Metropolitan Transportation Authority
One Gateway Plaza
Los Angeles, CA 90012-2952
213.922.2000 Tel
metro.net

Metro

9

PLANNING AND PROGRAMMING COMMITTEE
NOVEMBER 18, 2009

SUBJECT: CRENSHAW TRANSIT CORRIDOR PROJECT

ACTION: APPROVE RECOMMENDATIONS

RECOMMENDATIONS

A. Receive and file the Crenshaw Transit Corridor Draft Environmental Impact Statement/Environmental Impact Report (DEIS/DEIR). Attachment A contains the Executive Summary. Attachment B is a map of the Study Area. The full report is available upon request or at: www.metro.net/crenshaw

B. Adopt the Light Rail Transit (LRT) Alternative as the Locally Preferred Alternative (LPA) as follows:

- From a northern terminal at the Exposition / Crenshaw station (reconstructed at-grade), the alignment follows Crenshaw Boulevard south to the Harbor Subdivision and then follows the Harbor Subdivision to a connection at the Metro Green Line Aviation/LAX station
- Stations are to be included at: Exposition/Crenshaw, Crenshaw/Martin Luther King Jr., Crenshaw/Slauson, Florence/West, Florence/La Brea, Aviation/ Manchester (optional), Aviation/Century (aerial)
- Grade separations are to be located:
  - Between 39th and 48th Streets (below grade)
  - Between 60th St and Victoria Avenue (below grade) (Design Option 4, included to respond to adverse visual impacts)
  - Across La Brea Avenue (aerial)
  - Across La Cienega Boulevard / I-405 (aerial)
  - Across Manchester Avenue (aerial) (Design Option 2, included to respond to traffic impacts identified in the Grade Crossing Analysis)
  - Across Century Boulevard (aerial) (Design Option 1, included to serve an improved connection to Los Angeles International Airport)
  - Adjacent to the Los Angeles International Airport south runways (below-grade trench)
- A maintenance facility is to be included at a site to be determined. A site in the City of El Segundo located between two railroad tracks northeast of the intersection of Rosecrans Avenue and Sepulveda Boulevard is recommended to be further analyzed. During the next phase of environmental review, MTA may have to identify additional alternate sites for analysis.

Attachment C1 shows the recommended Locally Preferred Alternative.

C. Authorize the preparation of the Final EIS/EIR, continued environmental review and additional advanced conceptual engineering for the LPA and the following additional design options (Attachment C2):
   - Centinela grade separation (cut-and-cover – Design Option 3)
   - Additional Crenshaw/Vernon Station (below grade – Design Option 5)
   - Exposition/Crenshaw grade separation (below-grade – Design Option 6)
   - Alternate maintenance facility sites, as necessary

   Additional design and cost estimation as well as input from relevant regulatory agencies (e.g., California Public Utilities Commission) is required in order to determine if the remaining design options should be included in the definition of the project to address potential environmental impacts and physical constraints. This next phase of work will include value engineering and analysis of interim operable segments, as necessary; and

D. Adopt a resolution (Attachment D) authorizing the Chief Executive Officer (CEO) to execute a Funding Agreement with Caltrans and the Los Angeles Neighborhood Initiative (LANI) for a $226,800 Caltrans FY 2009 Community Based Transportation Planning Grant for the West Boulevard Station Area and Community Linkages Plan. We will provide the required local match of $25,200 with half of the contribution as in-kind labor, which brings the total funding agreement amount to $252,000.

ISSUE

In April 2007, the Board awarded contracts to complete the Alternatives Analysis, federal and state environmental clearance and conceptual engineering, and to conduct public outreach for the Crenshaw Transit Corridor. In March 2008, the Board received a report which identified the two build alternatives – one Bus Rapid Transit (BRT) alternative and one Light Rail Transit (LRT) alternative – to be analyzed in detail in the AA/DEIS/DEIR in addition to the Transportation Systems Management (TSM) and No-Build Alternatives. In June 2009, the Board received an update on the status of the AA/DEIS/DEIR, including refinements to the alternatives being evaluated, and community participation efforts.

The Draft EIS/EIR is now complete and the Notice of Availability was published in the Federal Register on September 11, 2009, and the Notice of Completion was published with the State Clearing on September 10, 2009. The DEIS/DEIR was circulated for the public comment period which ended October 26, 2009. The adoption of a LPA is necessary in order for work to commence on the Final EIS/EIR and to procure and complete Advanced Conceptual Engineering (ACE)/Preliminary Engineering (PE). Adoption of the LPA will identify a transit mode and alignment for the project.

In addition, we applied for and were awarded a Caltrans' Environmental Justice: Context-Sensitive Planning Grant in FY 2009-10 funding cycle totaling $226,800. This grant, along with the $25,200 in matching dollars being provided by us, will fund the

development of a West Boulevard Station Area and Community Linkages Plan for neighborhoods surrounding the proposed Crenshaw Transit Corridor West Boulevard Station. The plan will describe strategies to increase transit access, mobility and opportunity for economic revitalization in this underserved, low-income and minority area. Station design refinements such as the subject of the Caltrans grant are typically performed once the LPA is selected during the FEIS/FEIR stage.

POLICY IMPLICATIONS

The Crenshaw Transit Corridor is contained in the constrained element of the adopted 2009 Long Range Transportation Plan (LRTP) with a planned completion date of 2018, consistent with the Measure R Expenditure Plan. The selection of the LPA would allow for the completion of the final EIS/EIR and ultimately construction of this Measure R project.

Adoption of the resolution authorizing the CEO to execute funding agreements and take any actions necessary to obtain the Caltrans grant, will help to explore a full range of station design solutions for the Crenshaw West Boulevard Station. The resolution is a requirement to obtain the Caltrans grant.

OPTIONS

The Crenshaw Transit Corridor AA/DEIS/DEIR considered numerous routes and mode alternatives which were reduced to two build alternatives. The Build Alternatives consist of a BRT and an LRT Alternative with six LRT Alternative design options. The DEIS/DEIR also evaluated TSM and No-Build alternatives.

The LRT Alternative incorporating several design options is recommended as the Locally Preferred Alternative. The Board could choose to select one of the other three alternatives carried forward in the DEIS/DEIR or defer selection of an LPA. None of these options is recommended because the LRT Alternative proved to generate the greatest travel time savings and reliability, higher ridership for comparable segments, more strongly supports community goals for economic development, and promotes connections with other elements of the Metro rail system. The BRT alternative does not yield strong travel time benefits due to some mixed flow operation and the slow speeds required of BRT vehicles at un-gated crossings along the Harbor Subdivision. Additionally, exclusive lanes in narrow sections of Crenshaw Boulevard require the conversion of mixed flow lanes and will result in some additional traffic impacts. See Attachment E for a Summary of Comparison of Build Alternatives.

With regard to deferring the LPA selection, this action is not recommended because it would delay implementation of this Measure R project which could result in not meeting the Measure R completion deadline.

Related to the Community Based Transportation Planning Grant, the Board may also choose not to authorize the CEO to execute the funding agreements. We do not

recommend this option because without Board approval, we will be unable to access the $226,800 Caltrans grant funding.

FINANCIAL IMPACT

Funding of $2.9 million in federal earmark and matching Measure R funds for this project is included in the FY 10 budget in cost center 4330 (South Bay Area Team), in project 465512 (Crenshaw Transit Corridor Project), in account 50316 (Services Professional/Technical) for the Final EIS/EIR.

The recommended LPA is estimated to cost approximately $1.4 billion in unescalated (2008) dollars. This cost estimate escalated to the planned construction completion date of 2018 is $1.76 billion. The 2009 LRTP provides for an escalated cost of $1.76 billion in 2018.

With regard to the Caltrans Planning grant, the FY 10 budget contains $12,500 in Proposition A, C, and TDA Administration funding in cost center 4330 (South Bay Area Team), in project 400227 (Community Strategies and Partnerships Initiatives), in account 50316 (Services Professional/Technical) to initiate grant activities.

Since both these efforts will be multi-year projects, it will be the responsibility of the cost center manager and the Chief Planning Officer to budget expenditures in future years.

Impact to Bus and Rail Operating and Capital Budget

The funding for the preparation of Final EIS/EIR is from a federal earmark and matching Measure R funds dedicated for this project. The funding for our match to the Environmental Justice Grant is from Proposition A, C, and TDA Administration funding and is not eligible for bus and rail operation and/or capital expenditures.

BACKGROUND

In April 2007, the Board authorized initiation of environmental clearance, conceptual engineering, and public outreach for the Crenshaw Transit Corridor. In March 2008, the Board received a report which identified the two build alternatives – one BRT alternative and one LRT alternative – to be analyzed in detail in the AA/DEIS/DEIR in addition to the TSM and No-Build Alternatives.

This Draft EIS/EIR culminates a series of studies including the Crenshaw-Prairie Corridor Preliminary Planning Study in 1994, the Crenshaw-Prairie Corridor Route Refinement Study in 2000, and the Crenshaw-Prairie Corridor Major Investment Study (MIS) in 2003. These studies documented the lack of connectivity and mobility and the need for transportation improvements in the Crenshaw Corridor.

Community Outreach

There has been a comprehensive community outreach program throughout the development of the DEIS/DEIR. In September 2007, a Notice of Intent to prepare an EIS was published in the Federal Register and a Notice of Preparation for an EIR was published. Four public scoping meetings were held in October 2007. A second round of four public meetings was held in February 2008 to provide the community with a Project update related to the screening of alternatives, to solicit input, and to answer questions. Three rounds of two Working Groups meetings each were held in August and September 2008 and March 2009, respectively. Topics included review of alignments and design features, environmental review process, station locations, urban design and land use, project funding and evaluation, transit connections, and evaluation criteria for the selection of a Locally Preferred Alternative.

With the completion of the DEIS/DEIR, we conducted four formal public hearings on September 30, October 1, 3, and 6, 2009, in accordance with Federal and State environmental law. These hearings were attended by approximately 400 people. Other project briefings conducted during the comment period included an additional 100 to 200 people. Over sixty briefings were held during the two-year development of the DEIS/DEIR with business, community, educational, and neighborhood groups. More than 400 comments were received during the comment period.

Most of the public comments received expressed support for the LRT Alternative, with less support received for BRT. Comments in support of the LRT Alternative cited connectivity with the rail system (especially the Metro Green Line), service to the LAX airport, stronger nexus with local economic development initiatives, and consistency with a long-term infrastructure strategy for the corridor that may potentially extend north toward Wilshire Boulevard and beyond and south to the South Bay and the Harbor area. Many cited the lack of benefit that BRT would bring to service along Crenshaw Boulevard and the notion that implementing BRT along the Harbor Subdivision may preclude future expansion of the regional transit network.

Comments on environmental impacts focused on public safety, traffic and parking, historic and cultural resources, environmental justice, visual impacts, noise, and community impacts. Many of the comments also pertained to safety of LRT crossings and the interaction of vehicular and pedestrian traffic with LRT. A significant number of comments requested a below grade alignment along the entire length of Crenshaw Boulevard between the Exposition Line and the Harbor Subdivision. Specifically, commenters requested a below grade alignment between 48th and 59th Streets related to concerns about traffic impacts, pedestrian safety associated with two schools (one located near a station and one located one block away from Crenshaw Boulevard), impacts due to reconfiguration of the street and landscaping, and perceptions of equity.

Concerns were raised about both maintenance facility sites. Comments about the site near Florence and Manchester Avenues (Westchester) related to displacement of existing uses (especially a local playhouse), traffic impacts due to required street

closures and perceptions of noise and air quality impacts of the facility upon the adjacent residential neighborhood. Concerns about the site near Rosecrans Avenue and Sepulveda Boulevard (El Segundo) related to consistency with a plan for future commercial development on the largely empty site, local traffic and accessibility, impacts to railroad service in the area, and a desire for more detailed discussion of impacts.

A comprehensive response to public comments will be incorporated in the Final EIS/EIR.

Rationale for LPA Recommendation

The LRT Alternative connecting the Exposition Line to the Metro Green Line and following Crenshaw Boulevard and the Harbor Subdivision ROW is recommended as the Locally Preferred Alternative based on transportation system performance, linkage to economic development, ability to facilitate a LAX airport service, and connections with the Metro Green Line.

The LRT represents the long-term investment that would generate the greatest benefits to travel time along the corridor. The LRT Alternative would allow for travel times between the Exposition Line and the Metro Green Line of 20 minutes, a savings of 29-33% from the equivalent BRT travel time of 28-30 minutes and a 43% savings from the equivalent TSM travel time of 35 minutes. As a result of the improved travel times and reliability, the LRT alternative would generate more riders along the segment between the Exposition Line and the Metro Green Line with a base estimate of 12,700 as compared with 9,700 for the BRT Alternative. Additional passengers are estimated to be attracted to the system as more projects enabled by Measure R are implemented and as more airport passengers take advantage of connections to LAX terminals. As ridership grows in response to growth patterns and increased connections in the corridor, the LRT Alternative is able to increase capacity to accommodate this growth and to maintain travel times and reliability.

The LRT Alternative is a more significant engine of economic development in the corridor. This is an important factor as coordination with development represents a significant opportunity at several nodes – near Baldwin Hills / Crenshaw Plaza and Leimert Park Village Station, downtown Inglewood, and the LAX area. Infrastructure associated with the LRT Alternative stations creates more opportunities for linkages with adjacent development. In addition, over the course of the project construction, the LRT Alternative generates 7,800 jobs each year as compared with 3,500 for the BRT Alternative. Attachment E provides a comparison of the LRT and BRT Alternatives. Attachments F, G, and H are summaries of Environmental, LRT Design Options, and Maintenance and Operations Facilities Impacts, respectively.

Significantly, the LRT Alternative includes a rail connection to LAX. A major intermodal transportation connection serving the airport is planned near the proposed Aviation / Century station. Los Angeles World Airports is planning to build an Automated People

Mover from this location to the LAX Central Terminal Area as part of its Master Plan. Passengers from both a north-south Crenshaw LRT service and a new Metro Green Line service will be able to connect to the Automated People Mover to LAX terminals.

Finally, the LRT Alternative leverages a connection to the existing Metro Green Line, improving accessibility for passengers in several corridors. The Crenshaw LRT Alternative creates a significant regional north-south link between the South Bay, communities along the Crenshaw Transit Corridor and the Expo Line, allowing for connections to downtown Los Angeles, and the Westside. The Metro Green Line will also be able to be extended to the north toward LAX with the possibility of future connections beyond.

Project Features

The LRT alignment would extend approximately 8.5 miles from the Exposition LRT line (under construction) at the Crenshaw/Exposition Boulevards intersection to the Metro Green Line near the LAX Station. Seven new stations are included as previously discussed.

The LRT alignment includes several grade separations wherever required by analysis of environmental impacts. Three design options still require additional evaluation to determine if they shall be included in the definition of the LRT alignment. They are recommended to be carried forward into the Final environmental review to continue to explore potential environmental impacts and physical constraints. Additional cost analysis with more advanced conceptual engineering design work and review by relevant partner agencies are required in order to make final determinations on the remaining design options.

- Potential Centinela grade separation (Design Option 3, $13 million, in 2008 dollars)
- Additional below grade station near Vernon Ave. (Design Option 5, $155 million)
- Below grade section between Exposition/Crenshaw and 39th Street (Design Option 6, $236 million)

All grade separations recommended to be included in the LPA respond to MTA's Grade Separation Policy or specific environmental impacts identified in the Draft EIS/EIR. The remaining grade separation design options are recommended to be carried forward into further analysis for the Final EIS/EIR until it can be determined if environmental criteria or regulatory agencies require them. Comments from agencies such as City of Los Angeles, the City of Inglewood, and the California Public Utilities Commission call for more detailed review and analysis to determine if additional grade separations shall be included or if included grade separated sections should be extended.

Project Impact and Findings

There are many factors that are important to consider for the LRT Alternative.

Environmental Impacts – Some environmental impacts remain with the LRT Alternative. Most traffic impacts are mitigated by design treatments as part of the alternative and included design options. The LRT Alternative has a longer length of combined grade-separated segments, minimizing traffic impacts and leading to faster and more reliable travel times. Air quality impacts (emissions of nitrous oxides) are associated with the LRT Alternative due to a relatively high share of passengers attracted to access the transit system by automobile. Special traffic work noise impacts are evident at two proposed station sites. Design of station facilities and traction power substations will need to be refined in the next phase of work in order to minimize impacts to historic resources.

Harbor Subdivision ROW

Discussions are continuing with the BNSF Railway to determine the long-term requirements for freight operations within the corridor and the physical requirements for design of LRT tracks along the Harbor Subdivision. We are also exploring the possibility of suspending rail traffic during the construction period in order to reduce construction costs.

NEXT STEPS

Upon Board approval of the LPA, work will commence on the preparation of the Final EIS/EIR for the Crenshaw Transit Corridor project. We anticipate returning to the Board in late Fall 2010 to certify the Final EIS/EIR and to file a Record of Decision with the Federal Transit Administration and a Notice of Determination with the State of California. As the Final EIS/EIR progresses, we will provide periodic updates to the Board.

ATTACHMENT

A. Crenshaw Transit Corridor DEIS/DEIR Executive Summary
B. Crenshaw Transit Corridor Study Area
C1. Crenshaw Transit Corridor Locally Preferred Alternative Recommendation
C2. Design Options for Further Analysis
D. Resolution Authorizing the Chief Executive Officer to Execute Funding Agreements with the State of California for Community Based Transportation Planning Grant
E. Comparison of LRT and BRT Alternatives
F. Summary of Environmental Impacts
G. Summary of LRT Design Options Impacts
H. Summary of Maintenance and Operations Facilities Impacts

Prepared by: Renee Berlin, Executive Officer, Transportation Development and Implementation
Alan Patashnick, Director, South Bay Area Team
Roderick Diaz, Transportation Planning Manager
Fulgene Asuncion, Transportation Planning Manager

Carol Inge
Chief Planning Officer

Arthur T. Leahy
Chief Executive Officer

ATTACHMENT A

Crenshaw Transit Corridor DEIS/DEIR Executive Summary

CRENSHAW TRANSIT CORRIDOR PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT/ DRAFT ENVIRONMENTAL IMPACT REPORT
EXECUTIVE SUMMARY

State Clearinghouse No. 2002091148

Metro

U.S. Department of Transportation
Federal Transit Administration

Crenshaw Transit Corridor As Part of the Regional Transportation System.

ES.1 Introduction

The Crenshaw Corridor, a heavily traveled north-south oriented urban corridor in Los Angeles County, California, is being considered for transit improvements by the Los Angeles County Metropolitan Transportation Authority (Metro) in cooperation with the Federal Transit Administration (FTA). These agencies have initiated an environmental review of proposed transit improvements in the corridor as a key step in providing the Metro Board and the general public with information that will support selection of a Locally Preferred Alternative (LPA). For purposes of the environmental review, Metro is serving as Lead Agency under the provisions of the California Environmental Quality Act (CEQA) and FTA is Lead Agency as required by the National Environmental Policy Act (NEPA). The environmental review entails preparation of a Draft Environmental Impact Statement (DEIS) to satisfy Federal requirements and a Draft Environmental Impact Report (DEIR) to satisfy State requirements. Highlighted in this summary is the planning and review process to date along with the comparative evaluation of proposed transit improvement alternatives for the corridor that will be considered by the Metro Board.

TABLE OF CONTENTS

ES.2 Purpose of this Environmental Document

This document describes the existing conditions and environmental setting in the Crenshaw Corridor. The environmental review process provides the public with an opportunity to review and comment on the alternatives and the environmental analysis presented in this document. The document discusses the purpose and need for the project and identifies and evaluates proposed transit improvement alternatives. Where appropriate mitigation measures are identified to reduce potentially adverse environmental impacts that may result from the alignments or alternatives being considered.

This DEIS/DEIR does not make recommendations regarding the approval or denial of the Crenshaw Transit Project or any of the transit improvement alternatives that are being considered. This DEIS/DEIR is intended as a disclosure document, to inform public agency decision-makers and the public of the environmental effects of the transit alternatives under consideration. Metro and the FTA shall consider the information included in this DEIS/DEIR, along with other information, which may be presented to the agency, prior to the selection of a LPA and the adoption of the project. Other agencies, such as the California Department of Transportation (Caltrans), and the Cities of Los Angeles, Inglewood, Hawthorne, and El Segundo, as well the County of Los Angeles, will also be involved in reviewing the Project. On the Federal level, agencies with potential reviewing/permitting authorities include the Advisory Council on Historic Preservation, Federal Aviation Administration, Federal Railroad Administration, the Occupational Safety and Health Administration, and the Environmental Protection Agency. The many agencies that evaluate the DEIS/DEIR will continue to be involved in the review process of the Final Environmental Impact Statement/Final Environmental Impact Report (FEIS/FEIR).

ES.3 Environmental Review Process

This DEIS/DEIR has been prepared to meet the requirements of NEPA and CEQA. As required by these laws, the environmental review process must be completed before the proposed project can be approved. The goal of both legislative acts is to ensure that local and federal decision-makers are aware of the environmental consequences of a project before making a decision whether to proceed.

View of the Crenshaw Corridor looking north from the Hyde Park area.

One of the first steps in the environmental review process is to publish a Notice of Intent (NOI) to prepare an EIS in the Federal Register. This notice was published on October 2, 2007 (Vol 72, No 190) and provided a brief description of the proposed project and invited comment on issues that would be addressed in theenvironmental document. A Notice of Preparation (NOP) of an EIR, the CEQA equivalent of the NOI, was also prepared and circulated by the State of California on September 28, 2007. In addition to these notices, various other means were used to invite public comment on the project. Three public scoping workshops, attended by 118 persons in total, were held between October 15 and 20, 2007. Letters of invitation were mailed to a total of 99,400 addresses within a 1/4-mile of the Crenshaw Transit Corridor alternative alignments. Articles and advertisements were published in a number of local newspapers including several non-English announcements, including the Korea Daily (Korean), La Opinion (Spanish), Daily Hawthorne Press Tribune, Nor Gyank (Armenian English/French), LA Sentinel, Watts Times and Metro Daily Brief advertisements in the Peninsula newspapers. Electronic mailings (e-mail blasts) were sent to stakeholders, including elected officials, council districts, and community-

CRENSHAW CORRIDOR LOCATION

based organizations. Metro also distributed bus pamphlets and placed postings in community and council district newsletters. The 30-day public scoping comment period was extended until November 20, 2007, and all 365 comments that were received on the project were documented and reviewed in the preparation of this document.

Numerous community meetings have been held as part of the Alternatives evaluation and project formulation process.

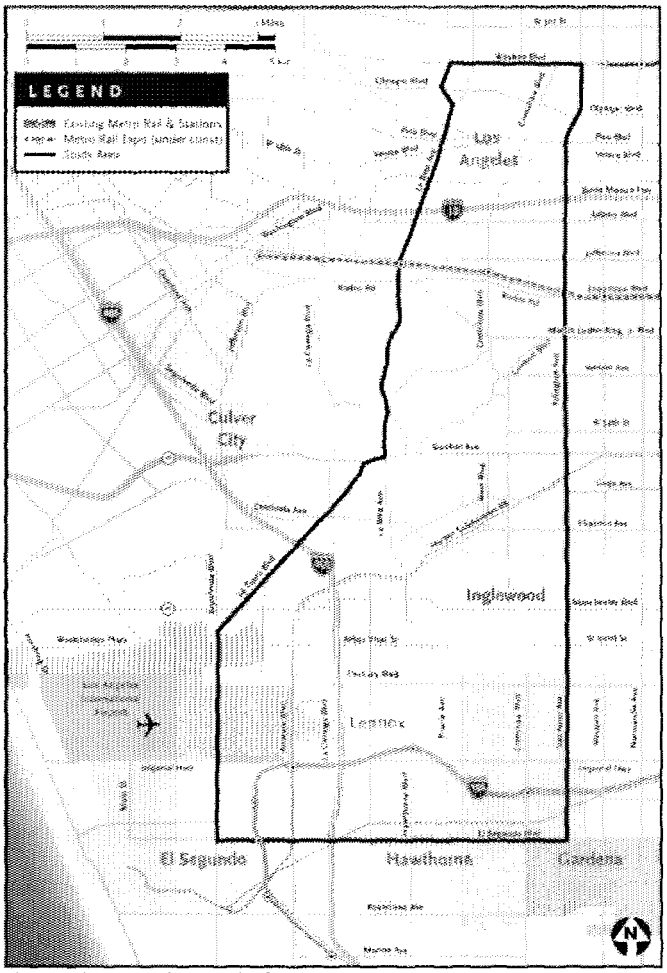
Metro will initiate a second round of public comment with the release of this DEIS/DEIR. The public review period of the completed DEIS/DEIR will last for 45 days. During the public review period, this document will be placed in local public libraries and other repository sites. The document will be made available on the Metro website (www.metro.net/crenshaw) and information about public hearings and other ongoing project activities is available via the project hotline at (213) 922-2736. Public hearings will be held to receive oral and written testimony on the DEIS/DEIR from the general public. Metro will provide notice of these public involvement meetings in compliance with CEQA and NEPA. For a detailed description of the environmental review process, and related public involvement opportunities, please refer to Sections 2.0 Alternatives Considered and 6.0 Community Participation of this document.

Public hearing testimony and written comments on the DEIS/DEIR will be compiled during the public review period. In Fall 2009, the Metro Board will consider public comments as it contemplates selection of a LPA for the Crenshaw Transit Corridor. Public comments and Metro responses will be incorporated into the FEIS/FEIR. These final reports, to be prepared in 2010, will focus on the environmental review of the LPA. Metro and the FTA cannot initiate the proposed project until the Final EIS/EIR is certified with all necessary mitigation measures and an adopted Mitigation Monitoring Program. Following certification of the FEIR by the Metro Board, the FTA will consider the FEIS and issue a public Record of Decision (ROD) to complete the final step in the environmental review of the project.

ES.4 Location of the Crenshaw Corridor

The Crenshaw Transit Corridor study area is generally a north-south corridor that extends approximately ten miles in length through much of Central Los Angeles. The study area includes approximately 33 square miles and portions of five jurisdictions: the Cities of Los Angeles, Inglewood, Hawthorne, and El Segundo, as well as portions of unincorporated Los Angeles County. The study area, as shown below, is generally defined as the area extending north to Wilshire Boulevard and the Park Mile area of Los Angeles; east to Arlington Avenue; south to El Segundo Boulevard and the downtown Hawthorne area; and west to Sepulveda Boulevard, La Tijera Boulevard, and La Brea Avenue. Three major interstate highways traverse the study area, including the Santa Monica Freeway (I-10) and Glenn Anderson Freeway (I-105), running east-west and the San Diego Freeway (I-405) which runs north-south. The Harbor Freeway (I-110) parallels the corridor, running north-south immediately to the east of the study area.

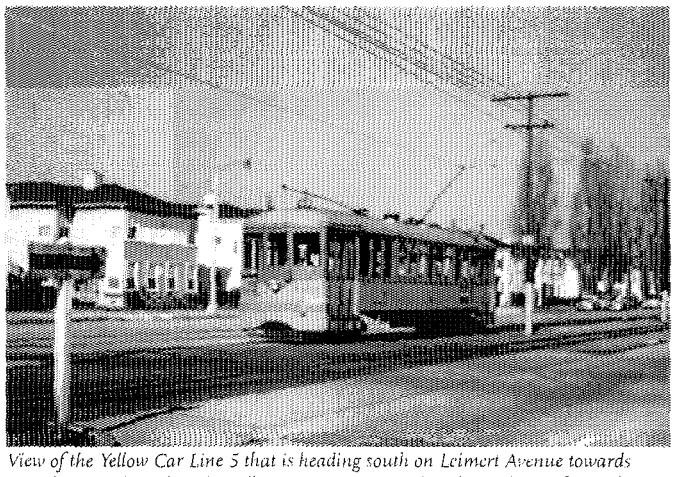
Who is on the Metro Board? Metro is governed by a 13-member Board of Directors comprised of: five Los Angeles County Supervisors; the Mayor of Los Angeles; three Los Angeles mayor-appointed members; four city council members representing the other 87 cities in Los Angeles County; and the Governor of California appoints one non-voting member.



The Crenshaw Corridor includes five jurisdictions and covers approximately 33 square miles.

ES.5 Previous Planning Studies

In 1967, the Crenshaw Transit Corridor was initially included in the region's first rail system plan. Over the past 40 years, Metro and its predecessor agencies - the Southern California Rapid Transit District (SCRTD) and the Los Angeles County Transportation Commission (LACTC) have undertaken numerous plans and studies that documented the lack of connectivity and mobility and the need for transportation improvements in the Crenshaw Transit Corridor. These included the Inner-City Transit Needs Assessment Study Final Report (1993) and the Community Redevelopment Agency's Crenshaw Corridor Recovery and Revitalization Environmental Impact Report (1994). Studies concluded that transportation within and from the Crenshaw Corridor was constrained, congested, and urgently in need of system improvements.



View of the Yellow Car Line 5 that is heading south on Leimert Avenue towards Crenshaw Boulevards. The Yellow Car Line operated in the medians of Crenshaw Boulevard, Leimert Avenue and Hawthorne Boulevard until the 1950s.

