$ -
				$ -
				$ -
				$ -
10.03 Guideway: At-grade in mixed traffic		25580.00		$ 14,300,000
Embedded Track in Roadway Semi Exclusive R/W	RF	25580.00	$ 560.00	$ 14,324,800
				$ -
				$ -
				$ -
10.04 Guideway: Aerial structure		17840.00		$ 252,000,000
Typical Span*	RF	16340.00	$ 13,400.00	$ 218,956,000
Long Span LRT Bridge	RF	1500.00	$ 22,000.00	$ 33,000,000
				$ -
				$ -
				$ -
10.05 Guideway: Built-up fill		0.00		$ -
None				$ -
				$ -
				$ -
10.06 Guideway: Underground cut & cover		0.00		$ -
None				$ -
				$ -
10.07 Guideway: Underground tunnel		0.00		$ -
None				$ -
				$ -
10.08 Guideway: Retained cut or fill		3600.00		$ 9,400,000
MSE Walls	RF	3600.00	$ 2,600.00	$ 9,360,000
				$ -
				$ -
10.09 Track: Direct fixation		21,440.00		$ 15,400,000
10.04 +10.09	RF	21440.00	$ 720.00	$ 15,436,800
				$ -
				$ -
				$ -
				$ -
10.10 Track: Embedded		25,580.00		$ 23,500,000
10.03	RF	25580.00	$ 920.00	$ 23,533,600
				$ -
				$ -
				$ -
				$ -
10.11 Track: Ballasted				$ 600,000
Ballasted Track	RF	1406.00	$ 460.00	$ 646,760
				$ -
				$ -
				$ -
				$ -
10.12 Track: Special (switches, turnouts)				$ 6,900,000
No. 8 Diamond Double Crossover Power Operated Ballasted	EA	1.00	$ 760,000.00	$ 760,000
No. 8 Diamond Single Crossover Power Operated Embedded	EA	8.00	$ 480,000.00	$ 3,840,000
No. 8 Diamond Single Crossover Power Operated Ballasted	EA	0.00	$ 420,000.00	$ -
No. 8 Diamond Single Crossover Power Operated Fixed	EA	4.00	$ 580,000.00	$ 2,320,000
10.13 Track: Vibration and noise dampening				$ -
None				$ -
				$ -
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)		**7**		**$ 95,500**
20.01 At-grade station, stop, shelter, mall, terminal, platform		6.00		$ 25,600,000
At-grade station, Center Platform		4.00	$ 3,800,000.00	$ 15,200,000
At-grade station, Split Platform		2.00	$ 5,200,000.00	$ 10,400,000
				$ -
				$ -
				$ -
20.02 Aerial station, stop, shelter, mall, terminal, platform		1.00		$ 7,200,000
LRT Station Elevated	EA	1.00	$ 7,200,000.00	$ 7,200,000
				$ -
20.03 Underground station, stop, shelter, mall, terminal, platform		0.00		$ -
None				$ -
				$ -
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.		0.00		$ -
				$ -
				$ -
20.05 Joint development				$ -
				$ -
				$ -
20.06 Automobile parking multi-story structure				$ 61,900,000
			$ 4,000.00	$ -
Parking Lot Structure Stalls	EA	2690.00	$ 23,000.00	$ 61,870,000
				$ -

20.07 Elevators, escalators					$ 800,000
Assume 1 Elevator & 2 Escalators Per Aerial Station	EA	3.00	$	250,000.00	$ 750,000
					$ -
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS		44826.00			$ 34,000
30.01 Administration Building: Office, sales, storage, revenue counting					
30.02 Light Maintenance Facility					
30.03 Heavy Maintenance Facility	SF	54000	$	630	$ 34,020,000
30.04 Storage or Maintenance of Way Building					
30.05 Yard and Yard Track					
40 SITEWORK & SPECIAL CONDITIONS		44826.00			$ 47,229
40.01 Demolition, Clearing, Earthwork					$ 3,800,000
Demolition, Clearing Within Street	RF	25580.00	$	150.00	$ 3,837,000
					$ -
					$ -
					$ -
					$ -
40.02 Site Utilities, Utility Relocation		47,020.00			$ 24,300,000
Aerial Guideway	RF	21440.00	$	440.00	$ 9,433,600
At-Grade Guideway within Street	RF	25580.00	$	580.00	$ 14,836,400
					$ -
					$ -
					$ -
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments					$ -
Remove Contaminated Soil In ROW	RF	0.00	$	160.00	$ -
					$ -
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks					$ -
Environmental Mitigation Within ROW	RF	0.00	$	70.00	$ -
					$ -
					$ -
					$ -
40.05 Site structures including retaining walls, sound walls					$ 920,880
Soundwalls	RF	0.00	$	380.00	$ -
Retaining Walls (Assume 20% At Grade Alignment Requires 3' Walls)	RF	5116.00	$	180.00	$ 920,880
40.06 Pedestrian / bike access and accommodation, landscaping					$ 18,208,000
Landscaping & Bike Path	RF	0.00	$	280.00	$ -
Landscaping Street Scape, Urban Design Features	RF	45520.00	$	400.00	$ 18,208,000
					$ -
					$ -
					$ -
40.07 Automobile, bus, van accessways including roads, parking lots					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
40.08 Temporary Facilities and other indirect costs during construction					$ -
					$ -
					$ -
50 SYSTEMS		44826.00			$ 116,600
50.01 Train control and signals					$ 26,000,000
Signal Substation & Cables	RF	44826.00	$	450.00	$ 20,171,700
Ductbank & Pullboxes	RF	44826.00	$	130.00	$ 5,827,380
50.02 Traffic signals and crossing protection					$ 5,300,000
Major Intersection	EA	7.00	$	300,000.00	$ 2,100,000
Minor Intersection	EA	19.00	$	150,000.00	$ 2,850,000
Grade Crossings	EA	0.00	$	250,000.00	$ -
Areial Intersection	EA	6.00	$	60,000.00	$ 360,000
					$ -
					$ -
					$ -
					$ -
					$ -
50.03 Traction power supply: substations					$ 21,600,000
Hardware Procurement	RF	44826.00	$	430.00	$ 19,275,180
Building Installation	RF	44826.00	$	52.00	$ 2,330,952
					$ -
50.04 Traction power distribution: catenary and third rail					$ 29,700,000
Catenary OCS Pole		44826.00	$	470.00	$ 21,068,220
Ductbank Pullboxes		44826.00	$	130.00	$ 5,827,380
OCS Poles Foundations		44826.00	$	62.00	$ 2,779,212
50.05 Communications					$ 25,600,000
Communications Equipment Installation		44826.00	$	440.00	$ 19,723,440
Ductbank & Pullboxes		44826.00	$	130.00	$ 5,827,380
					$ -
50.06 Fare collection system and equipment					$ 6,000,000
Ticket Vending Machines, Total Corridor Length Times Cost Multiplier*	EA	7.00	$	860,000.00	$ 6,020,000
					$ -
50.07 Central Control					$ 2,400,000
	EA	1.00	$	2,400,000.00	$ 2,400,000
					$ -
Construction Subtotal (10 - 50)		44826.00			$ 616,129
60 ROW, LAND, EXISTING IMPROVEMENTS		44826.00			$ 196,000
60.01 Purchase or lease of real estate					$ 196,000,000
					$ -
ROW	SF	980135.00	$	200.00	$ 196,027,000
					$ -
					$ -
					$ -
60.02 Relocation of existing households and businesses					$ -
					$ -
					$ -
					$ -

				$ -
				$ -
70 VEHICLES (number)		**36**		$ 126,000
70.01 Light Rail	EA	36	$ 3,500,000	$ 126,000,000
70.02 Heavy Rail				
70.03 Commuter Rail				
70.04 Bus			$ 450,000	$ -
70.05 Other				
70.06 Non-revenue vehicles				
70.07 Spare parts				
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)		44826.00		$ 200,000
80.01 Preliminary Engineering	18,484	3% 10-50		$ 18,484
80.02 Final Design	43,129	7% 10-50		$ 43,129
80.03 Project Management for Design and Construction	61,613	10% 10-50		$ 61,613
80.04 Construction Administration & Management	30,806	5% 10-50		$ 30,806
80.05 Professional Liability and other Non-Construction Insurance		0% 10-50		
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.	6,161	1% 10-50		$ 6,161
80.07 Surveys, Testing, Investigation, Inspection	12,323	2% 10-50		$ 12,323
80.08 Start up	12,323	1.5% 10-50		$ 12,323
				$ 1,138,129

* All Unit Prices Taken From Expo Phase 2 Cost Estimate

MAIN WORKSHEET-BUILD ALTERNATIVE

(Rev.11, May 2, 2008)

Metro Eastside Phase II

Alternative 5 Washington LRT

Today's Date **8/27/09**

Yr of Base Year $ 2008

Yr of Revenue Ops 2008

	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	YOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	**9.36**	699,900	164,941	**864,841**	**$ 92,371**	**69%**	**39%**	**864,841**
10.01 Guideway: At-grade exclusive right-of-way	0.00	0.00	0	0				0
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	0.00	0.00	0	0				0
10.03 Guideway: At-grade in mixed traffic	0.22	600.00	150	750	$ 3,443			750
10.04 Guideway: Aerial structure	8.97	654300.00	163,575	817,875	$ 91,134			817,875
10.05 Guideway: Built-up fill	0.00	0.00	0	0				0
10.06 Guideway: Underground cut & cover	0.00	0.00	0	0				0
10.07 Guideway: Underground tunnel	0.00	0.00	0	0				0
10.08 Guideway: Retained cut or fill	0.17	2300.00	575	2,875	$ 16,867			2,875
10.09 Track: Direct fixation		34,800	522	35,322				35,322
10.10 Track: Embedded		1,100	17	1,117				1,117
10.11 Track: Ballasted		0	0	0				0
10.12 Track: Special (switches, turnouts)		6,800	102	6,902				6,902
10.13 Track: Vibration and noise dampening		0	0	0				0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	**6**	111,800	27,950	**139,750**	**$ 23,292**	**11%**	**6%**	**139,750**
20.01 At-grade station, stop, shelter, mall, terminal, platform	0	0	0	0				0
20.02 Aerial station, stop, shelter, mall, terminal, platform	6	43200	10,800	54,000	$ 9,000			54,000
20.03 Underground station, stop, shelter, mall, terminal, platform	0	0	0	0				0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	0	0	0	0				0
20.05 Joint development		0	0	0				0
20.06 Automobile parking multi-story structure		64,100	16,025	80,125				80,125
20.07 Elevators, escalators		4,500	1,125	5,625				5,625
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	9.36	23,600	3,540	**27,140**	**$ 2,899**	**2%**	**1%**	**27,140**
30.01 Administration Building: Office, sales, storage, revenue counting				0				0
30.02 Light Maintenance Facility				0				0
30.03 Heavy Maintenance Facility		23,600	3,540	27,140				27,140
30.04 Storage or Maintenance of Way Building				0				0
30.05 Yard and Yard Track				0				0
40 SITEWORK & SPECIAL CONDITIONS	9.36	41,040	12,312	**53,352**	**$ 5,698**	**4%**	**2%**	**53,352**
40.01 Demolition, Clearing, Earthwork		200	60	260				260
40.02 Site Utilities, Utility Relocation		21,900	6,570	28,470				28,470
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments				0				0
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks				0				0
40.05 Site structures including retaining walls, sound walls		40	12	52				52
40.06 Pedestrian / bike access and accommodation, landscaping		18,900	5,670	24,570				24,570
40.07 Automobile, bus, van accessways including roads, parking lots				0				0
40.08 Temporary Facilities and other indirect costs during construction				0				0
50 SYSTEMS	9.36	125,000	37,500	**162,500**	**$ 17,356**	**13%**	**7%**	**162,500**
50.01 Train control and signals		28,200	8,460	36,660				36,660
50.02 Traffic signals and crossing protection		6,000	1,800	7,800				7,800
50.03 Traction power supply: substations		23,400	7,020	30,420				30,420
50.04 Traction power distribution: catenary and third rail		32,100	9,630	41,730				41,730
50.05 Communications		27,700	8,310	36,010				36,010
50.06 Fare collection system and equipment		5,200	1,560	6,760				6,760
50.07 Central Control		2,400	720	3,120				3,120
Construction Subtotal (10 - 50)	9.36	1,001,340	246,243	**1,247,583**	**$ 133,250**	**100%**	**56%**	**1,247,583**
60 ROW, LAND, EXISTING IMPROVEMENTS	9.36	255,600	102,240	**357,840**	**$ 38,220**		**16%**	**357,840**
60.01 Purchase or lease of real estate		255,600	102,240	357,840				357,840
60.02 Relocation of existing households and businesses				0				0
70 VEHICLES (number)	**25**	87,500	4,375	**91,875**	**$ 3,675**		**4%**	**91,875**
70.01 Light Rail	25	87,500	4,375	91,875	$ 3,675			91,875
70.02 Heavy Rail				0				0
70.03 Commuter Rail				0				0
70.04 Bus	0	0	0	0				0
70.05 Other				0				0
70.06 Non-revenue vehicles				0				0
70.07 Spare parts				0				0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	9.36	300,402	41,956	**342,358**	**$ 36,566**	**27%**	**15%**	**342,357**
80.01 Preliminary Engineering		30,040	4,506	34,546				34,546
80.02 Final Design		70,094	10,514	80,608				80,608
80.03 Project Management for Design and Construction		100,134	15,020	115,154				115,154
80.04 Construction Administration & Management		50,067	7,510	57,577				57,577
80.05 Professional Liability and other Non-Construction Insurance				0				0
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.		10,013	1,101	11,115				11,115
80.07 Surveys, Testing, Investigation, Inspection		20,027	3,004	23,031				23,031
80.08 Start up		20,027	300	20,327				20,327
Subtotal (10 - 80)	9.36	1,644,842	394,814	**2,039,656**	**$ 217,849**		**91%**	**2,039,655**
90 UNALLOCATED CONTINGENCY				**203,966**			**9%**	**203,965**
Subtotal (10 - 90)	9.36			**2,243,621**	**$ 239,634**		**100%**	**2,243,620**
100 FINANCE CHARGES				**0**			**0%**	**0**
Total Project Cost (10 - 100)	9.36			**2,243,621**	**$ 239,634**		**100%**	**2,243,620**

Allocated Contingency as % of Base Yr Dollars w/o Contingency	24.00%	
Unallocated Contingency as % of Base Yr Dollars w/o Contingency	12.40%	
Total Contingency as % of Base Yr Dollars w/o Contingency	36.40%	
Unallocated Contingency as % of Subtotal (10 - 80)	10.00%	
YOE Construction Cost per Mile (X000)		$133,250
YOE Total Project Cost per Mile Not Including Vehicles (X000)		$229,821
YOE Total Project Cost per Mile (X000)		$239,634

Alternative 5 Washington LRT

	Unit	Quantity	Unit Cost	Base Year Dollars w/o Contingency (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)		**48535.00**		$ 699,900
10.01 Guideway: At-grade exclusive right-of-way		0.00		$ -
Ballasted Track		0.00	$ 480.00	$ -
				$ -
				$ -
				$ -
				$ -
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)		0.00		$ -
				$ -
				$ -
				$ -
				$ -
				$ -
10.03 Guideway: At-grade in mixed traffic		1150.00		$ 600,000
Embedded Track in Roadway Semi Exclusive R/W	RF	1150.00	$ 560.00	$ 644,000
				$ -
				$ -
				$ -
10.04 Guideway: Aerial structure		47385.00		$ 654,300,000
Typical Span*	RF	45135.00	$ 13,400.00	$ 604,809,000
Long Span LRT Bridge	RF	2250.00	$ 22,000.00	$ 49,500,000
				$ -
				$ -
				$ -
10.05 Guideway: Built-up fill		0.00		$ -
None				$ -
				$ -
				$ -
10.06 Guideway: Underground cut & cover		0.00		$ -
None				$ -
				$ -
10.07 Guideway: Underground tunnel		0.00		$ -
None				$ -
				$ -
10.08 Guideway: Retained cut or fill		900.00		$ 2,300,000
MSE Walls	RF	900.00	$ 2,600.00	$ 2,340,000
				$ -
				$ -
10.09 Track: Direct fixation		48,285.00		$ 34,800,000
10.04 +10.09	RF	48285.00	$ 720.00	$ 34,765,200
				$ -
				$ -
				$ -
				$ -
10.10 Track: Embedded		1,150.00		$ 1,100,000
10.03	RF	1150.00	$ 920.00	$ 1,058,000
				$ -
				$ -
				$ -
				$ -
10.11 Track: Ballasted				$ -
Ballasted Track	RF	0.00	$ 460.00	$ -
				$ -
				$ -
				$ -
				$ -
10.12 Track: Special (switches, turnouts)				$ 6,800,000
No. 8 Diamond Double Crossover Fixed	EA	1.00	$ 980,000.00	$ 980,000
No. 8 Diamond Single Crossover Fixed	EA	10.00	$ 580,000.00	$ 5,800,000
				$ -
10.13 Track: Vibration and noise dampening				$ -
None				$ -
				$ -
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)		**6**		**$ 111,800**
20.01 At-grade station, stop, shelter, mall, terminal, platform		0.00		$ -
				$ -
				$ -
				$ -
				$ -
				$ -
20.02 Aerial station, stop, shelter, mall, terminal, platform		6.00		$ 43,200,000
LRT Station Elevated	EA	6.00	$ 7,200,000.00	$ 43,200,000
				$ -
20.03 Underground station, stop, shelter, mall, terminal, platform		0.00		$ -
None				$ -
				$ -
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.		0.00		$ -
				$ -
				$ -
20.05 Joint development				$ -
				$ -
				$ -
20.06 Automobile parking multi-story structure				$ 64,100,000
		500.00	$ 4,000.00	$ 2,000,000
Parking Lot Structure Stalls	EA	2702.00	$ 23,000.00	$ 62,146,000
				$ -