Metro has completed three transportation studies of the Crenshaw Transit Corridor over the past 13 years alone. In 1994, the Crenshaw-Prairie Corridor Preliminary Planning Study clearly identified the need for high-capacity transit system improvements. These options were studied further in December 2000, with the Crenshaw-Prairie Corridor Route Refinement Study. This report identified the need for viable transportation alternatives for the Crenshaw Transit Corridor. In 2003, the Crenshaw-Prairie Corridor Major Investment Study (MIS) was completed to assist decision-makers in evaluating the most effective solution, or phasing of solutions, to the transportation challenges identified in the Crenshaw Transit Corridor while achieving local goals and objectives. The MIS provided the foundation for the inclusion of the Crenshaw Transit Corridor into the Metro Long Range Plan. A description of each of these three previous studies is presented in Section 1.0 Purpose and Need of the DEIS/DEIR.

ES.6 Purpose and Need for the Project

Travel demand forecasts prepared by the Southern California Association of Governments (SCAG) and Metro over the past decade have identified the need for transit improvements

PROJECT PURPOSE - CONGESTION

throughout the Southern California region, particularly in Los Angeles County, to meet the mandates of the federal Clean Air Act and address the increasing mobility needs of the region.

The 2008 SCAG Regional Transportation Plan (RTP) determined travel conditions in the Crenshaw Transit Corridor will worsen by 2035 and the area will not meet regional objectives for transportation mobility, accessibility, reliability, or safety without additional transportation improvements. Subsequent travel demand forecasting conducted for the current update of the Metro Long Range Plan has confirmed the continuing need for mobility improvements in the corridor.

Existing transportation facilities and services within the Crenshaw Corridor include arterial streets, freeways, bus routes, and rail lines. The topography and street grid of the corridor present unique challenges to existing transportation facilities and services. There are few north-south arterials in the corridor that cross the western portion of the Crenshaw Transit Corridor. As a result of this constrained network, pressure is placed on nearby north-south arterials such as La Cienega Boulevard and La Brea Avenue.

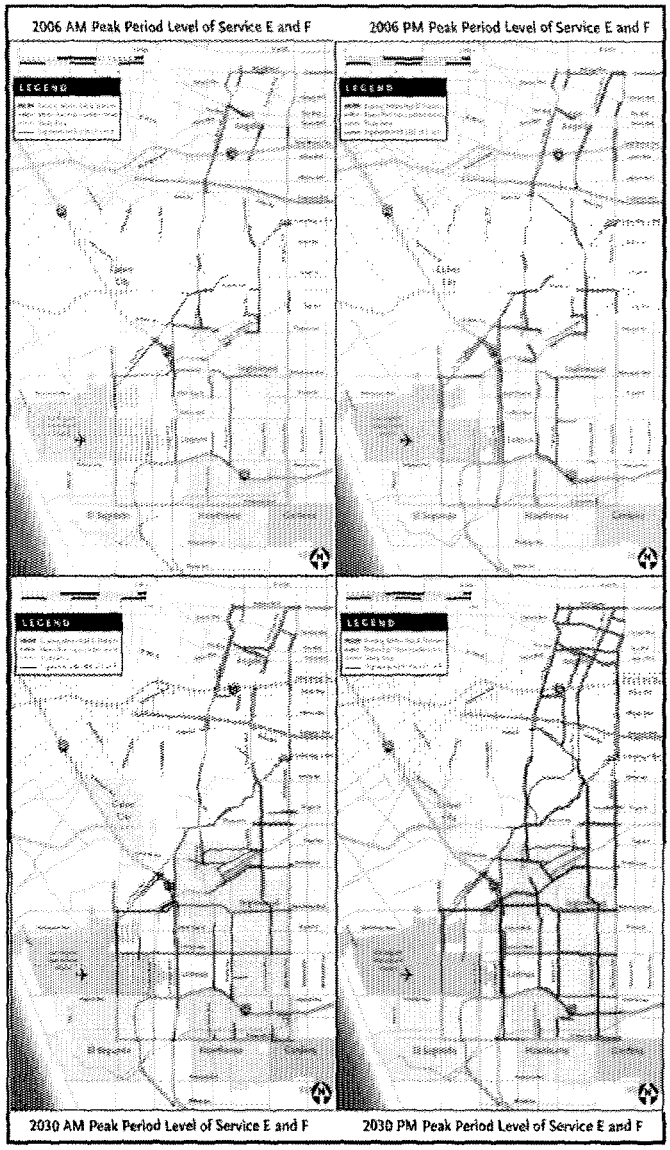
ES.7 Major Themes

This section describes the need for the Crenshaw Transit Corridor. The following factors highlight the need for transit improvements such as the proposed project. Each of these factors is briefly explained and described below.

- Peak Period Congestion
- Limited Transportation Accessibility
- Poor Connections with Regional Transportation
- Limited Access to Services Outside of the Corridor
- The Corridor's Economic Future Is Dependent on Improved Accessibility
- High Transit Demand, Transit Dependency, and Transit Operation Challenges
- Benefit to the Environment and Improved Sustainability for Corridor Communities

Peak Period Congestion

Los Angeles has the distinction of being the most congested urban area in the country, according to the most recent annual survey of traffic congestion levels conducted by the Texas Transportation Institute. Current freeway and surface arterial facilities cannot be sufficiently expanded to handle the forecasted travel demand. The number of roadway segments within the Crenshaw Transit Corridor that are congested, that is locations



The number of street segments in the corridor that will be overloaded and congested will double between today and the year 2030.

where traffic volumes consume more than 90 percent of the street capacity, is expected to more than double between 2006 and 2030 in both the AM peak travel period, 7:00 a.m. to 9:00 a.m. and the PM peak travel period, 3:00 p.m. to 7:00 p.m.

Local Roadways. By 2030, congestion is expected for Crenshaw Boulevard north of Manchester Boulevard to Wilshire Boulevard, the northern terminus of the study area. In addition, La Brea Avenue/Hawthorne Boulevard and Prairie Avenue, between Manchester Boulevard and the I-105 would continue to experience heavy traffic conditions and congestion during the morning peak period. The increased traffic congestion would result in lower peak period travel speeds along these corridors, generally below 30 miles-per-hour with speeds below 20 miles per hour along some sections of Crenshaw Boulevard.

The Crenshaw Corridor is largely a residential community. Access to to regional transportation linking to jobs, services and education is key. Pictured here is a morning rush hour view of Crenshaw Boulevard near the entrance to the I-10 which connects the corridor to Downtown and West Los Angeles.

Freeways. The I-10, I-105 and I-405, similar to many freeways in Southern California, experience high levels of congestion, particularly during peak commute periods. The I-105, located near the southern edge of the study area, and I-405, located in the southwest portion of the study area, also experience heavy traffic throughout the day as they provide regional access to West Los Angeles and Los Angeles International Airport (LAX).

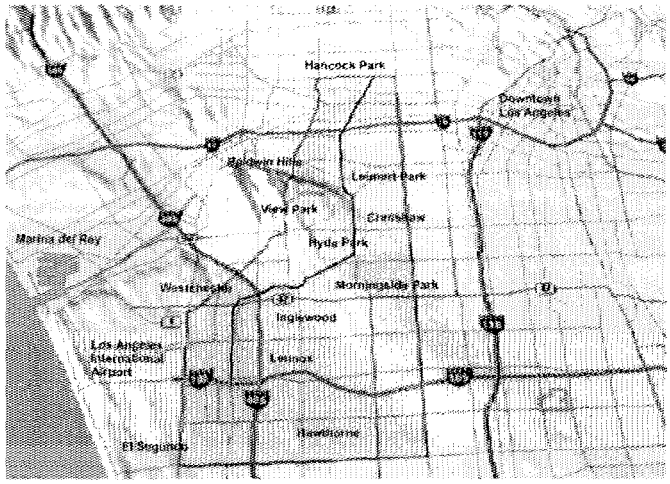
Based on the 2006 Caltrans traffic counts, the I-105 and I-405 carry an annual average daily traffic (AADT) volume of approximately 247,000 and 305,000 vehicles per day near LAX, respectively. The AADT for the I-10 within the study area is also high, at approximately 301,000 vehicles per day. The I-10 has peak period congestion levels rated at F3, meaning that the freeway operates at Level of Service (LOS) "F" conditions for more than three hours (for each peak period direction of travel) in each peak travel period (Caltrans, 1998). The AADT for these three freeways are among the highest in the nation.

View of Interstate 405 near Hughes Parkway. I-405 is the only north-south high capacity transportation facility within the corridor and it is congested for many hours of the day.

Between 2006 and 2030, peak period traffic volumes on the freeway segments within the Corridor are expected to increase by 20 to 90 percent. Based on traffic forecasts for the AM peak period, traffic volumes on the I-10 near Crenshaw Boulevard are anticipated to increase by more than 50 percent, from approximately 31,000 vehicles to 48,000 vehicles. During the same peak period, traffic volumes on the I-405 are forecasted to grow 40 to 50 percent, from approximately 30,000 vehicles to 43,000 vehicles. On the I-105, AM peak period traffic volumes are expected to increase by approximately 20 percent or more, with up to 90 percent increases in the westbound direction near LAX. This would result in AM peak period traffic volumes increasing from approximately 23,000 vehicles in 2006 to 30,000 vehicles in 2030.

Limited Accessibility

While the Crenshaw Transit Corridor is served by two east-west running interstates, the I-10 and I-105, the corridor is constrained by the lack of north-south mobility. Major sections of the arterial network in the corridor are at or near capacity, resulting in severe congestion and a bottlenecked corridor. The terrain of the corridor, generally characterized by a series of small hills, also precludes the provision of major east-west streets in the study area from Exposition Boulevard south to Manchester Boulevard, adding further limitations to north-south traffic flow. Implementation of an effective north-south transportation network within the Crenshaw Transit Corridor is vital to alleviate current and projected connectivity and mobility problems. Improving transportation in this corridor would affect corridor residents and businesses by providing essential linkages from residential areas to commercial, activity, employment, and institutional centers within and adjacent to the corridor.



The Baldwin Hills are a significant topographic constraint in the Crenshaw Corridor. The feature limits the continuity of the transportation network in both north-south and east-west directions increasing the importance of efficient traffic flow along Crenshaw Boulevard.

Poor Connections to Regional Transportation

The corridor currently has poor connections to the regional transportation system, as there are no north-south high capacity transportation connections within the corridor. The lack of transportation and transit connections limits mobility and transportation choices. Typically, the Crenshaw Transit Corridor residents must make several local bus and/or "Rapid Bus" transfers in order to access the existing regional transit system. Average travel times for residents within the corridor range from 32 to 42 minutes. The corridor's primary transit service, bus transit, is constrained by vehicular congestion and increased demand for service, resulting in a lack of effectiveness and passenger convenience.

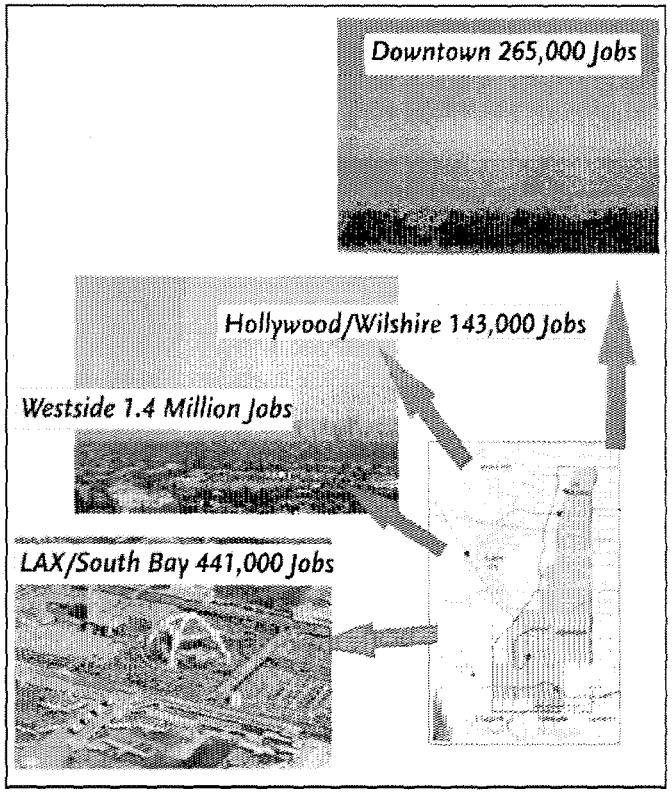
By 2030, the Crenshaw Corridor transit demand is projected to increase by approximately 55 percent. Without significant improvements and capacity enhancement, the Corridor's transit system will be substantially overburdened, and mobility to and from the corridor will be significantly constrained. There is an urgent need to improve transportation mobility and reliability in the corridor by improving both the level and quality of transit service. As population and employment continue to grow, the lack of regional transportation system connections will become more detrimental to future corridor travel and economic development.

Limited Access to Services Outside of the Corridor

One of the key components to socioeconomic mobility is access to jobs, services and education. The Crenshaw Transit Corridor is predominantly residential in character. While the Corridor contains important regional destinations such as LAX, the Forum, and Hollywood Park as well as local destinations including the Baldwin Hills-Crenshaw Plaza, the AMC Magic Johnson 15 movie theatre complex, the Nate Holden Performing Arts Center, the West Angeles Church of God in Christ, and other religious institutions, jobs, retail services and colleges are located outside of the corridor. With the implementation of transit improvements in the Crenshaw Transit Corridor, many of the transit-dependent residents residing in the study area would be able to easily access important destinations outside of the corridor, as well as take advantage of community civic centers located in the cities of Inglewood and Hawthorne, and a large number of shopping districts and centers located in Koreatown, the Crenshaw District, and downtown Inglewood.

Although the Crenshaw Transit Corridor contains several employment destinations, active retail centers, and stable

residential neighborhoods, there are many more activity and employment centers located outside of the corridor such as toward downtown Los Angeles, the Westside and South Bay. Corridor travelers have limited options and accessibility to existing transit because of continuing freeway and street system congestion, slowing and overburdened bus operations, and the lack of direct connections to the regional rail system. Future transportation improvements within the corridor will need to reflect a multi-modal strategy providing travelers with a more complete set of transportation alternatives.



The vast majority of jobs are found outside of the Crenshaw Corridor. Transit access to Downtown LA, Hollywood, Wilshire Corridor, Century City, South Bay and West Los Angeles is a critical element to the sustainability of Crenshaw Corridor communities.

Needless to say, the corridor will continue to export person trips to outside districts at a high rate from 2006 to 2030, particularly the Westside of Los Angeles. This would be the result of growing employment opportunities located in the Westside in conjunction with the fact that the study area is primarily residential, thus residents generally work outside the study area.

The Corridor's Economic Future Is Dependent on Improved Accessibility

A majority of the Crenshaw Transit Corridor is encompassed by redevelopment areas within the Cities of Los Angeles, Inglewood, and Hawthorne. City redevelopment agencies function in attracting private investment into economically depressed communities, eliminating blight and abandoned or unsafe properties. There is a strong connection between redevelopment and revitalization of these areas and transportation system improvements. Increased accessibility, mobility, and links to transit provide opportunity for increased development densities. All or portions of 11 redevelopment plan areas are located within the Corridor. A majority of the corridor's key activity and employment destinations are currently preparing expansion (e.g. Baldwin Hills/Crenshaw Plaza), revitalization (e.g. , downtown Inglewood), or redevelopment plans (e.g.,, Hollywood Park). The success of these projects and the corridor's economic future are strongly dependent on improved local and regional accessibility.

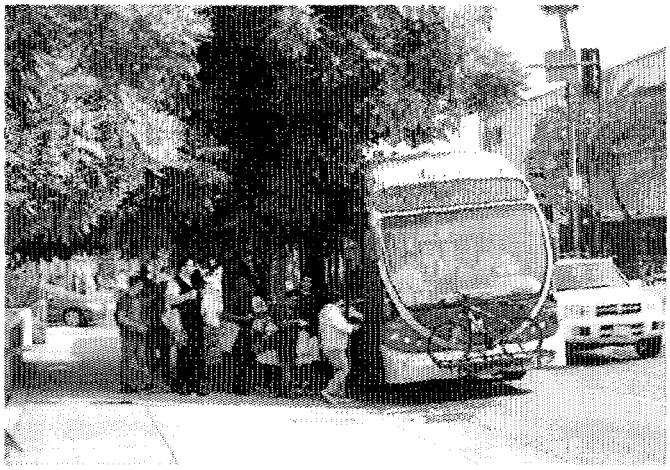
High Transit Demand, Transit Dependency, and Transit Operation Challenges

The existing population and employment density in the Crenshaw Corridor is extremely high and very transit supportive. The Corridor population and employment densities are four times higher than Los Angeles County as a whole. The Corridor has a high concentration of low-income, minority, transit-dependent residents. More than 49 percent of all corridor households are designated as low income. In addition, 16 percent of all households in the corridor do not have access to an automobile, compared to 8 percent in the County's urbanized area. Forecasts show a growing transit-dependent population, with a projected 55 percent increase in corridor residents that rely on, or will rely on the area's transit system.

As a result of the higher than average transit ridership in the corridor, many of the buses serving the corridor are at or over capacity, resulting in overcrowding, rider pass-bys and loading delays. These issues then contribute to uneven headways and related schedule problems. Overcrowding also reduces the life of

buses and contributes to higher maintenance costs. Bus operating conditions are affected by traffic conditions under which the service operates, passenger loading time, and bus-stop spacing.

The corridor has substantial traffic congestion, high bus ridership and load factors, and closely spaced bus stops. Combined, these factors result in declining bus operating speeds, reducing competition with the private automobile. Local bus service in the Crenshaw Transit Corridor currently operates at 10 to 13 miles-per-hour and the Metro Rapid buses operate at 13 to 15 miles-per-hour during AM and PM peak periods. Operating speeds are expected to decline further in the future as congestion increases.



Existing Rapid Bus service along Crenshaw Boulevard (lines 710 and 740) has been well received.

Benefit to the Environment and Improved Sustainability for Corridor Communities

The corridor is contained within the South Coast Air Basin, which has the worst air quality in the nation. Mobile source emissions from vehicles are the single largest contributor to air quality problems in the basin. The Crenshaw Transit Corridor Project would provide transportation and transit improvements that would provide the area with an energy-efficient way of reducing the number of vehicles on roadways and freeways. This would contribute to the improvement of Southern California's regional and local air quality, and a reduction in greenhouse gas emissions. Moreover, both Federal and State government are placing increased emphasis on improving the sustainability of neighborhoods and communities. Improved accessibility utilizing transit improvements will greatly aid in achieving sustainability for neighborhoods and communities within the corridor that are highly dependent on access to employment, services and education resources outside of the boundaries of the corridor.

ES.8 Consideration of Alternatives

As part of the environmental review process, Metro follows an established protocol to identify the transit alternatives and issues to be analyzed, including seeking input from the public, corridor stakeholders, and other affected parties. The alternatives described below provide a reasonable range of possible alternatives, which meet the project goals and objectives. As part of this process, Metro will consider all reasonable alternatives before selecting the preferred alternative that provides improved public transportation services in the Crenshaw Transit Corridor.

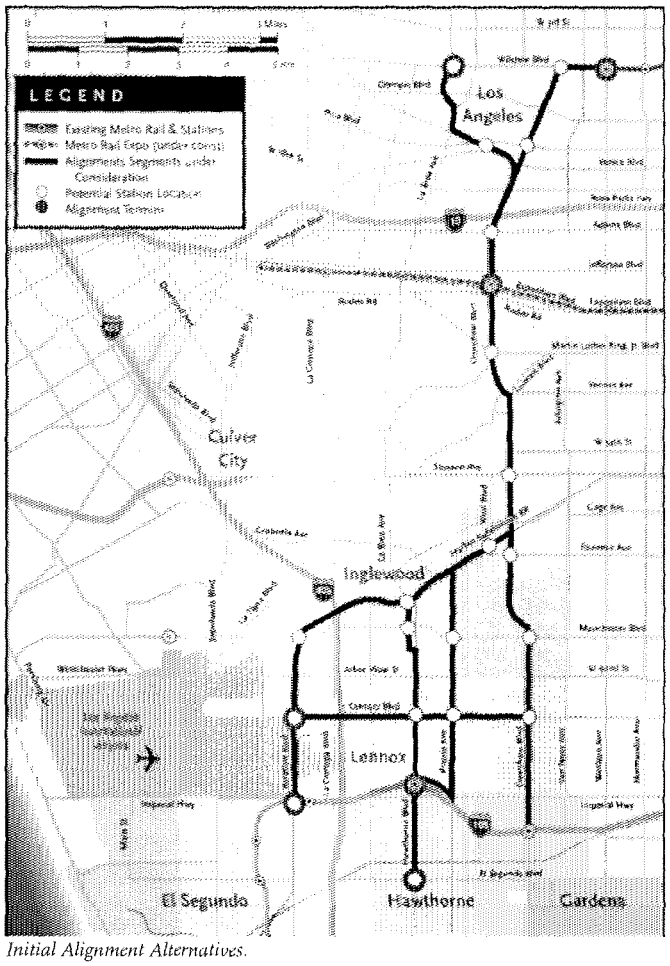
The process typically results in the narrowing down of options and alternatives are eliminated based on their effectiveness, environmental impacts, efficiency, financial feasibility, and equity. The end result of the process is the selection of a locally preferred alternative, or LPA, by the Metro Board. The data collection, analyses, and results of the alternatives analysis (AA) process are summarized in Section 2.0 Alternatives Considered of this DEIS/DEIR.

What is an LPA? The DEIS/DEIR process culminates in the Metro Board of Directors making a recommendation for the Locally Preferred Alternative (LPA). A LPA is the project alternative that the Lead Agency feels will best balance the needs of the population for which the project serves. This recommendation is based on the results of the environmental evaluation as well as public opinion conveyed throughout the public participation process. The selection of an LPA allows the project to move forward into more advanced design and engineering and more detailed environmental analysis.

INITIAL ALTERNATIVES CONSIDERED

Identification of Alternatives

The identification of alternatives for the Crenshaw Transit Corridor began with "project scoping." The project scoping exercise defined a series of initial improvement options that were conceptual in nature. Following scoping, the planning process involved analyzing the alternatives, to determine which alternatives would be studied in detail and carried forward into the DEIS/DEIR.

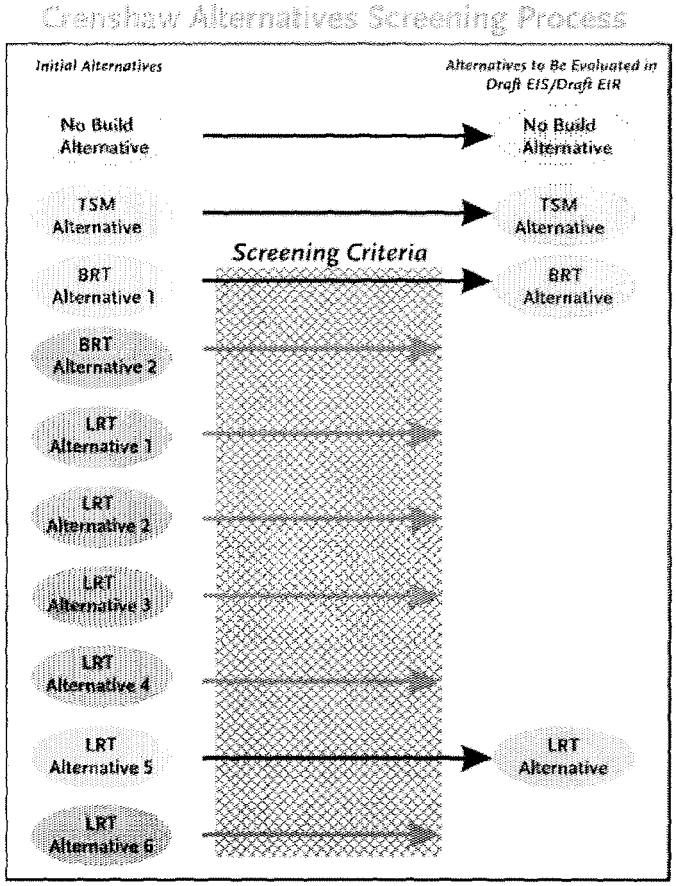


Initial Alignment Alternatives.

Initial Alternatives Screening

The alternatives development and evaluation process began with identifying the initial alternatives. The initial alternatives were presented at the scoping meetings and reviewed with the public and various agencies. In addition to a No-Build Alternative and a low cost transportation systems management (TSM) Alternative, which are required to be addressed by FTA, the initial alternatives included Bus Rapid Transit (BRT) and Light Rail Transit (LRT) operating along different alignments/routes. The initial alternatives were screened using engineering and environmental constraints, for example, comparing typical transit design configurations and alignments to existing right-of-way widths and then to the surrounding community and environment.

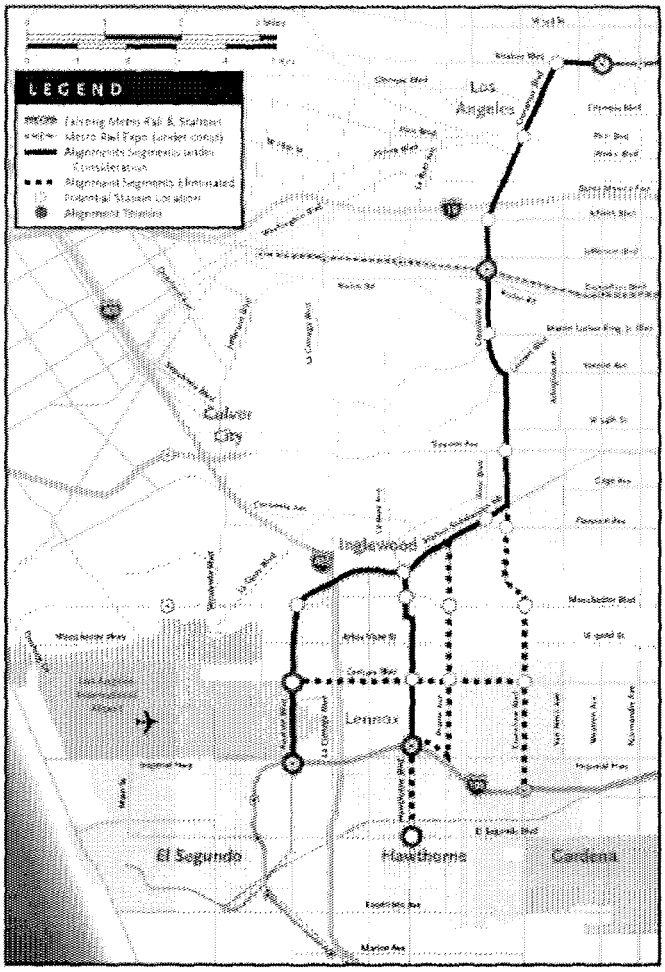
As a result of the initial alternatives screening, the following alignments and configurations were eliminated from further consideration.



- **Prairie Avenue between the Harbor Subdivision and the Metro Green Line** was eliminated because there is inadequate right-of-way between Florence Avenue and Manchester Boulevard for an at-grade or aerial (elevated)

LRT alignment or a dedicated BRT lane. In addition, there were potential engineering problems connecting to the Metro Green Line Hawthorne Station over the I-105 and the alignment had potential visual, noise, and land use impacts.

- **Crenshaw Boulevard between the Harbor Subdivision and the Metro Green Line** was eliminated due to inadequate right-of-way and the engineering problems associated with the curves between Crenshaw Drive and Manchester Boulevard. In addition, there are significant roadway elevation changes on Crenshaw Boulevard between Florence Avenue and 80th Street. Further, the landscaped median along that section of Crenshaw Boulevard would have to be removed. In addition, there are no activity or employment centers between the Harbor Subdivision railroad and Manchester Boulevard making the project less effective. Public support was also lacking for this Alternative.



Alignments Eliminated in Initial Study Screening. The dotted lines indicate the alignments eliminated from further study. Options were eliminated due to physical and engineering constraints, lack of community acceptance, and potential adverse environmental effects.

- **Century Boulevard between Crenshaw Boulevard and Aviation Boulevard** was eliminated because the width of Century Boulevard is not wide enough to accommodate an at-grade alignment and acquiring the necessary right-of-way would adversely affect existing businesses. Due to the limited street width, an elevated alignment would be an option, however, the I-405 crosses above Century Boulevard, as a result, a transit alignment would have to pass under the freeway. Near this point there is inadequate distance to transition from an elevated alignment to a below-grade alignment east of the I-405. In addition, there are limited station location options.

- **Hawthorne Boulevard between the Metro Green Line and El Segundo Boulevard** was eliminated because there is not a viable station terminus at Hawthorne/El Segundo Boulevards. As with other potential alignments, there are no activity or employment centers in the vicinity which would reduce the effectiveness of the project. This area is also characterized by low-density residential developments that would not be transit supportive.