20.07 Elevators, escalators				$ 4,500,000
Assume 1 Elevator & 2 Escalators Per Aerial Station	EA	18.00	$ 250,000.00	$ 4,500,000
				$ -
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS		48535.00		$ 23,600
30.01 Administration Building: Office, sales, storage, revenue counting				
30.02 Light Maintenance Facility				
30.03 Heavy Maintenance Facility	SF	37500	$ 630	$ 23,625,000
30.04 Storage or Maintenance of Way Building				
30.05 Yard and Yard Track				
40 SITEWORK & SPECIAL CONDITIONS		48535.00		$ 41,040
40.01 Demolition, Clearing, Earthwork				$ 200,000
Demolition, Clearing Within Street	RF	1150.00	$ 150.00	$ 172,500
				$ -
				$ -
				$ -
				$ -
40.02 Site Utilities, Utility Relocation		49,435.00		$ 21,900,000
Aerial Guideway	RF	48285.00	$ 440.00	$ 21,245,400
At-Grade Guideway within Street	RF	1150.00	$ 580.00	$ 667,000
				$ -
				$ -
				$ -
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments				$ -
Remove Contaminated Soil In ROW	RF		$ 160.00	$ -
				$ -
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks				$ -
Environmental Mitigation Within ROW	RF		$ 70.00	$ -
				$ -
				$ -
				$ -
40.05 Site structures including retaining walls, sound walls				$ 40,000
				$ -
Retaining Walls (Assume 20% At Grade Alignment Requires 3' Walls)	RF	230.00	$ 180.00	$ 41,400
40.06 Pedestrian / bike access and accommodation, landscaping				$ 18,900,000
				$ -
Landscaping Street Scape, Urban Design Features	RF	47185.00	$ 400.00	$ 18,874,000
				$ -
				$ -
				$ -
40.07 Automobile, bus, van accessways including roads, parking lots				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
40.08 Temporary Facilities and other indirect costs during construction				$ -
				$ -
				$ -
50 SYSTEMS		48535.00		$ 125,000
50.01 Train control and signals				$ 28,200,000
Signal Substation & Cables	RF	48535.00	$ 450.00	$ 21,840,750
Ductbank & Pullboxes	RF	48535.00	$ 130.00	$ 6,309,550
50.02 Traffic signals and crossing protection				$ 6,000,000
Major Intersection	EA	1.00	$ 300,000.00	$ 300,000
Minor Intersection	EA	1.00	$ 150,000.00	$ 150,000
Aerial Intersection	EA	22.00	$ 250,000.00	$ 5,500,000
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
50.03 Traction power supply: substations				$ 23,400,000
Hardware Procurement	RF	48535.00	$ 430.00	$ 20,870,050
Building Installation	RF	48535.00	$ 52.00	$ 2,523,820
				$ -
50.04 Traction power distribution: catenary and third rail				$ 32,100,000
Catenary OCS Pole	RF	48535.00	$ 470.00	$ 22,811,450
Ductbank Pullboxes	RF	48535.00	$ 130.00	$ 6,309,550
OCS Poles Foundations	RF	48535.00	$ 62.00	$ 3,009,170
50.05 Communications				$ 27,700,000
Communications Equipment Installation	RF	48535.00	$ 440.00	$ 21,355,400
Ductbank & Pullboxes	RF	48535.00	$ 130.00	$ 6,309,550
				$ -
50.06 Fare collection system and equipment				$ 5,200,000
Ticket Vending Machines, Total Corridor Length Times Cost Multiplier*	EA	6.00	$ 860,000.00	$ 5,160,000
				$ -
50.07 Central Control				$ 2,400,000
	EA	1.00	$ 2,400,000.00	$ 2,400,000
				$ -
Construction Subtotal (10 - 50)		48535.00		$ 1,001,340
60 ROW, LAND, EXISTING IMPROVEMENTS		48535.00		$ 255,600
60.01 Purchase or lease of real estate				$ 255,600,000
ROW	SF	1278190.00	$ 200.00	$ 255,638,000
				$ -
				$ -
				$ -
60.02 Relocation of existing households and businesses				$ -
				$ -
				$ -
				$ -

					$ -
					$ -
70 VEHICLES (number)		**25**			$ 87,500
70.01 Light Rail	EA	25		$ 3,500,000	$ 87,500,000
70.02 Heavy Rail					
70.03 Commuter Rail					
70.04 Bus				$ 450,000	$ -
70.05 Other					
70.06 Non-revenue vehicles					
70.07 Spare parts					
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)		48535.00			$ 300,000
80.01 Preliminary Engineering	30,040	3% 10-50			$ 30,040
80.02 Final Design	70,094	7% 10-50			$ 70,094
80.03 Project Management for Design and Construction	100,134	10% 10-50			$ 100,134
80.04 Construction Administration & Management	50,067	5% 10-50			$ 50,067
80.05 Professional Liability and other Non-Construction Insurance		0% 10-50			
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.	10,013	1% 10-50			$ 10,013
80.07 Surveys, Testing, Investigation, Inspection	20,027	2% 10-50			$ 20,027
80.08 Start up	20,027	1.5% 10-50			$ 20,027
					$ 1,644,440

* All Unit Prices Taken From Expo Phase 2 Cost Estimate

APPENDIX D:

Preliminary Operating Plan Technical Memorandum

Eastside Transit Corridor Phase 2
Preliminary Operating Plan Technical Memorandum

Prepared By: HDR Engineering, Inc.

INTRODUCTION

In 2007, the Los Angeles County Metropolitan Transportation Authority (Metro) initiated the Eastside Transit Corridor Phase 2 Alternatives Analysis (AA) process to evaluate alternatives for the second phase of the Metro Gold Line Eastside Extension currently under construction and anticipated to be operational in 2009. The AA Report, completed in January 2009, provided a detailed overview of the Study Area's transportation needs and how they would be served by each of the five proposed Refined Alternatives under consideration at the time. In January 2009, the Metro Board approved four Final Alternatives for further study.

This technical memorandum is an update the Preliminary Operating Plan Technical Memorandum (dated October 15, 2008) developed for the AA phase. This report will cover the approach in developing the operating and maintenance (O&M) cost methodology to estimate the potential costs for each alternative and the operating and maintenance cost results.

OPERATING ASSUMPTIONS AND PLANS

This technical memorandum documents general operating assumptions and plans for each of the Eastside Transit Corridor Phase 2 alternatives based on service levels projected for Year 2030. These assumptions include: operating agency, span of service, vehicle capacity/loading standards, vehicle performance, and station dwell times. The operating plans include station-to-station run time estimates and operating requirements for each build alternative.

Operating Assumptions

Existing transit services in the Eastside Transit Corridor Phase 2 study area are operated by Metro, Montebello Bus Lines, Norwalk Transit System, Monterey Park Spirit Bus and Foothill Transit Zone. Metro provides local and express bus service throughout the study area. The other transit providers offer local bus service in municipalities where the Eastside Transit Corridor Phase 2 extension would operate.

Metro is assumed to be the operating agency for the proposed extension that would connect to Phase 1 of the Metro Gold Line Eastside Extension currently under construction.

Span of Service

The span of service for the proposed light rail transit (LRT) alternatives will be comparable to the weekday, Saturday and Sunday and holiday schedules for current Gold Line schedules, respectively. Table 1 below, summarizes the assumed span of service.

Table 1 METRO LRT Span of Service

DAY OF WEEK	TIME PERIOD	HOURS
Monday-Sunday	Early AM	4:00 - 6:30 a.m.
	AM Peak Period	6:30 - 8:30 a.m.
	Midday	8:30 a.m. - 4:00 p.m.
	PM Peak Period	4:00 – 7:00 p.m.
	Early Evening	7:00 - 8:00 p.m.
	Late Evening	8:00 p.m. - 1:30 a.m.

Service Frequency

Table 2 below, summarizes the assumed service frequency.

Table 2 METRO LRT Service Frequency

DAY OF WEEK	FREQUENCY	HOURS
Weekdays	5 minutes	6:30 - 8:30 a.m., 4:00 – 7:00 p.m.
	10 minutes	8:30 a.m. - 4:00 p.m., 7:00 - 8:00 p.m.
	15 minutes	4:00 - 6:30 a.m., 8:00 p.m. - 1:30 a.m.
Saturday & Sunday	10 minutes	9:00 a.m.– 6:30 p.m.
	15 minutes	7:00 - 9:00 a.m., 6:30 - 7:30 p.m.
	20 minutes	4:00 – 7:00 a.m., 7:30 p.m. – 1:00 a.m.

The assumed service frequencies for LRT operations are based on Metro's Draft 2008 Long Range Transportation Plan criteria.

Vehicle Capacity and Passenger Load Standards

Vehicle capacity and passenger loading standards have been established in order to determine the service frequency and fleet requirements for each of the LRT alternatives. Table 3 summarizes the assumed vehicle capacity (seats) and passenger loading standards for all modes.

Table 3 Vehicle Capacity and Peak Hour Passenger Loading Standards

TRANSIT MODE	SEATS	LOAD STANDARD
LRT	76	190% of seats (a)

(a) Metro load factor

The above load standards were used to determine the appropriate peak hour service frequency for the project alternatives. The projected AM or PM peak hour maximum line loads can be divided by the load standard (e.g., 76 * 1.90 = 144 for LRT) to determine the peak hour throughput required for that route. During off-peak hours, the load standard for all modes will be a maximum of 100 percent (i.e., no standees).

Metro's current load factor standard for LRT = 190% of seated load (144 passengers per light rail vehicle) applied to the peak hour, peak direction maximum load point. However, Metro is expected to reduce its load factor to 175% standard due to overcrowding and increased incidence of wheelchairs, bicycles and strollers. A standard of 190% of seated load will be applied for the Eastside Transit Corridor Phase 2 project based on the load factor that is currently adopted by Metro.

The train consist expected for the design year is based on Metro's expectation for 3-car trains to meet service requirements by Year 2030. Three-car trains will be operated for all weekday and weekend service periods. Metro anticipates, as part of revenue service, a need for a 3-car gap train at each end of the alignment ready to pull into service as a result of a late train and one 3-car train as a maintenance spare due to a failure of a vehicle to operate in service.

Vehicle Performance

LRT vehicles are assumed to have a normal service maximum acceleration rate of about 2.5 miles per hour per second (mphps) from 0 and 30 miles per hour (mph), decreasing to an average acceleration rate of 1.0 mphps from 0 to 65 mph. Normal service braking is assumed to be a constant 2.5 mphps from 65 mph to 0 mph. LRT vehicles are assumed to have a maximum speed of 65 mph. However, sections of the alignment will have speed restrictions due to horizontal and vertical curves and station spacing. Station-to-station LRT time estimates have been developed based on these criteria and are included below.

Station Dwell Times and End-of-Line Layovers

The average station dwell times (i.e., time to allow passengers to board and alight the transit vehicle) for the LRT alternatives are assumed to be 20 seconds at all of the proposed stations, not including the end of line station.

Transit operations plans will include time for end-of-line layovers. Layovers will provide sufficient time for drivers to take breaks as required by union agreement as well as provide for schedule recovery (i.e., a late train can "catch up" to its schedule). Operations plans will include layovers at least 5 minutes for LRT at each end-of-line station. Metro currently uses drop-back operators at most terminal stations for rail operations.

Average Intersection Delay

The average intersection delay assumes a comparable level of signal priority for LRT operations for at-grade alignments. Non-signalized intersections, driveways and other crossings will be signal or gate-controlled and no delay will be incurred. Average intersection delay for existing minor signalized intersections (i.e. major collectors and minor arterials) are assumed to be between 10 seconds, while a 30 second delay is assumed at major arterial intersections.

Operating Plans

Operating plans were developed for the following alternatives:

- State Route(SR)60 LRT
- Beverly Boulevard LRT
- Beverly/Whittier Boulevards LRT(Rosemead and Montebello Boulevards options)
- Washington Boulevard LRT

One-Way Run Time Estimates

Table 4 SR-60 LRT Station-to-Station Run Times

Station	Speed (mph)	Distance (miles) Increment	Distance (miles) Total	Run Time (hr:min:sec)	Delay Time (hr:min:sec)	Dwell Time (hr:min:sec)	Total Time (hr:min:sec)
East 3rd / Atlantic / Pomona			0.00			00:00:20	00:00:20
	35	0.55		00:01:04	00:00:20		
At-Grade to Aerial			0.55			00:00:00	00:01:44
	55	0.93		00:01:23	00:00:00		
Route 60 east of Garfield			1.48			00:00:20	00:03:27
	45	2.31		00:03:27	00:00:00		
Route 60 at Paramount			3.79			00:00:20	00:07:14
	45	2.39		00:03:33	00:00:00		
Route 60 at Santa Anita			6.18			00:00:20	00:11:07
	55	0.74		00:01:21	00:00:00		
Route 60 at Peck			6.92			00:00:00	00:12:28
			6.92	**00:10:48**	**00:00:20**	**00:01:20**	**00:12:28**
					Avg. Speed =	33.3	mph
					Avg. Station Spacing=	1.4	miles

a) **Run-times based on one-way travel.**

Table 5 Beverly Boulevard LRT Station-to-Station Run Times

Station		Max. Speed (mph)	Distance (miles) Location	Increment	Total	Run Time (hr:min:sec)	Delay Time (hr:min:sec)	Dwell Time (hr:min:sec)	Total Time (hr:min:sec)
Atlantic			1000.00		0.00			00:00:20	00:00:20
		35		0.38		00:00:47	00:00:20		
	At-Grade to Aerial		3000.00		0.38			00:00:00	00:01:27
		40		0.98		00:01:31	00:00:00		
	TS (R=250.00')		8158.04		1.36			00:00:00	00:02:58
	Curve 1	20		0.05		00:00:09	00:00:00		
	ST		8423.92		1.41			00:00:00	00:03:07
		20		0.04		00:00:12	00:00:00		
Garfield			8648.92		1.45			00:00:20	00:03:39
		25		0.05		00:00:12	00:00:00		
	TS (R=400.00')		8891.11		1.49			00:00:00	00:03:51
	Curve 2	25		0.02		00:00:03	00:00:00		
	ST		8992.18		1.51			00:00:00	00:03:54
		40		0.66		00:01:03	00:00:00		
	TS (R=300.00')		12495.67		2.18			00:00:00	00:04:57
	Curve 3	25		0.10		00:00:14	00:00:00		
	ST		13017.17		2.28			00:00:00	00:05:11
		35		0.13		00:00:15	00:00:00		
	At-Grade to Aerial		13700.00		2.41			00:00:00	00:05:26
		35		0.51		00:00:59	00:00:10		
Wilcox			16385.32		2.91			00:00:20	00:06:55
		35		1.00		00:01:58	00:01:00		
Montebello			21668.94		3.91			00:00:20	00:10:13
		35		1.51		00:02:50	00:01:30		
Rosemead			29650.44		5.43			00:00:20	00:14:53
		35		0.39		00:00:48	00:00:30		
	Aerial to At-Grade		31700.00		5.81			00:00:00	00:16:11
		35		0.11		00:00:12	00:00:10		
	TS (R=450.00')		32286.35		5.93			00:00:00	00:16:33
	Curve 4	25		0.02		00:00:03	00:00:00		
	ST		32388.70		5.94			00:00:00	00:16:36
		25		0.03		00:00:04	00:00:00		
	TS (R=450.00')		32529.20		5.97			00:00:00	00:16:40
	Curve 5	25		0.02		00:00:03	00:00:00		
	ST		32630.55		5.99			00:00:00	00:16:43
		25		0.22		00:00:32	00:00:00		
	TS (R=450.00')		33795.59		6.21			00:00:00	00:17:15
	Curve 6	25		0.06		00:00:08	00:00:00		
	ST		34097.31		6.27			00:00:00	00:17:23
		35		0.23		00:00:25	00:00:00		
	Aerial to At-Grade		35300.00		6.50			00:00:00	00:17:48
		35		0.76		00:01:25	00:00:00		
Norwalk			39289.94		7.25			00:00:20	00:19:33
		35		0.70		00:01:27	00:00:00		
Broadway			42996.00		7.95			00:00:20	00:21:20
		35		0.62		00:01:18	00:00:00		
Philadelphia			46257.28		8.57			00:00:20	00:22:58
		35		0.21		00:00:30	00:00:00		
	TS (R=500.00')		47375.63		8.78			00:00:00	00:23:28
	Curve 7	30		0.05		00:00:05	00:00:00		
	ST		47616.84		8.83			00:00:00	00:23:33
		35		0.10		00:00:11	00:00:00		
	TS (R=500.00')		48136.76		8.93			00:00:00	00:23:44
	Curve 8	30		0.05		00:00:08	00:00:00		
	ST		48389.43		8.98			00:00:00	00:23:52
		10		0.01		00:00:06	00:00:00		
Mar Vista			48450.00		8.99			00:00:00	00:23:58
					8.99	**00:17:38**	**00:03:40**	**00:02:40**	**00:23:58**
							Avg. Speed =	22.5	mph
							Avg. Station Spacing=	1.1	miles

a) **Run-times based on one-way travel.**

Table 6 Beverly/Whittier Boulevards LRT (Rosemead Boulevard Option) Station-to-Station Run Times