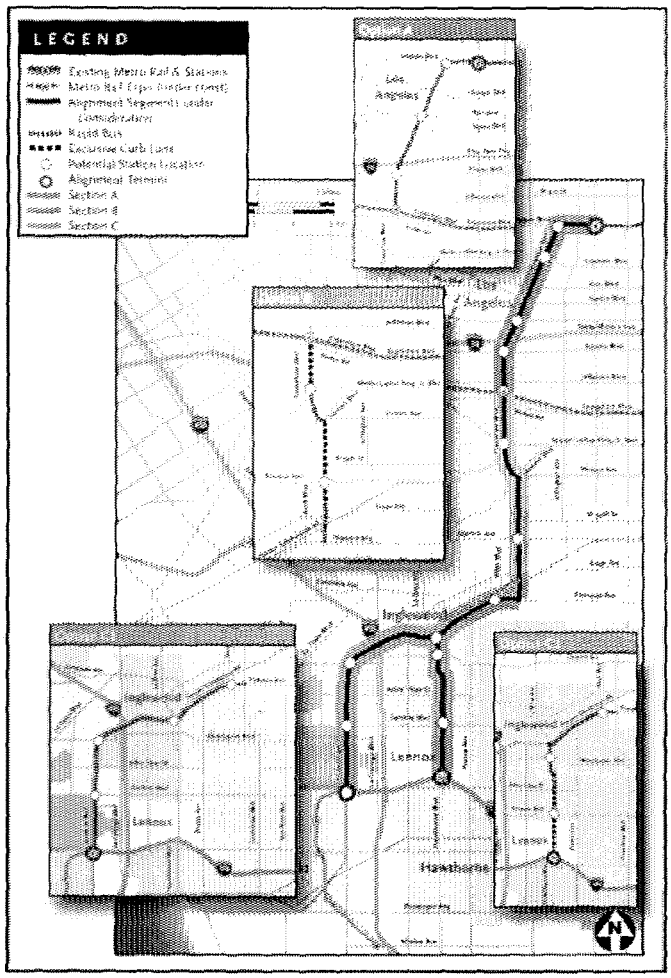
Conceptual LRT and BRT Alternatives Considered

The initial alternatives screening resulted in conceptual LRT and BRT alternatives that were analyzed in more detail. The Crenshaw Transit Corridor was divided into three sections to facilitate screening: Section A: Wilshire Boulevard to Exposition Boulevard; Section B: Exposition Boulevard to Harbor Subdivision/Florence Avenue; and Section C: Harbor Subdivision/Florence Avenue to the Metro Green Line. The detailed screening of conceptual alternatives focused on alignment alternatives that would apply to both the LRT and BRT modes. The screening was conducted sequentially, first analyzing alignments within the northern (Section A) and southern

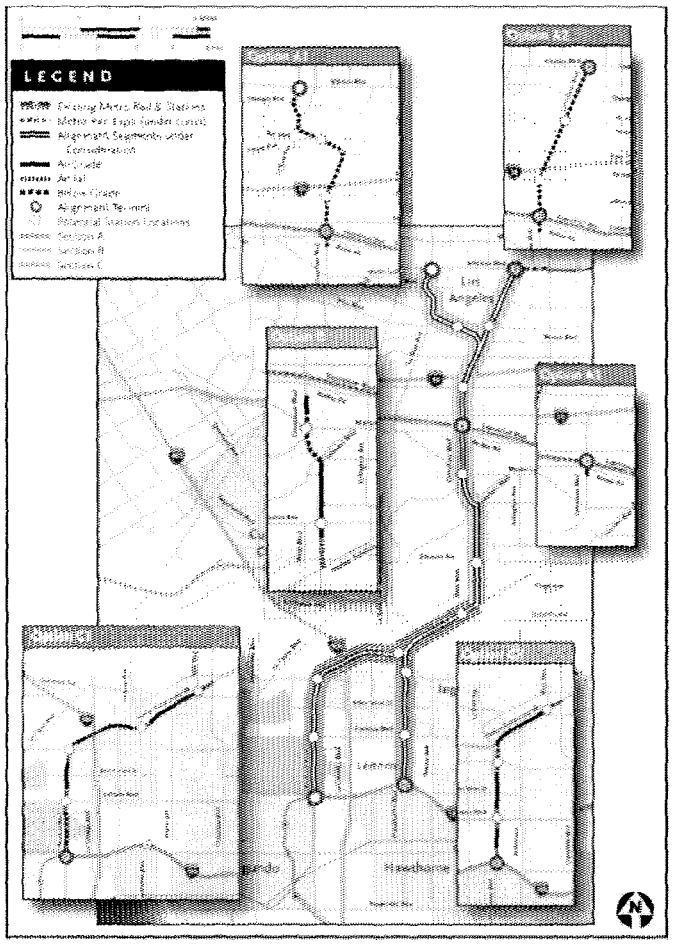
(Section C) corridor sections and then analyzing the six possible combinations of the Section A, B, and C alignments, at a corridor level.

Six Initial Corridor Alternatives Were Evaluated

Section A, B, and C alignment options were combined into full corridor alternatives extending from the northern termini, at Wilshire Boulevard/La Brea Avenue, Wilshire/Crenshaw Boulevards, or Exposition/Crenshaw Boulevards, to Aviation Boulevard/Imperial Highway or Hawthorne Boulevard/the I-105 . As shown, six full corridor alternatives were identified for screening:



Initial BRT corridor alternatives extended from the Purple Line, Wilshire/Western station to stations along the Green Line near I-105.



Initial alignment alternatives were built up from options in three sections of the corridor.

Alignment Alternative 1 – Starts at Wilshire Boulevard, runs south on La Brea Avenue, east on San Vicente and Venice Boulevards, south on Crenshaw Boulevard, and along the Harbor Subdivision to the Metro Green Line Aviation/LAX Station at Aviation Boulevard/Imperial Highway (Options A1, B, and C1). (11.9 miles)

Alignment Alternative 2 – Starts at Wilshire Boulevard, runs south on Crenshaw Boulevard, and along the Harbor Subdivision to the Metro Green Line Aviation/LAX Station at Aviation Boulevard/Imperial Highway (Options A2, B, and C1). (10.6 miles)

OTHER ALTERNATIVES CONSIDERED

Alignment Alternative 3 – Starts at Wilshire Boulevard, runs south on La Brea Avenue, east on San Vicente and Venice Boulevards, south on Crenshaw Boulevard, and along Market Street/La Brea Avenue/Hawthorne Boulevard to the Metro Green Line Hawthorne Station at Hawthorne Boulevard/the I-105 Freeway (Options A1, B, and C2). (10.1 miles)

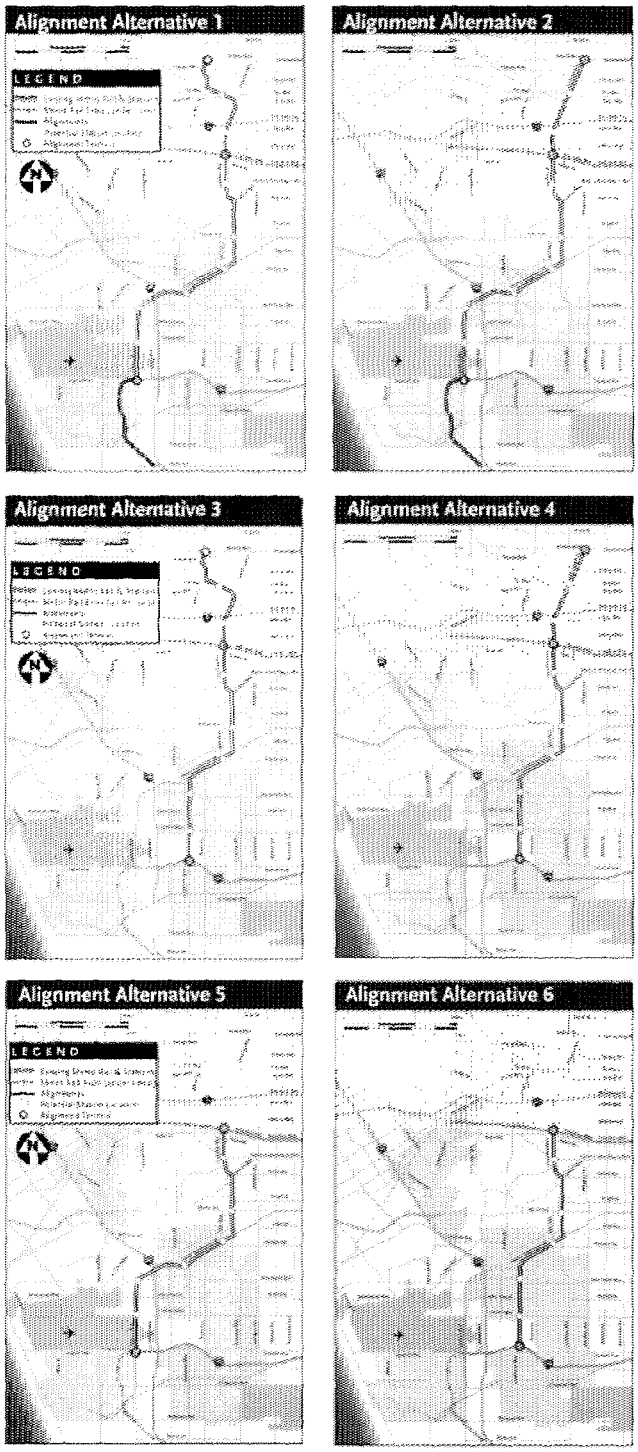
Alignment Alternative 4 – Starts at Wilshire Boulevard, runs south on Crenshaw Boulevard, and along Market Street/La Brea Avenue/Hawthorne Boulevard to the Metro Green Line Hawthorne Station at Hawthorne Boulevard/the I-105 Freeway (Options A2, B, and C2). (9.8 miles)

Alignment Alternative 5 – Starts at Exposition Boulevard, runs south on Crenshaw Boulevard, and along the Harbor Subdivision to the Metro Green Line Aviation/LAX Station at Aviation Boulevard/Imperial Highway (Options A3, B, and C1). (8.5 miles)

Alignment Alternative 6 – Starts at Exposition Boulevard, runs south on Crenshaw Boulevard, and along Market Street/La Brea Avenue/Hawthorne Boulevard to the Metro Green Line Hawthorne Station at Hawthorne Boulevard/the I-105 Freeway (Options A3, B, and C2). (7.0 miles)

The screening of alignment alternatives used evaluation criteria with an assumption of LRT operating characteristics including travel time savings, ridership, costs, and cost-effectiveness. Table ES-1 summarizes the LRT corridor alternatives characteristics and screening results.

What is an Alternatives Analysis? Transit project proposals seeking to qualify for federal funding typically proceed through the FTA's process, consisting of five formal steps: Alternatives Analysis Study, Environmental Impact Statement, Preliminary Engineering, Final Design, and Construction. The Alternatives Analysis Study is designed to examine all the potential transit options available and determine a locally preferred alternative.



Six Full Corridor Alignment Alternatives were initially studied.

Conceptual Station Locations Considered

Stations are a key component of the transit alternatives under consideration. Their location and design must balance transportation, urban design, architectural, and engineering factors. The conceptual alternatives refinement process included analyzing proposed station locations using pedestrian, automobile, and transit access; proximity to major cross streets, bus stops, Metro Rail stations, and other transit services; and, area development projects and plans (existing, planned, and potential). Proposed station location constraints were also evaluated, including: unfavorable existing land uses; environmental impacts; potential conflicts between pedestrian, automobile, and train traffic; right-of-way impacts, including surrounding businesses and/or properties and transportation system design issues; and, standards to be maintained. To facilitate the process, these issues were divided into the following four categories: pedestrian access, neighborhood character, linkages/development, and other issues.

Table S-1. Alignment Alternatives Characteristics and Screening Results Summary

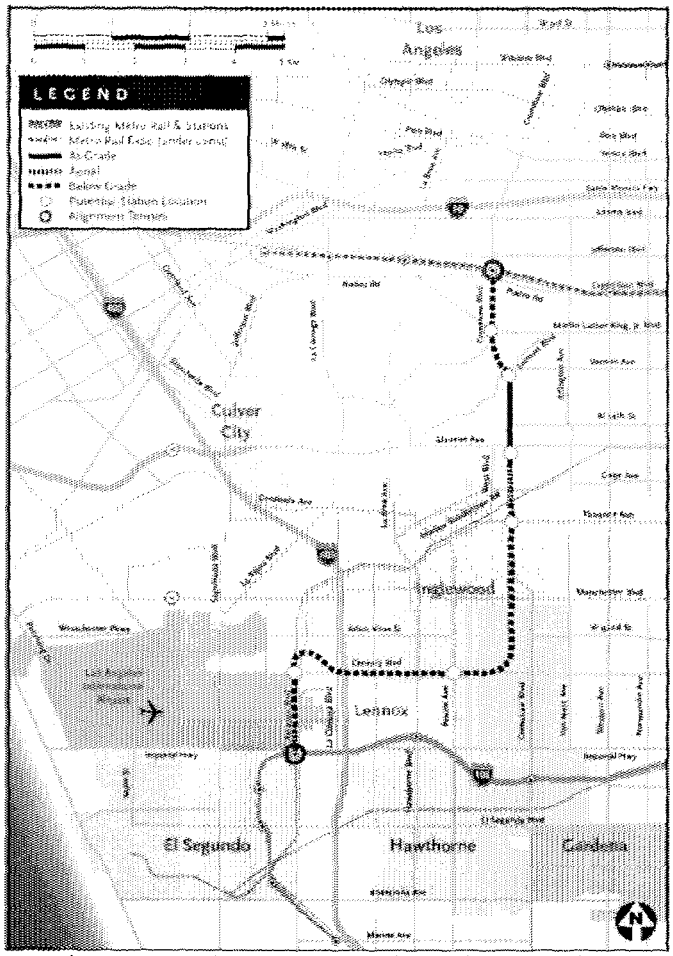
Criteria	Environmental Effects	Economic Development and Land Use	Capital and Operating Costs, Cost-Effectiveness, Financial Capability, and Federal New Starts Funding Criteria	Ridership/User Benefits	Travel Time Settings
Alignment Alt 1 (A1, B, C1)	Good	Lower population density; higher population without household vehicle; higher employment density	Highest capital cost; best cost-effective value	Highest daily boardings, high user benefits per passenger mile	Best within study area, to Westside District, and Redondo District
Alignment Alt 2 (A1, B, C2)	Good	Lower population density; higher population without household vehicle; highest employment density	Moderately high capital cost	Moderate user benefits per passenger mile	Best to Redondo District
Alignment Alt 3 (A1, B, C2)	Fair	Higher population density; higher low income population; lower employment density	Moderately high capital cost	Highest user benefits per passenger mile	Best within study area and to Westside District
Alignment Alt 4 (A2, B, C2)	Fair	Highest population density; highest low income population; lower employment density	Moderately high capital cost; low cost-effectiveness value	Moderate user benefits per passenger mile	Moderate; high within study area and to Westside District
Alignment Alt 5 (A3, B, C1)	Best	Lowest population density; higher employment density	Lower capital cost; consistent with Metro's *2001 Long Range Transportation Plan*	Lowest user benefits per passenger mile	Moderate; high to Redondo District
Alignment Alt 6 (A3, B, C2)	Better	Higher population density; higher low income population; lowest employment density	Lowest capital cost; lowest cost-effectiveness value; consistent with Metro's *2001 Long Range Transportation Plan*	Lowest daily boardings, low user benefits per passenger mile	Moderate

OTHER ALTERNATIVES CONSIDERED

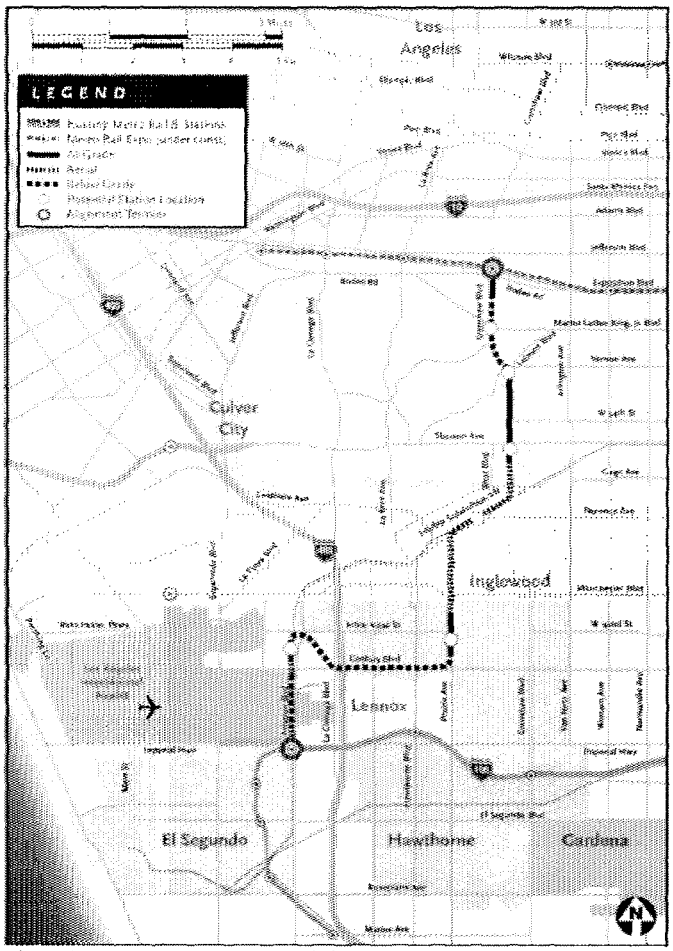
Additional Alignment Alternative Options Considered and Eliminated

Prairie Avenue and Crenshaw Boulevard Alternatives Through coordination with the City of Inglewood, it was suggested that two new alternatives be studied that would serve the proposed redevelopment of Hollywood Park on the site north of Century Boulevard between Prairie Avenue and Crenshaw Boulevard. They were suggested as alternatives to the proposed alignment along the Harbor Subdivision with service to downtown Inglewood. The alternatives would follow an alignment on either Prairie Avenue or Crenshaw Boulevard to serve a proposed station at Hollywood Park and Century Boulevard.

While the Prairie Avenue and Crenshaw Boulevard alternatives were previously evaluated in the initial screening process, the proposed redevelopment of Hollywood Park was not an approved element of the City of Inglewood's land use plan and could not yet be included in estimates of ridership according to FTA guidelines. At Century Boulevard, both alternatives would then continue west along Century Boulevard to serve LAX and connect with the existing Metro Green Line at Aviation Boulevard. These options were compared to each other as well as to the Harbor Subdivision alignment. Ridership potential, travel time, connections to other transportation facilities and services, physical constraints, capital costs, and environmental impacts were all considered. This supplemental analysis included land use data from major development projects yet to be approved.



A Crenshaw/Century Boulevard alignment was eliminated since it would require tunneling under residences, abandoned oil wells and across earthquake faults, raising the cost significantly.



The Prairie Avenue/Century Boulevard alignment did not compare favorably to the Harbor Subdivision alignment.

INITIAL MAINTENANCE FACILITY SITES CONSIDERED

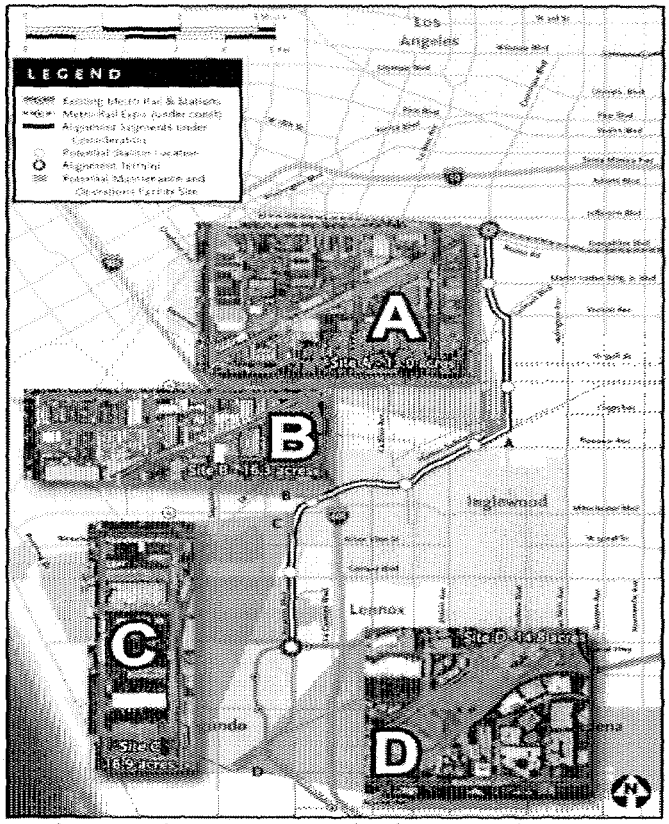
A comparison of the two Inglewood alignment alternatives determined that the Prairie Avenue/Century Boulevard alignment would be shorter in length and have fewer physical constraints than the Crenshaw Boulevard/Century Boulevard alignment. The Crenshaw Boulevard/Century Boulevard alignment would require tunneling under residences, abandoned oil wells, and across earthquake faults. It was also estimated to be at least $200 million greater in capital costs than the Prairie Avenue /Century Boulevard alignment and close to $1 billion more than the Harbor Subdivision alignment. For these reasons, the Crenshaw Boulevard/Century Boulevard alignment was eliminated and the Prairie Avenue/Century Boulevard alignment was selected for comparison with the Harbor Subdivision alignment.

The comparison of the Prairie Avenue/Century Boulevard alignment to the Harbor Subdivision alignment found that the Prairie Avenue/Century Boulevard alignment would result in slightly lower ridership (even accounting for proposed developments) and would have a capital cost of approximately $500 to $700 million, or 40 percent more than the Harbor Subdivision alignment. Although more population would be served by the Prairie Avenue/Century Boulevard alignment, the number of employees served would be significantly fewer than the Harbor Subdivision alignment with service to downtown Inglewood. The proposed station in downtown Inglewood on the Harbor Subdivision alignment would also have a greater number of transit connections than the proposed station at Hollywood Park on the Prairie Avenue/Century Boulevard alignment. In addition, there would also be significant and unavoidable parkland and cemetery impacts with the Prairie Avenue/Century Boulevard alignment. The Harbor Subdivision alignment is generally within an existing railroad corridor and would have fewer environmental impacts. For these reasons, the Prairie Avenue/Century Boulevard alignment was eliminated from further consideration.

The view of the Harbor Subdivision at Centinela Avenue in Inglewood. The Harbor Subdivsion is a portion of railroad right-of-way owned by Metro that runs east-west and north-south through the southern portion of the corridor. There are 19 at-grade surface street crossings of the railroad in the corridor.

ES.9 Maintenance and Operations Facilities Site Evaluation

The operation of additional transit services along the Crenshaw Transit Corridor requires facilities where transit vehicles can be serviced and maintained on both an overnight and long-term basis. While the maintenance and storage of additional buses needed for the No-Build and TSM Alternatives could be



Sites of approximately 15 acres or more are desirable. A variety of sites adjacent to corridor routes were reviewed. Four sites were initially considered for evaluation.

MAINTENANCE FACILITY SCREENING

accommodated within existing Metro facilities, the BRT and LRT Alternatives would require additional maintenance and storage capacity. The size, location, construction, and operations of the required bus and light rail vehicle maintenance and operations facilities must be considered as part of the BRT and LRT Alternatives evaluation.

BRT maintenance and operations facilities would be capable of performing all levels of standard and articulated bus vehicle service and maintenance and would also serve as a storage area for vehicles that are not in service. LRT maintenance and operations facilities generally include vehicle storage and repair, administrative and functional uses such as offices, materials, tools, parts storage, and communications equipment rooms. The following figure illustrates four potential maintenance and operations facility sites for the Crenshaw Transit Corridor Project. Site A is approximately 13 acres and bound by 67th Street, Crenshaw Boulevard, the Harbor Subdivision right-of-way, and West Boulevard. Site B is approximately 16.3 acres and bound by 83rd Street, the Harbor Subdivision right-of-way, and Isis Avenue. Site C is approximately 16.9 acres and is bound by Manchester Avenue, Osage Avenue/ the Harbor Subdivision right-of-way, and Bellanca Avenue. Site D is approximately 14.8 acres and in close proximity to the Metro Green Line and is bound by the Harbor Subdivision and a BNSF Branch Line, a Union Pacific Branch Line and Rosecrans Avenue. These sites were compared using several factors including, size and proximity; land use and zoning; land ownership; buffers; potential expansion; community disruption; and most valuable and best use. A comparison of the sites is shown in Table ES-2. Based on the analysis, the four potential maintenance yard sites were ranked as follows: 1) Site D, 2) Site B, 3) Site C, and 4) Site A.

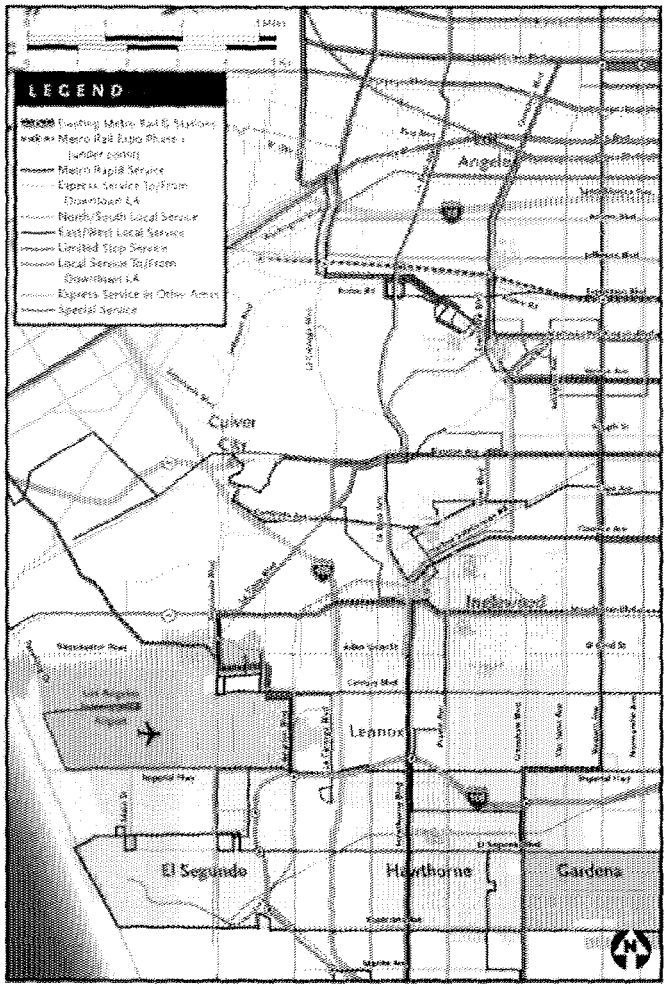
Table ES-2. Maintenance and Operations Facility Screening Summary

Criteria	Site A	Site B	Site C	Site D
Size and Proximity	13 acres; directly adjacent to alignment	16.3 acres; directly adjacent to alignment	16.9 acres; directly adjacent to alignment	14.8 acres; not directly adjacent to alignment
Land Use and Zoning	Residential; displaces approximately 182 dwelling units	Industrial; requires building demolitions	Industrial; requires building demolitions	Vacant; zoned commercial and industrial
Land Ownership	Private; requires public agency to displace residents	12% owned by County of Los Angeles Public Works	Private	Private
Buffers	Requires buffers	Requires buffers	Buffers unnecessary	Buffers unnecessary
Potential Expansion	Severely limited	Severely limited	Severely limited	Greatest potential
Community Disruption	High	Moderate	Moderate	Low
Pre-Emption of Most Valuable/ Best Use	Fair	Good	Good	Best

ES.10 Alternatives Evaluated In This DEIS/DEIR

No-Build Alternative

The No-Build or No Project Alternative is required to be discussed in all NEPA and CEQA environmental documents. The No-Build Alternative includes all existing highway and transit services and facilities, the current environmentally cleared or under construction Metro 2001 Long Range Transportation Plan committed highway and transit projects, and the SCAG's 2008 Regional Transportation Plan (RTP) committed highway and transit projects.



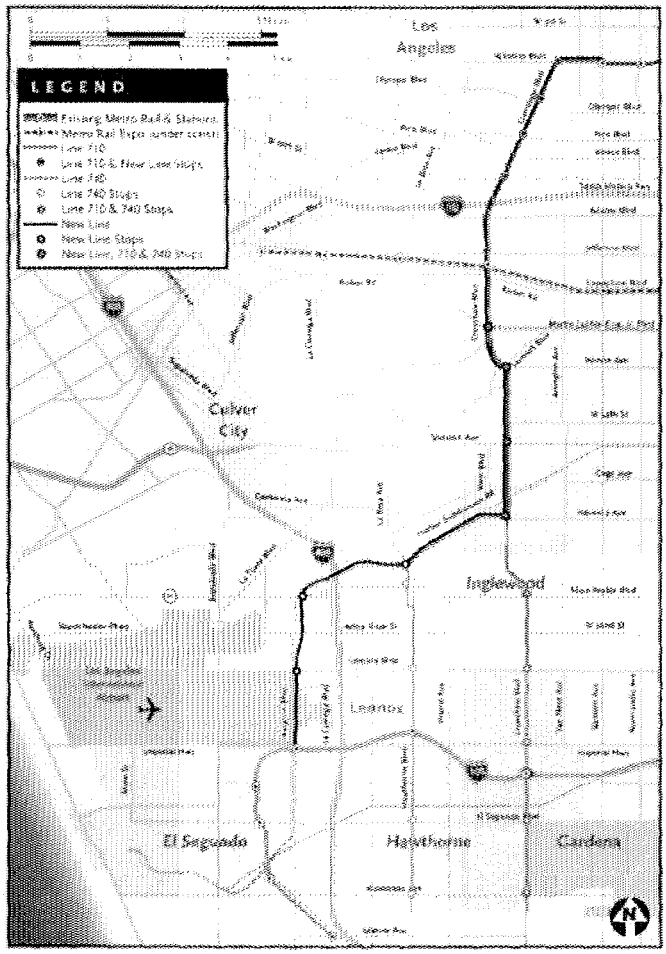
The No Build Alternative includes existing a funded projects in the Metro Long Range Plan. The baseline largely includes enhancements to existing local transit service .