Station		Max. Speed (mph)	Distance (miles) Location	Increment	Total	Run Time (hr:min:sec)	Delay Time (hr:min:sec)	Dwell Time (hr:min:sec)	Total Time (hr:min:sec)
Atlantic			1000.00		0.00			00:00:20	00:00:20
		35		0.38		00:00:47	00:00:20		
	At-Grade to Aerial		3000.00		0.38			00:00:00	00:01:27
		40		0.98		00:01:31	00:00:00		
	TS (R=250.00')		8158.04		1.36			00:00:00	00:02:58
	Curve 1	20		0.05		00:00:09	00:00:00		
	ST		8423.92		1.41			00:00:00	00:03:07
		20		0.04		00:00:12	00:00:00		
Garfield			8648.92		1.45			00:00:20	00:03:39
		25		0.05		00:00:12	00:00:00		
	TS (R=400.00')		8891.11		1.49			00:00:00	00:03:51
	Curve 2	25		0.02		00:00:03	00:00:00		
	ST		8992.18		1.51			00:00:00	00:03:54
		40		0.66		00:01:03	00:00:00		
	TS (R=300.00')		12495.67		2.18			00:00:00	00:04:57
	Curve 3	25		0.10		00:00:14	00:00:00		
	ST		13017.17		2.28			00:00:00	00:05:11
		35		0.28		00:00:30	00:00:00		
	Aerial to At-Grade		14500.00		2.56			00:00:00	00:05:41
		35		0.38		00:00:46	00:00:10		
Wilcox			16520.32		2.94			00:00:20	00:06:57
		35		0.98		00:01:56	00:01:00		
Montebello			21703.23		3.92			00:00:20	00:10:13
		35		1.40		00:02:38	00:01:30		
Rosemead/Beverly			29079.31		5.32			00:00:20	00:14:41
		10		0.08		00:00:32	00:00:30		
	TS (R=150.00')		29515.40		5.40			00:00:00	00:15:43
	Curve 4	10		0.04		00:00:15	00:00:00		
	ST		29734.31		5.44			00:00:00	00:15:58
		35		0.32		00:00:37	00:00:00		
	Aerial to At-Grade		31400.00		5.76			00:00:00	00:16:35
		40		0.29		00:00:32	00:00:00		
	TS (R=150.00')		32950.34		6.05			00:00:00	00:17:07
	Curve 5	10		0.04		00:00:14	00:00:00		
	ST		33141.38		6.09			00:00:00	00:17:21
		5		0.00		00:00:03	00:00:00		
Rosemead/Whittier			33157.15		6.09			00:00:20	00:17:44
		40		1.05		00:01:45	00:00:00		
	Aerial to At-Grade		38700.00		7.14			00:00:00	00:19:29
		35		0.24		00:00:31	00:00:10		
Norwalk			39951.68		7.38			00:00:20	00:20:30
		35		1.53		00:02:46	00:01:00		
	TS (R=350.00')		48032.12		8.91			00:00:00	00:24:16
	Curve 6	20		0.13		00:00:23	00:00:00		
	ST		48696.70		9.03			00:00:00	00:24:39
		20		0.04		00:00:07	00:00:00		
	TS (R=350.00')		48902.28		9.07			00:00:00	00:24:46
	Curve 7	20		0.02		00:00:04	00:00:00		
	ST		49002.99		9.09			00:00:00	00:24:50
		10		0.01		00:00:05	00:00:00		
Mar Vista			49041.26		9.10			00:00:00	00:24:55
					9.10	**00:17:55**	**00:04:40**	**00:02:20**	**00:24:55**
							Avg. Speed =	21.9	mph
							Avg. Station Spacing=	1.3	miles

a) **Run-times based on one-way travel.**

Table 7 Beverly/Whittier Boulevards LRT (Montebello Boulevard Option) Station-to-Station Run Times

Station		Max. Speed (mph)	Distance (miles) Location	Increment	Total	Run Time (hr:min:sec)	Delay Time (hr:min:sec)	Dwell Time (hr:min:sec)	Total Time (hr:min:sec)
Atlantic			1000.00		0.00			00:00:20	00:00:20
		35		0.38		00:00:47	00:00:20		
	At-Grade to Aerial		3000.00		0.38			00:00:00	00:01:27
		40		0.98		00:01:31	00:00:00		
	TS (R=250.00')		8158.04		1.36			00:00:00	00:02:58
	Curve 1	20		0.05		00:00:09	00:00:00		
	ST		8423.92		1.41			00:00:00	00:03:07
		20		0.04		00:00:12	00:00:00		
Garfield			8648.92		1.45			00:00:20	00:03:39
		25		0.05		00:00:12	00:00:00		
	TS (R=400.00')		8891.11		1.49			00:00:00	00:03:51
	Curve 2	25		0.02		00:00:03	00:00:00		
	ST		8992.18		1.51			00:00:00	00:03:54
		40		0.66		00:01:03	00:00:00		
	TS (R=300.00')		12495.67		2.18			00:00:00	00:04:57
	Curve 3	25		0.10		00:00:14	00:00:00		
	ST		13017.17		2.28			00:00:00	00:05:11
		35		0.28		00:00:30	00:00:00		
	Aerial to At-Grade		14500.00		2.56			00:00:00	00:05:41
		35		0.38		00:00:46	00:00:10		
Wilcox			16520.32		2.94			00:00:20	00:06:57
		35		0.95		00:01:52	00:01:00		
Beverly Montebello			21526.88		3.89			00:00:20	00:10:09
		10		0.01		00:00:05	00:00:30		
	TS (R=150.00')		21565.16		3.89			00:00:00	00:10:44
	Curve 4	10		0.04		00:00:16	00:00:00		
	ST		21801.06		3.94			00:00:00	00:11:00
		35		0.21		00:00:26	00:00:00		
	At-Grade to Aerial		22899.68		4.15			00:00:00	00:11:26
		35		0.25		00:00:29	00:00:00		
	TS (R=100.00')		24227.31		4.40			00:00:00	00:11:55
	Curve 5	10		0.03		00:00:11	00:00:00		
	ST		24387.39		4.43			00:00:00	00:12:06
		10		0.10		00:00:36	00:00:00		
Whittier Montebello			24892.39		4.53			00:00:20	00:13:02
		35		0.54		00:01:04	00:00:00		
	TS (R=500.00')		27733.65		5.06			00:00:00	00:14:06
	Curve 6	20		0.02		00:00:04	00:00:00		
	ST		27840.43		5.08			00:00:00	00:14:10
		20		0.02		00:00:03	00:00:00		
	TS (R=500.00')		27942.49		5.10			00:00:00	00:14:13
	Curve 7	20		0.02		00:00:04	00:00:00		
	ST		28049.27		5.12			00:00:00	00:14:17
		35		0.93		00:01:45	00:00:00		
Rosemead			32960.01		6.05			00:00:20	00:16:22
		45		1.09		00:01:40	00:00:00		
	Aerial to At-Grade		38700.00		7.14			00:00:00	00:18:02
		45		0.20		00:00:25	00:00:10		
Norwalk			39754.54		7.34			00:00:20	00:18:57
		35		1.57		00:02:49	00:01:00		
	TS (R=350.00')		48032.12		8.91			00:00:00	00:22:46
	Curve 8	20		0.02		00:00:03	00:00:00		
	ST		48132.83		8.93			00:00:00	00:22:49
		20		0.02		00:00:04	00:00:00		
	TS (R=350.00')		48238.41		8.95			00:00:00	00:22:53
	Curve 9	20		0.02		00:00:03	00:00:00		
	ST		48339.11		8.97			00:00:00	00:22:56
		20		0.10		00:00:21	00:00:00		
Mar Vista			48844.11		9.06			00:00:00	00:23:17
					9.06	**00:17:47**	**00:03:10**	**00:02:20**	**00:23:17**
							Avg. Speed =	23.4	mph
							Avg. Station Spacing=	1.3	miles

a) Run-times based on one-way travel.

Table 8 Washington Boulevard LRT Station-to-Station Run Times

Station		Max. Speed (mph)	Distance (miles) Location	Increment	Total	Run Time (hr:min:sec)	Delay Time (hr:min:sec)	Dwell Time (hr:min:sec)	Total Time (hr:min:sec)
Atlantic			1000.00		0.00			00:00:20	00:00:20
		35		0.38		00:00:47	00:00:20		
	At-Grade to Aerial		3000.00		0.38			00:00:00	00:01:27
		40		0.98		00:01:31	00:00:00		
	TS (R=250.00')		8158.04		1.36			00:00:00	00:02:58
	Curve 1	20		0.05		00:00:09	00:00:00		
	ST		8423.92		1.41			00:00:00	00:03:07
		20		0.05		00:00:10	00:00:00		
Garfield			8714.29		1.46			00:00:20	00:03:37
		20		0.03		00:00:10	00:00:00		
	TS (R=350.00')		8879.23		1.49			00:00:00	00:03:47
	Curve 2	20		0.02		00:00:03	00:00:00		
	ST		8964.17		1.51			00:00:00	00:03:50
		40		1.16		00:01:49	00:00:00		
	TS (R=500.00')		15082.12		2.67			00:00:00	00:05:39
	Curve 3	30		0.11		00:00:13	00:00:00		
	ST		15676.11		2.78			00:00:00	00:05:52
		30		0.05		00:00:13	00:00:00		
Whittier			15964.25		2.83			00:00:20	00:06:25
		55		0.97		00:01:29	00:00:00		
	TS (R=450.00')		21110.78		3.81			00:00:00	00:07:54
	Curve 4	25		0.13		00:00:19	00:00:00		
	ST		21812.99		3.94			00:00:00	00:08:13
		55		0.75		00:01:14	00:00:00		
Greenwood			25768.34		4.69			00:00:20	00:09:47
		55		0.47		00:00:56	00:00:00		
	TS (R=550.00')		28249.88		5.16			00:00:00	00:10:43
	Curve 5	25		0.01		00:00:02	00:00:00		
	ST		28323.67		5.17			00:00:00	00:10:45
		25		0.02		00:00:03	00:00:00		
	TS (R=350.00')		28433.25		5.20			00:00:00	00:10:48
	Curve 6	25		0.02		00:00:04	00:00:00		
	ST		28563.67		5.22			00:00:00	00:10:52
		55		0.94		00:01:27	00:00:00		
Rosemead			33525.57		6.16			00:00:20	00:12:39
		55		1.70		00:02:24	00:00:00		
Norwalk			42480.17		7.86			00:00:20	00:15:23
		55		1.41		00:02:05	00:00:00		
Lambert			49915.23		9.26			00:00:00	00:17:28
					9.26	**00:15:08**	**00:00:20**	**00:02:00**	**00:17:28**
							Avg. Speed =	31.8	mph
							Avg. Station Spacing=	1.5	miles

a) **Run-times based on one-way travel.**

Operating Requirements

Table 9 TSM Alternative Operating Requirements

Route	From	To	Run Time (min)	Distance (Miles)	Day	---Headway--- Peak	Base	Eve.	---Train Consist--- Peak	Base	Eve.	Peak LRVs	-----Annual Revenue----- Car-Miles	Car-Hours	Train-Hours	Lay Over	Cycle Time	---Trains--- Peak	Base	Eve.
Gold	Pomona/Atlantic	Sierra Madre Villa	57.0	19.5	M-F	5.0	10.0	15.0	3	3	3	75	4,249,700	219,840	73,280	5.5	125.0	25	13	9
					Sat	10.0	15.0	20.0	3	3	3		574,900	32,210	10,740			13	9	7
					Sun	10.0	15.0	20.0	3	3	3		652,300	36,550	12,180			13	9	7
ESTIMATED TOTALS:												75	5,476,900	288,600	96,200			25	13	9
DIFFERENCE FROM EXISTING GOLD LINE:												57	3,764,900	213,700	53,660			16	7	5
READY CARS:												9								
PEAK REVENUE TOTAL:												84								
MAINTENANCE SPARES:												17								
TOTAL FLEET:												101								

a) Maintenance spare ratio is 20% of peak revenue total.
b) Ready cars include 4 existing cars and an additional 5 ready cars.

Table 10 SR-60 LRT Operating Requirements

Route	From	To	Run Time (min)	Distance (Miles)	Day	---Headway--- Peak	Base	Eve.	---Train Consist--- Peak	Base	Eve.	Peak LRVs	-----Annual Revenue----- Car-Miles	Car-Hours	Train-Hours	Lay Over	Cycle Time	---Trains--- Peak	Base	Eve.
Gold	Peck	Sierra Madre Villa	69.5	26.4	M-F	5.0	10.0	15.0	3	3	3	90	5,757,800	255,270	85,090	5.5	150.0	30	15	10
					Sat	10.0	15.0	20.0	3	3	3		779,000	36,890	12,300			15	10	8
					Sun	10.0	15.0	20.0	3	3	3		883,800	41,860	13,950			15	10	8
ESTIMATED TOTALS:												90	7,420,600	334,020	111,340			30	15	10
DIFFERENCE FROM TSM BASELINE:												15	1,943,700	45,420	15,140			5	2	1
READY CARS:												9								
PEAK REVENUE TOTAL:												99								
MAINTENANCE SPARES:												20								
TOTAL FLEET:												119								

a) Maintenance spare ratio is 20% of peak revenue total.

Table 11 Beverly Boulevard LRT Operating Requirements

Route	From	To	Run Time (min)	Distance (Miles)	Day	---Headway--- Peak	Base	Eve.	---Train Consist--- Peak	Base	Eve.	Peak LRVs	-----Annual Revenue----- Car-Miles	Car-Hours	Train-Hours	Lay Over	Cycle Time	---Trains--- Peak	Base	Eve.
Gold	Mar Vista	Sierra Madre Villa	81.0	28.5	M-F	5.0	10.0	15.0	3	3	3	105	6,208,900	303,280	101,090	6.5	175.0	35	18	12
					Sat	10.0	15.0	20.0	3	3	3		840,000	43,520	14,510			18	12	9
					Sun	10.0	15.0	20.0	3	3	3		953,100	49,380	16,460			18	12	9
ESTIMATED TOTALS:												105	8,002,000	396,180	132,060			35	18	12
DIFFERENCE FROM TSM BASELINE:												30	2,525,100	107,580	35,860			10	5	3
READY CARS:												9								
PEAK REVENUE TOTAL:												114								
MAINTENANCE SPARES:												23								
TOTAL FLEET:												137								

a) Maintenance spare ratio is 20% of peak revenue total.

Table 12 Beverly/Whittier Boulevards LRT (Rosemead Boulevard Option) Operating Requirements

Route	From	To	Run Time (min)	Distance (Miles)	Day	---Headway--- Peak	Base	Eve.	---Train Consist--- Peak	Base	Eve.	Peak LRVs	-----Annual Revenue----- Car-Miles	Car-Hours	Train-Hours	Lay Over	Cycle Time	---Trains--- Peak	Base	Eve.
Gold	Mar Vista	Sierra Madre Villa	81.9	28.6	M-F	5.0	10.0	15.0	3	3	3	105	6,232,900	303,280	101,090	5.6	175.0	35	18	12
					Sat	10.0	15.0	20.0	3	3	3		843,200	43,520	14,510			18	12	9
					Sun	10.0	15.0	20.0	3	3	3		956,800	49,380	16,460			18	12	9
ESTIMATED TOTALS:												105	8,032,900	396,180	132,060			35	18	12
DIFFERENCE FROM TSM BASELINE:												30	2,556,000	107,580	35,860			10	5	3
READY CARS:												9								
PEAK REVENUE TOTAL:												114								
MAINTENANCE SPARES:												23								
TOTAL FLEET:												137								

a) Maintenance spare ratio is 20% of peak revenue total.

Table 13 Beverly/Whittier Boulevards LRT (Montebello Boulevard Option) Operating Requirements

Route	From	To	Run Time (min)	Distance (Miles)	Day	---Headway--- Peak	Base	Eve.	---Train Consist--- Peak	Base	Eve.	Peak LRVs	-----Annual Revenue----- Car-Miles	Car-Hours	Train-Hours	Lay Over	Cycle Time	---Trains--- Peak	Base	Eve.
Gold	Philadelphia	Sierra Madre Villa	80.3	28.6	M-F	5.0	10.0	15.0	3	3	3	105	6,224,100	303,280	101,090	7.2	175.0	35	18	12
					Sat	10.0	15.0	20.0	3	3	3		842,100	43,520	14,510			18	12	9
					Sun	10.0	15.0	20.0	3	3	3		955,400	49,380	16,460			18	12	9
ESTIMATED TOTALS:												105	8,021,600	396,180	132,060			35	18	12
DIFFERENCE FROM TSM BASELINE:												30	2,544,700	107,580	35,860			10	5	3
READY CARS:												9								
PEAK REVENUE TOTAL:												114								
MAINTENANCE SPARES:												23								
TOTAL FLEET:												137								

a) Maintenance spare ratio is 20% of peak revenue total.

Table 14 Washington Boulevard LRT Operating Requirements

Route	From	To	Run Time (min)	Distance (Miles)	Day	---Headway--- Peak	Base	Eve.	---Train Consist--- Peak	Base	Eve.	Peak LRVs	-----Annual Revenue----- Car-Miles	Car-Hours	Train-Hours	Lay Over	Cycle Time	---Trains--- Peak	Base	Eve.
Gold	Lambert	Sierra Madre Villa	74.5	28.8	M-F	5.0	10.0	15.0	3	3	3	96	6,267,700	273,940	91,310	5.5	160.0	32	16	11
					Sat	10.0	15.0	20.0	3	3	3		848,000	38,840	12,950			16	11	8
					Sun	10.0	15.0	20.0	3	3	3		962,100	44,070	14,690			16	11	8
ESTIMATED TOTALS:												96	8,077,800	356,850	118,950			32	16	11
DIFFERENCE FROM TSM BASELINE:												21	2,600,900	68,250	22,750			7	3	2
READY CARS:												9								
PEAK REVENUE TOTAL:												105								
MAINTENANCE SPARES:												21								
TOTAL FLEET:												126								

a) Maintenance spare ratio is 20% of peak revenue total.

APPENDIX E:

Preliminary Operating and Maintenance Cost Estimate Technical Memorandum

Eastside Transit Corridor Phase 2
Preliminary Operating and Maintenance Cost Estimate Technical Memorandum

Prepared By: HDR Engineering, Inc.

Revised: August 21, 2009

INTRODUCTION

In January 2007, the Los Angeles County Metropolitan Transportation Authority (Metro) initiated the Eastside Transit Corridor Phase 2 Alternatives Analysis (AA) process to evaluate alternatives for the second phase of the Metro Gold Line Eastside Extension currently under construction and anticipate to be operational in 2009. The AA Report, completed in January 2009, provided a detailed overview of the Study Area's transportation needs and how they would be served by each of the five proposed Refined Alternatives under consideration at the time. In January 2009, the Metro Board approved four Final Alternatives and the initiation of Conceptual Engineering to refine and further evaluate the approved alternatives.

This technical memorandum is an update the Preliminary Operating and Maintenance Cost Estimate Technical Memorandum (dated October 15, 2008) developed for the Alternatives Analysis (AA) phase. This report will cover the approach in developing the operating and maintenance (O&M) cost methodology to estimate the potential costs for each alternative and the operating and maintenance cost results.

OPERATING AND MAINTENANCE COST ESTIMATE METHODOLOGY

Definition of Alternatives

Operating and maintenance (O&M) cost models were developed to estimate the annual operating and maintenance costs for the following alternatives:

- No-Build Alternative: The No-Build Alternative is a requirement of the National Environmental Policy Act (NEPA) regulations and serves as the baseline for establishing the environmental impacts of the alternatives, the financial condition of implementing and operating agencies, and the cost-effectiveness of the Transportation Systems Management (TSM) Alternative. The No-Build Alternative includes the region's current and planned improvements, including the Metro Gold Line Eastside Extension currently under construction.

- Baseline/TSM: The Baseline/TSM Alternative is defined as "the best that can be done" to address the identified transportation deficiencies in the corridor without constructing a Build Alternative, which include four light rail transit alternatives to connect to eastern portion of the Phase 1 Metro Gold Line Eastside Extension. While lower in cost than the Build Alternatives, the Baseline/TSM Alternative may still carry some significant costs, particularly when the transportation problems in the corridor are complex and the associated build options are capital intensive. The TSM/Baseline Alternative(s) may include transportation systems upgrades, such as intersection improvements, road widenings, traffic engineering actions, bus route restructuring, shortened bus headways, expanded use of articulated buses, reserved bus lanes, contra-flow lanes for buses and High Occupancy Vehicles (HOVs) on freeways, special bus ramps on freeways, expanded park-ride facilities, express and limited stop service, signalization improvements, transit signal priority, passenger information systems, and timed transfer operations. The key factor in designing the Baseline/TSM is that it must serve the same travel markets and provide as close a level of service as the Build Alternatives under study, absent a corresponding level of capital investment.

- State Route (SR) 60 LRT: The SR-60 LRT alignment begins as an eastward extension of the Phase 1 project across S. Atlantic Blvd., then transitions to an aerial configuration to follow the south side of Route 60, largely within the existing right-of-way, east to Peck Road.

- Beverly Blvd LRT: This LRT alignment begins as an eastward extension of the Phase 1 project across S. Atlantic Blvd., then turns south at Garfield Ave. The alignment then turns east at Beverly Blvd. and follows Beverly to the San Gabriel River where the route swings south and enters the Whittier Greenway, following that facility to a terminus at Mar Vista in Central Whittier.

- Beverly/Whittier Blvds LRT (Rosemead Blvd Option): This LRT alignment begins as an eastward extension of the Phase 1 project across S. Atlantic Blvd., then turns south at Garfield Ave. The alignment then turns east at Beverly Blvd. and follows Beverly to Rosemead Blvd., turns south on Rosemead Blvd., then turns east on Whittier Blvd to a terminus at Mar Vista.

- Beverly/Whittier Blvds LRT (Montebello Blvd Option: This LRT alignment begins as an eastward extension of the Phase 1 project across S. Atlantic Blvd., then turns south at Garfield Ave. The alignment then turns east at Beverly Blvd. and follows Beverly to Montebello Blvd., turns south on Montebello Blvd., then turns east on Whittier Blvd to a terminus at Mar Vista.

- Washington Blvd. LRT: This LRT alignment begins as an eastward extension of the Phase 1 project across S. Atlantic Blvd., then turns south at Garfield Ave. and follows Garfield south to Washington Blvd. The alignment continues east along Washington Blvd. to a terminus east of Lambert Rd. in the vicinity of the Washington/Whittier intersection.

Metro LRT Operations O&M Model

Since Metro currently operates LRT, O&M estimates were developed based on the Gold Line financial and operating data for fiscal year (FY)2008. The following sections include a general overview of the Metro LRT operations cost model structure and required inputs.

Structure and Inputs

Metro's Gold line LRT operating costs for fiscal year 2008 were derived from the Metro FY 2008 Adopted Budget (Activity Based Gold Line Cost Model) and were allocated to five variables: route miles, yards, annual revenue train-hours, annual revenue car-miles, and peak LRV cars.

The following equation summarizes the fully-allocated cost model used to estimate annual O&M costs for the study alternatives:

Estimated Annual O&M Cost = (Route-Mile Unit Cost x Projected Route-Miles) + (Yard Unit Cost x Projected Yards) + (Train-Hour Unit Cost x Projected Train-Hours) + (Car-Mile Unit Cost x Projected Car Miles) + (Peak LRV Unit Cost x Projected Peak LRV Cars)

Where:

- Route-Miles: Total number of directional route miles.
- Yards: Total number of maintenance and storage facilities.

- Annual Revenue Train-Hours: Total hours of revenue service operated by all trains in one year.
- Annual Revenue Car-Miles: Total miles of revenue service operated by all trains in one year.
- Peak LRV Cars: The maximum number of passengers vehicles scheduled in service at the same time.

FY 2008 expenses and units of service for each variable are presented in Table 1. Operating expenses assigned to each variable were summed and divided by FY 2008 units of service to derive unit costs.

Table 1 Metro LRT FY 2008 Expense Allocations and Unit Costs

	FULL ALLOCATION				
EXPENSE OBJECT	Rt.-Miles	Yards	Train-Hrs	Car-Miles	LRVs
Wages & Benefits	2,853,501	2,853,501	6,798,038	4,992,979	0
Materials & Supplies	257,125	257,125	0	1,062,268	50,832
Other	1,938	1,938	0	3,174	41,981
Services	356,453	356,453	0	30,819	0
Propulsion Power	0	0	0	2,089,821	0
Non-Revenue Vehicles	157,211	157,211	0	0	0
Facilities Maintenance	699,501	699,501	0	0	0
Transit Security	0	0	0	9,284,537	0
General Manager	0	598,727	0	0	0
Revenue	0	0	0	0	1,182,870
Service Development	0	0	0	0	363,484
Safety	0	0	0	0	372,854
Casualty & Liability	0	0	0	549,607	0
Workers' Comp	120,037	120,037	320,098	240,074	0
Utilities	0	371,710	0	371,710	0
Other Metro Operations	0	108,757	0	0	0
Building Costs	0	247,470	0	0	0
Copy Services	0	0	0	0	37,331
Support Department Costs	0	0	0	0	3,650,210
Total Operating Expenses:	4,445,764	5,772,428	7,118,136	18,624,989	5,699,562
FY2008 Units of Service	13.7	1.0	43,925	1,653,458	22
Unit Cost (operating expenses only)	$324,508	$5,772,428	$162.05	$11.26	$259,071

The unit costs derived from the fully allocated model were applied to the projected operating statistics generated for each project alternative to estimate total O&M costs.

Metro Bus Operations O&M Model

A second phase of the Metro Gold line Eastside Extension would have a significant impact on Metro local and express bus operations. O&M estimates were developed based on Metro's bus financial and operating data for fiscal year 2008. The following sections include a general overview of the Metro bus operations cost model structure and required inputs.

Structure and Inputs

Metro's bus operating costs for fiscal year 2008 were used from the Metro FY 2008 Adopted Budget (Activity Based Bus Cost Model) and were allocated to five variables: route miles, garages, annual revenue bus-hours, annual revenue bus-miles, and peak buses.

The following equation summarizes the fully-allocated cost model used to estimate annual O&M costs for the study alternatives:

Estimated Annual O&M Cost = Route-Mile Unit Cost x Projected Route-Miles + Garage Unit Cost x Projected Garages + Bus-Hour Unit Cost x Projected Bus-Hours + Bus-Mile Unit Cost x Projected Bus-Miles + Peak Buses Unit Cost x Projected Peak Buses

Where:

- Route-Miles: Total number of directional BRT route miles.
- Garages: number of bus storage and maintenance garages.
- Annual Revenue Bus-Hours: Total hours of revenue service operated by all trains in one year.
- Annual Revenue Bus-Miles: Total miles of revenue service operated by all trains in one year.
- Peak Buses: The maximum number of passengers vehicles scheduled in service at the same time.

FY 2008 expenses and units of service for each variable are presented in Table 2. Operating expenses assigned to each variable were summed and divided by FY 2006 units of service to derive unit costs.

Table 2 Metro Bus FY 2008 Expense Allocations and Unit Costs

EXPENSE OBJECT	FULL ALLOCATION Rt.-Miles	Garages	Bus-Hrs	Bus-Miles	Buses
Wages & Benefits	0	0	339,799,542	120,784,155	0
Control Center	0	0	7,810,633	0	0
Services	0	0	55,996	1,387,101	0
Training	839,699	839,699	5,528,742	0	0
Scheduling & Planning	0	0	3,714,552	0	0
Fuel	0	0	0	53,833,804	0
Materials & Supplies	0	0	206,302	43,894,475	0
Fueling Contractor Reimb.	0	0	0	(2,222,023)	0
Maintenance Support	8,180,979	8,180,979	0	193,000	0
Power Plant Assembly	0	0	0	4,971,708	0
Accident Repair	0	0	0	1,940,677	0
Wheelchair Lifts	0	0	0	165,780	0
Painting	0	0	0	659,577	0
Windows	0	0	0	19,578	0
Non-Revenue Vehicles	2,570,170	2,570,170	0	0	0
Facility Maintenance	16,319,328	16,319,328	0	0	0
Transit Security	0	0	0	21,013,238	0
General Managers	0	13,766,337	0	0	0
Revenue	0	0	0	0	17,234,811
Service Development	0	0	0	0	6,947,388
Safety	0	0	0		1,731,373
Casualty & Liability	0	0	0	0	55,958,642
Workers' Comp	0	0	0	0	38,300,894
Transitional Duty Program	0	0	0	0	2,498,517
Utilities	0	0	0	7,159,937	0
Other Metro Operations	0	4,148,887	0	0	0
Building Costs	0	7,711,409	0	0	0
Copy Services	0	0	0	0	1,087,675
Support Department Costs	0	0	0	0	46,613,787
Purchased Transportation	0	0	38,254,175	0	0
Enterprise Fund Debt	0	0	0	0	2,240,099
Total Operating Expenses:	27,910,175	53,536,808	395,369,942	253,801,007	172,613,186
FY2008 Units of Service	4,527	15.0	7,776,000	96,458,000	2,675
Unit Cost (oper. expenses only)	$6,165	$3,569,121	$50.84	$2.63	$64,528

The unit costs derived from the fully allocated model were applied to the projected operating statistics generated for each project alternative to estimate total O&M costs.

Montebello Bus Lines Operations O&M Model

Since the Eastside Transit Corridor Phase 2 would affect Montebello Bus Lines operations, O&M estimates were developed based on fiscal year 2006 Montebello Bus Lines operating statistics and adjusted to FY 2008 dollars at 4% per annum for inflation. The following sections include a general overview of the Montebello Bus Lines operations cost model structure and required inputs.

Structure and Inputs

The Montebello Bus Lines O&M cost model uses the same five variables and cost equation as used for the Metro bus model. The Montebello bus cost model was based on FY 2006 National Transit Database reports. The Montebello Bus Lines fiscal year 2006 motor bus operating costs, reported by Object Class and Function, were allocated to five variables: route-miles, garages, annual revenue bus-hours, annual revenue bus-miles, and peak buses.

FY 2006 expenses and units of service for each variable are presented in Table 3. Operating expenses assigned to each variable were summed and divided by FY 2006 units of service to derive unit costs.

Table 3 Montebello Bus FY 2006 Expense Allocations and Unit Costs

	FULL ALLOCATION				
EXPENSE OBJECT	Rt-Miles	Garages	Bus-Hrs	Bus-Miles	Buses
501.01 Operators Salaries/Wages	0	0	5,430,492	0	0
501.02 Other Salaries/Wages	308,524	7,325	286,550	1,562,576	749,937
502.00 Fringe Benefits	5,859	225,126	4,140,848	1,296,425	756,648
503.00 Services	0	20,892	0	579,276	1,721,761
504.01 Fuel & Lubricants	0	0	0	2,125,472	138,936
504.02 Tires & Tubes	0	0	0	0	0
504.03 Other Materials & Supplies	16,401	49,204	0	1,129,723	120,710
505.00 Utilities	96,512	96,512	0	0	0
506.00 Casualty/Liability	0	0	0	1,083,060	0
507.00 Taxes	0	0	0	0	0
508.00 Purchased Transportation	0	0	354,030	0	0
509.00 Miscellaneous Expenses	0	41,416	0	25,255	142,391
510.00 Expense Transfers	0	0	0	0	0
Total Operating Expenses:	427,296	440,474	10,211,920	7,801,787	3,630,383
FY2006 Units of Service	222.8	2	253,239	2,793,960	77
Unit Cost (operating expenses only)	$1,918	$231,828	$40.33	$2.79	$47,148

The unit costs derived from the fully allocated model were applied to the projected operating statistics generated for each project alternative to estimate total O&M costs.

Norwalk Transit System Bus Operation O&M Model

Since the Eastside Transit Corridor Phase 2 would affect Norwalk Transit System bus operations, O&M estimates were developed based on fiscal year 2006 Norwalk Transit System bus operating statistics. The following sections include a general overview of the Norwalk Transit System bus operations cost model structure and required inputs.