Several projects that are unfunded in the Metro 2001 Long Range Transportation Plan or have not yet completed their environmental study are not included in the No-Build Alternative. These include Exposition Phase II, Westside Extension, and the Regional Connector.

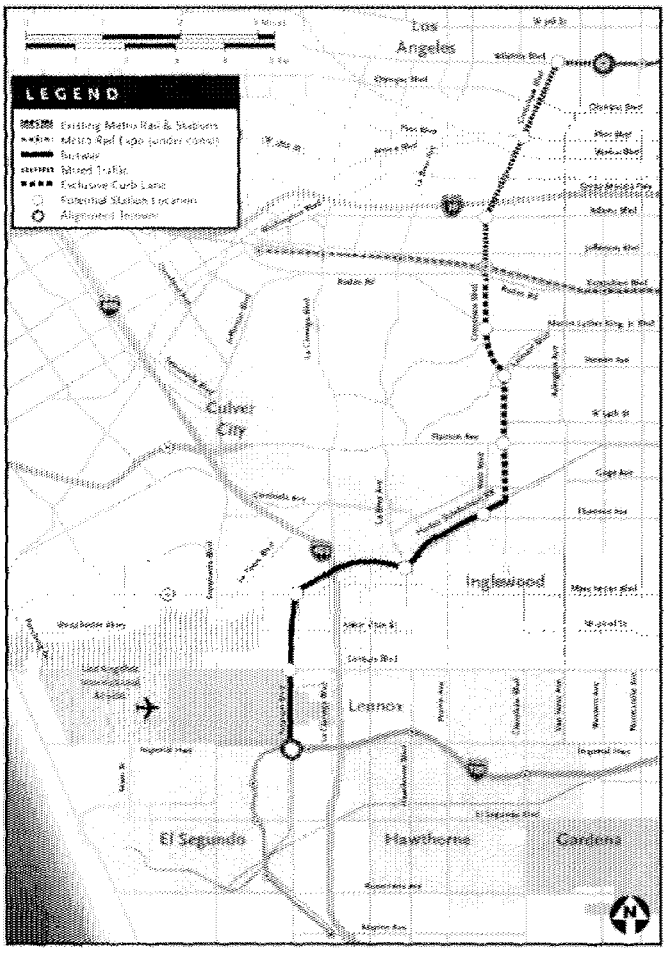
The No-Build Alternative provides valuable information to the decision-maker and the public as it serves as a point of departure for evaluating transportation and environmental impacts of the other "build" alternatives.

Transportation Systems Management (TSM) Alternative

The TSM Alternative enhances the No-Build Alternative by expanding the Metro Rapid Bus services operating in the Crenshaw Transit Corridor. Under the TSM Alternative, a new Metro Rapid line would be added along Crenshaw Boulevard, La Brea Avenue, and Hawthorne Boulevard to complement the existing Metro Rapid Lines 710 and 740. The new Metro Rapid would operate from the Metro Purple Line Wilshire/Western Station to the Metro Green Line Aviation/LAX Station. It would operate along Wilshire and Crenshaw Boulevards, to Florence Avenue, and then along Florence Avenue and Aviation Boulevard to the Metro Green Line Aviation/LAX Station, located at the Aviation Boulevard/Imperial Highway intersection. The proposed new Metro Rapid Line would have the same stop locations on Crenshaw Boulevard as the Metro Rapid Lines 710 and 740. On Florence Avenue and Aviation Boulevard, the new Metro Rapid Line would have stops at West Boulevard, La Brea Avenue, Manchester Boulevard, Century Boulevard, and Imperial Highway at the Metro Green Line Aviation/LAX Station. The TSM Alternative does not include any additional improvements other than the projects included in the No-Build Alternative and expanded bus service.



The TSM or Transportation Systems Management Alternative is required to be considered as an option by the Federal Transit Administration. TSM is intended to represent a low cost option to address needs in the corridor. The TSM Alternative for the Crenshaw Corridor involves improvements to existing Rapid Bus stops and the creation of a new Rapid Bus service along Florence Avenue and Aviation Boulevard.



The BRT Alternative considered in this Draft EIS/EIR is approximately 12 miles in length and provides service between the Metro Purple Line and the Metro Green Line. The BRT would operate in mixed traffic,and in semi-exclusive curb lane within Crenshaw Boulevard. It would operate in a dedicated busway on the Harbor Subdivision similar to the Metro Orange Line operations.

BRT Alternative

The BRT Alternative provides new transit services in the Crenshaw Transit Corridor, which would travel in mixed-traffic and in exclusive curb lanes. The BRT services would use low-floor, compressed natural gas (CNG) powered, articulated vehicles (i.e., a bus with two cabins rather than one), with multi-doors for boarding. Enhanced BRT stops and stations would be constructed for passengers to access the system. The BRT alignment would extend approximately 12 miles from the Metro Purple Line Wilshire/Western Station to the Metro Green Line Aviation/LAX Station. The BRT Alternative includes 12 stations. As discussed below, the BRT Alternative, in various segments of the corridor, would operate under three conditions, in mixed traffic, in an exclusive lane and in a dedicated busway.

Wilshire Boulevard/Crenshaw Boulevard Mixed-Traffic Lanes. The proposed new BRT route would begin at the Metro Purple Line Wilshire/Western Station. It would extend west operating in mixed-traffic lanes, from Wilshire Boulevard to Crenshaw Boulevard, with stations located at the Wilshire Boulevard/ Western Avenue and the Wilshire/Crenshaw Boulevards

intersections. On Wilshire Boulevard, the existing Metro Purple Line Wilshire/Western Station and the Wilshire/Crenshaw Boulevards intersection stop would be used for BRT route access. A new BRT station/stop would be located on Crenshaw Boulevard, south of Wilshire Boulevard. From Wilshire Boulevard, BRT vehicles operate in mixed-traffic on Crenshaw Boulevard south to Exposition Boulevard (similar to existing Metro Rapid Bus operations).

BRT stations/stops would be located at Pico, Adams, and Exposition Boulevards. The BRT station at Exposition Boulevard allows transfers to the Metro Expo LRT Line (under construction). A Metro Rapid Bus extension or a BRT line from Exposition Boulevard/Crenshaw Boulevard and Wilshire Boulevard/La Brea Avenue would be implemented when the Metro Purple Line is extended west from Western Avenue.

Crenshaw Boulevard Exclusive BRT Lanes. On Crenshaw Boulevard, between Exposition Boulevard and the Harbor Subdivision, semi-exclusive BRT lanes would be provided in each direction, using the outside curb lane (except where exclusive BRT lanes would be built, as described below). During peak periods, the BRT service would operate in lanes restricted to buses and right-turning vehicles. During off-peak periods, the BRT vehicles would operate in mixed-traffic and in exclusive lanes restricted to buses and right-turn vehicles on the remaining sections.

Exposition Boulevard to Rodeo Road – Exclusive BRT lanes would be provided during peak periods by restricting the outside curb lanes to buses and right-turning vehicles, and prohibiting parking or general vehicle use during peak periods. As a result, the peak period general purpose traffic lanes would be reduced to two lanes in each direction. During off-peak periods, the BRT vehicles would operate in mixed-traffic in the inside traffic lane, and would not change current on-street parking provisions or the general traffic lanes available during off-peak periods.

Rodeo Road to north of Martin Luther King Jr. Boulevard – Exclusive BRT lanes would be provided during the peak and off-peak periods by reconstructing the street and using an undeveloped area within the existing right-of-way, along the east side. The exclusive BRT lanes would be located along the outside curb lane and would be used by buses and right-turning vehicles only. The existing general traffic lanes would be maintained; however, on-street parking would be reduced, from both sides of the frontage roads to one side.

From north of Martin Luther King Jr. Boulevard to Vernon Avenue – Exclusive BRT lanes would be provided during peak periods by restricting the outside curb lanes to buses and right-turning vehicles, and by prohibiting parking or general vehicle use during peak periods. As a result, the peak period traffic lanes would be reduced to two lanes in each direction. During off-peak periods, the BRT vehicles would operate in mixed-traffic in the inside traffic lane, and current on-street parking provisions and general traffic lanes available during off-peak periods would remain as they are today.

Vernon Avenue to West 60th Street – Exclusive BRT lanes would be provided during peak and off-peak periods by reconstructing the street and using excess lane areas, or areas where frontage roads exist along the east and west sides. The exclusive BRT lanes would be located along the outside curb and be used by buses and right-turning vehicles only. The existing general traffic lanes would be maintained; however, on-street parking would be reduced from both sides of the frontage roads to one side.

West 60th Street to Florence Avenue – Exclusive BRT lanes would be provided during peak periods by restricting the outside curb lanes to buses and right-turning vehicles, and prohibiting parking or general vehicle use during peak periods. The peak period traffic lanes would be reduced to two lanes in each direction. During off-peak periods, the BRT vehicles would operate in mixed-traffic, in the inside traffic lane, and current on-street parking and the general traffic lanes available remain as is. BRT stations in this segment of Crenshaw Boulevard would be located at the Crenshaw/Martin Luther King Jr. Boulevards and the Crenshaw Boulevard/ Slauson Avenue intersection. In addition, an optional station near the Crenshaw/Leimert Boulevards intersection would also be considered.

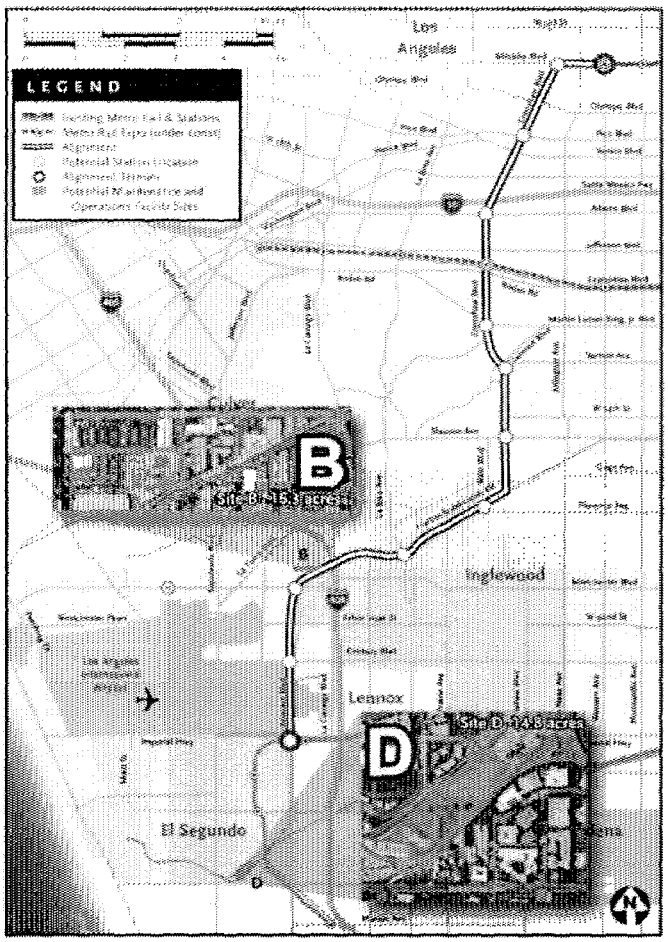
Harbor Subdivision BRT Busway. A BRT busway would be provided within the Harbor Subdivision right-of-way, from Crenshaw Boulevard south to the Aviation Boulevard/104th Street intersection, where the busway transitions to mixed-traffic operation. The BRT mixed-traffic operations continue from 104th Street and terminate at the Metro Green Line Aviation/LAX Station. The BRT Alternative assumes that the existing BNSF railroad tracks would be maintained. However, to accommodate a two-lane busway, the existing BNSF railroad track within the study area, would be relocated closer to the southern/eastern right-of-way line. The proposed busway would be located north and west of the relocated BNSF railroad track.

The BRT facility standards Metro used for the Metro Orange Line required a cross-section of 55 feet. This standard busway system would provide two 13-foot bus lanes separated by a 2-foot painted buffer line in the center of the busway and a relocated BNSF track. Because this cross-section could not be accommodated without acquiring additional right-of-way, a guided-busway system would be used to accommodate narrow bus lanes. Two 10.5-foot wide curbed bus lanes would be provided. A rubber guide following a raised curb on each side of the bus lane would guide the BRT vehicles. The busway would be separated from the relocated railroad track by a 1.5-foot wide barrier wall.

At the existing grade crossings, the railroad track would be protected by railroad gates and flashing lights. Between Crenshaw Boulevard and Imperial Highway, there are 19 at-grade BNSF railroad crossings within the Harbor Subdivision. These crossings would be modified to accommodate the busway crossing. Busway lanes would increase from 10.5 feet to 12 feet wide at these crossing. Without the widening, the raised curbs for the guided BRT vehicles would not be able to continue through the crossings. Traffic signals would control the busway crossings, rather than railroad gates and flashing lights. The wider busway and railroad gate setback requirements would require the acquisition of approximately six feet of additional right-of-way at these crossings.

BRT stations would be located approximately one-mile apart. The BRT stations would be at-grade and comprised of two separate platforms, one for each travel direction. The station platforms would accommodate three conventional (40- to 45-feet long) buses or two articulated (60-feet long) buses. The BRT platforms would accommodate low-floor vehicles to improve the boarding and alighting process and help reduce vehicle travel times. BRT stations along the Harbor Subdivision would be located at West Boulevard, La Brea Avenue, Manchester Boulevard, and Century Boulevard. A station is also proposed at the Metro Green Line Aviation/LAX Station. If implemented, passengers would be able to transfer to the proposed LAX "people mover" (planned to be constructed and operated by the airport) at the Century Boulevard Station.

Supporting BRT Facilities. A new maintenance and operations facility would be required to accommodate the expanded vehicle fleet under the BRT Alternative. The facility would be a stand-



This environmental report considers the impacts at two candidate maintenance yard sites. Site B is located in Westchester and Site D is located in El Segundo.

alone facility for BRT vehicle service and maintenance/storage area for vehicles not in service. The facility would ultimately be large enough to support approximately 100 to 300 buses. The ultimate facility size would be determined after the project's operating plan is finalized. The figure above shows the two proposed maintenance and operations facility sites being evaluated. These two sites are also being evaluated for the LRT Alternative.

Base LRT Alternative

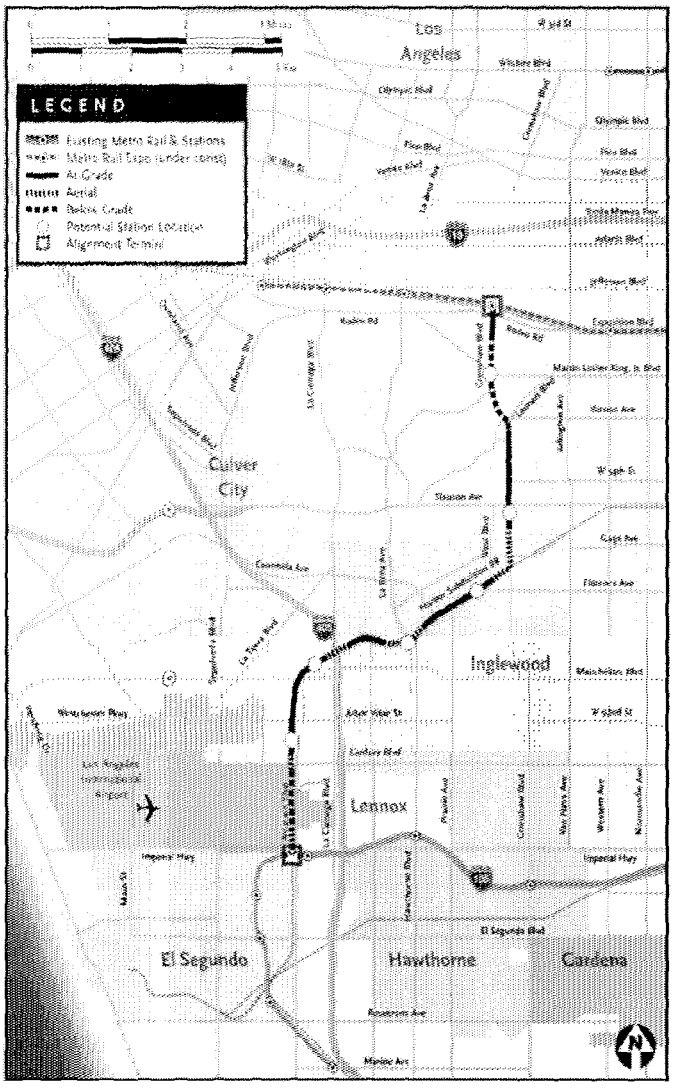
The Base LRT alignment would extend approximately 8.5 miles from the Expo LRT Line at the Crenshaw/Exposition Boulevards intersection to the Metro Green Line Aviation/LAX Station. The LRT alignment would be double-tracked and would consist of four components, at-grade street, at-grade railroad, aerial, and below-grade sections.

Crenshaw Boulevard Alignment. The proposed LRT alignment northern terminus would be located east of Crenshaw Boulevard, where it would connect with the Expo LRT Line. The Expo LRT Line would have a split, side platform station with the westbound platform located on the east side of Crenshaw Boulevard and the eastbound platform located on the west side of Crenshaw Boulevard. Because the split platform station would not provide convenient passenger transfers between the Crenshaw and Expo LRT Lines, it is proposed that the station be modified under the Base LRT Alternative to a single, center platform station located on Exposition Boulevard east of Crenshaw Boulevard. The present station location would be shifted east to provide the Expo LRT Line track connection. A pocket track would be provided east of the station for Crenshaw LRT Line trains to reverse direction.

From the Exposition/Crenshaw station, the proposed LRT alignment would turn south along the Crenshaw Boulevard east side and would cross the northbound lanes, north of Rodeo Road, to the center of Crenshaw Boulevard. There would be a traffic signal at the Crenshaw Boulevard/Rodeo Road intersection to control traffic. A new median would be constructed for the double-track LRT alignment. To maintain the existing traffic lanes on Crenshaw Boulevard, the east side of the street would be widened south to Rodeo Place.

The alignment would continue south, at-grade, in a new median on Crenshaw Boulevard to approximately West 39th Street where the alignment would transition to below-grade. The portal for the transition would be approximately 600 feet long.

After transitioning to below-grade, the LRT alignment would continue below-grade south along Crenshaw Boulevard. A below-grade station would be located at Martin Luther King Jr.



Base LRT Alignment. The Base light rail route is approximately 8.5 miles in length. It extends from the Exposition Light Rail line to the Green Line. This baseline option includes at grade, below grade and elevated sections as shown above.

Boulevard. Between Leimert Boulevard and West 48th Street, the alignment would transition from below-grade to at-grade in the center of the street, and would continue at-grade to West 59th Street. Crenshaw Boulevard would be reconfigured to minimize the width of the frontage roads by eliminating parking on one side of each frontage road. An at-grade station would be located south of Slauson Avenue.

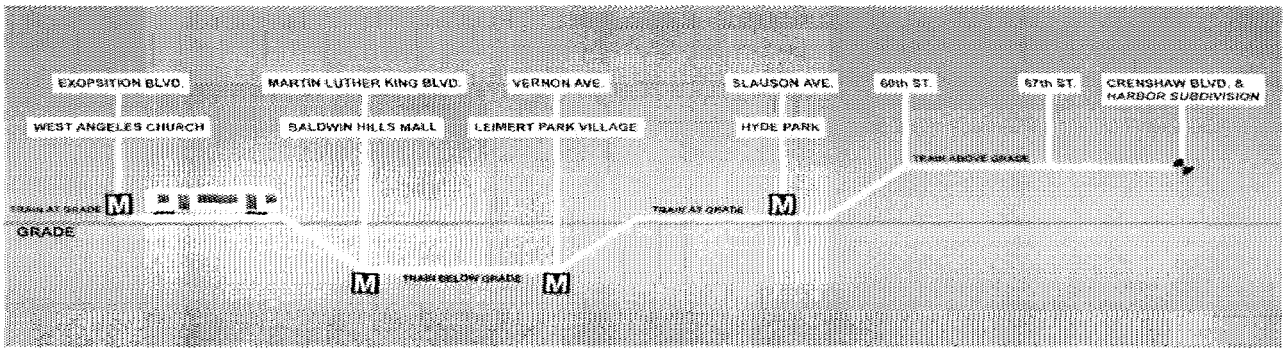
The Base LRT alignment would be on an aerial structure south of West 60th Street due to insufficient street width of 100 feet. The alignment would transition from at-grade to aerial between West 59th and West 60th Streets, and would continue on an aerial structure south to the Harbor Subdivision.

Stations would be located at Crenshaw/Martin Luther King Jr., and Crenshaw/Slauson Avenue. The Crenshaw/Exposition station would result in modifying the Expo LRT Line Crenshaw Station to a center platform station design under the Base LRT Alternative.

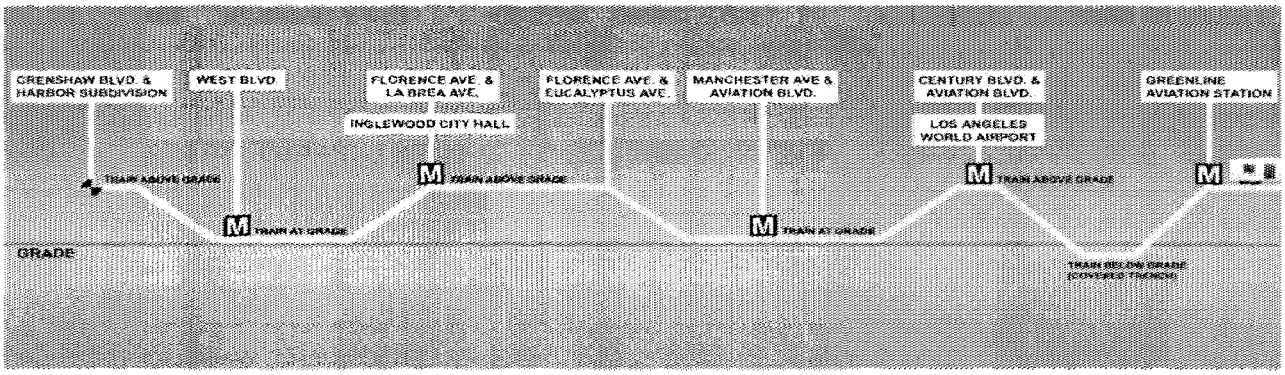
Harbor Subdivision Base LRT Alignment. From Crenshaw Boulevard, the proposed aerial LRT alignment would turn west onto the Harbor Subdivision right-of-way. The aerial LRT alignment would continue west of Victoria Avenue, where it would transition to at-grade. An at-grade station would be located west of West Boulevard.

The alignment would continue at-grade east of La Brea Avenue, where it would transition to an aerial LRT. An aerial station would be located just west of La Brea Avenue (directly over the BNSF railroad track) with a mezzanine for a potential connection to a pedestrian bridge over Florence Avenue. This would serve the Inglewood Civic Center and shopping complex. The aerial alignment would continue west of Eucalyptus Avenue, where it would descend to at-grade.

The LRT alignment would continue at-grade to approximately Hyde Park Boulevard, where it would transition to an aerial configuration across the I-405 and La Cienega Boulevard. The



EXPOSITION BLVD. TO HARBOR SUBDIVISION



HARBOR SUBDIVISION TO GREENLINE AVIATION STATION

Vertical Profile of the Base LRT Alignment. As shown about one third of the Base LRT alignment is grade separated.

LRT ALTERNATIVE DETAIL

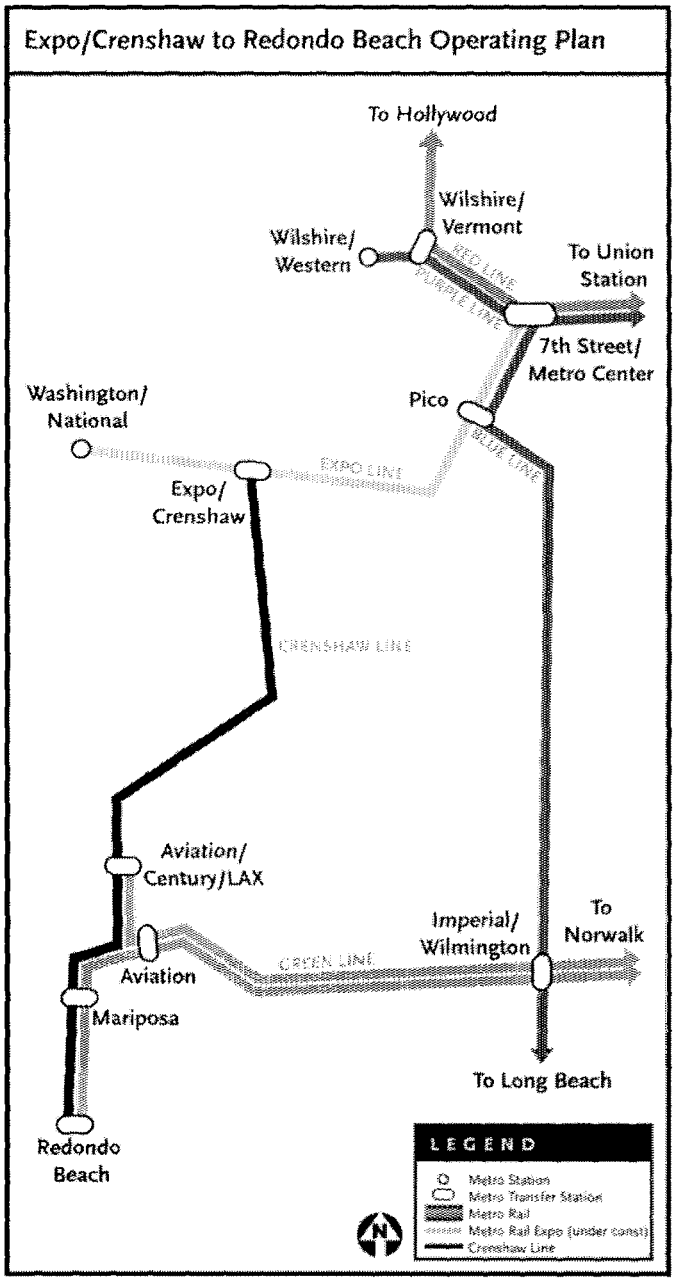
LRT alignment would return to at-grade west of La Cienega Boulevard, where there would be an at-grade station west of Hindry Avenue (i.e., the Aviation/Manchester Station). The alignment would continue at-grade to the Aviation/Century Station, near the 96th Street/Aviation Boulevard intersection. This station would provide transfers to the planned LAX people mover.

The alignment would transition to an aerial configuration north of Century Boulevard. At Century Boulevard, the LRT alignment would continue via a new bridge constructed west of, and adjacent to, the existing railroad bridge. After crossing Century Boulevard, the LRT alignment would descend to below-grade, primarily within Metro owned right-of-way, and would continue south beyond the LAX south runways. This segment of below-grade alignment is subject to a determination of necessity by the Federal Aviation Administration (FAA). Approximately 20 feet of additional right-of-way or easement would be required in some sections either through acquisition or easement.

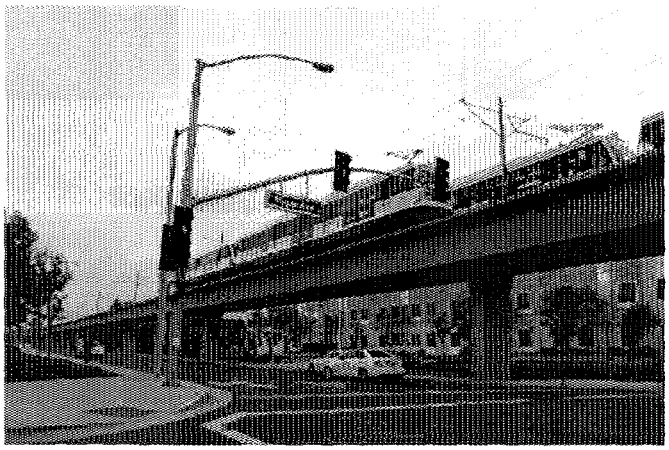
South of West 111th Street, the alignment would transition to an aerial configuration, where it would join the existing Metro Green Line. At the Metro Green Line junction, the LRT alignment could proceed east and enter the Aviation/Imperial (existing Aviation/LAX) Station or proceed west and continue to the existing Metro Green Line Redondo Beach Station at Marine Avenue.

The LRT Alternative operation would provide for a single LRT line providing service from the Exposition/Crenshaw Station in the north to the Redondo Beach Station on the existing Metro Green Line in the south. Operation would follow new infrastructure along Crenshaw Boulevard and the Harbor Subdivision and join the existing Metro Green Line just west of the existing Aviation Station near Imperial Highway.