Structure and Inputs

The Norwalk Transit System O&M cost model uses the same five variables and cost equation as used for the Metro bus model. The Norwalk Transit System bus cost model was based on FY 2006 National Transit Database reports. Norwalk Transit System fiscal year 2006 motor bus operating costs, reported by Object Class and Function, were allocated to five variables: garages, annual revenue bus-hours, annual revenue bus-miles, and peak buses.

FY 2006 expenses and units of service for each variable are presented in Table 4. Operating expenses assigned to each variable were summed and divided by FY 2006 units of service to derive unit costs.

Table 4 Norwalk Transit System FY 2006 Bus Expense Allocations and Unit Costs

	FULL ALLOCATION				
EXPENSE OBJECT	Rt-Miles	Garages	Bus-Hrs	Bus-Miles	Buses
501.01 Operators Salaries/Wages	0	0	2,527,586	0	0
501.02 Other Salaries/Wages	15,111	231,283	226,246	651,463	458,245
502.00 Fringe Benefits	3,018	127,642	1,443,437	390,331	320,873
503.00 Services	408	64,726	0	39,992	413,280
504.01 Fuel & Lubricants	0	0	0	848,249	0
504.02 Tires & Tubes	0	0	0	72,940	0
504.03 Other Materials & Supplies	0	0	0	767,572	203,530
505.00 Utilities	53,789	53,789	0	0	0
506.00 Casualty/Liability	0	0	0	277,383	0
507.00 Taxes	0	2,847	0	0	0
508.00 Purchased Transportation	0	0	0	0	0
509.00 Miscellaneous Expenses	790	113,983	0	30,689	82,697
510.00 Expense Transfers	0	0	0	0	0
Total Operating Expenses:	73,116	594,269	4,197,269	3,078,619	1,478,625
FY2006 Units of Service	167.0	1	100,371	1,274,412	36
Unit Cost (operating expenses only)	$438	$495,225	$41.82	$2.42	$41,073

The unit costs derived from the fully allocated model were applied to the projected operating statistics generated for each project alternative to estimate total O&M costs. The Monterey Park Spirit Bus also has motor bus service within the study area that would be affected. The Norwalk Transit System bus operations cost model and unit costs were used to determine estimated costs for Monterey Park Spirit Bus due to lack of data availability and similarities in bus size and operating characteristics.

Foothill Transit Zone Bus Operations O&M Model

Since the Eastside Transit Corridor Phase 2 would affect Foothill Transit Zone bus operations, O&M estimates were developed based on fiscal year 2006 Foothill Transit Zone bus operating statistics. The following sections include a general overview of the Foothill Transit Zone bus operations cost model structure and required inputs.

Structure and Inputs

The Foothill Transit Zone O&M cost model uses the same five variables and cost equation as used for the Metro bus model. The Foothill bus cost model was based on FY 2006 National Transit Database reports.

Foothill Transit Zone fiscal year 2006 motor bus operating costs, reported by Object Class and Function, were allocated to five variables: garages, annual revenue bus-hours, annual revenue bus-miles, and peak buses. FY 2006 expenses and units of service for each variable are presented in Table 4-5. Operating expenses assigned to each variable were summed and divided by FY 2006 units of service to derive unit costs.

Table 5 Foothill Transit Zone FY 2006 Bus Expense Allocations and Unit Costs

EXPENSE OBJECT	FULL ALLOCATION				
	Rt-Miles	Garages	Bus-Hours	Bus-Miles	Buses
501.01 Operators Salaries/Wages	0	0	0	0	0
501.02 Other Salaries/Wages	0	0	0	0	0
502.00 Fringe Benefits	0	0	0	0	0
503.00 Services	0	1,024,441	0	0	8,192,302
504.01 Fuel & Lubricants	0	0	0	9,764,546	0
504.02 Tires & Tubes	0	0	0	0	0
504.03 Other Materials & Supplies	0	0	0	0	0
505.00 Utilities	0	0	0	0	0
506.00 Casualty/Liability	0	0	0	0	0
507.00 Taxes	0	0	0	0	0
508.00 Purchased Transportation	0	0	39,364,590	0	0
509.00 Miscellaneous Expenses	0	0	0	0	0
510.00 Expense Transfers	0	0	0	0	0
Total Operating Expenses:	0	1,024,441	39,364,590	9,764,546	8,192,302
FY2006 Units of Service	894.3	2.0	736,395.0	11,895,676	306.0
Unit Cost (operating expenses only)	$0	$512,221	$53.46	$0.82	$26,772

The unit costs derived from the fully allocated model were applied to the projected operating statistics generated for each project alternative to estimate total O&M costs.

Results

There are four build alternatives being considered for this study that would connect to the first phase of the Metro Gold Line Eastside Extension at the Pomona/Atlantic station. Table 6 presents characteristics of each build alternative for Phase 2.

Table 6 Summary of Build Alternatives

Alternative	Phase 2 Description	Stations	Headway Peak	Headway Base	Headway Evening	Route Miles	Run Time
SR-60 LRT	Atlantic - Route 60 to Peck Road	5	5	10	15	6.92	0:12:28
Beverly Blvd LRT	Atlantic - Route 60 - Garfield Aerial - Beverly LRT - Whittier Greenway to Mar Vista	9	5	10	15	8.99	0:23:58
Beverly/Whittier Blvds LRT	(Rosemead Blvd Option): Atlantic - Route 60 - Garfield Aerial - Beverly/Rosemead/Whittier LRT to Mar Vista	8	5	10	15	9.10	0:24:55
	(Montebello Blvd Option): Atlantic - Route 60 - Garfield Aerial - Beverly/Montebello/Whittier LRT to Mar Vista	8	5	10	15	9.06	0:23:17
Washington Blvd LRT	Atlantic - Route 60 - Garfield Aerial - Washington LRT to Atlantic	7	5	10	15	9.26	0:17:28

(1) Run times based on one-way travel.

The estimated annual O&M costs of LRT and bus operations for each of the Eastside Transit Corridor Phase 2 project alternatives are summarized in this section. The annual O&M cost estimates are based on design year 2030 operating plans and ridership projections. These "future" cost estimates, however, are presented in 2008 dollars.

Estimated future costs for potential new or expanded Metro rail yards and bus garages were based on fractional unit estimates. Any expansions or additional maintenance/storage facilities were estimated using a fraction of about 150 buses per garage and 50 LRV's per yard for capacity. There were not any specific yard sites identified at the time of developing the O&M costs and assumptions were used solely for cost allocation. It was assumed that the LRV's would not require more than one additional yard or exceed a total of two yards.

LRT O&M Cost Estimates

There are four LRT alternatives considered for this study. Table 7 shows the system characteristics and estimated annual O&M costs for Metro operations for the FY 2008 Gold Line currently in service, the No-Build and TSM/Baseline alternatives and the four LRT project alternatives. Costs are presented in 2008 dollars.
Metro currently uses two 2-car gap trains beyond those directly scheduled for revenue service. Metro anticipates, as part of revenue service, a need for a 3-car gap train at each end of the alignment ready to pull into service as a result of a late train and one 3-car train as a maintenance spare due to a failure of a vehicle to operate in service. These ready cars were factored into the full allocation of estimated costs and have been included as part of the operating plans.

Table 7 METRO LRT Annual O&M Cost Estimates (2008 dollars)

System Scenario	FULL ALLOCATION Route Miles	Yards	Train Hours	Car Miles	Peak LRVs
FY 2008 Gold Line LRT Unit Costs	$324,508	$5,772,428	$162.05	$11.26	$259,071
FY 2008 Units	13.7	1.0	43,925	1,653,458	22
FY 2008 Cost by Variable	$4,445,764	$5,772,428	$7,118,136	$18,624,989	$5,699,562
Total FY 2008 Cost					$41,660,880
No-Build & TSM	19.5	2.0	96,200	5,476,900	84
O&M Cost by Variable	$6,327,913	$11,544,857	$15,589,407	$61,693,252	$21,761,964
Total Annual LRT O&M Cost					$116,917,393
Increment Over FY 2008					$75,256,513
SR-60 LRT Alternative	26.4	2.0	111,340	7,420,600	99
O&M Cost by Variable	$8,567,020	$11,544,857	$18,042,876	$83,587,604	$25,648,029
Total Annual LRT O&M Cost					$147,390,385
Increment Over TSM					$30,472,992
Beverly Blvd LRT Alternative	28.5	2.0	132,060	8,002,000	114
O&M Cost by Variable	$9,248,488	$11,544,857	$21,400,594	$90,136,647	$29,534,094
Total Annual LRT O&M Cost					$161,864,680
Increment Over TSM					$44,947,287
Beverly/Whittier Blvds LRT Alternative (Rosemead Blvd Option)	28.6	2.0	132,060	8,032,900	114
O&M Cost by Variable	$9,280,939	$11,544,857	$21,400,594	$90,484,713	$29,534,094
Total Annual LRT O&M Cost					$162,245,197
Increment Over TSM					$45,327,803
Beverly/Whittier Blvds LRT Alternative (Montebello Blvd Option)	28.6	2.0	132,060	8,021,600	114
O&M Cost by Variable	$9,280,939	$11,544,857	$21,400,594	$90,357,427	$29,534,094
Total Annual LRT O&M Cost					$162,117,910
Increment Over TSM					$45,200,517
Washington Blvd LRT Alternative	28.8	2.0	118,950	8,077,800	105
O&M Cost by Variable	$9,345,840	$11,544,857	$19,276,092	$90,990,478	$27,202,455
Total Annual LRT O&M Cost					$158,359,722
Increment Over TSM					$41,442,329

(1) Estimated peak LRVs do not include maintenance spares. Costs associated with maintenance spares are factored into yard costs.

Bus O&M Cost Estimates

Table 8 shows the system characteristics and estimated annual O&M costs for Metro bus, Montebello Bus Lines, Norwalk Transit System, Monterey Park Spirit Bus and Foothill Transit Zone bus operations for each of the study alternatives.

Table 8 Bus Annual O&M Cost Estimates

Alternative	FULL ALLOCATION Route Miles	Garages	-----Annual Revenue----- Bus-Miles	Bus Hours	Buses	Total O&M Cost	Incremental Cost
No Build							
Metro Bus	268.1	1	18,640	1,536	126		
O&M Cost by Variable	$1,652,909	$3,569,121	$947,739	$4,042	$8,130,565	$ 14,304,375	-
Montebello Bus Lines	165.6	2	6,011	636	56		
O&M Cost by Variable	$ 317,595	$ 440,474	$ 242,379	$ 1,776	$ 2,640,279	$ 3,642,502	-
Norwalk Transit System	44.4	1	1,715	126	7		
O&M Cost by Variable	$ 19,439	$ 495,225	$ 71,709	$ 304	$ 287,510	$ 874,187	-
Monterey Park Spirit Bus	4.4	1	118	18	1		
O&M Cost by Variable	$ 1,926	$ 495,225	$ 4,926	$ 43	$ 41,073	$ 543,193	-
Foothill Bus	23.4	2	422	42	3		
O&M Cost by Variable	$ -	$ 1,024,441	$ 22,580	$ 34	$ 80,317	$ 1,127,372	-
Total Corridor Bus Cost					193	**$ 20,491,629**	-
2030 TSM Baseline							
Metro Bus	290.7	1.4	26,820	2,154	177		
O&M Cost by Variable	$1,792,244	$4,996,769	$1,363,640	$5,668	$11,421,508	$19,579,828	$5,275,453
Montebello Bus Lines	179.7	2	7,610	786	69		
O&M Cost by Variable	$ 344,637	$ 463,656	$ 306,855	$ 2,195	$ 3,253,200	$ 4,370,543	$ 728,041
Norwalk Transit System	44.4	1	1,715	126	7		
O&M Cost by Variable	$ 19,439	$ 495,225	$ 71,709	$ 304	$ 287,510	$ 874,187	$ -
Monterey Park Spirit Bus	4.4	1	118	18	1		
O&M Cost by Variable	$ 1,926	$ 495,225	$ 4,926	$ 43	$ 41,073	$ 543,193	$ -
Foothill Bus	23.4	2	422	42	3		
O&M Cost by Variable	$ -	$ 1,024,441	$ 22,580	$ 34	$ 80,317	$ 1,127,372	$ -
Total Corridor Bus Cost					257	**$26,495,124**	**$6,003,495**
SR-60 LRT							
Metro Bus	290.7	1.1	20,336	1,665	137		
O&M Cost by Variable	$1,792,244	$3,926,033	$1,034,002	$4,381	$8,808,112	$15,564,772	($4,015,056)
Montebello Bus Lines	179.7	2	7,610	786	69		
O&M Cost by Variable	$ 344,637	$ 463,656	$ 306,855	$ 2,195	$ 3,253,200	$ 4,370,543	$ -
Norwalk Transit System	44.4	1	1,715	126	7		
O&M Cost by Variable	$ 19,439	$ 495,225	$ 71,709	$ 304	$ 287,510	$ 874,187	$ -
Monterey Park Spirit Bus	4.4	1	118	18	1		
O&M Cost by Variable	$ 1,926	$ 495,225	$ 4,926	$ 43	$ 41,073	$ 543,193	$ -
Foothill Bus	23.4	2	422	42	3		
O&M Cost by Variable	$ -	$ 1,024,441	$ 22,580	$ 34	$ 80,317	$ 1,127,372	$ -
Total Corridor Bus Cost					217	**$22,480,068**	**($4,015,056)**

Table 8 Bus Annual O&M Cost Estimates (continued)

Alternative	FULL ALLOCATION Route Miles	Garages	-----Annual Revenue----- Bus-Miles	Bus Hours	Buses	Total O&M Cost	Incremental Cost
Beverly Blvd LRT							
Metro Bus	292.7	1.1	20,580	1,689	139		
O&M Cost by Variable	$1,804,574	$3,926,033	$1,046,388	$4,444	$8,969,433	$15,750,872	($3,828,956)
Montebello Bus Lines	179.7	2	7,610	786	69		
O&M Cost by Variable	$ 344,637	$ 463,656	$ 306,855	$ 2,195	$ 3,253,200	$ 4,370,543	$ -
Norwalk Transit System	44.4	1	1,715	126	7		
O&M Cost by Variable	$ 19,439	$ 495,225	$ 71,709	$ 304	$ 287,510	$ 874,187	$ -
Monterey Park Spirit Bus	4.4	1	118	18	1		
O&M Cost by Variable	$ 1,926	$ 495,225	$ 4,926	$ 43	$ 41,073	$ 543,193	$ -
Foothill Bus	23.4	2	422	42	3		
O&M Cost by Variable	$ -	$ 1,024,441	$ 22,580	$ 34	$ 80,317	$ 1,127,372	$ -
Total Corridor Bus Cost					219	**$22,666,168**	**($3,828,956)**
Beverly/Whittier Blvds LRT Alternative (Rosemead Blvd Option)							
Metro Bus	292.7	1.1	20,580	1,689	139		
O&M Cost by Variable	$1,804,574	$3,926,033	$1,046,388	$4,444	$8,969,433	$15,750,872	($3,828,956)
Montebello Bus Lines	179.7	2	7,610	786	69		
O&M Cost by Variable	$ 344,637	$ 463,656	$ 306,855	$ 2,195	$ 3,253,200	$ 4,370,543	$ -
Norwalk Transit System	44.4	1	1,715	126	7		
O&M Cost by Variable	$ 19,439	$ 495,225	$ 71,709	$ 304	$ 287,510	$ 874,187	$ -
Monterey Park Spirit Bus	4.4	1	118	18	1		
O&M Cost by Variable	$ 1,926	$ 495,225	$ 4,926	$ 43	$ 41,073	$ 543,193	$ -
Foothill Bus	23.4	2	422	42	3		
O&M Cost by Variable	$ -	$ 1,024,441	$ 22,580	$ 34	$ 80,317	$ 1,127,372	$ -
Total Corridor Bus Cost					219	**$22,666,168**	**($3,828,956)**
Beverly/Whittier Blvds LRT Alternative (Montebello Blvd Option)							
Metro Bus	292.7	1.1	20,580	1,689	139		
O&M Cost by Variable	$1,804,574	$3,926,033	$1,046,388	$4,444	$8,969,433	$15,750,872	($3,828,956)
Montebello Bus Lines	179.7	2	7,610	786	69		
O&M Cost by Variable	$ 344,637	$ 463,656	$ 306,855	$ 2,195	$ 3,253,200	$ 4,370,543	$ -
Norwalk Transit System	44.4	1	1,715	126	7		
O&M Cost by Variable	$ 19,439	$ 495,225	$ 71,709	$ 304	$ 287,510	$ 874,187	$ -
Monterey Park Spirit Bus	4.4	1	118	18	1		
O&M Cost by Variable	$ 1,926	$ 495,225	$ 4,926	$ 43	$ 41,073	$ 543,193	$ -
Foothill Bus	23.4	2	422	42	3		
O&M Cost by Variable	$ -	$ 1,024,441	$ 22,580	$ 34	$ 80,317	$ 1,127,372	$ -
Total Corridor Bus Cost					219	**$22,666,168**	**($3,828,956)**
Washington LRT							
Metro Bus	294.1	1.1	20,931	1,698	139		
O&M Cost by Variable	$1,813,206	$3,926,033	$1,064,255	$4,468	$8,969,433	$15,777,394	($3,802,434)
Montebello Bus Lines	179.7	2	7,610	786	69		
O&M Cost by Variable	$ 344,637	$ 463,656	$ 306,855	$ 2,195	$ 3,253,200	$ 4,370,543	$ -
Norwalk Transit System	44.4	1	1,715	126	7		
O&M Cost by Variable	$ 19,439	$ 495,225	$ 71,709	$ 304	$ 287,510	$ 874,187	$ -
Monterey Park Spirit Bus	4.4	1	118	18	1		
O&M Cost by Variable	$ 1,926	$ 495,225	$ 4,926	$ 43	$ 41,073	$ 543,193	$ -
Foothill Bus	23.4	2	422	42	3		
O&M Cost by Variable	$ -	$ 1,024,441	$ 22,580	$ 34	$ 80,317	$ 1,127,372	$ -
Total Corridor Bus Cost					219	**$22,692,690**	**($3,802,434)**

(1) All Metro costs estimated in FY 2008 dollars.
(2) Cost for other transit providers are based on FY 2006 dollars and adjusted to FY 2008 dollars at 4% per annum for inflation.