The LRT Alternative will also involve a new extension of the Metro Green Line to the north to serve the new Aviation/Century Station for connections to Los Angeles International Airport (LAX). A new service pattern will extend between Norwalk and Aviation/Century.



LRT operation will involve a single service from Exposition/Crenshaw to Redondo Beach Station along new infrastructure and the Metro Green Line. New Metro Green Line serivce north toward an airport connect (with LAX's proposed "automated people mover") at Aviation/Century will be facilitated.



The Crenshaw LRT Alternative would travel southbound to Aviation and Imperial where it would continue south, connecting with the existing Metro Green Line, with service to the Mariposa, El Segundo, Douglas and Redondo Beach Green Line stations. Here the Metro Green Line is shown at Maple Street, just north of the Mariposa Station.

Stations and Station Parking. The Base LRT Alternative would include stations for passenger access. Seven new stations would be provided including Crenshaw/Exposition, Crenshaw/Martin Luther King Jr., Crenshaw/Slauson, Florence/West, Florence/La Brea, Aviation/Manchester, and Aviation/Century. LRT station types would be at-grade, aerial, or below-grade, and would be comprised of 270-foot long platforms that accommodate LRT trains with up to three cars. All platforms would be fully accessible and comply with the Americans with Disabilities Act (ADA). Outdoor platforms would be well-lighted and include amenities, such as canopies that cover a minimum 30 percent of the platform area, seating, bike lockers, bike racks, trash receptacles, and artwork. The stations at Crenshaw/Exposition Boulevards, Crenshaw/Martin Luther King Jr. Boulevards, Harbor Subdivision/La Brea Avenue, and Harbor Subdivision/Manchester Avenue would include park-and-ride lots. The park-and-ride lots at Crenshaw/Exposition Boulevards and Crenshaw/Martin Luther King Jr. Boulevards would be shared with adjacent businesses/civic uses.

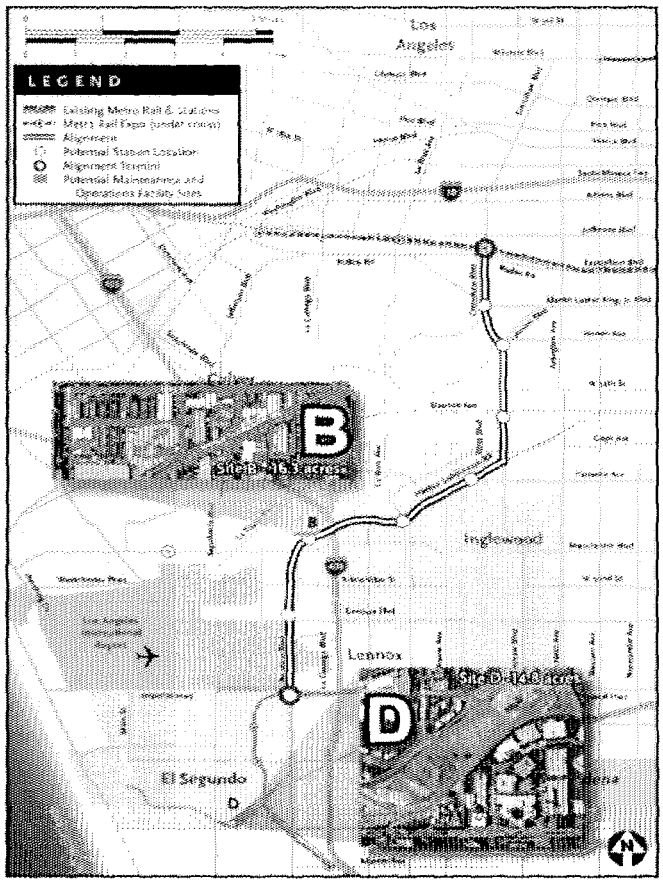
Supporting LRT Facilities. The Base LRT Alternative construction would include installing trackwork, an overhead contact system (OCS) distributing electricity to light rail vehicles (LRVs), traction power substations (TPSS) located about one mile apart, signaling and communication systems, and a vehicle maintenance and operations facility which would operate 24 hours a day, seven days a week.

Systems: The LRT fixed guideway would consist of continuously welded rails. The rails would be embedded in a concrete slab or installed on crossties and ballasts. The LRT OCS would consist of steel poles installed along the operating right-of-way to support the electrical power line. The poles would be approximately 25-feet tall and would be installed at 90 to 170 feet intervals. The poles would generally be located in the center of the right-of-way, between the two tracks, wherever possible. In some locations, the poles would be located on both sides of the LRT tracks. The overhead electrical power lines are suspended above the LRT tracks. Electricity for LRT operations would be supplied to the OCS from traction power substations (TPSS), located along the proposed LRT alignment. These electrical substations would be enclosed structures located near the LRT alignment. Development of the substations, in some cases, would require an access roadway for maintenance vehicles. Electrical substations would be required for approximately each mile of single or double-track. Communications and signaling (C&S) buildings house train control and communications for LRT operations in a central facility at each station. Each facility is an enclosure located within the station site area, typically adjacent to a station platform. Positioning of a C&S building must be done to provide clearances for maintenance and servicing, and to maintain sight lines for LRT operations.

Maintenance and Operations Facility: The Base LRT Alternative would require a new maintenance and operations facility. The facility would be a stand-alone facility for LRV service and maintenance and storage for vehicles that are not in service. The facility would operate 24 hours a day, seven days a week.

What is an Overhead Contact System? A distinctive feature of LRT is that the vehicles draw power from overhead wires, known as the overhead contact system (OCS). This allows LRT systems to be integrated with other at-grade transportation modes, such as automobiles and pedestrians.

The facility would ultimately be large enough to support approximately 60 vehicles. The ultimate facility size would be determined after the project operating plan is finalized. The two proposed maintenance and operations facility sites evaluated are shown below.



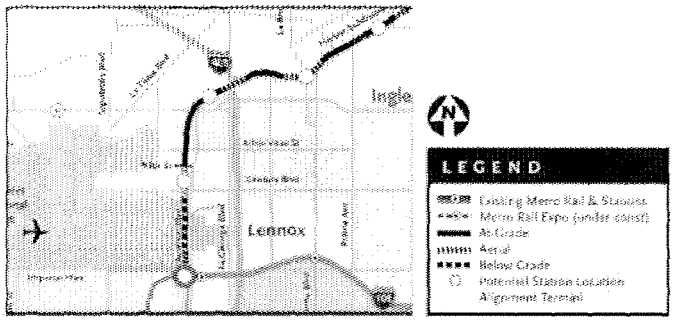
Candidate maintenance yard sites for LRT are the same as those sites being considered for BRT.

A Maintenance and Operations Facility is necessary to ensure that the project can continue to function on a daily basis without service interruptions or delay. These activities include the maintenance needed to keep the transit vehicles in peak operating condition, as well as emergency repairs necessary if a vehicle becomes inoperable. Storage is necessary for the vehicles when they are not in operation and are being repaired, or for replacement vehicles that become temporarily inoperable.

ES.11 Additional LRT Alternative Design Options

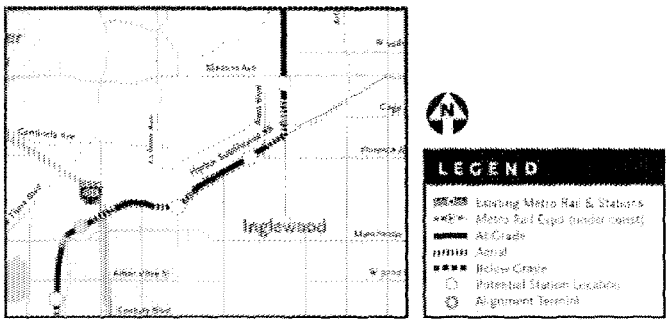
Six additional LRT Alternative design options are being considered in this environmental document as variations to the Base LRT Alternative. These design options were developed in response to public and agency input and may be included as part of the preferred LRT Alternative based upon results of environmental analysis and further public comment. These design options include the following:

Design Option 1. LRT Alternative Design Option 1 involves an aerial station design option for the Aviation/Century station on the north side of Century Boulevard as compared to the Base LRT Alternative at-grade station located approximately 1,500 feet north of Century Boulevard near 96th Street.



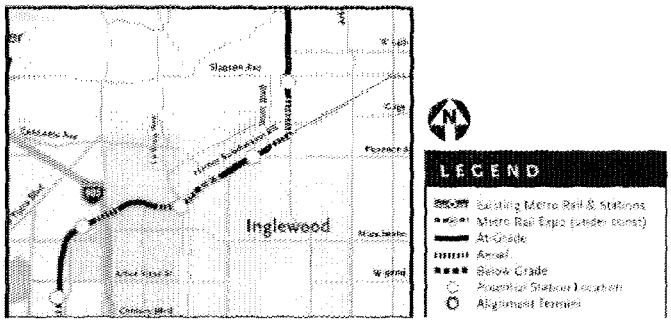
Design Option 1 considers whether the proposed LRT station at Aviation/Century should be elevated and be located closer to Century Boulevard.

Design Option 2. LRT Alternative Design Option 2 involves an aerial crossing rather than an at-grade crossing at Manchester Avenue. An aerial crossing over Manchester Avenue would replace the at-grade LRT alignment proposed under the Base LRT Alternative and would extend an aerial alignment approximately 1,300 feet within the Harbor Subdivision. The over crossing would consist of an 800-foot bridge and 250-foot approaches on each bridge. The aerial alignment would return to grade on the north side of Manchester Avenue before the at-grade station proposed on the north side of Hindry Avenue. A final decision on including this aerial crossing in the LRT Alternative would be dependent on further traffic analysis, and an evaluation of the grade separation analysis. The grade separation analysis, required by Metro's Grade Separation Policy, is a review of physical conditions at the site, and a cost evaluation.



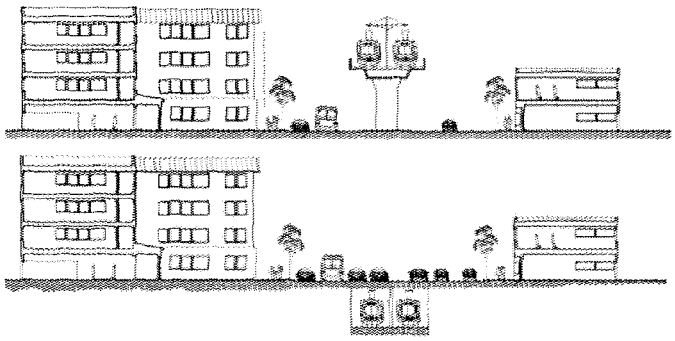
LRT Design Option 2 addresses whether an elevated crossing above Manchester Avenue is necessary to preserve efficient traffic flow during LRT operations.

Design Option 3. LRT Alternative Design Option 3 involves a cut-and-cover crossing instead of an at-grade crossing at Centinela Avenue. An LRT under-crossing at Centinela Avenue would replace the at-grade LRT alignment proposed under the Base LRT Alternative and would extend approximately 2,000 feet within the Harbor Subdivision. The under-crossing would consist of a 200-foot long bridge with a 700-foot depressed LRT alignment section on the west and an 1,100-foot depressed section on the east side of Centinela Avenue. A final decision on inclusion of this Centinela Avenue under-crossing design option in the LRT Alternative would be dependent on further traffic analysis and an evaluation of the grade separation analysis required by Metro's Grade Separation Policy. An aerial design option at Centinela Avenue was also evaluated, but was eliminated from further consideration as a result of the high cost and visual impacts.

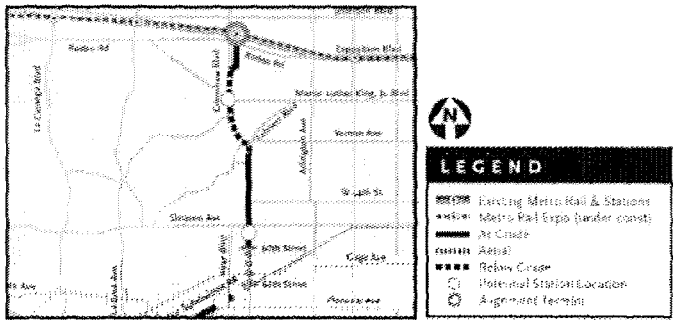


LRT Design Option 3 considers the effects of creating a grade separation at the Harbor Subdivision and Centinela Avenue. This crossing is at grade in the Base LRT Alternative, however, there are adjacent land uses such as a nearby school, and park that generate pedestrian traffic that would have to cross the LRT line.

Design Option 4. LRT Alternative Design Option 4 involves a cut-and-cover alignment instead of an aerial alignment between Victoria Avenue and 60th Street. A below-grade alignment between South Victoria Avenue and 60th Street would replace the aerial alignment proposed under the Base LRT Alternative, starting on Crenshaw Boulevard and extending into the Harbor Subdivision. The below-grade alignment would be built as a cut-and-cover tunnel.



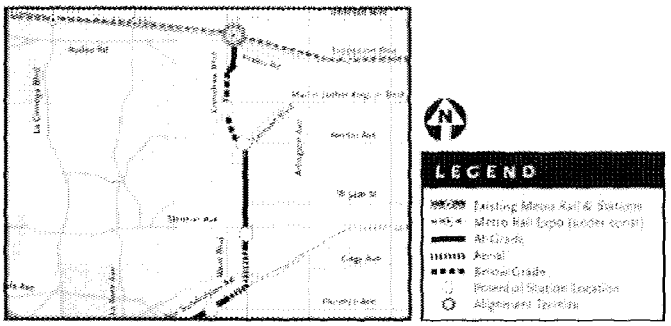
Design Option 4 is an option to avoid the visual effects of the elevated structure in the median of Crenshaw Boulevard, as well as the loss of travel lanes. The Design Option would place the LRT below grade and maintain the existing traffic lanes on Crenshaw Boulevard.



To eliminate the visual effects of an elevated LRT structure within the median of Crenshaw Boulevard, Design Option 4 considers below grade alignment from 60th street to Victoria Avenue.

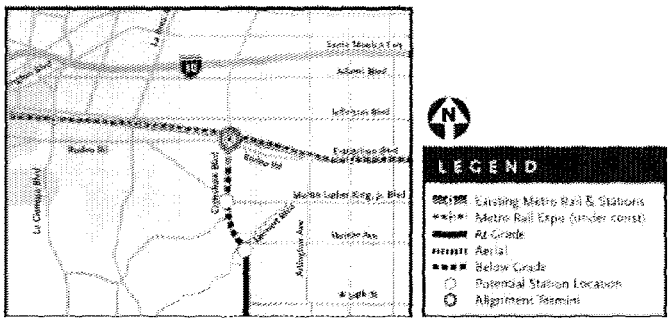
Design Option 5. LRT Alternative Design Option 5 involves a below-grade station at Vernon Avenue in Leimert Park. The Crenshaw/Vernon station is an optional below-grade station. If the optional station at Crenshaw/Vernon is not included in the selection of the LPA, consideration will be given to shifting the Crenshaw/Martin Luther King Jr. Station to between Martin Luther King Jr. Boulevard and Stocker Avenue to improve pedestrian access to Leimert Park Village. The result is two scenarios for LRT stations in this area: (1) One station (Base LRT Alternative) – the Crenshaw/Martin Luther King Jr. Station lies

closer to Stocker Avenue and (2) Two stations (LRT Alternative with Design Option 5) – a Crenshaw/Martin Luther King Jr. Station and a Crenshaw/Vernon Station. These two stations would be within half a mile distance of each other.



LRT Design Option 5 considers the feasibility of maintaining two stations in close proximity at Crenshaw/King and at Crenshaw/Vernon. The Crenshaw/Vernon station is the optional station.

Design Option 6. LRT Alternative Design Option 6 involves a below-grade alignment between 39th Street and Exposition with a below-grade station at Crenshaw Boulevard and Exposition Boulevard. A below-grade alignment between 39th Street and Exposition Boulevard would replace the at-grade Base LRT Alternative alignment and would extend the tunnel north of Martin Luther King Jr. Boulevard to Exposition Boulevard with a below-grade station. The below-grade station would provide street level access for transferring to the Exposition LRT. The below-grade alignment could be built as a bored tunnel. A final decision on a below-grade alignment would be dependent on further analysis of environmental impacts and cost evaluation.



To reduce potential traffic conflicts at Exposition and Crenshaw and to avoid right-of-way conflicts with a proposed development along Crenshaw Boulevard between Rodeo Road and Coliseum Street, LRT Design Option 6 considers a below grade alignment along Crenshaw Boulevard between Exposition and 39th Street.

ES.12 Issues to be Resolved

Based on the outcome of the alternatives analysis and screening process and technical transit planning considerations, in addition to input received during the interagency coordination process, a series of issues (listed below) that remain to be resolved have been identified. These issues must be addressed and resolved as the project moves forward through the DEIS/DEIR process and to the selection of a LPA by the Metro Board.

Community Acceptance of the TSM and BRT Alternatives as a Credible Mobility Improvement Over Existing Metro Rapid Bus Service as the Long Term Investment

Crenshaw Boulevard currently features Metro Rapid Bus service that supplements local bus service along the corridor. The TSM and BRT Alternatives described in the DEIS/DEIR distinguish small incremental travel time improvements over the existing service. Existing bus service and future options are subject to traffic delays as a portion of these services will have to operate in mixed traffic. The Metro Board will have to consider whether these options are viable long-term solutions to mobility needs in the Crenshaw Corridor.

Community Meeting.

ISSUES TO BE RESOLVED - CONNECTIONS, DEVELOPMENT

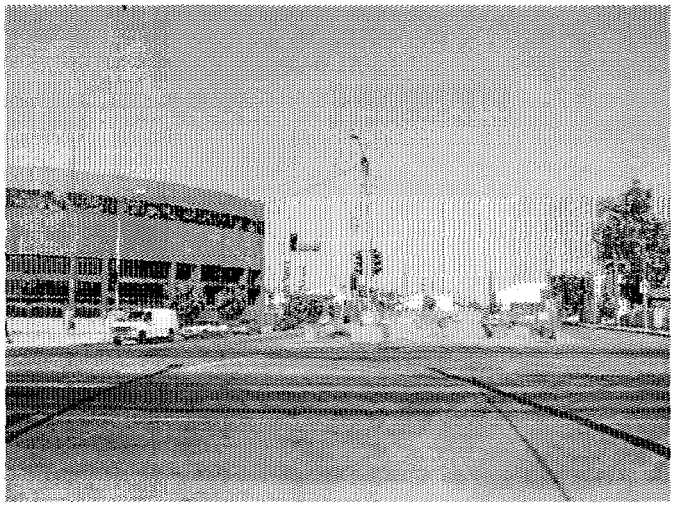
Crenshaw Transit Corridor Connection to the Metro Purple Line/ Metro Purple Line Extension

As presented in the DEIS/DEIR, all of the build alternatives provide a bus connection to the Metro Purple Line Wilshire/ Western subway station. This bus connection is achieved through service in mixed traffic and, as a result, the reliability of the connection travel time is subject to traffic congestion and delays. When the Metro Purple Line is extended westward, then the future connection options from the Crenshaw Corridor should be accounted for. The Alternatives Analysis process conducted for the Crenshaw Corridor screened out a LRT connection to the Metro Purple Line due to cost effectiveness considerations. The connection would have to be entirely underground due to the narrow right-of-way on Crenshaw Boulevard, making the option cost prohibitive. If a connection is to be achieved between a Crenshaw Corridor LRT Alternative and the Metro Purple Line, a Metro feasibility study has found that an LRT connection towards the west, such as the Wilshire Boulevard/La Brea Avenue intersection rather than Crenshaw/Wilshire Boulevards intersection would be the most attractive option. Metro Board deliberation of the Crenshaw Corridor LRT Alternative and of the related Westside Extension Project should consider measures that would not pre-empt this future connection. Implementation of the TSM or BRT alternatives may also consider re-alignment of routes to serve Wilshire/La Brea upon implementation of the Westside Extension Project.

Metro Purple Line Connection at Wilshire/Western Station for the BRT Alternative.

Crenshaw Transit Corridor Light Rail Alternative Connection to the Exposition Light Rail

The Base LRT Alternative under consideration would cross the Exposition Light Rail Line at-grade. This type of crossing would have the potential to create severe traffic delays during peak periods when both lines would operate at high train frequencies. The at-grade connection would also require that the Exposition platform be rebuilt and extended. Grade separation of the crossing between the two lines would reduce traffic flow considerations and eliminate the expense of the platform rebuild. The only viable grade separation would be to bring the Crenshaw LRT underground at Exposition. This would introduce a different set of construction impacts associated with building an underground station. The Metro Board will have to consider the extent of the underground Crenshaw LRT segment. The DEIS/ DEIR considered a design option to extend the underground segment from Exposition Boulevard to 39th Street. The effect of this option would create a below-grade segment that extends from Exposition Boulevard to 48th Street, a distance of approximately 1.5 miles. This would increase project costs.



Expo Line Connection.

What is an at-grade crossing? An intersection of railroad tracks, roads, walkways, or a combination of these at the same surface level.

Light Rail Station Area Development Potential Consistent with Community Goals and Objectives

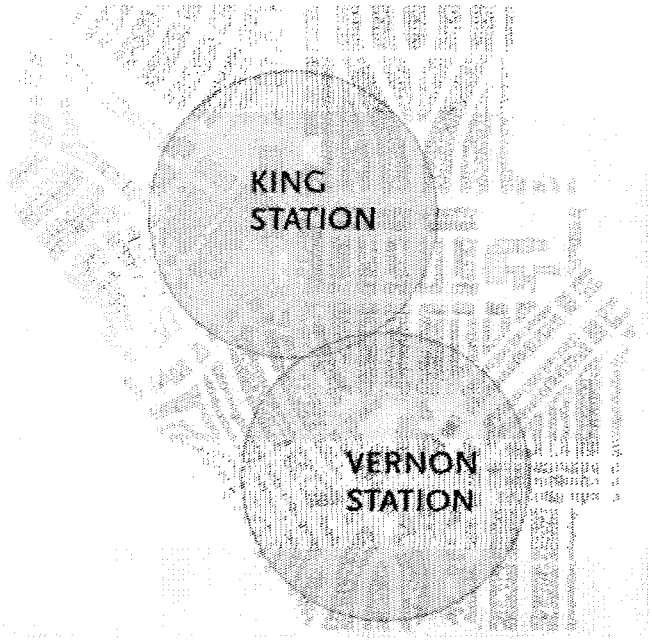
One key aspect in obtaining federal funding for transit improvements is whether local communities encourage transit-supporting or transit-oriented land uses. Similarly, California, with impetus from Senate Bill 375, has also focused on transit-supporting land uses as a means to reduce greenhouse gas emissions. Transit-supporting land uses often result in an increase in development density and intensity. The Metro Board must weigh Federal and State mandates against community concerns regarding over-development or changes in the character of corridor communities. Although all proposed station areas are subject to this concern, Leimert Park Village residents in particular have expressed concern about increased development.

Potential changes to Leimert Park Village that may be induced by a nearby light rail station have emerged as a local concern.

Light Rail Station Location(s) Between Martin Luther King Jr. Boulevard and Vernon Avenue

Related to the issue of transit-supporting land use and induced growth is the pending location of the LRT station between Martin Luther King Jr. Boulevard and Vernon Avenue. The LRT Alternative indicates two below-grade LRT stations; a station at Martin Luther King Jr. Boulevard and an optional station at Vernon Avenue, adjacent to Leimert Park. These prospective station locations are approximately 1/2-mile apart. An additional station would increase LRT travel times.

As proposed with the Design Option, one station would serve the Baldwin Hills Crenshaw Plaza shopping center and the other would serve Leimert Park Village. The Metro Board should consider whether two stations are necessary and whether the added expense of a Leimert Park Station (near Vernon Avenue) is warranted. Since the alignment is underground at this location, the cost of an additional station is more significant. Public comments received expressed concern about the intensity of new development that may be attracted to Leimert Park Village if there is an adjacent station.

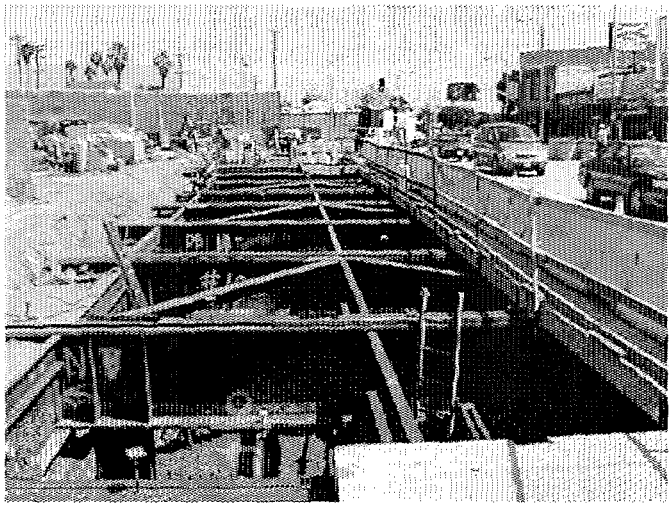


Station Proximity.

Light Rail Underground Construction Method Between 39th Street and 48th Street

One of the most disruptive forms of underground transit construction is the cut-and-cover method. This method requires excavation of the underground trench, and then temporarily covering the trench with wooden planks or concrete or metal panels while the subway is constructed beneath. In the section

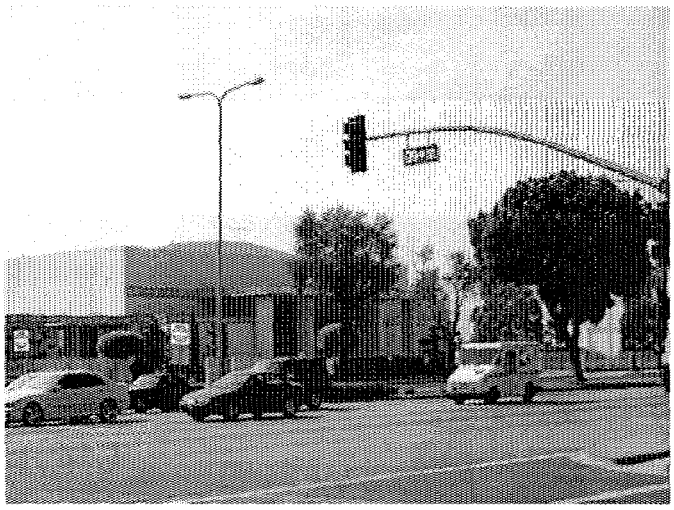
of Crenshaw Boulevard between 39th Street and 48th Street, this construction technique would likely have adverse effects on traffic flow and to the accessibility for local businesses. The tunnel-boring technique would be less disruptive to the community, but requires stations to be located deeper than with the cut-and-cover method. This technique involves an underground machine that creates the subway structure without disrupting the surface. The Metro Board must consider whether tunnel boring is a viable option for this segment. Typically short segments are not cost-effective; however, if the underground LRT segment extends from 39th Street to 48th Street to address the Exposition LRT/Crenshaw LRT grade separation, then tunnel boring may be economically feasible. It is important to note that even if tunnel boring is feasible, the Crenshaw/Martin Luther King Station and the optional Crenshaw/Vernon Station would continue to be constructed through the cut-and-cover technique.



Cut and Cover Construction Gold Line Eastside Extension.

Light Rail Northern Portal Location and Baldwin Hills Crenshaw Plaza Access

The Base LRT Alternative would transition into an underground alignment near (immediately to the north of)39th Street. Access to the Baldwin Hills Crenshaw Plaza is south of 39th Street. Future redevelopment plans for the plaza may place an even greater emphasis on access and circulation at the 39th Street location. The placement of the underground portal will be an important consideration that may affect the future operations of the plaza.



The Base LRT Alternative would have a portal to transition from surface level to below surface near 39th Street. There are a number of adjacent land uses that would be affected by this transition area.

Treatment of Frontage Roads and Parking From Coliseum to Martin Luther King Jr. Boulevard and from 48th Street to Slauson Avenue

In a number of segments along Crenshaw Boulevard, north of Slauson Avenue, the street features one-way frontage roads that are separated from the main traffic lanes of Crenshaw Boulevard by a raised median. To maintain the current number of traffic lanes and to accommodate LRT or BRT in semi-exclusive rights-of-way, the frontage roads would be reconfigured or eliminated.

In a number of sections Crenshaw Boulevard features one-way service or frontage roads that serve adjacent businesses and provide parking out of the main traffic flow of Crenshaw Boulevard. These frontage would be affected by the at-grade segments of the LRT proposal.

ISSUE TO BE RESOLVED - LINKAGES

This change has implications for the loss of curb parking along Crenshaw Boulevard, convenient access to Crenshaw Boulevard businesses, and alteration in street landscaping. Public input through the urban design and station area planning process will be necessary to fully reveal community and business concerns and identify acceptable solutions.

Streetscape and Urban Design Treatments to Mitigate the Loss of Mature Median Trees Between 48th Street and 54th Street.