Cost Summary and Incremental Costs

Table 9 summarizes the estimated annual O&M costs for each of the Eastside Transit Corridor Phase 2 project alternatives. Costs are presented in 2008 dollars. The incremental O&M costs for each of the Build Alternatives relative to the Baseline/TSM Alternative are also presented in Table 9.

Table 9 Eastside Transit Corridor Phase 2 Annual O&M Cost Estimates

Input Measure	No Build	Baseline/ TSM	SR-60 LRT	Beverly Blvd LRT	Beverly/Whitter Blvds LRT		Washington Blvd LRT
					Rosemead Option	Montebello Option	
Metro LRT Cost	$ 116,917,393	$ 116,917,393	$ 147,390,385	$ 161,864,680	$ 162,245,197	$ 162,117,910	$ 158,359,722
Metro Bus Cost	$ 14,304,375	$ 19,579,828	$ 15,564,772	$ 15,750,872	$ 15,750,872	$ 15,750,872	$ 15,777,394
Montebello Bus Lines Cost	$ 3,642,502	$ 4,370,543	$ 4,370,543	$ 4,370,543	$ 4,370,543	$ 4,370,543	$ 4,370,543
Norwalk Transit System Bus Cost	$ 874,187	$ 874,187	$ 874,187	$ 874,187	$ 874,187	$ 874,187	$ 874,187
Monterey Park Spirit Bus Cost	$ 543,193	$ 543,193	$ 543,193	$ 543,193	$ 543,193	$ 543,193	$ 543,193
Foothill Transit Zone Bus Cost	$ 1,127,372	$ 1,127,372	$ 1,127,372	$ 1,127,372	$ 1,127,372	$ 1,127,372	$ 1,127,372
Total Annual O&M Cost	**$ 137,409,023**	**$ 143,412,517**	**$ 169,870,453**	**$ 184,530,848**	**$ 184,911,365**	**$ 184,784,078**	**$ 181,052,412**
Incremental Annual O&M Cost	**$ -**	**$ 6,003,495**	**$ 26,457,936**	**$ 41,118,331**	**$ 41,498,847**	**$ 41,398,083**	**$ 37,639,895**

(1) All costs estimated in FY 2008 dollars.
(2) Incremental Cost of the TSM/Baseline Alternative is relative to the No-Build Alternative.
(3) Incremental cost of the build alternatives is relative to Baseline/TSM Alternative.

APPENDIX F:

Focus Group Invitee List

Eastside Transit Corridor Phase 2 - Focus Group Invitee List (April/May 2009)

Invited To Group No:	Focus Group	Organization/Affiliation	Prefix	First Name	Last Name	Title	City
1	Washington	City of Commerce	Mr.	Joe	Aguilar	Mayor	Commerce
1	Washington	City of Commerce	Honorable	Hugo	Argumedo	Council Member	Commerce
1	Washington	City of Commerce	Honorable	Tina	Baca Del Rio	Mayor Pro Tem	Commerce
1	Washington	City of Commerce	Honorable	Robert C.	Fierro	Council Member	Commerce
1	Washington	City of Commerce	Honorable	Lilia R.	Leon	Council Member	Commerce
1	Washington	City of Commerce	Mr.	Jorge	Rifa	City Administrator	Commerce
1	Washington	Commerce Industrial Council Chamber	Mr.	Eddie	Tafoya	Executive Director	Commerce
1	Washington	North Park Middle School	Mr.	John	Lopez	Principal	Pico Rivera
1	Washington	City of Santa Fe Springs	Mr.	Al	Fuentes	Redevelopment Consultant	Santa Fe Springs
1	Washington	City of Santa Fe Springs	Mr.	Tom	Lopez	Assistant Director of Public Works	Santa Fe Springs
1	Washington	City of Commerce	Mr.	Alex	Hamilton	Assistant Director, Community Development	Commerce
1	Washington	City of Downey	Mr.	Gerald	Caton	City Manager	Downey
1	Washington	City of Downey	Ms.	Linda	Haines	Director, Development Services	Downey
1	Washington	City of Downey	Mr.	Brian	Regland	Director, Public Works	Downey
1	Washington	City of Whittier	Council Member	Cathy	Warner	Council Member	Whittier
1	Washington	City of Whittier - Parking & Transportation Commission	Commissioner	Al	Martinez	Commissioner	Whittier
1	Washington	Management of Pico Rivera Marketplace	Mr.	Adam	Monteilh	Property Administrator	Los Angeles
1	Washington	Whittier Ridgeview Homeowners Association	Ms.	Laura	Westerman		Whittier
2	Whittier/Beverly	CA State Assemblymember Charles Calderon - 58th Assembly District	Ms.	Adrianna	Villa	Field Representative	City of Industry
2	Whittier/Beverly	Pico Rivera Chamber of Commerce	Ms.	Koko	Judge	Executive Director	Pico Rivera
2	Whittier/Beverly	Pico Rivera Resident	Mr.	John	Zeigler		
2	Whittier/Beverly	City of Whittier	Mr.	Jeff	Collier	Director of Community Development	Whittier
2	Whittier/Beverly	City of Whittier - Parking & Transportation Commission	Commissioner	Douglas	Halliday	Vice Chair	Whittier
2	Whittier/Beverly	City of Whittier - Parking & Transportation Commission	Commissioner	James	Snedden	Chair	Whittier
2	Whittier/Beverly	City of Whittier Planning Commission	Commissioner	Fernando	Dutra	Chair	Whittier
2	Whittier/Beverly	City of Whittier Planning Commission	Commissioner	Wesley A.	Murray	Vice Chair	Whittier
2	Whittier/Beverly	Management of Krikorian/ Village Walk	Mr.	Jeff	Kristoff		Redondo Beach
2	Whittier/Beverly	Whittier Area Chamber of Commerce	Ms.	Cheryl	Estep	President	Whittier
3	SR-60	Project Amiga	Ms.	Irene	Portillo	Executive Director	South El Monte
3	SR-60	Beverly Hospital	Mr.	Gary	Kiff	President	Montebello

Eastside Transit Corridor Phase 2 - Focus Group Invitee List (April/May 2009)

Invited To Group No:	Focus Group	Organization/Affiliation	Prefix	First Name	Last Name	Title	City
3	SR-60	C-21 Dynamic Brokers	Ms.	Diana	Bustamante	President	Montebello
3	SR-60	City of Montebello, Planning Commission	Mr.	Thomas	Calderon	Chair, Planning Commission	Montebello
3	SR-60	City of Montebello, Planning Commission	Ms.	Cynthia	Diaz	Planning Commissioner	Montebello
3	SR-60	City of Montebello, Planning Commission	Commissioner	Minerva	Gutierrez	Planning Commissioner	Montebello
3	SR-60	City of Montebello, Planning Commission	Commissioner	Maria	Halpern	Planning Commissioner	Montebello
3	SR-60	City of Montebello, Planning Commission	Ms.	Linda	Payan	Planning Commissioner	Montebello
3	SR-60	Kaiser Permanente	Ms.	Reyna	Del Haro	Director of Public Affairs	Baldwin Park
3	SR-60	Montebello Board of Realtors	Ms.	Irma	Acosta		Montebello
3	SR-60	Montebello Board of Realtors	Mr.	Jay	Avirom	President	Montebello
3	SR-60	Montebello Chamber of Commerce	Ms.	Andrea	Wagg	President	Montebello
3	SR-60	Montebello Town Center	Ms.	Tisha	Cabezas	Marketing Manager	Montebello
3	SR-60	Montebello Town Center	Mr.	Gregory	Millsap	Senior Manager, Property Management	Montebello
3	SR-60	Montebello Town Center	Mr.	Vaughn	Vencill	Security & Guest Services Manager	Montebello
3	SR-60	Montebello Unified School District	Mr.	David	Randall		Montebello
3	SR-60	Montebello Unified School District	Mr.	Edward	Velasquez	Superintendent	Montebello
3	SR-60	P&P Management	Ms.	Pamela	Manookian		Montebello
3	SR-60	Alhambra Unified School District	Mr.	Harold	Standerfer	Deputy Superintendent	Alhambra
3	SR-60	City of Monterey Park	Honorable	Mitchell	Ing	Mayor Pro Tem	Monterey Park
3	SR-60	City of Monterey Park	Honorable	David T.	Lau	Council Member	Monterey Park
3	SR-60	City of Monterey Park	Honorable	Betty	Tom Chu	Council Member	Monterey Park
3	SR-60	City of Monterey Park	Honorable	Benjamin "Frank"	Venti	Council Member	Monterey Park
3	SR-60	City of Monterey Park	Honorable	Anthony	Wong	Council Member	Monterey Park
3	SR-60	City of Monterey Park, Economic Development Advisory Committee	Mr.	Brian	Dowling	Economic Redevelopmnet Project Manager	Monterey Park
3	SR-60	City of Monterey Park, Economic Development Advisory Committee	Ms.	Cindy	Ota Lee	Chair	Monterey Park
3	SR-60	City of Monterey Park, Environmental Commission	Mr.	William	Wheeler		Monterey Park
3	SR-60	East Los Angeles College	Mr.	Ernest	Moreno	President	Monterey Park
3	SR-60	Economic Development Advisory Committee	Mr.	Dante	Terramani	Vice Chair	Monterey Park
3	SR-60	Montebello Unified School District	Mr.	Robert	Henke	Assistant Superintendent of Pupil & Community Services	Montebello
3	SR-60	Monterey Park Enviromental Commission	Ms.	Linda	Chu	Chair	Monterey Park

Eastside Transit Corridor Phase 2 - Focus Group Invitee List (April/May 2009)

Invited To Group No:	Focus Group	Organization/Affiliation	Prefix	First Name	Last Name	Title	City
3	SR-60	Monterey Park Enviromental Commission	Mr.	Joe	Reichenberger	Co-Chair	Monterey Park
3	SR-60	Monterey Park Planning Commission	Mr.	Wayne	Lee	Chair	Monterey Park
3	SR-60	Monterey Park Planning Commission	Mr.	Adolfo	Reta	Director of Development Services/Staff Liason	Monterey Park
3	SR-60	Monterey Park Recreation and Parks Commission	Mr.	Rick	Burroughs		Monterey Park
3	SR-60	Monterey Park Recreation and Parks Commission	Mr.	Harry	Panagiotes	Liaison	Monterey Park
3	SR-60	Monterey Park Traffic Commission	Mr.	Luis	Estrada		Monterey Park
3	SR-60	Monterey Park Traffic Commission	Mr.	Cesar	Vega	Liaison	Monterey Park
3	SR-60	Chamber Board of Directors	Ms.	Marissa	Castro-Salvati	Business Development	Monterey Park
3	SR-60	Chamber Board of Directors	Ms.	Nadine	Gomez	President	Rosemead
3	SR-60	City of Rosemead	Honorable	Sandra	Armenta	Council Member	Rosemead
3	SR-60	City of Rosemead	Ms.	Sheri	Bermejo	Planning Services Manager	Rosemead
3	SR-60	City of Rosemead	Honorable	Margaret	Clark	Mayor	Rosemead
3	SR-60	City of Rosemead	Mr.	Farid	Hentabli	Engineering Management Analyst	Rosemead
3	SR-60	City of Rosemead	Honorable	Polly	Low	Council Member	Rosemead
3	SR-60	City of Rosemead	Honorable	Steven	Ly	Council Member	Rosemead
3	SR-60	City of Rosemead	Mr.	Chris	Marcarello	Deputy Director of Public Service	Rosemead
3	SR-60	City of Rosemead	Honorable	Gary	Taylor	Mayor Pro Tem	Rosemead
3	SR-60	City of Rosemead	Commissioner	Truong	Cam	Planning Commissioner	Rosemead
3	SR-60	City of Rosemead	Commissioner	Todd	Kunioka	Planning Commissioner	Rosemead
3	SR-60	City of Rosemead	Commissioner	Daniel	Lopez	Planning Commissioner	Rosemead
3	SR-60	City of Rosemead	Commissioner	Allan	Vuu	Planning Commissioner	Rosemead
3	SR-60	City of Rosemead, Planning Commission	Commissioner	Ronald	Gay	Planning Commissioner	Rosemead
3	SR-60	Garvey School District	Mr.	Bob	Bruesch	Board President	Rosemead
3	SR-60	Garvey School District	Ms.	Virginia	Peterson	Superintendent	Rosemead
3	SR-60	Rosemead School Board	Ms.	Rhonda	Harmon	President	Rosemead
3	SR-60	Rosemead School District	Ms.	Amy	Enomoto-Perez	Superintendent	Rosemead
3	SR-60	University of the West	Mr.	Allen	Huang	President	Rosemead

Eastside Transit Corridor Phase 2 - Focus Group Invitee List (April/May 2009)

Invited To Group No:	Focus Group	Organization/Affiliation	Prefix	First Name	Last Name	Title	City
3	SR-60	1st District	Ms.	Gloria	Molina	Supervisor	El Monte
3	SR-60	Athens Recycling	Mr.	Dennis	Chiappetta		City of Industry
3	SR-60	Bank of the West	Ms.	Connie	Lainez	Branch Manager	South El Monte
3	SR-60	Cielito Lindo Restaurant	Mr.	Jose	Hernandez		South El Monte
3	SR-60	Cielito Lindo Restaurant	Ms.	Teresa	Hernandez		South El Monte
3	SR-60	Citizens Business Bank	Mr.	Craig	Ciebiera	Vice President	South El Monte
3	SR-60	Club Latino De Sur El Monte	Mr.	Carlos	Vega		South El Monte
3	SR-60	D.C. Corporation	Mr.	David	Cook		West Covina
3	SR-60	D.C. Corporation	Mr.	Don	Cook		West Covina
3	SR-60	El Monte City School District	Ms.	Elizabeth	Rivas	President	El Monte
3	SR-60	El Monte City School District	Mr.	Jeff	Seymour	Superintendent	El Monte
3	SR-60	El Monte Union High School District	Ms.	Kathy	Furnald	Superintendent	El Monte
3	SR-60	El Monte Union High School District	Mr.	Carlos	Salcedo	President	El Monte
3	SR-60	El Monte/ South El Monte Chamber of Commerce	Mr.	Richard	Nichols	Executive Director	El Monte
3	SR-60	Epiphany Church	Mr.	Antonio	Esteban	Father	South El Monte
3	SR-60	Faith Tabernacle	Mr.	David	Martinez	Pastor	South El Monte
3	SR-60	Fire Station 90	Mr.	Guy	Favatella	Captain	South El Monte
3	SR-60	Fire Station 90	Mr.	Frank	Reynoso	Captain	South El Monte
3	SR-60	Fire Station 90	Mr.	Ruben	Torrez	Captain	South El Monte
3	SR-60	Greater El Monte Community Hospital	Mr.	Samantha	Wong	Bus Development	South El Monte
3	SR-60	Mountain View School District	Ms.	Gloria	Diaz		El Monte
3	SR-60	Mountain View School District	Mr.	Joe	Moreno	President	El Monte
3	SR-60	Mountain View School District	Mr.	John	Stoddard	Superintendent	El Monte
3	SR-60	Pacific Ind Realty Inc.	Mr.	John	Wagner	President	South El Monte
3	SR-60	Primestor Development	Ms.	Vanessa	Delgado		Beverly Hills
3	SR-60	Primestor Development	Mr.	Arturo	Sneider		Beverly Hills
3	SR-60	Ramada Inn Suites	Mr.	Paul	Shih Hsiau Yen		South El Monte
3	SR-60	Ramada Inn Suites	Ms.	Paige	Yen		South El Monte
3	SR-60	Santa Anita Commercial Group, LLC.	Mr.	Ron	Jenkins		South El Monte
3	SR-60	Santa Anita Commercial Group, LLC.	Mr.	Jack	Owens		South El Monte
3	SR-60	SEMBOA	Mr.	Lawerence	Beard		South El Monte
3	SR-60	South El Monte Community Services Commissions	Ms.	Josie	Blanco	Commissioner	South El Monte
3	SR-60	South El Monte Community Services Commissions	Ms.	Hathyia	Chea	Commissioner	South El Monte
3	SR-60	South El Monte Community Services Commissions	Ms.	Yolanda	Del Rio	Commissioner	South El Monte
3	SR-60	South El Monte Community Services Commissions	Ms.	Cynthia	Flores	Commissioner	South El Monte