Since the 1960s (after the termination of the streetcar service on Crenshaw Boulevard), the median of Crenshaw Boulevard has been landscaped from 48th Street to 54th Street. Along this section of the Crenshaw Boulevard median are intervals of mature trees that provide visual relief from the wide Crenshaw Boulevard right-of-way and provide a landscape underpinning supporting Crenshaw Boulevard's designation as a scenic highway by the City of Los Angeles for the section north of Slauson Avenue. LRT improvements in this section of Crenshaw Boulevard would require the removal of these trees. At issue is whether there are urban design and landscaping options that will effectively mitigate this visual loss. Plans for the LRT Alternative in this section currently propose widening of sidewalks with additional landscaping for pedestrians. The DEIS/DEIR anticipates that community input during station area planning exercises will provide a firm basis to provide adequate mitigation and resolution of this issue.

Mature Trees In Crenshaw Median. Trees were planted along the median of Crenshaw Boulevard when the original Yellow Car transit line was removed. Over the years these trees have matured and the current LRT proposal would remove this landscaping and provide additional landscaping along a widened sidewalk.

Pedestrian Safety Improvements at Nearby Schools

A number of private and public schools are either adjacent to or near Crenshaw Boulevard. There is also a private school near the Harbor Subdivision and Centinela Avenue crossing. The Metro Board will need to consider whether additional pedestrian safety measures are warranted, beyond Metro's current pedestrian safety program.

Schools adjacent to the LRT raise the awareness regarding pedestrian safety and measures that must be in place to ensure safe LRT operations and pedestrian paths.

Effective Urban Design and Structure Design Treatments to Mitigate the Impact of an Elevated Structure Between 60th Street and the Harbor Subdivision

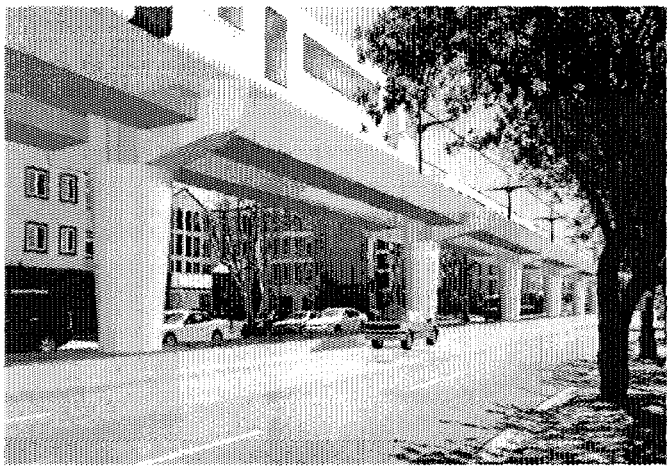
The Base LRT Alternative includes construction of an aerial/ elevated structure within the median of Crenshaw Boulevard between 60th Street and the Harbor Subdivision railroad. The aerial trackbed structure would be located on columns spaced at intervals within the street. It is anticipated that the columns would be at least 8 feet in diameter and the structure would be over 20 feet in height. Catenary poles necessary to supply power to the LRT system would be mounted atop the structure and would extend the overall height of the elevated guideway to over 30 feet. The placement of this type of structure within the middle of Crenshaw Boulevard will result in a marked change in visual character. Overall, Crenshaw Boulevard may appear to be

ISSUE TO BE RESOLVED - CONNECTIONS NEAR INGLEWOOD

narrower, there would be shaded and shadowed areas, and the placement of columns would limit sight distances for motorist and pedestrians.

Aerial station rendering.

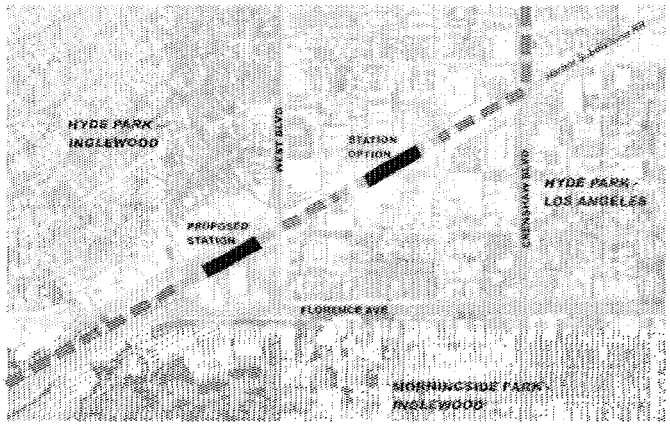
Outside of the design option to place the LRT alignment underground, it is anticipated that community input will be focused on methods and measures to reduce the visual effect of the structure to a point where community consensus is achieved. The Advanced Conceptual Engineering (ACE)/Preliminary Engineering (PE) phase would address these issues if the Base LRT Alternative is selected as the LPA. Specifically, the PE phase would identify urban design solutions including design options for the structure, lighting, solar access, landscaping and architectural and artistic treatments.



Illustrative view of elevated LRT structure near Crenshaw at 60th Street.

West Boulevard Station Location

Under the Base LRT Alternative, a station is located west of West Boulevard in the City of Inglewood. Community input received from residents in the Hyde Park community favor moving the station eastward toward Crenshaw Boulevard to provide a better connection with transit services on Crenshaw Boulevard and on Florence Avenue potentially providing improved access from communities to the south along Crenshaw Boulevard, such as Morningside Park. Such a location may provide for revitalization along a corridor between Crenshaw Boulevard and West Boulevard. Some community residents in the City of Inglewood favor the continued location of the station west of West Boulevard, where there may also be transit-oriented development opportunities on vacant parking lots and other under-utilized parcels. The potential location of a station adjacent to West Boulevard also could be perceived as a catalyst to change along West Boulevard that has remained dormant for many years.



Crenshaw Corridor.

Connection to Hollywood Park Redevelopment

As discussed above, Metro received comments during meetings in the City of Inglewood that the alignment should be re-directed to serve the City of Inglewood's focus and investment in the Hollywood Park area. Metro reviewed ridership and cost data and concluded that the proposed Base LRT alignment along the Harbor Subdivision that does not directly connect to the Hollywood Park Redevelopment area remains the most viable and cost-effective option. The Base LRT alignment serves

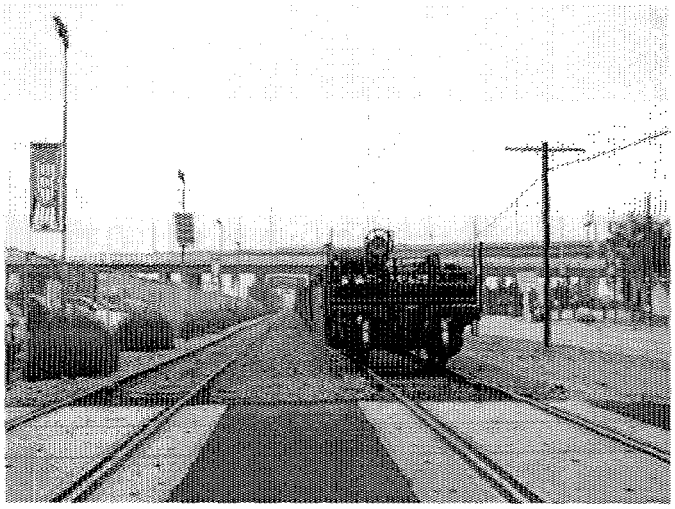
ISSUES TO BE RESOLVED - RAILROAD COORDINATION

downtown Inglewood employment with a proposed station at La Brea Avenue. The issue remains, however, as to how Hollywood Park can be connected to light rail, perhaps through enhancement of local transit connections or coordination with local developers regarding the provision of shuttle service.

Hollywood Park Redevelopment. Within the City of Inglewood, the Hollywood Park area is undergoing a major change with housing and retail developments expected to replace the race track. Transit connections to this emerging area is a major local concern.

Burlington Northern Santa Fe Use of the Harbor Subdivision Railroad

One of the most significant constraints to transit use of the Harbor Subdivision is the issue of whether Burlington Northern Santa Fe (BNSF) will maintain railroad operations within the right-of-way. Maintaining BNSF operations in the Harbor Subdivision would require the relocation of the railroad tracks to allow for either BRT or LRT operations. The continued use by BNSF also adds to construction cost, as well as a new element to grade crossings, where there would be crossing signals for either the LRT or BRT vehicles and a separate signal system for railroad operations. Metro has had discussions with BNSF to determine whether the abandonment (during construction and/or permanently) of the Crenshaw Corridor portion of the Harbor Subdivision (Crenshaw Boulevard to Imperial Highway) is possible.

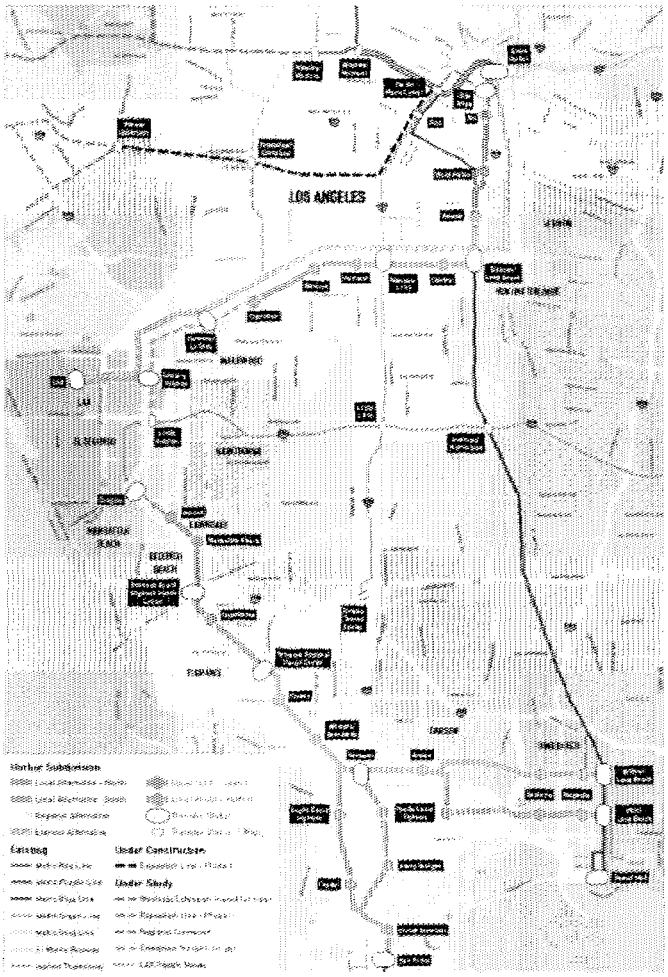


Harbor Subdivision. Continued freight use of the Harbor Subdivision poses many constraints to the development of both BRT and LRT transit service within the railroad right-of-way.

Metro Harbor Subdivision Alternatives Analysis Study

The long term use of the Harbor Subdivision railroad right-of-way is currently being studied by Metro. Decisions related to the Crenshaw Corridor Transit Project will have an effect on future planning for the entire Harbor Subdivision. The Metro Board, in its deliberation on the Crenshaw Corridor Transit Project, will need to consider opportunities and limitations that may be imposed on connections to the South Bay and more broadly the entire railroad corridor from downtown Los Angeles to the harbor area.

What is the Harbor Subdivision? The Harbor Subdivision is a freight rail corridor, approximately 26 miles in length, that traverses southwest Los Angeles County from Vernon to Wilmington. In the early 1990s, Metro purchased the portion of the corridor between Redondo Junction and Watson Yard, along with several other rail rights-of-way, to further the development of the region's rapid transit system. Metro has initiated an Alternatives Analysis Study (AA) for the Harbor Subdivision Transit Corridor. The study will examine potential transit service along the Metro-owned Harbor Subdivision.



The Harbor Subdivision Alternatives Analysis explores many alternatives between downtown Los Angeles and the harbor area via South Los Angeles, LAX, and the South Bay. The Crenshaw Corridor may affect or enable future projects along the Harbor Subdivision.

Grade Separation at Centinela Avenue

The application of Metro's Grade Crossing Policy is presented in the conclusions of the DEIS/DEIR. At this stage in the analysis, the assessment concludes that no grade separation is needed at Centinela Avenue and the Harbor Subdivision adjacent to Florence Boulevard. Comments received through the community outreach process indicated community concerns regarding access to Edward Vincent Jr. Park (Centinela Park), a nearby private school and church that may be addressed through a grade separation. The grade of Centinela Avenue affects the operation of vehicles through the intersection. The DEIS/DEIR contains a design option for a grade separation at Centinela Avenue to address these concerns. Such grade separation may require more extensive construction in the short term and may create some impacts to the palm trees adjacent to the additional railroad right-of-way.

View of Centinela Avenue at Florence Ave/Harbor Subdivision. Traffic movements along with pedestrian flows to a nearby Vincent Park, church and school are major local concerns. The crossing is at the top of a slight incline.

What is a grade separation? A crossing of a roadway and a railroad at different elevations, such as a bridge structure carrying the highway over the railroad or vice versa. A grade separation can also be created by placing railroad or transit line in an undercrossing or tunnel to separate it from a roadway or another rail line.

Specific Effects on Landmark Palm Trees Near Centinela Avenue and Mitigation Options

One of the most noticeable visual elements along the Harbor Subdivision in the City of Inglewood is the dual row of palm trees. These palms generally mark the southern boundary of Edward Vincent Park. The impact assessment for the both the BRT and LRT Alternatives indicated that the guideway requirements would likely require the removal of some portion of the northern most row of palm trees. It is Metro's intent to hold focused community urban design and station area meetings in Inglewood to address this issue and design measures to mitigate the visual impact.

Landmark Palms.

Grade Separation at Manchester

The application of Metro's Grade Crossing Policy to the Crenshaw Corridor Transit Project indicates that at-grade separation is likely necessary for the Manchester Boulevard intersection with the Harbor Subdivision. Because this solution will add capital costs to the project, Metro will explore alternative solutions with the Los Angeles Department of Transportation during the PE phase if the LRT Alternative is selected as the LPA.

Role of the Aviation / Manchester Station - Located at the edge of the Westchester district of the City of Los Angeles rather than its center, the proposed Aviation / Manchester has one of the lower potentials for ridership growth among the stations along the proposed transit investment. The immediate area lacks a cohesion as it includes a mix of commercial and industrial uses at the border between the City of Los Angeles and Inglewood. Curves of the alignment and the potential for an elevated crossing make the location of this station right at Manchester difficult. Nonetheless, this location would be the most convenient location for residents of Westchester to access the Crenshaw Transit Corridor. If there is a station at this location, its siting and configuration would need to balance competing modes of access, including pedestrian access from the residential neighborhood immediately to the north, transit access along Manchester and Florence, and automobile / park-and-ride access from arterials such as Manchester Avenue/Boulevard, Aviation Boulevard, and La Cienega Boulevard.

Grade Crossing at Manchester.

Connection Between Crenshaw Transit Project and the Los Angeles International Airport

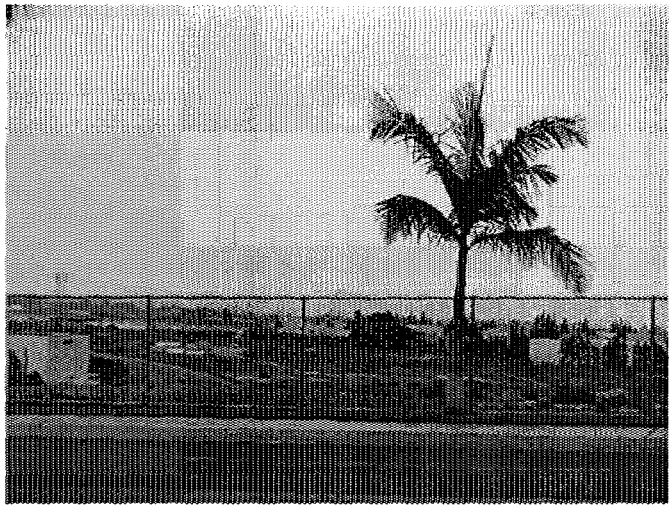
The lack of a convenient connection to LAX from Metro's rail transit system has been under discussion for many years. The nearest rail transit stop to LAX is the Aviation/Imperial Green

Century and Aviation. This location is the gateway to LAX. Metro anticipates that an Automated People Mover system to be constructed operated by the airport will ultimately provide a convenient connection to the airport terminals.

Line station (approximately 1.5 miles from the LAX terminals). The Crenshaw Corridor Transit Project creates the opportunity to bring a transit connection closer to LAX. The DEIS/DEIR proposes either a BRT or LRT station at Century Boulevard and Aviation Boulevard. Metro's coordination with LAX indicates that an "automated people mover" from the terminal area may be planned to connect to this area at some time in the future. The Metro Board, as part of the consideration of the LPA, must consider the certainty and time frame of construction of this important connection.

Availability of LRT/BRT Maintenance Yard Sites in Westchester or El Segundo

Both of the BRT and LRT Alternatives require new maintenance yards to service the expanded bus or rail vehicle fleets. Adequate size sites are difficult to find. Two candidate sites are identified in the DEIS/DEIR. One site is located in the Westchester area of Los Angeles along the Harbor Subdivision near Manchester Avenue/Florence Avenue, and the other is located near Rosecrans and Sepulveda Boulevards in the City of El Segundo. Both sites have unique issues that require resolution to make the creation of maintenance facility site viable. The Westchester site would displace an existing Los Angeles County maintenance yard other light industrial uses and a community theater. It also is adjacent to a residential neighborhood. Issues of concern are whether the County is able to relocate their facility and whether adequate relocation sites can be found for displaced light industrial businesses. For the El Segundo site, the City has expressed concerns that the location of a new maintenance yard would affect planned commercial/retail development sites and street extensions important to the City of El Segundo. Also, the El Segundo site may preclude the reconfiguration of BNSF and Union Pacific railroad storage tracks serving the El Segundo Standard Oil Refinery on the west side of Sepulveda Boulevard.



Proposed Maintenance Site D.

Project Phasing

As discussed in the DEIS/DEIR, transit improvements in the Crenshaw Corridor have been studied and discussed as early as the 1960s. As the process moves forward toward selecting an LPA and the sequencing of funding a new system, the discussion may have to address the phasing of the project. Important consideration will revolve around starting construction at the northern end near the Exposition LRT Line project or at the southern end near the Metro Green Line. Availability of a connection to a maintenance facility will affect this discussion. Additional considerations include the length and the interim termini of any potential phases. Overall, if funding availability affects the timing of construction, the Metro Board will have to consider the community concern over the timing of transit improvements that will take place on the main trunk of Crenshaw Boulevard.

Crenshaw Transit Corridor Project may be constructed in separate phases. If the project is developed in phases, these phases would be decided once the Metro Board recommends an LPA and the project completes more advanced engineering design. Phases are selected as functional operable segments between logical termini.

ES.13 Traffic and Parking

The potential construction and operation impacts for both traffic and parking impacts summarized below and further described in Section 3.0 Transportation Impacts.

Construction Impacts. Construction of the BRT Alternative would result in traffic impacts at all grade crossings along the Harbor Subdivision right-of-way. Similarly, it is anticipated that construction associated with the LRT Alternative would also result in traffic impacts at all Harbor Subdivision intersections. Under both the LRT and BRT Alternative, construction of at-grade crossings would require intermittent off-peak lane reductions and closures of these crossings for up to six months. It is anticipated that these lane reductions and closures would cause traffic to divert to other locations. Most significantly, would be the disruption of normal business operations as a result of intermittent site access.

Impacts to local traffic and circulation are expected with construction of the BRT and LRT aerial structures. Typical impacts associated with an aerial structure would include temporary and/or long-term lane closure, temporary removal of parking, and secondary impacts, such as increased traffic, to adjacent streets.

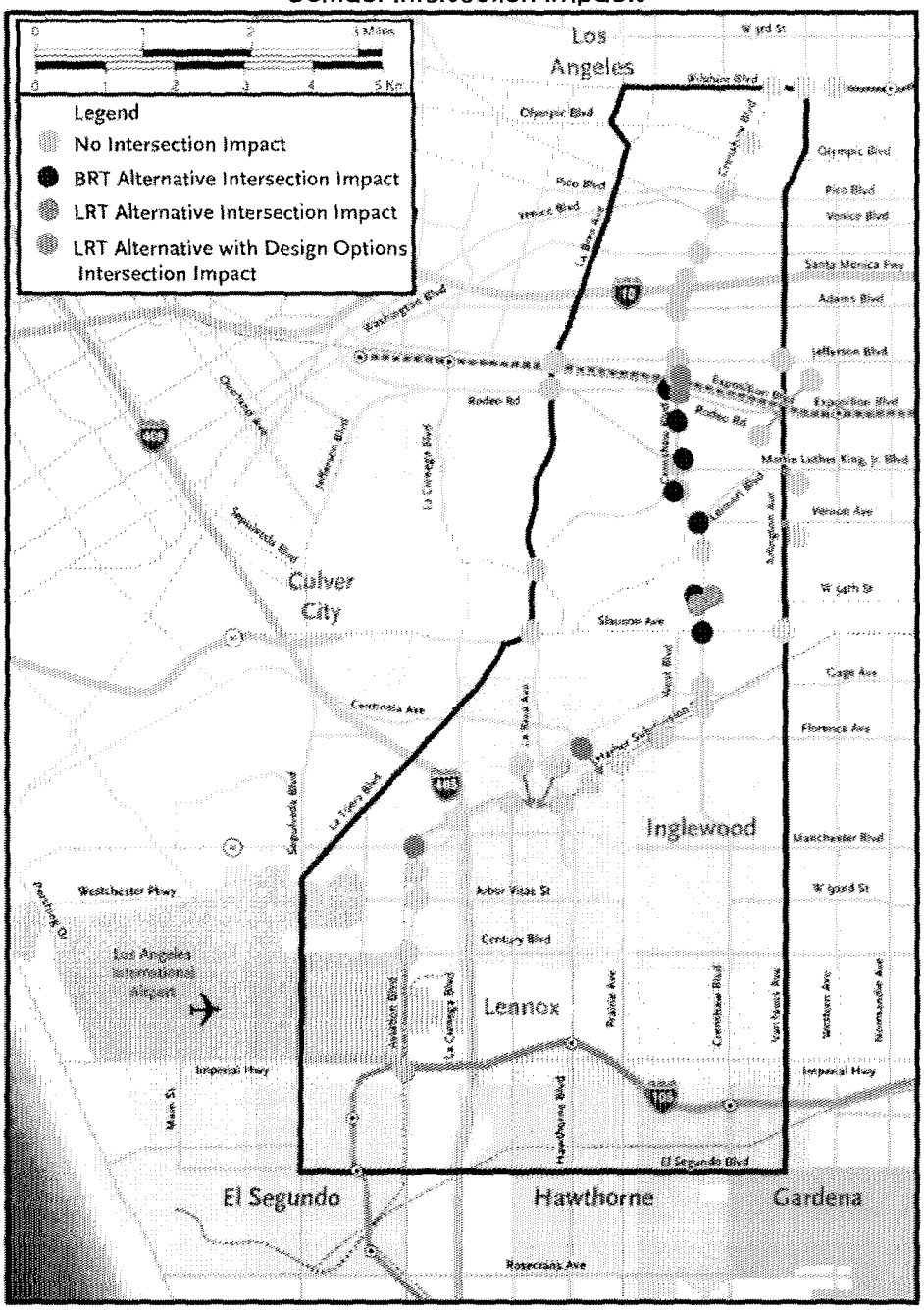
Cut and cover construction associated with the LRT Alternative would prohibit east-west crossings at several designated locations for approximately eight months. These construction period impacts would occur at the station portals, by severely reducing the northbound movements along Crenshaw Boulevard. The number of traffic lanes would be reduced and local circulation would be impacted. Temporary lane closures would occur during off-peak and nighttime periods, potentially requiring temporary street closures during the off-peak periods for up to six months. The median left-turn lanes would likely be closed during the construction period, prohibiting left turns for up to six months. Metro would implement a construction period traffic management plan to deal with anticipated impacts related to congestion and parking. This plan would focus on maintaining traffic flow, providing alternate parking locations, maintaining access to local businesses, and minimizing disruptions to general circulation.

Operational Impacts. The BRT Alternative would result in traffic impacts at 7 of the 46 study intersections. These impacts would occur where semi-exclusive, peak-hour bus lanes (allowing non-transit right turns only) occur on Crenshaw Boulevard. The LRT Alternative would result in traffic impacts at 5 of the 46 study intersections. The impacts would occur at intersections where at-grade crossings are present or in station areas where park-and-ride demand increases traffic volumes. The design options for the LRT Alternative would avoid traffic impacts at all but 1 of the 46 study intersections, the remaining impact would occur at an intersection with a proposed at-grade crossing.

Both the BRT Alternative and the LRT Alternative would result in the loss of on-street parking. The BRT Alternative would result in the permanent loss of four on-street spaces on southbound Crenshaw Boulevard between Exposition Boulevard and Rodeo Road. The LRT Alternative would result in the loss permanent loss of 163 northbound and 132 southbound on-street parking spaces between Rodeo Road and Slauson Avenue. Much of this on-street parking loss would occur on the inner portion of the frontage road that borders both sides of Crenshaw Boulevard. The frontage road would be eliminated to accommodate the center-running rail right-of-way.

The project is expected to result in only a minor loss of off-street parking under the BRT and LRT Alternatives. This loss would occur in the Harbor Subdivision portion of the transit corridor and be limited to private off-street lots where the land would be used for station development. These private off-street parking lots would be acquired by Metro prior to construction. While the final number of parking spaces provided at any proposed park and ride lots lot will be determined at a later time, it is assumed that the proposed station parking would provide sufficient capacity to accommodate the anticipated parking demand for LRT or BRT, which is expected to range from approximately 100 to 300 spaces per station. At other stations along the corridor where off-street parking would not be provided, spillover parking to the adjacent streets may occur, but is likely to be minimal based on projected parking demand at stations with park-and-ride facilities.

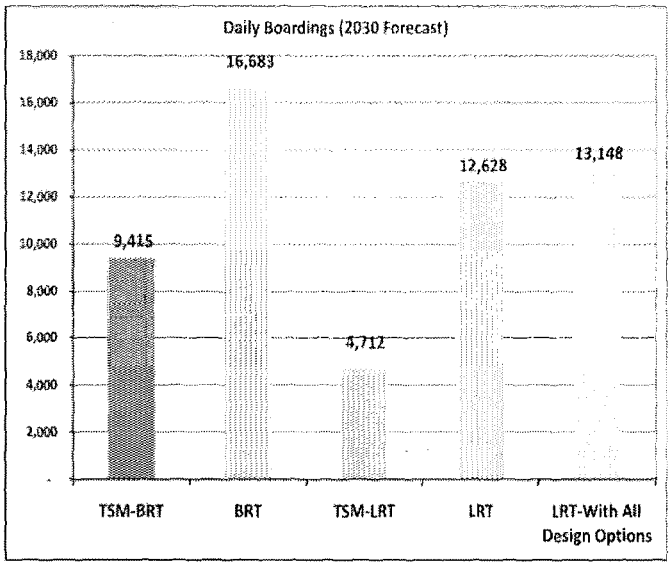
Corridor Intersection Impacts



Most of the project operation phase intersection impacts would occur on Crenshaw Boulevard or at grade crossings along the Harbor Subdivision. The BRT Alternative would affect the following seven intersections: Crenshaw/Rodeo, Crenshaw/Coliseum, Crenshaw/King, Crenshaw/Stocker, Crenshaw/Vernon, Crenshaw/54th, and Crenshaw/Slauson. The LRT Alternative would affect the following five intersections: Crenshaw/Exposition, Crenshaw/Rodeo, Crenshaw/54th, Florence/Centinela, and Florence/Manchester. The LRT with design options would only affect the Crenshaw/54th intersection.

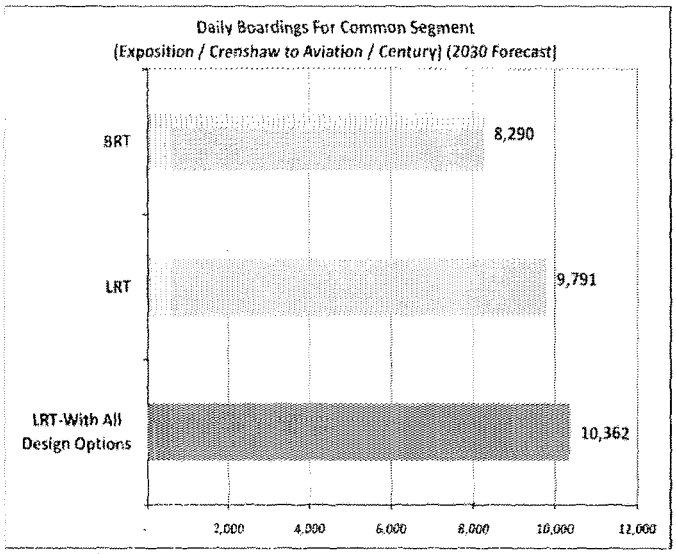
ES.14 Ridership

Project ridership in year 2030 for each of the project alternatives is shown below. The TSM Alternative defined in the document provides for improved bus service between LAX and the Green Line and the Metro Purple Line Wilshire/Western Station. This TSM Alternative is also serving as the baseline alternative for the BRT Alternative with a terminus at Wilshire Boulevard (TSM-BRT). Because the LRT alternative terminates at Exposition Boulevard, the TSM Alternative was modified to provide a baseline with a terminus at Exposition Boulevard (TSM-LRT). The TSM Alternative provides modest enhancements to the existing Metro Rapid Bus Service, without the additional features of Bus Rapid Transit. The ridership forecast indicates that the BRT Alternative would increase ridership by 77 percent over its TSM Alternative and the LRT Alternative and LRT Alternatives with design options would increase ridership by 168 and 179 percent from their TSM Alternative, respectively. For purposes of the TSM comparison, ridership information is only provided for the length of the respective service.



The year 2030 travel demand forecast show that the BRT and LRT Alternatives would yield daily ridership ranging from 12,600 to 16,700 riders.

To compare alternatives, ridership for a common segment between Exposition/Crenshaw and Aviation/Century is summarized. For the comparable segment, the LRT Alternatives have higher ridership than the BRT Alternative (18 to 24 percent greater) Full segment ridership is presented in Section 3 Transportation Impacts.



The LRT Alternative has higher ridership than the BRT Alternative for the common segment.

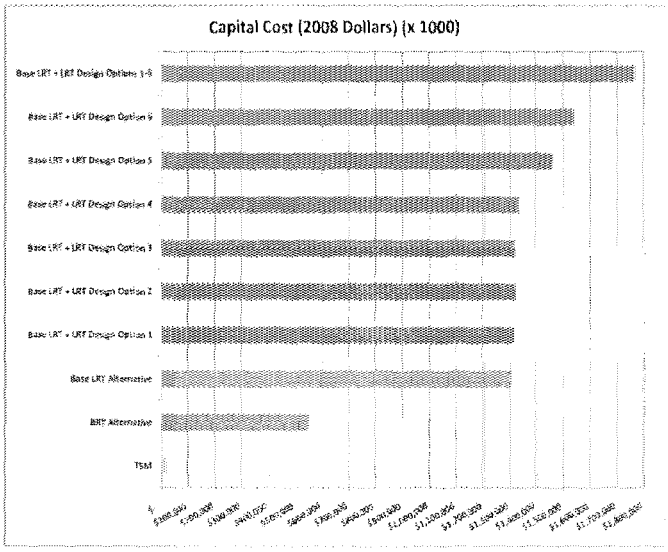
ES.15 Financial Analysis and Evaluation

The cost of a transportation investment falls into two categories: capital costs, and operating and maintenance (O&M) costs. Capital costs are the start-up costs for the project, including the costs of guideway construction, vehicles, and any system facilities necessary before the project can begin to operate. O&M costs are the costs associated with the day-to-day running of the new transportation system. Costs, such as labor, vehicle maintenance, and overall facility maintenance fall into this category. This section summarizes both types of costs and presents the proposed capital financing plan, and evaluates Metro's ability to afford the alternatives under consideration.

Capital Cost Estimates

This section summarizes the capital cost estimates for the TSM Alternative, the BRT Alternative, the Base LRT Alternative, and the six LRT Alternative design options. The No-Build Alternative does not have any associated capital costs for comparative

purposes as they are considered in the overall financial capability of Metro along with the other alternatives under consideration. The capital cost methodology and capital cost estimates are found in the Final Capital Cost Report (Parsons Brinckerhoff, March 23, 2009). The TSM Alternative capital cost is estimated at $25.4 million, the BRT Alternative at $554 million, and the LRT Alternatives range from $1.306 billion to $1.767 billion in 2008 dollars.



Range of Capital Cost. A key consideration is the cost to build the various alternatives under construction. As shown above, the costs range from less than $100,000 for the TSM Alternative to almost $1.8 Billion for the LRT Base Alternative inclusive of all six Design Options. The capital cost differential between the BRT Alternative and Base LRT Alternative is approximately $750,000. The Metro Board will weigh these costs and the benefits of each option as they deliberate on a preferred alternative.

Operating and Maintenance Cost Estimates

This section summarizes the O&M cost estimates for the No-Build, TSM, BRT, and Base LRT Alternatives. The O&M costs were estimated using a resource cost build-up model based on the current Metro heavy rail transit (HRT), LRT, BRT, and bus operating costs and the incremental bus costs for the other municipal bus systems in the study area (Santa Monica, Culver City, Los Angeles Department of Transportation (LADOT) Beach Cities Transit, and Torrance). The operating and maintenance cost methodology and cost estimates are found in the *Final Operating and Maintenance Cost Estimate Report* (PB March 26, 2009).

The LRT Alternatives have the greatest change in O&M compared to the No-Build and TSM Alternatives. The LRT Alternatives will cost an additional $45 million to $55 million annually to operate and maintain over the No-Build condition. The BRT Alternative will cost an additional $20 million annually.

ES.16 Summary of Impacts

Four alternatives are under consideration for the Crenshaw Transit Corridor Project, a No-Build Alternative, a TSM Alternative, a BRT Alternative, and a LRT Alternative. Six LRT Alternative design options are also under consideration. Each alternative represents a different level of transit service within the Crenshaw Transit Corridor.

Table ES-3 summarizes the physical features of the No-Build and three build alternatives. It also compares the benefits, transportation impacts, environmental consequences and costs of the build alternatives to the No-Build Alternative. Table ES-4 presents the potential impacts and benefits relative to the design options and Table ES-5 presents the same information for the two maintenance and operations facility sites analyzed. The circles are an indication of whether or not a particular alternative or design option would have an adverse or potentially adverse effect. An open circle (○) represent a less than adverse effect, or no adverse effect; a semi-open circle (◉) represents a less than adverse effect with implementation of mitigation measures and a closed circle (●) represents a potentially adverse effect or an adverse effect. Tables ES6 through ES8 provide a more detailed description of the impacts. The information presented in these tables is a summary of the analysis contained in this DEIS/DEIR in Sections 1.0 through 4.0.

The selection of a Locally Preferred Alternative (LPA) by the Metro Board considers a wide variety of variables including the performance, ridership, costs, benefits, environmental impacts, and public input.

Table ES.3. Summary of Impacts

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative
Environmental				
Traffic (without Intersection Analysis)	○	○	◉	◉
Traffic (with Intersection Analysis)	○	○	●, ◗	●, ◗
Regional Land Use	○	○	○	○
Local Land Use and Development	●	○	○	○
Division of Established Community	○	○	○	○
Consistency with Local Plans/Policies	●	●	○	○
Displacements and Relocation	○	○	◉	◉
Community Cohesion	○	○	○	◉
Visual	○	○	●, ◗	●, ◗
Air Quality (Operational)	○	○	○	●, ◗
Noise and Vibration	○	○	○	●
Ecosystems and Biological Resources	○	○	◉	◉
Geotechnical	◉	◉	◉	◉
Water	○	○	○	○
Energy	○	○	○	○
Historic, Archaeological, Paleontological	○	○	●, ◗	●, ◗
Parklands and Community Facilities	○	○	○	○
Economic	○	○	○	○
Safety and Security	○	○	◉	◉
Construction (without Air Quality)	○	○	◉	◉
Construction (with Air Quality)	○	○	●, ◗	●, ◗
Growth Inducing	○	○	○	○
Cumulative (without Air Quality)	○	○	○	○
Cumulative (with Air Quality)	○	○	○	●, ◗
Environmental Justice	●	●	●	●

○ Less Than Adverse Effect, or No Adverse Effect
◉ Less Than Adverse Effect with Implementation of Mitigation Measure
● *Potentially Adverse Effect or an Adverse Effect*
◗ Significant Impact Under CEQA

Table ES-4. LRT Alternative Design Options and Impacts Summary

Project Goal/Criteria/Measure	LRT Alternative Design Option 1	LRT Alternative Design Option 2	LRT Alternative Design Option 3	LRT Alternative Design Option 4	LRT Alternative Design Option 5	LRT Alternative Design Option 6
Environmental						
Traffic	⦿	⦿	⦿	⦿	⦿	⦿
Regional Land Use	○	○	○	○	○	○
Local Land Use and Development	○	○	○	○	●	○
Division of Established Community	○	○	○	○	○	○
Consistency with Local Plans/Policies	○	○	○	○	○	○
Displacements	○	○	⦿	⦿	⦿	○
Community Cohesion	○	○	○	○	○	○
Visual	○	○	⦿	○	○	○
Air Quality (Operational)	●, ◗	●, ◗	●, ◗	●, ◗	●, ◗	●, ◗
Noise and Vibration	●	●	●	●	●	●
Ecosystems and Biological Resources	⦿	⦿	⦿	⦿	⦿	⦿
Geotechnical	⦿	⦿	⦿	⦿	⦿	⦿
Water	○	○	○	○	○	○
Historic, Archaeological, Paleontological	●, ◗	●, ◗	●, ◗	●, ◗	●, ◗	●, ◗
Parklands and Community Facilities	○	○	○	○	○	○
Economic	○	○	○	○	○	○
Safety and Security	⦿	⦿	⦿	⦿	⦿	⦿
Construction (without Air Quality)	⦿	⦿	⦿	⦿	⦿	⦿
Construction (with Air Quality)	●, ◗	●, ◗	●, ◗	●, ◗	●, ◗	●, ◗
Growth Inducing	○	○	○	○	○	○
Cumulative (without Air Quality)	○	○	○	○	○	○
Cumulative (with Air Quality)	●, ◗	●, ◗	●, ◗	●, ◗	●, ◗	●, ◗
Environmental Justice	○	○	○	○	○	○

○ Less Than Adverse Effect, or No Adverse Effect
⦿ Less Than Adverse Effect with Implementation of Mitigation Measure
● Potentially Adverse Effect or an Adverse Effect
◗ Significant Impact Under CEQA

Table ES-5. Maintenance and Operations Facilities and Impacts Summary

Project Goal/Criteria/Measure	Maintenance and Operations Facility B	Maintenance and Operations Facility D
Environment		
Traffic	○	○
Regional Land Use	○	○
Local Land Use and Development	○	○
Division of Established Community	○	○
Consistency with Local Land Use Plans/ Policies	○	○
Displacements	●	◉
Community Cohesion	○	○
Visual Quality	○	○
Air Quality (Operational)	●	●
Noise and Vibration	○	○
Ecosystems and Biological Resources	○	◉
Geotechnical	◉	◉
Water	○	○
Historic, Archaeological, Paleontological	●	○
Parklands and Community Facilities	○	○
Economic	○	○
Safety and Security	○	○
Construction (without Air Quality)	◉	◉
Construction (with Air Quality)	●, ◗	●, ◗
Growth Inducing	○	○
Cumulative Impacts (without Air Quality)	○	○
Cumulative Impacts (with Air Quality)	●	●
Environmental Justice	○	○

○ Less Than Adverse Effect, or No Adverse Effect
◉ Less Than Adverse Effect with Implementation of Mitigation Measure
● Potentially Adverse Effect or an Adverse Effect
◗ Significant Impact Under CEQA

Evaluation Criteria

Below is a discussion of the various project alternatives and how they perform in relation to the following criteria and performance measures.

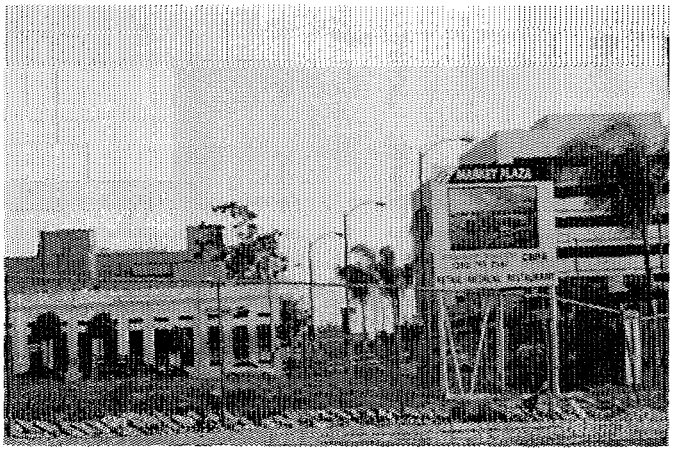
- Regional Connectivity
- Environmental Effects
- Economic Development/Land Use
- Community Support
- Capital and Operating Costs
- Cost-Effectiveness
- Financial Capability
- Federal New Starts Funding Criteria
- Ridership
- Travel Time Savings

Regional Connectivity – Each of the alternatives, with the exception of the No-Build Alternative would increase regional connectivity and improve access to major activity centers and travel markets in West Los Angeles, Hollywood and Downtown Los Angeles. However, the TSM Alternative would not provide a connection from the airport to other mass transportation facilities, as would be provided under the BRT and LRT Alternatives.

Environmental Effects – The No-Build and TSM Alternatives would not include construction activity, as a result, they would not have impacts related to displacement (no property acquisition or relocation would be necessary), or construction air quality. Both the BRT and LRT Alternatives would require mitigation for temporary construction impacts and would result in adverse construction air quality impacts. The LRT Alternative would also have an adverse air quality impact due to exceedance of the Federal NOx threshold, and while it would result in a reduction in Greenhouse Gases when compared to the No-Build, the decrease would be less than the project Greenhouse Gas decrease under the BRT Alternative and generally similar to that under the TSM Alternative. All alternatives would result in increased visual impacts. The TSM and No-Build Alternatives would result in impacts as the result of increased congestion, while the BRT Alternative would remove vegetation and result in new sources of light or glare, the LRT Alternative would remove landscaping, add elevated structures, and a fixed guideway with overhead wires and poles in the middle of Crenshaw Boulevard. The BRT and LRT Alternatives would also result in adverse effects to historic resources to the Century Lounge and Angelus Funeral Home, respectively. The TSM and No-Build Alternatives would not result in an adverse effect to a historic resource.

Each of the alternatives would have a disproportionate adverse environmental justice effect, for the TSM and No-Build Alternatives the effect would be related to transit equity and traffic congestion along Crenshaw Boulevard, while the BRT Alternative would result in a disproportionate adverse effect related to aesthetics and parklands adjacent to and along Edward Vincent Jr. Park. The LRT Alternative would have disproportionate impacts related to community cohesion and aesthetics in the Hyde Park area on Crenshaw Boulevard.

Economic Development and Land Use – The TSM and No-Build Alternatives would not be consistent with several existing land use policies encouraging transit-oriented uses. The No-Build Alternative in particular would limit future opportunities for development at stations. The TSM Alternative would be consistent with some local land use policies by enhancing transportation, but would not provide modal options, or increase opportunities for redevelopment.



Inglewood redevelopment at La Brea Avenue.

The BRT Alternative would increase accessibility from public transit to Edward Vincent Jr. (from West Station), Leimert Park (from Vernon Station, and Grevillea Park (from La Brea Station) and improves public transit access to 51 community facilities and public services located within 0.25 mile. The LRT Alternative would also increase accessibility to Edward Vincent Jr. (from West Station), Leimert Park (from Vernon Station, and Grevillea Park (from La Brea Station) and would improve public transit access to 33 community facilities and public services located within 0.25 mile. The LRT Alternative would also result in 880 additional jobs and a $73.2 million increase in economic output compared to 240 additional jobs and $20.3 million increase in output under the BRT Alternative and 250 additional jobs and $20.9 million increase in economic output. The No-Build Alternative would not result in an additional jobs or economic output.

Community Support – There were 365 comments received during the scoping period. The most frequent comment topics included alignments/routes, mode, public safety, traffic and parking, historic and cultural resources, connectivity, environmental justice and economic development.

Alignment/Route. Many of the comments concerned potential connections to existing transit lines, particularly the Metro Red, Purple, Blue, and Green Lines, as well as the Exposition (Expo) Light Rail Transit (LRT) line (under construction). Recommendations were made to design new routes, such as an alignment from La Brea Avenue/Wilshire Boulevard with connections to Venice Boulevard/San Vicente Boulevard then south along Crenshaw Boulevard.

Mode. Most remarks expressed support for LRT, as opposed to bus-based services. Stakeholders urged the consideration of grade separations (either below grade or at grade). There was concern that an at-grade alignment would degrade the aesthetics, culture, and history of portions of the Crenshaw Corridor, particularly in the Leimert Park area. Comments were received pertaining to the safety of LRT at crossings and the interaction of vehicular traffic with LRT. Some of the comments were in support of bus services because they were perceived as having less of a negative impact on the aesthetics and culture of the area. Some felt that buses were safer than light rail, would cause less disruption, would cost less, and could be implemented sooner.

Public Safety. Stakeholders articulated concern over LRT with regard to its proximity to schools and the safe interaction between LRT and vehicular/pedestrian traffic, particularly at crossings.

Traffic and Parking. Generally, the concerns regarded potential increases in congestion during construction and potentially during LRT/BRT operations.

Northbound traffic at Crenshaw and Adams.

Historic and Cultural Resources. Preservation of the character, culture, and history of the Crenshaw Corridor were paramount. Stakeholders expressed a fear that the community would change, and that minority and small owned business could be impacted. Leimert Park Village and Hyde Park were areas mentioned frequently with regard to preservation.

Connectivity. Participants expressed a desire for regional connectivity and efficiency, with a focused attention on connections to LAX, the Westside, Downtown Los Angeles, the South Bay and the Metro Red, Green, Blue, and Purple Lines.

Environmental Justice. Community stakeholders wanted the same level of investment and consideration that more affluent communities would receive. Comments expressed that negative impacts should be mitigated to the extent possible and that the quality of life should be protected from degradation.

Economic Development. A few comments referenced the potential for transit to allow for enhanced economic vitality. Others expressed concern for the perceived potential loss of existing businesses along Crenshaw Boulevard.

Ridership – The BRT Alternative would result in the highest number of daily boardings with 16,680 daily boardings in the year 2030. The LRT Alternative would result in 13,144 daily boardings and the TSM Alternative would result in 9,412 daily boardings in 2030. The No-Build Alternative would not result in any new daily boardings, as no new improvements would occur.

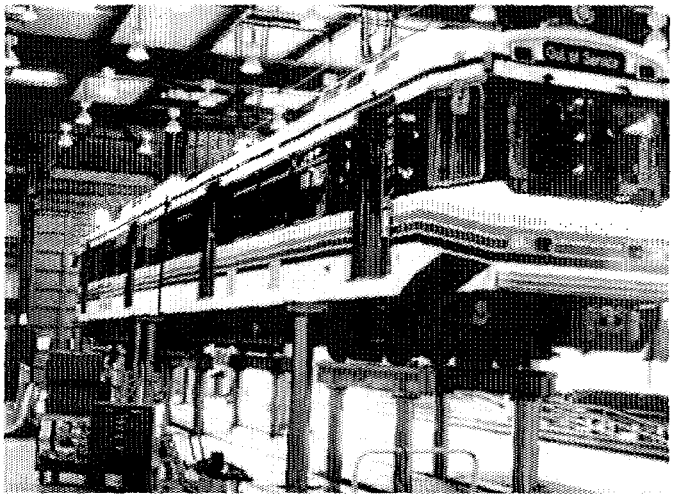
Travel Time Savings – The LRT Alternative would have the greatest travel time savings, resulting in a savings of 21.6 minutes saved traveling from the Exposition Line to the Metro Green Line in 2030. The BRT Alternative would result in a savings of 17.2 minutes, while the TSM Alternative would result in a savings of 10.5 minutes in the peak period and 11.2 minutes in the off-peak period. The No-Build Alternative would not result in any travel time savings.

Design Options

Effects related to the six LRT design options would serve as avoidance alternatives to impacts identified in Base LRT Alternative. However, Design Option 5 (a subway station at Vernon Avenue near Leimert Park) would result in a potentially adverse land use effect related to the intensification of development near Leimert Park and additional construction impacts associated with cut-and-cover construction for the station. In addition, Design Options 3, 4 and 5 would each result in additional property acquisitions beyond the Base LRT Alternative. Design Option 3 (a cut and cover crossing instead of an at-grade crossing at Centinela Avenue) would result in an adverse visual effect due to the potential removal of mature palm trees along Crenshaw Boulevard at Edward Vincent Jr. Park.

Maintenance and Operations Facilities

Two candidate maintenance and operations facility sites are currently under consideration by the Metro Board, one of which will be selected as part of the proposed project. Maintenance and Operations Facility B is an approximately 16-acre site bound by 83rd Street, the Harbor Subdivision right-of-way and Isis Avenue. Maintenance and Operations Facility D is an approximately 14-acre site near the Metro Green Line and bound by the Harbor Subdivision right-of-way, and Union Pacific Branch Line and Rosecrans Avenue. The two maintenance and operations facilities would result in similar effects, both would be generally consistent with local land use policies, but would result in unmitigatable air quality impacts. Maintenance and Operations Facility D would be located on vacant land, but would require mitigation for an impact related to the removal of native trees and vegetation.



Two candidate maintenance and operations facility sites are currently under consideration by the Metro Board, one of which will be selected as part of the proposed project. Candidate site D is located in El Segundo near Rosecrans Avenue and Sepulveda Boulevard, and candidate site B is located adjacent to the community of Westchester near Florence and Hindry Avenues.

Maintenance and Operations Facility B would require the displacement of several industrial businesses along the Harbor Subdivision Railroad and require the closure of Hindry Avenue, one of the few existing streets that allows through across the Harbor Subdivision Railroad in the community of Westchester. Maintenance and Operations Facility Site B would result in a potentially adverse effect related to historic resources due to a partial take of the Kaiser Homes' production plant. Both sites would either be consistent with or not result in an adverse effect related to the remaining project goals, criteria and measures.

Trade-Offs Among Alternatives

Consideration of all alternatives is required in order to draw a conclusion about the proper investment for the Crenshaw Transit Corridor. Each alternative – the No-Build Alternative, the TSM Alternative, the BRT Alternative, and the LRT Alternative must be evaluated against many different factors and variables. Weighing each of the factors inevitably involves tradeoffs among features of each alternatives and between alternatives.

The No-Build Alternative would not achieve the level of mobility and accessibility needed by communities within the Crenshaw Transit Corridor. These communities contain a disproportionately high concentration of minority and low income households. Additionally, the No-Build Alternative would not create the infrastructure necessary to shift the corridor communities from fossil fuel-oriented travel to a viable transit alternative. As a result, VMT within the corridor would remain unchanged, greenhouse gas emissions would remain unchecked and the corridor communities would continue to rely on non-renewable energy sources.

Currently, portions of the corridor are served by Metro's Rapid Bus. The TSM Alternative would represent a modest change over existing transit service. TSM bus service related improvements would present limited opportunities for increases in ridership and would not serve as a strong catalyst for attracting transit-supportive land uses and economic development to the corridor, as would be expected with a greater transit investment in a more permanent fixed guideway.

Both build alternatives – the BRT Alternative and the LRT Alternative – have relative merits and deficiencies.

The BRT Alternative provides many incremental improvements beyond the TSM Alternative. It reduces travel time and improves reliability of bus transit service, especially in locations where exclusive rights-of-way can be secured, such as along the Harbor Subdivision and in sections of Crenshaw Boulevard. The BRT Alternative also provides additional focus for nodes of activity that occur at BRT stations. The BRT Alternative includes service which can operate in existing roadways beyond the area of investment in physical infrastructure. This feature allows the BRT Alternative to extend service to the Wilshire Boulevard Corridor, attracting more riders making that connection.

The Metro Board will likely consider a wide range of trade-offs in the selection of the Locally Preferred Alternative.

The BRT Alternative does have a several limitations. While providing expanded transit service and connections to the regional transit system, the physical constraints of travel

corridors (especially arterial corridors) make exclusive transit lanes difficult to secure along the entire length of such corridors. In the case of the Crenshaw Corridor, the semi-exclusive lanes in Crenshaw Boulevard are shared with right-turning vehicles. This configuration may result in conflicts with right-turning vehicles as well as local buses. As a result, BRT travel times and reliability along Crenshaw Boulevard would improve only marginally compared to the conventional rapid bus service,. The difference may degrade over time. There are constraints for the BRT Alternative along the Harbor Subdivision, as well. Minimum lane widths for the BRT busway, especially along the Harbor Subdivision create impacts including the need to purchase additional property in selected locations and parkland impacts. Constraints on speeds along the right-of-way at crossings with other streets increase travel times and diminish ridership potential.

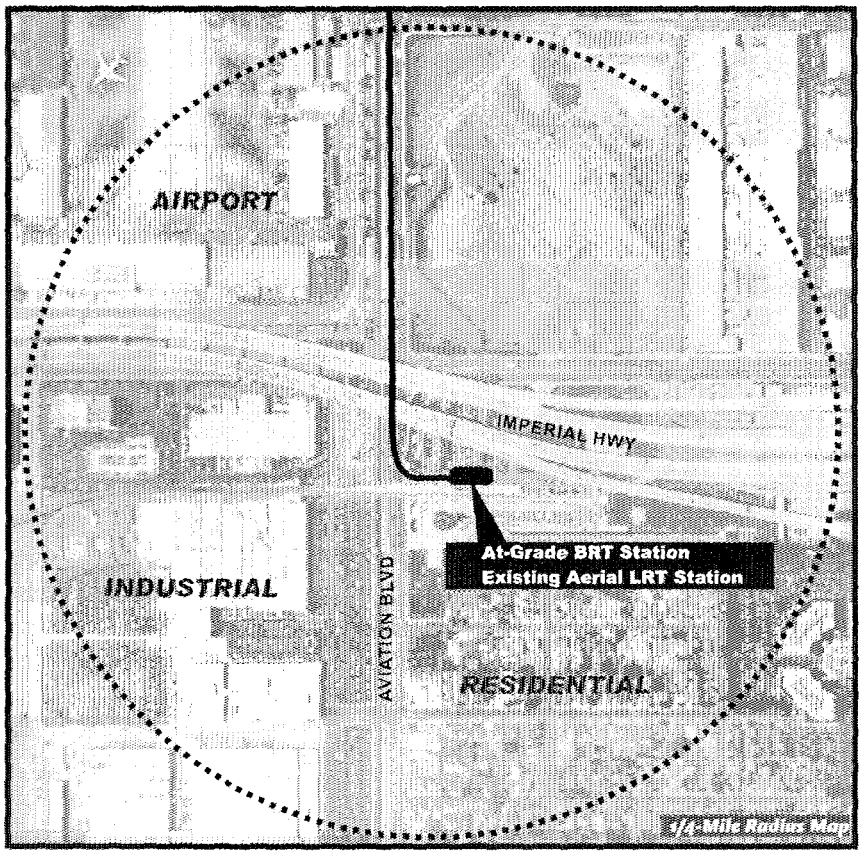
Many similar factors are important to consider for the LRT Alternative. The LRT Alternative does have a longer length of combined exclusive right-of-way segments (at-grade, below grade and elevated), leading to fewer conflicts with traffic and faster and more reliabile travel times. The relatively higher speeds associated with the LRT Alternative offer greater potential improvement in ridership. Travel times are more reliable over the long run as congestion on the roadway network affect vehicle traffic. The LRT Alternative is also able to take advantage of existing transit investments, such as the Metro Green Line. Consequently, service on the LRT Alternative can provide connections more deeply into the South Bay Area along the Metro Green Line. In addition, a portion of the LRT Alternative also facilitates the extension of the Metro Green Line in the direction of LAX. Importantly, the substantial infrastructure investment associated with the LRT Alternative is typically more catalytic in encouraging transit-supportive land uses envisioned by many communities within the corridor.

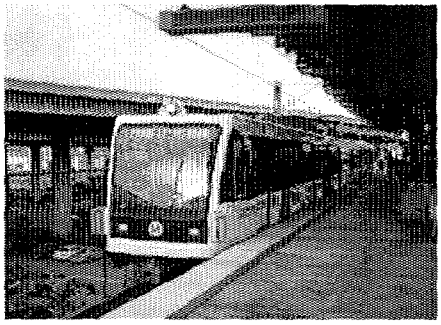
The LRT Alternative also has limitations. The LRT alternative is estimated to have significantly higher capital costs compared to the TSM and BRT Alternatives, requiring greater financial resources. The LRT Alternative is constrained in terms of where it can operate, unlike BRT, which can operate in many different types of service environments. The physical constraints and high cost associated with extending LRT service north of the Exposition Line limits the market for the LRT Alternative and connections to the dense Wilshire Corridor. In some cases, the LRT Alternative infrastructure creates more significant visual and construction impacts. In some other cases, especially along Crenshaw Boulevard, the LRT Alternative is subject to the disadvantages of delays at arterial street intersections, similar to the TSM and BRT Alternatives. When compared to the other alternatives under consideration, the higher capital cost can be considered with respect to LRT's higher carrying capacity, operational reliability and catalytic influence on economic development within and adjacent to station areas along the route.

The BRT and LRT Alternatives differ in the extent of benefits and costs and in the time frame over which those benefits and costs are realized. The next stage of this environmental review will involve public review of these tradeoffs and the entire environmental analysis and the comparative performance of the alternatives. Public comments will inform the ultimate selection of a locally preferred alternative by the Metro Board.

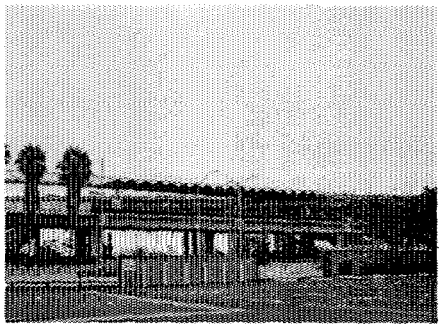
Consideration of all alternatives is required in order to draw a conclusion about the proper investment for the Crenshaw Transit Corridor. Each alternative – the No-Build Alternative, the TSM Alternative, the BRT Alternative, and the LRT Alternative must be evaluated against many different factors and variables. Weighing each of the factors inevitably involves tradeoffs among features of each alternatives and between alternatives.