Eastside Transit Corridor Phase 2 - Focus Group Invitee List (April/May 2009)

Invited To Group No:	Focus Group	Organization/Affiliation	Prefix	First Name	Last Name	Title	City
3	SR-60	South El Monte Community Services Commissions	Mr.	Rudy	Lopez	Commissioner	South El Monte
3	SR-60	South El Monte Community Services Commissions	Ms.	Marissa	Martinez-Perez	Commissioner	South El Monte
3	SR-60	South El Monte Community Services Commissions	Ms.	Jacqueline	Tovar	Commissioner	South El Monte
3	SR-60	South El Monte Planning Commissioners	Commissioner	Joseph	Armendariz	Chairman	South El Monte
3	SR-60	South El Monte Planning Commissioners	Mr.	Joe	Jauregui	Commissioner	South El Monte
3	SR-60	South El Monte Planning Commissioners	Mr.	Lorenzo	Lauria	Commissioner	South El Monte
3	SR-60	South El Monte Planning Commissioners	Mr.	Salvador	Ramirez	Commissioner	South El Monte
3	SR-60	South El Monte Planning Commissioners	Mr.	Jeffery	Rubio	Vice Chairman	South El Monte
3	SR-60	South El Monte Senior Advisor Council	Mr.	John	Gonzales		South El Monte
3	SR-60	South El Monte Super Bingo	Ms.	Gloria	Gomez		South El Monte
3	SR-60	Temple Station Sheriff's Department	Mr.	Richard	Shaw	Captain	Temple City
3	SR-60	Temple Station Sheriff's Department	Mr.	John	Stilegenbaure	Sergeant	Temple City
3	SR-60	Valle Lindo School District	Ms.	Mary	Labrucherie	Superintendent	South El Monte
3	SR-60	Valle Lindo School District	Mr.	Rudy	Martinez	President	South El Monte
3	SR-60	City of El Monte	Mr.	Rene	Bobadilla		El Monte
3	SR-60	City of El Monte	Ms.	Deborah	Moraza	Transportation Services Manager	El Monte
3	SR-60	City of El Monte	Mr.	Eugene	Moy	Redevelopment Manager	El Monte
3	SR-60	City of El Monte	Mr.	James	Mussenden	City Manager	El Monte
3	SR-60	City of Industry	Mr.	Joshua	Nelson	Project Engineer	City of Industry
3	SR-60	City of Monterey Park	Ms.	Amy	Ho	Transportation Manager	Monterey Park
3	SR-60	City of Monterey Park	Mr.	Elias	Saykali	Director of Public Works	Monterey Park
3	SR-60	City of Pico Rivera	Mr.	Al	Cablay	Director of Public Works	Pico Rivera
3	SR-60	City of Rosemead	Ms.	Aileen	Flores	Public Affairs Manager	Rosemead
3	SR-60	City of South El Monte	Mr.	Manuel	Mancha	Director, Community Development	South El Monte
3	SR-60	City of South El Monte	Mr.	Anthony	Ybarra	City Manager	South El Monte
3	SR-60	City of South El Monte - Community Development	Mr.	Omar	Hernandez	Housing/Grants/Special Projects	South El Monte
3	SR-60	San Gabriel Valley Council of Governments	Mr.	Nick	Conway	Executive Director	Pasadena
3	SR-60	ELAC		Sonia	Lopez	Associate Dean, Student Activities	
3	SR-60	ELAC		Judy	Martinez	Social Science Commissioner, ASU Board Member	

Eastside Transit Corridor Phase 2 - Focus Group Invitee List (April/May 2009)

Invited To Group No:	Focus Group	Organization/Affiliation	Prefix	First Name	Last Name	Title	City
1,2,3	SR-60 Whittier/Beverly Washington	California State Assembly, District 49	Honorable	Mike	Eng	Assembly Member	El Monte
1,2,3	SR-60 Whittier/Beverly Washington	California State Assembly, District 49	Ms.	Monica	Aleman		El Monte
1,2,3	SR-60 Whittier/Beverly Washington	California State Assembly, District 50	Honorable	Hector	De La Torre	Assembly Member	South Gate
1,2,3	SR-60 Whittier/Beverly Washington	California State Assembly, District 56	Honorable	Tony	Mendoza	Assembly Member	Norwalk
1,2,3	SR-60 Whittier/Beverly Washington	California State Assembly, District 58	Honorable	Charles	Calderon	Assembly Member	City of Industry
1,2,3	SR-60 Whittier/Beverly Washington	California State Senate, District 24	Mr.	Henry	Lo		Los Angeles
1,2,3	SR-60 Whittier/Beverly Washington	California State Senate, District 24	Honorable	Gloria	Romero	Senator	Los Angeles
1,2,3	SR-60 Whittier/Beverly Washington	California State Senate, District 30	Honorable	Ron	Calderon	Senator	Montebello
1,2,3	SR-60 Whittier/Beverly Washington	CB Richard Ellis	Mr.	James	Rodriguez	First Vice President	Commerce
1,2,3	SR-60 Whittier/Beverly Washington	Los Angeles County Board of Supervisors, District 1	Ms.	Nicole	Englund	Planning Deputy	Los Angeles
1,2,3	SR-60 Whittier/Beverly Washington	Mexican American Opportunity Foundation (MAOF)	Mr.	Martin	Castro	President	Montebello
1,2,3	SR-60 Whittier/Beverly Washington	Our Lady of Miraculous Medal Catholic Church	Mr.	Joseph	Avila		Montebello
1,2,3	SR-60 Whittier/Beverly Washington	Our Lady of Miraculous Medal Catholic Church	Mr.	Tony	Miera		Monterey Park

Eastside Transit Corridor Phase 2 - Focus Group Invitee List (April/May 2009)

Invited To Group No:	Focus Group	Organization/Affiliation	Prefix	First Name	Last Name	Title	City
1,2,3	SR-60 Whittier/Beverly Washington	Rio Hondo College	Mr.	Russell	Castaneda-Calleros M.P.P.	Director, Government & Community Relations	Whittier
1,2,3	SR-60 Whittier/Beverly Washington	Rolled Steel Products	Mr.	Steven	Alperson		Los Angeles
1,2,3	SR-60 Whittier/Beverly Washington	Rotary International	Mr.	Ted	Jones	President	Montebello
1,2,3	SR-60 Whittier/Beverly Washington	U.S. House of Representatives, District 34	Honorable	Lucille	Roybal-Allard	Congress Member	Los Angeles
1,2,3	SR-60 Whittier/Beverly Washington	U.S. House of Representatives, District 38	Honorable	Grace	Napolitano	Congress Member	Santa Fe Springs
1,2,3	SR-60 Whittier/Beverly Washington	U.S. House of Representatives, District 39	Mr.	Jesse	Cheng		Cerritos
1,2,3	SR-60 Whittier/Beverly Washington	U.S. House of Representatives, District 39	Honorable	Linda	Sanchez	Congress Member	Cerritos
1,2,3	SR-60 Whittier/Beverly Washington	U.S. House of Representatives, District 42, Office of Congressman Gary Miller	Ms.	Kara	Etheridge	Transportation Representatives	Brea
1,2,3	SR-60 Whittier/Beverly Washington	U.S. Senate	Honorable	Barbara	Boxer	Senator	Los Angeles
1,2,3	SR-60 Whittier/Beverly Washington	U.S. Senate	Honorable	Dianne	Feinstein	Senator	Los Angeles
1,2,3	SR-60 Whittier/Beverly Washington		Mr.	Phillip	Pace	Property Owner	Montebello
1,2,3	SR-60 Whittier/Beverly Washington		Mr.	Ruben	Juarez	Resident	Pico Rivera
1,2,3	SR-60 Whittier/Beverly Washington		Mr.	David	Juarez	Resident	Pico Rivera

Eastside Transit Corridor Phase 2 - Focus Group Invitee List (April/May 2009)

Invited To Group No:	Focus Group	Organization/Affiliation	Prefix	First Name	Last Name	Title	City
1,2,3	SR-60 Whittier/Beverly Washington		Mr.	Chris	Schaefer	Resident	Whittier
1,2,3	SR-60 Whittier/Beverly Washington	City of Montebello	Honorable	Robert	Urteaga	Mayor Pro Tem	Montebello
1,2,3	SR-60 Whittier/Beverly Washington	City of Montebello	Honorable	Rosemarie	Vasquez	Mayor	Montebello
1,2,3	SR-60 Whittier/Beverly Washington	CA State Assemblymember Charles Calderon - 58th Assembly District	Ms.	Lisa	Herrera		Pico Rivera
1,2,3	SR-60 Whittier/Beverly Washington	City of Pico Rivera	Mr.	David	Armenta	Council Member	Pico Rivera
1,2,3	SR-60 Whittier/Beverly Washington	City of Pico Rivera	Mr.	Ron	Beilke	Council Member	Pico Rivera
1,2,3	SR-60 Whittier/Beverly Washington	City of Pico Rivera	Mr.	Jeff	Brauckmann	Director of Community Development	Pico Rivera
1,2,3	SR-60 Whittier/Beverly Washington	City of Pico Rivera	Mr.	Chuck	Fuentes	City Manager	Pico Rivera
1,2,3	SR-60 Whittier/Beverly Washington	City of Pico Rivera	Ms.	Christina	Gallagher	Assistant Planner	Pico Rivera
1,2,3	SR-60 Whittier/Beverly Washington	City of Pico Rivera	Ms.	Gracie	Gallegos	Mayor	Pico Rivera
1,2,3	SR-60 Whittier/Beverly Washington	City of Pico Rivera	Ms.	Julia	Gonzalez	Deputy Director of Community Development	Pico Rivera
1,2,3	SR-60 Whittier/Beverly Washington	City of Pico Rivera	Honorable	Gregory	Salcido	Council Member	Pico Rivera
1,2,3	SR-60 Whittier/Beverly Washington	El Rancho High School	Mr.	Sam	Genis	Principal	Pico Rivera

Eastside Transit Corridor Phase 2 - Focus Group Invitee List (April/May 2009)

Invited To Group No:	Focus Group	Organization/Affiliation	Prefix	First Name	Last Name	Title	City
1,2,3	SR-60 Whittier/Beverly Washington	El Rancho Unified School District, Dist. 1	Mr.	Norbert	Genis	Superintendent	Pico Rivera
1,2,3	SR-60 Whittier/Beverly Washington	Montebello Board of Realtors / City of Pico Rivera	Honorable	Bob	Archuleta	Immediate Past President / Mayor Pro Tem	Montebello
1,2,3	SR-60 Whittier/Beverly Washington	Pico Rivera Resident	Ms.	Patricia	Bell		Whittier
1,2,3	SR-60 Whittier/Beverly Washington	Sheriff's Station	Captain	Michael	Rothans		Pico Rivera
1,2,3	SR-60 Whittier/Beverly Washington	El Monte Union High School District	Mr.	Tony	Ortega		El Monte
1,2,3	SR-60 Whittier/Beverly Washington	Army Corps of Engineers	Mr.	Phillip	Serpa		Los Angeles
1,2,3	SR-60 Whittier/Beverly Washington	Caltrans, Office of Environmental Analysis	Mr.	Brian	Manor	Environmental Planner	Los Angeles
1,2,3	SR-60 Whittier/Beverly Washington	City of Los Angeles, Bureau of Engineering	Mr.	Buu	Luu		Los Angeles
1,2,3	SR-60 Whittier/Beverly Washington	City of Montebello	Mr.	Michael A.	Huntley	Director of Community Development	Montebello
1,2,3	SR-60 Whittier/Beverly Washington	City of Montebello	Ms.	Aurora	Jackson	Director of Transportation	Montebello
1,2,3	SR-60 Whittier/Beverly Washington	City of Montebello	Ms.	Ariel	Socarras		Montebello
1,2,3	SR-60 Whittier/Beverly Washington	City of Whittier	Mr.	Martin	Browne	Management Analyst	Whittier
1,2,3	SR-60 Whittier/Beverly Washington	City of Whittier	Ms.	Nancy	Mendez	Assistant City Manager	Whittier

Eastside Transit Corridor Phase 2 - Focus Group Invitee List (April/May 2009)

Invited To Group No:	Focus Group	Organization/Affiliation	Prefix	First Name	Last Name	Title	City
1,2,3	SR-60 Whittier/Beverly Washington	Gateway Cities of Council of Governments	Mr.	Richard	Powers	Executive Director	Paramount
1,2,3	SR-60 Whittier/Beverly Washington	Los Angeles County, Dept. of Public Works	Mr.	Vince	Aguilar		Alhambra
1,2,3	SR-60 Whittier/Beverly Washington	Los Angeles County, Dept. of Public Works	Ms.	Lisa	Chen		Alhambra
1,2,3	SR-60 Whittier/Beverly Washington	City of Whittier	Mr.	Chris	Magdosku	Assistant Director of Public Works	Whittier
1,2,3	SR-60 Whittier/Beverly Washington	City of Whittier	Mr.	Owen	Newcomer	Council Member	Whittier
1,2,3	SR-60 Whittier/Beverly Washington	City of Whittier	Mr.	David	Pelser	Director of Public Works	Whittier
1,2,3	SR-60 Whittier/Beverly Washington	City of Whittier	Mr.	Joe	Vinatieri	Council Member	Whittier
1,2,3	SR-60 Whittier/Beverly Washington	Presbyterian Intercommunity Hospital	Ms.	Julie	Reback	Vice President Marketing	Whittier
1,2,3	SR-60 Whittier/Beverly Washington	Whittier Area Chamber of Commerce	Ms.	Mary Ann	Bakotich	Executive Director	Whittier
1,2,3	SR-60 Whittier/Beverly Washington	Whittier City School District	Mr.	Bob	Mazzeo		
1,2,3	SR-60 Whittier/Beverly Washington	Whittier College	Mr.	Joe	Price	Professor	Whittier
1,2,3	SR-60 Whittier/Beverly Washington		Mr.	Tony	Bustamante	Redevelopment Consultant	Whittier
1,2,3	SR-60 Whittier/Beverly Washington		Mr.	Steve	Temblador	Resident	Whittier

Eastside Transit Corridor Phase 2 - Focus Group Invitee List (April/May 2009)

Invited To Group No:	Focus Group	Organization/Affiliation	Prefix	First Name	Last Name	Title	City
1,2,3	SR-60 Whittier/Beverly Washington	City of Montebello	Honorable	William	Molinari	Council Member	Montebello
1,2,3	SR-60 Whittier/Beverly Washington	City of Montebello	Honorable	Kathy	Salazar	Council Member	Montebello
1,2,3	SR-60 Whittier/Beverly Washington	City of Montebello	Honorable	Mary Anne	Saucedo-Rodriguez	Council Member	Montebello
1,2,3	SR-60 Whittier/Beverly Washington	Leauge of Women Voters	Ms.	Margo	Reeg		
1,2,3	SR-60 Whittier/Beverly Washington	Our Lady of Miraculous Medal Catholic Church	Mr.	Josheph	Lombardo		Monterey Park
1,2,3	SR-60 Whittier/Beverly Washington	Our Lady of Miraculous Medal Catholic Church	Mr.	Ed	Solorzano		Montebello
1,2,3	SR-60 Whittier/Beverly Washington	Pico Rivera Resident	Mr.	Harold	Pederson		Pico Rivera
1,2,3,4	Montebello Alignment	Beverly Hospital	Mr.	Gary	Kiff	President	Montebello
1,2,3,4	Montebello Alignment	C-21 Dynamic Brokers	Ms.	Diana	Bustamante	President	Montebello
1,2,3,4	Montebello Alignment	CA State Assemblymember Charles Calderon - 58th Assembly District	Ms.	Adrianna	Villa	Field Representative	City of Industry
1,2,3,4	Montebello Alignment	City of Montebello	Honorable	Robert	Urteaga	Mayor Pro Tem	Montebello
1,2,3,4	Montebello Alignment	City of Montebello	Honorable	Rosemarie	Vasquez	Mayor	Montebello
1,2,3,4	Montebello Alignment	City of Montebello, Planning Commission	Mr.	Thomas	Calderon	Chair, Planning Commission	Montebello
1,2,3,4	Montebello Alignment	City of Montebello, Planning Commission	Ms.	Cynthia	Diaz	Planning Commissioner	Montebello
1,2,3,4	Montebello Alignment	City of Montebello, Planning Commission	Commissioner	Minerva	Gutierrez	Planning Commissioner	Montebello
1,2,3,4	Montebello Alignment	City of Montebello, Planning Commission	Commissioner	Maria	Halpern	Planning Commissioner	Montebello
1,2,3,4	Montebello Alignment	City of Montebello, Planning Commission	Ms.	Linda	Payan	Planning Commissioner	Montebello

Eastside Transit Corridor Phase 2 - Focus Group Invitee List (April/May 2009)

Invited To Group No:	Focus Group	Organization/Affiliation	Prefix	First Name	Last Name	Title	City
1,2,3,4	Montebello Alignment	Kaiser Permanente	Ms.	Reyna	Del Haro	Director of Public Affairs	Baldwin Park
1,2,3,4	Montebello Alignment	Montebello Board of Realtors	Ms.	Irma	Acosta		Montebello
1,2,3,4	Montebello Alignment	Montebello Board of Realtors	Mr.	Jay	Avirom	President	Montebello
1,2,3,4	Montebello Alignment	Montebello Chamber of Commerce	Ms.	Andrea	Wagg	President	Montebello
1,2,3,4	Montebello Alignment	Montebello Town Center	Ms.	Tisha	Cabezas	Marketing Manager	Montebello
1,2,3,4	Montebello Alignment	Montebello Town Center	Mr.	Gregory	Millsap	Senior Manager, Property Management	Montebello
1,2,3,4	Montebello Alignment	Montebello Town Center	Mr.	Vaughn	Vencill	Security & Guest Services Manager	Montebello
1,2,3,4	Montebello Alignment	Montebello Unified School District	Mr.	David	Randall		Montebello
1,2,3,4	Montebello Alignment	Montebello Unified School District	Mr.	Edward	Velasquez	Superintendent	Montebello
1,2,3,4	Montebello Alignment	P&P Management	Ms.	Pamela	Manookian		Montebello

APPENDIX G:

Outreach Meeting Record

Appendix G - Outreach Meeting Record

TYPE	STAKEHOLDERS	CONTACT NAME	PURPOSE	MEETING DATE & TIME	LOCATION
COUNCIL BRIEFINGS & OPEN HOUSES					
City	**City of Whittier - City Council & Open House**	Martin Brown	Present AA Results and Next Steps	**Tues., May 12, 09 Open House 5:30 p.m. Council Meeting 6:30 p.m.**	Whittier City Hall, Council Chambers 13230 Penn Street, 1st Floor Whittier, 90602
City	**City of Rosemead - City Council & Open House**	Aileen Flores	Present AA Results and Next Steps	**Tues, April 28, 09 Open House 5:30 p.m.* Council Meeting 7:00 p.m.**	City Hall Council Chambers 8838 E. Valley Blvd., Rosemead
City	**City of Commerce - City Council & Open House**	Alex Hamilton	Present AA Results and Next Steps	**Tues., April 21, 09 Open House 5:30 p.m.* Council Meeting 6:30 p.m.**	Commerce City Hall, Council Chambers 2535 Commerce Way Commerce, 90040
City	**City of Monterey Park - City Council & Open House**	Amy Ho	Present AA Results and Next Steps	**Wed., April 15, 09 Open House: 5:00 p.m.* Council Meeting: 7:00 p.m.**	Council Chambers 320 West Newmark Ave., Monterey Park, CA 91754
City	**City of South El Monte - City Council & Open House**	Omar Hernandez	Present AA Results and Next Steps	**Tues., April 14, 09, Open House 5:00 p.m.* Council Meeting 6:30 p.m.**	South El Monte City Hall, Council Chambers 1415 N. Santa Anita Avenue South El Monte, 91733
City	**City of Pico Rivera - City Council & Open House**	Julia Gonzalez	Present AA Results and Next Steps	**Tues., April 14, 09 Open House: 5:00 p.m.* Council Meeting: 6:00 p.m.**	Pico Rivera Council Chambers 6615 Passons Blvd Pico Rivera, CA 90660
City	**City of Montebello - City Council & Open House**	Aurora Jackson (AJ)	Present AA Results and Next Steps	**Wed., April 8, 09, Open House 5:30 p.m.* Council Meeting 6:30 p.m.**	Montebello City Hall, Council Chambers 1600 W. Beverly Blvd. Montebello, 90640

Appendix G - Outreach Meeting Record

TYPE	STAKEHOLDERS	CONTACT NAME	PURPOSE	MEETING DATE & TIME	LOCATION
City	**City of Monterey Park - City Council Project Update**	Elias Saykali, Director of Public Works	Project Update	**Wed., Feb. 18, 2009 7:00 pm**	Monterey Park City Hall, Council Chambers 320 West Newmark Avenue
FOCUS GROUP MEETINGS					
Stakeholder	**Focus Group #4**	Aurora Jackson (AJ)	Review alignments specific to Montebello	**Thurs., July 9, 09 6:00 p.m.-8:00 p.m.**	Montebello Senior Center
Stakeholder	**Focus Group Meeting #3 (SR60)**	Omar Hernandez	Present Project Background, Lay Foundation for Visioning Session, Discuss Benefits of LRT and Parking and Station Loctations	**Thurs., June 4, 09 6:00 p.m. - 8:00 p.m.**	So. El Monte Senior Center
Stakeholder	**Focus Group Meeting #2 (Whittier/Beverly)**	Sandra Castleman	Present Project Background, Lay Foundation for Visioning Session, Discuss Benefits of LRT and Parking and Station Locations	**Wed., June 3, 09 6:00 p.m. - 8:00 p.m.**	Whittier Train Depot 7333 Greenleaf Ave. Whittier , CA 90601
Stakeholder	**Focus Group Meeting #1 (Washington)**	Lilian Gonzalez	Present Project Background, Lay Foundation for Visioning Session, Discuss Benefits of LRT and Parking and Station Locations	**Tues, June 2, 09 6:00 p.m. - 8:00 p.m.**	El Rancho High School 6501 Passons Blvd. Pico Rivera, CA 90660
COMMUNITY OPEN HOUSES					
Stakeholder	**Property Owners Open House**	Trese Childs	Provide project overview/updates to property and business owners along the alignments	**Wed., July 29, 09 6:00 p.m. - 8:00p.m.**	Montebello Golf Course - San Antonio Room 901 Via San Clemente Montebello, CA 90640
ELECTED OFFICIAL BRIEFINGS					
Regulatory	**Gateway COG Transportation Committee (per Richard Powers request)**	Karen Heit	Project update	**Wed., May 6, 09 4:30 p.m.**	Gateway Cities COG 16401 Paramount Blvd. Paramount, CA 9072

Appendix G - Outreach Meeting Record

TYPE	STAKEHOLDERS	CONTACT NAME	PURPOSE	MEETING DATE & TIME	LOCATION
Regulatory	**San Gabriel Valley COG Transportation Committee**	Kathy Boyd	Update on Eastside Phase 2 Project	**Thurs., April 16, 09 4:00 p.m.**	SCE CTAC 6090 N. Irwindale Ave Irwindale, CA 91702
Regulatory	**Gateway COG**	Karen Heit	Present AA Results and Next Steps, Including Portland Tour Info., Visioning Sessions and City Council Briefings/ Open Houses and Next Steps	**Thurs., April 2, 09 10:00 a.m.**	16401 Paramount Blvd. Paramount, CA 90723
Regulatory	**San Gabriel Valley COG**	Kathy Boyd	Present AA Results and Next Steps, Including Portland Tour Info., Visioning Sessions and City Council Briefings/ Open Houses and Next Steps	**Tues., March 31, 09 1:30 p.m. - 2:00 p.m.**	3452 E. Foothill Blvd., Suite 910 Pasadena, CA 91107
TECHNICAL ADVISORY COMMITTEE (TAC) MEETINGS					
TAC	**TAC Meeting**		Project meeting	**Tues., March 17, 09 10:00 a.m.**	
STAKEHOLDER MEETINGS					
Stakeholder	**Kaiser Permanente Baldwin Park Medical Center** Attending the meeting on behalf of Kaiser will be: Maggie Pierce, Executive Director, Baldwin Park Medical Center Lloyd Duplechan, Assistant Medical Center Administrator, Baldwin Park Medical Center Reyna Del Haro, Director of Public Affairs, Baldwin Park Medical Center Carl Cameron, Administrator, Montebello Medical Office Building Peter Becronis, Corporate Real Estate Manager, Southern California Region	Gloria Bañuelos Reyna Del Haro Director of Public Affairs	Project update	**Wed., July 22, 09 9:30 a.m. - 11:00 a.m.**	Kaiser Permanente Baldwin Park Medical Center 1011 Baldwin Park Blvd. Baldwin Park, CA 91706
Stakeholder	**Southern California Edison**	Judy Grissmeyer	Project overview/technical team discussion	**Thurs., July 30, 09 10:00 a.m.**	1000 Potrero Grande, Monterey Park CA 91754
City	**City One-on-One: South El Monte**	Omar Hernandez	Review all Project Input Received, Discuss Tech. Issues and Prioritize Alternatives	**Tues., July 21, 09 3:00 p.m.**	City Hall Conference Room

Appendix G - Outreach Meeting Record

TYPE	STAKEHOLDERS	CONTACT NAME	PURPOSE	MEETING DATE & TIME	LOCATION
City	**City One-on-One: Montebello & Monterey Park staff:** City of Montebello department heads, planning officers, public works officials, community development officers	Aurora Jackson (AJ)	Review all Project Input Received, Discuss Tech. Issues and Prioritize Alternatives	**Thurs., July 16, 09** **2:00 p.m. - 5:00 p.m.**	Transportation Center, 400 S. Taylor, Montebello, Ca
City	**City One-on-One: Commerce staff:** Robert Zarrilli, Director of Community Development Alex Hamilton, Assistant Director of Community Development Dan Gomez, Director of Transportation Martin Gombert, Acting Director of Transportation	Linda Wright	Review all Project Input Received, Discuss Tech. Issues and Prioritize Alternatives	**Thurs., July 9, 09** **2:00 p.m.**	City Hall Admin Conference Room 2535 Commerce Way, Commerce
City	**City One-on-One: Rosemead staff:** Jeff Allred, City Manager Brian Saeki, Director of Community Development Sheri Bermejo, City Planner	Aileen Flores	Review all Project Input Received, Discuss Tech. Issues and Prioritize Alternatives	**Wed., July 8, 09** **10:00 a.m.**	City Hall Conference Room
City	**City One-on-One: Pico Rivera staff:** Julia Gonzalez Art Cervantes, Public Works Deputy Director	Julia Gonzalez	Review all Project Input Received, Discuss Tech. Issues and Prioritize Alternatives	**Wed., July 8, 09** **3:00 p.m. - 4:00 p.m.**	City Hall Main Conference Room
Stakeholder	**Southern California Edison**	Judy Grissmeyer	Project overview/technical team discussion	**Tues., June 30, 09** **9:00 a.m.**	1000 Potrero Grande, Monterey Park CA 91754
Regulatory	**FTA/Metro Monthly Coodination meeting**	Tham Nguyen	Provide Overview of Alternatives Prioritization Process and Final Recommendation	**Wed., July 1, 09** **9:00 a.m. - 12:00 p.m.**	
Stakeholder	**Montebello Golf Course - Golf Commission**	Fernando Garcia, Golf Course Superintendent/Facilites Manager	Project update	**Wed., June 17, 09** **11:30 a.m.**	901 Via San Clemente Montebello, CA 90640
Interest Group	**SR-60 Coalition**	Monica Aleman		**Tues., June 16, 09** **2:00 p.m.**	320 W. Newmark, Monterey Park
City	**City One-on-One: Whittier City Staff:** Nancy Mendez - Assistant City Manager Jeff Collier - Director of Community Development Fran Shields - Director of Community Development David Pelser - Director of Public Works Chris Magdosku - Assistant Director of Public Works Martin Brown - Transit Manager, Transit Division	Martin Brown	Discussion on route alignments, TOD, Land Use, Traffic Patterns etc in Whittier.	**Mon., June 15, 09** **11:00 a.m.**	Whittier Council Chambers

Appendix G - Outreach Meeting Record

TYPE	STAKEHOLDERS	CONTACT NAME	PURPOSE	MEETING DATE & TIME	LOCATION
Interest Group	**CalPoly Students Presentation to the Whittier City Council - 5 Point Intersection**	Wes Murray/Whittier Planning Commission	5 Points Intersection Improvements Presentaiton	**Fri., June 12, 09 10:00 a.m.**	City of Whittier
Interest Group	**Union Pacific Technical Team**	Lupe Valdez, Director of Public Affairs	Project update /Technical team discussion	**Thurs., May 28, 09 10:00 a.m.**	13181 Crossroads Parkway, North Suite 500 in the City of Industry
Interest Group	**Commerce Industrial Council - Board of Directors**	Eddie Tafoya	Project update	**Tues., May 26, 09 12:00 p.m.**	Steven's Steak House 5332 E. Stevens Place Commerce, CA
Stakeholder	**Our Lady of Miraculous Medal Catholic Church**	Tony Miera, Controller	Project update	**Thurs., May 14, 09 10:00 a.m.**	820 N. Garfield Ave. Montebello, CA 90640
Institutional	**Cantwell Sacred Heart of Mary High School**	David Chambers, Principal Ana Marie Straight, Secretary	Project update	**Mon., May 11, 09 12:00 p.m.**	329 N. Garfield Ave. Montebello, CA 90640
Interest Group	**Whittier Greenway Trail (GWT)**	Maria Claver / Mary Sullens Nancy Mendez	Project update	**Mon., May 4, 09 3:30 p.m.**	Whittier Council Chambers 13230 Penn Street, 1st Floor Whittier, 90602
Stakeholder	**Montebello Town Center**	Greg Millsap, General Manager	Project update	**Thurs., May 7, 09 10:00 a.m.**	2134 Montebello Town Center
Interest Group	**Mexican American Opportunity Foundation (MAOF)**	Martin Castro, President & CEO	Project update	**Thurs., April 30, 09 10:00 a.m. - 10:30 a.m.**	MAOF Office 401 N. Garfield, Montebello
City	**City of Montebello - District Board of Realtors**	Bob Archuleta, Mayor Pro Tem Irma Acosta, Executive Asst.	Project update and impacts on industry	**Wed., Mar. 4, 09 8:30 a.m.**	Quiet Cannon 901 N. Villa San Clemente, Montebello
Regulatory	**SCAG**	Kimberly Yu	Present AA Results and Next Steps	**Thurs., Feb. 26, 09**	

APPENDIX H:

Acronym List

Appendix H: List of Acronyms

AA ..... Alternatives Analysis
ACE.....Advanced Conceptual Engineering
BRT..... Bus Rapid Transit
CBD .....Central Business District
CE .....Conceptual Engineering
CEQA..... California Environmental Quality Act
CERCLA .....Comprehensive Environmental Response Compensation and Liability Act
CO .....Carbon Monoxide
COV .....Council of Government
CTPP .....Census Transportation Planning Package
EIR/EIS.....Environmental Impact Report/ Environmental Impact Statement
EPA ..... Environmental Protection Agency
FHWA ..... Federal Highway Administration
FTA .....Federal Transit Administration
FY .....Fiscal Year
GCL .....Geo-synthetic Clay
HOV .....High Occupancy Vehicle
I-5 .....Interstate 5
I-10 .....Interstate 10
I-605 .....Interstate 605
I-710 .....Interstate 710
KNR .....Kiss and Ride
LRT ..... Light Rail Transit
LRV ..... Light Rail Vehicle
Metro.....Los Angeles County Metropolitan Transit Authority
MIS .....Major Investment Study
MSE .....Mechanically Stabilized Earth
NEPA..... National Environmental Policy Act
NO_2 .....Nitrogen Dioxide
NTD .....National Transit Database
O_3 ..... Ozone
OCS .....Overhead Catenary System
OHP .....Office of Historic Preservation
OII ....Operating Industries, Inc
O&M .....Operating and Maintenance
PNR .....Park and Ride
PM_{10} and $PM_{2.5}$ .....Particulate Matter
PSA ..... Project Study Area
QA/QC .....Quality Assurance/Quality Control
SCAG ..... Southern California Association of Governments
SCC ..... Standardized Cost Categories
SCE.....Southern California Edison

SR-60 ..... State Route 60
TAC..... Technical Advisory Committee
TOD..... Transit Oriented Development
TPSS .....Traction Power Substations
TSM.....Transportation System Management
UPRR .....Union Pacific Railroad
USACE..... United States Army Corps Engineers