AVIATION/LAX (METRO GREEN LINE)

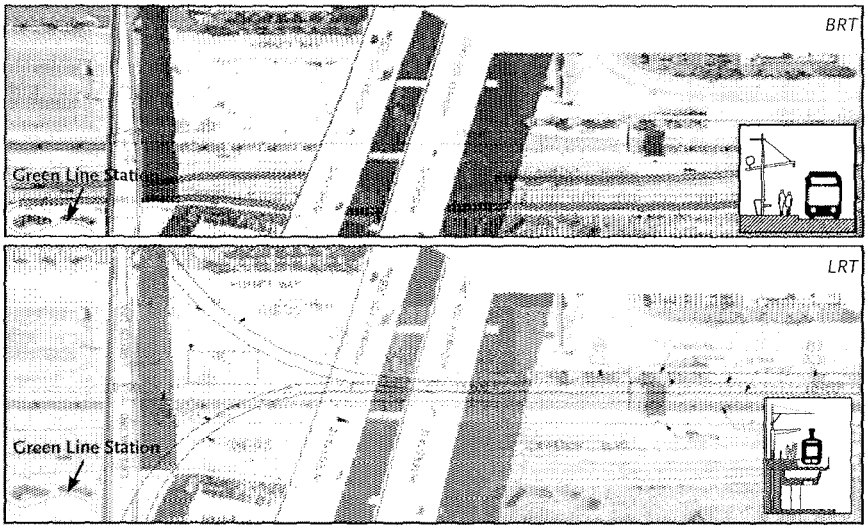


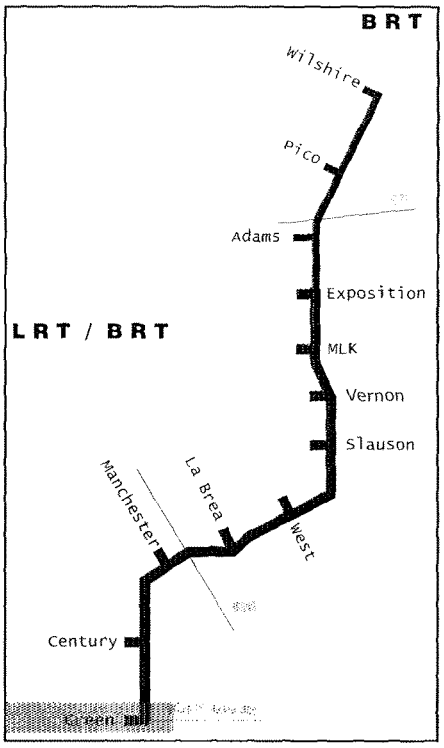


Metro Green Line Station



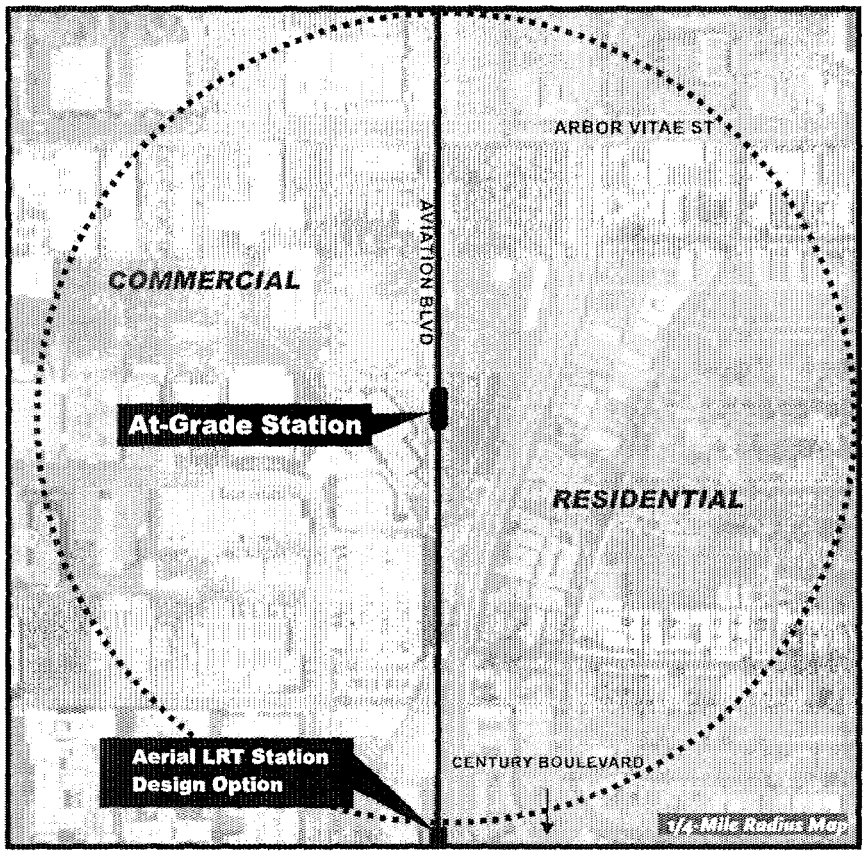
Metro Green Line Station

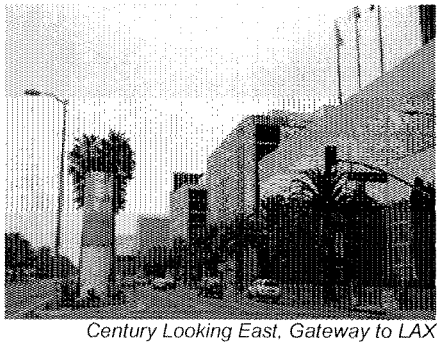




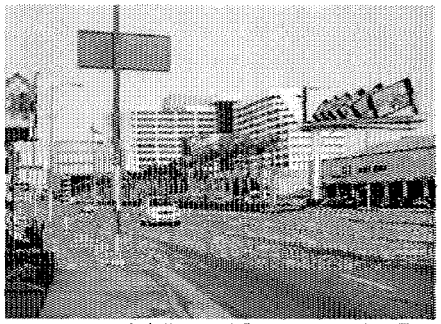
Aviation/LAX Station
The existing Aviation/LAX Station would connect the Metro Green Line with the Crenshaw corridor at Aviation and Imperial Highway. The station is in close proximity to the aerospace industry concentrated in El Segundo and residential neighborhoods.

AVIATION/CENTURY

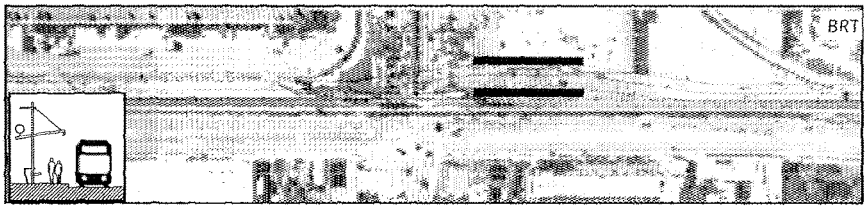


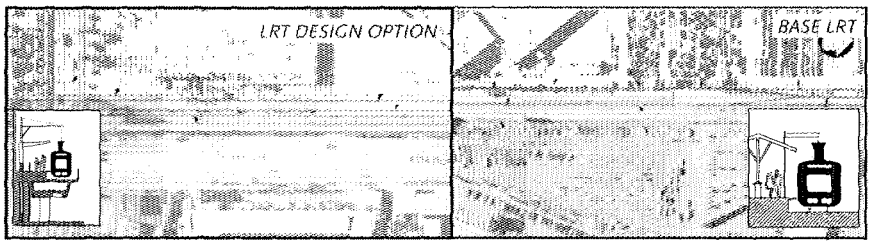


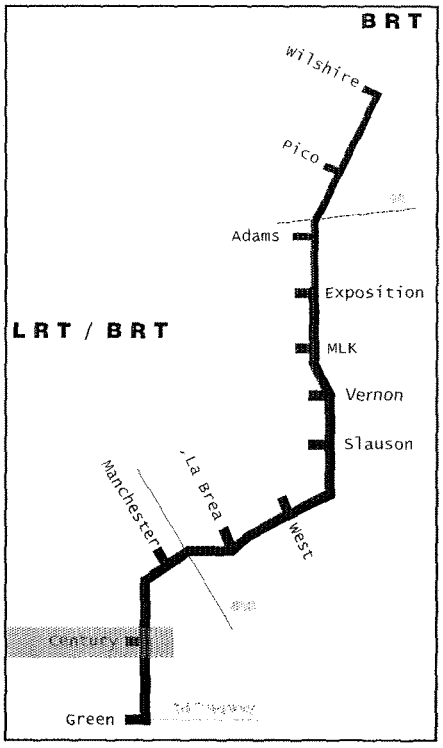
Century Looking East, Gateway to LAX



Aviation and Century, Looking East



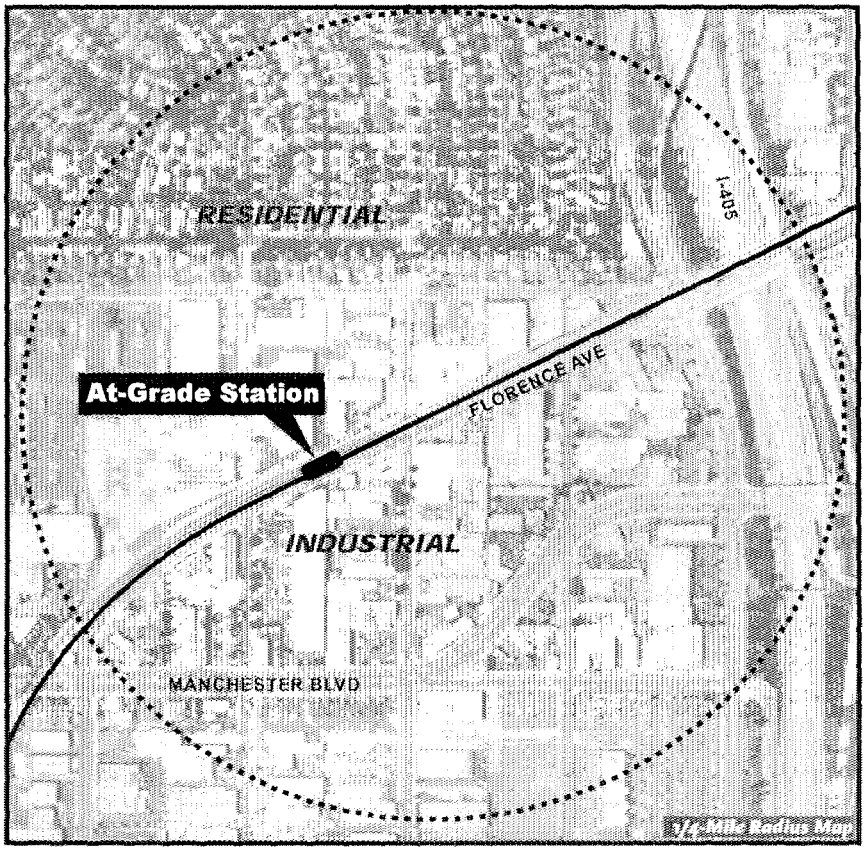




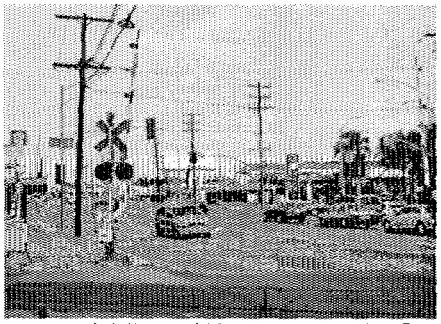
Aviation/Century Station

The Aviation/Century Station would service Aviation Boulevard, providing access to Century Boulevard, a major east-west gateway leading to LAX, one of the largest and busiest airports in the country. This station will serve a new major gateway between Metro's regional transit system and LAX. A design option for the LRT Alternative at this location includes an elevated station closer to Century Boulevard. The station would be in close proximity to drop-off areas for rental cars, taxis, buses, shuttles and a host of the existing means of access to the airport. This station would also serve a major concentration of hotels along Century Boulevard.

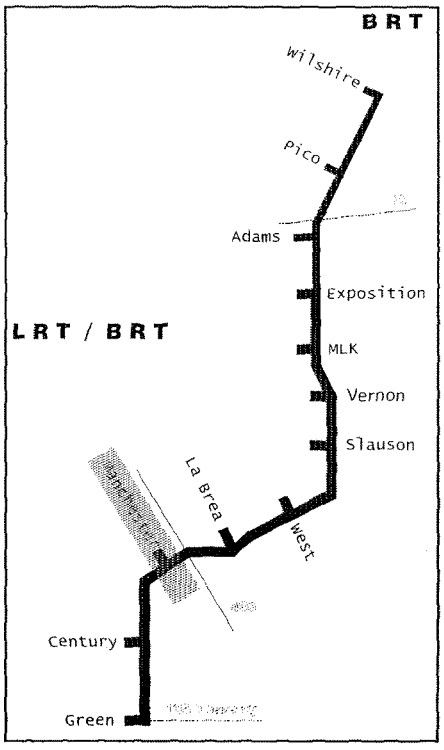
AVIATION/MANCHESTER



Police Academy

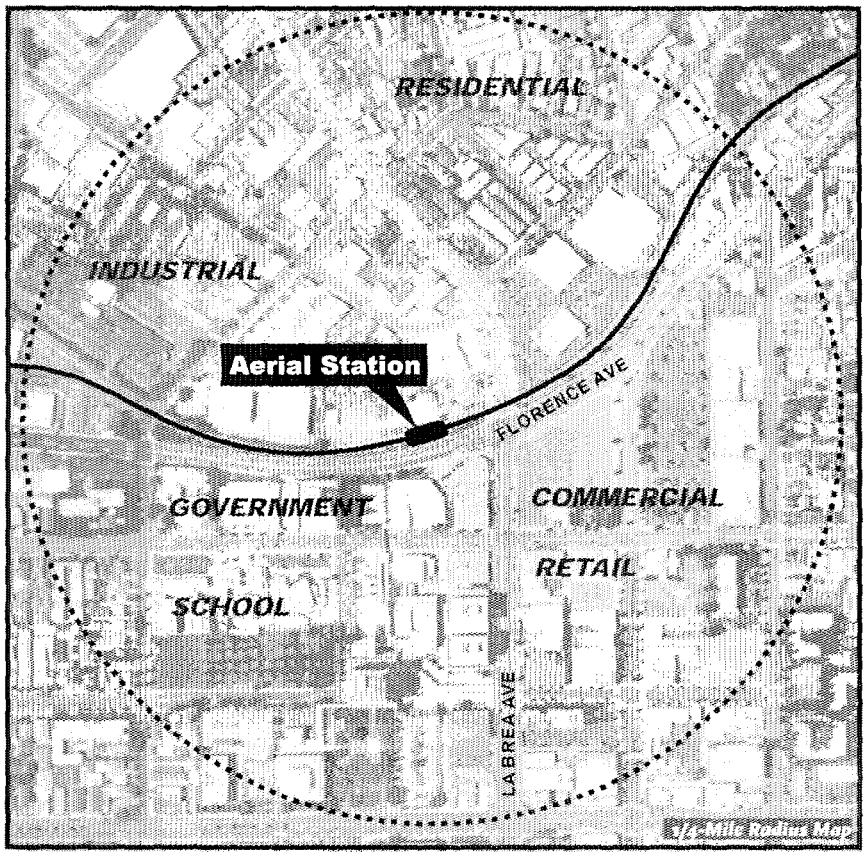


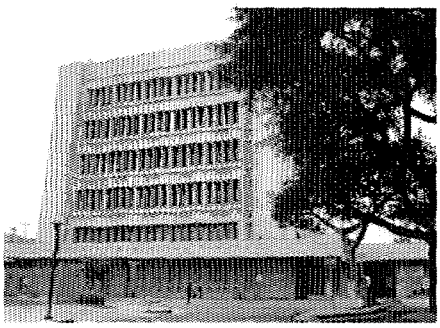
Aviation and Manchester, Looking East



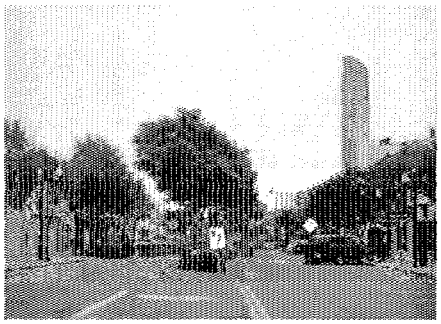
Aviation/Manchester Station

The Aviation/Manchester Station would service the industrial areas along Florence Avenue and the Harbor Subdivision Railroad, the commercial uses along Manchester Avenue, and the residential community of Westchester-Playa Del Rey to the north and west.

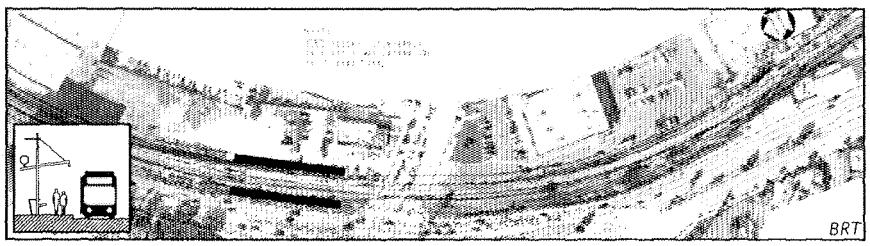


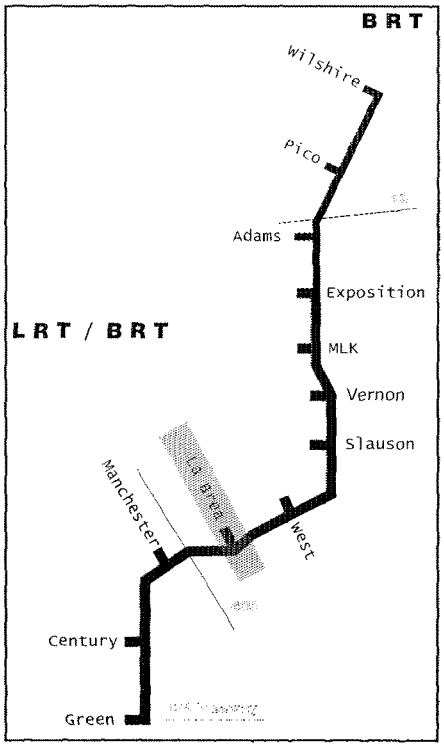


Inglewood Municipal Courthouse



Market Street, City of Inglewood

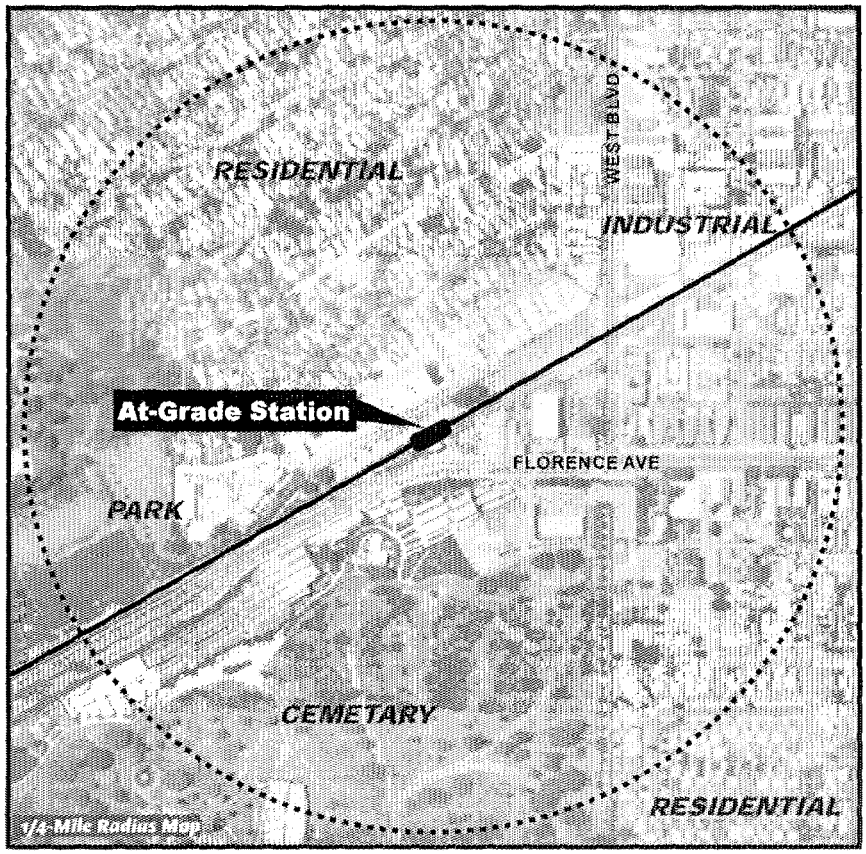


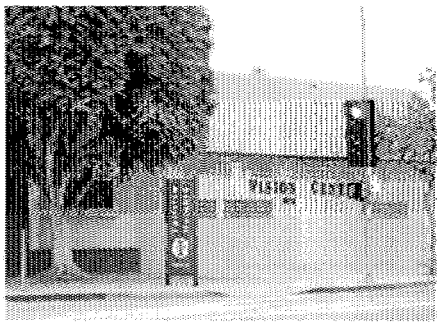


Florence/La Brea Station

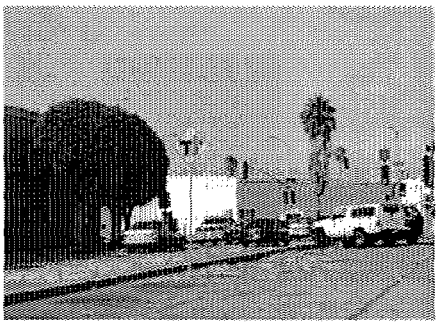
The Florence/La Brea Station would service La Brea Avenue, which is a major north-south gateway street leading to destinations such as Hollywood to the north and Hawthorne to the south. This station would provide access to Downtown Inglewood and the City of Inglewood Civic Center where City Hall, Police and Fire headquarters, the main library and the County Courthouse are located. The Station would also serve the commercial uses along Market Street to the south and residences to the north, east and west.

FLORENCE/WEST

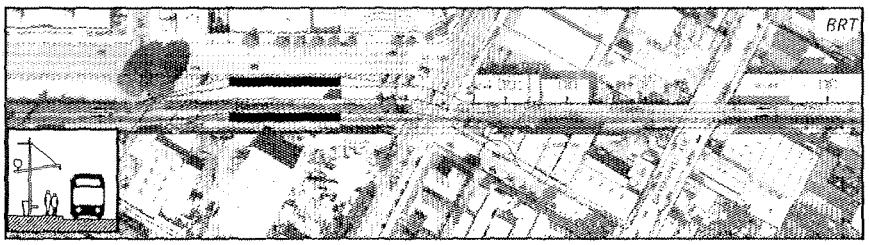


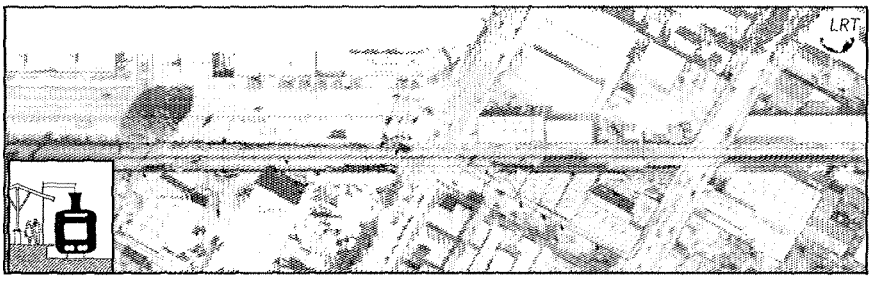


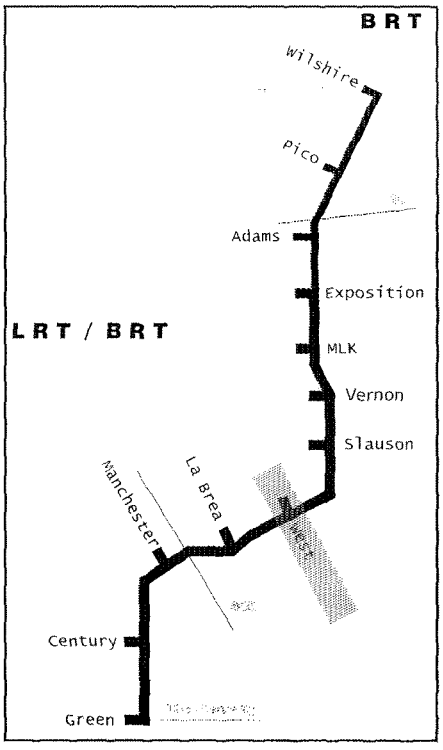
Redondo and West, Looking Southwest



Redondo and West, Looking East

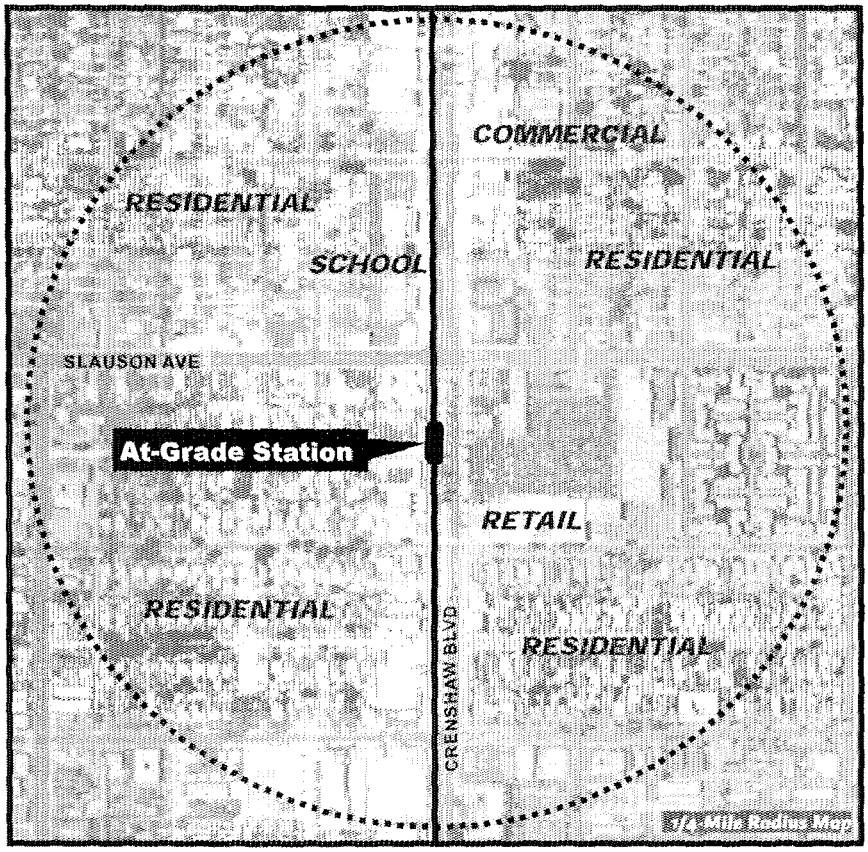


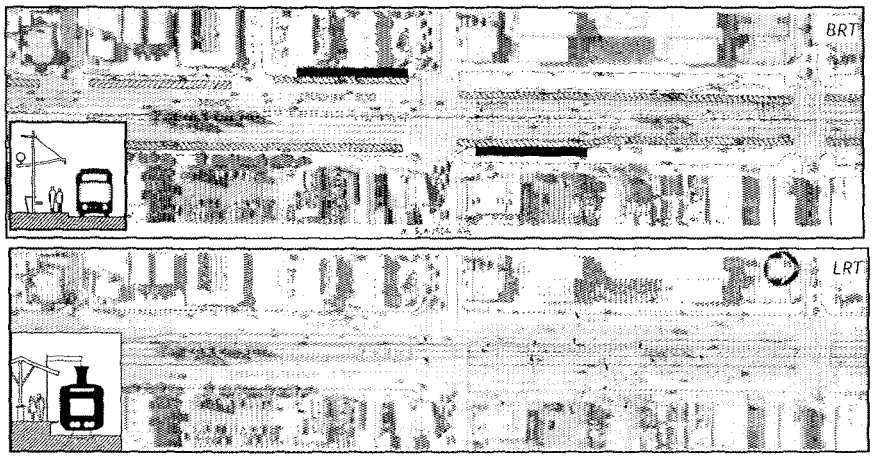




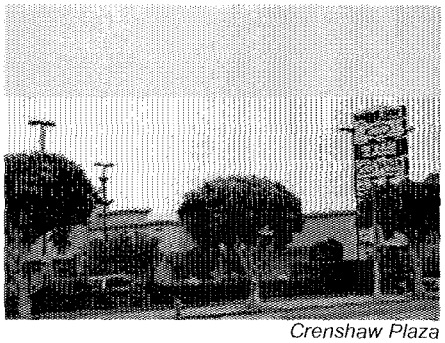
Florence/West Station
The Florence/West Station will provide access to West Boulevard and Florence Avenue, servicing the residential communities of Morningside Park and Hyde Park, as well as Edward Vincent Jr. Park to the northwest.

CRENSHAW/SLAUSON

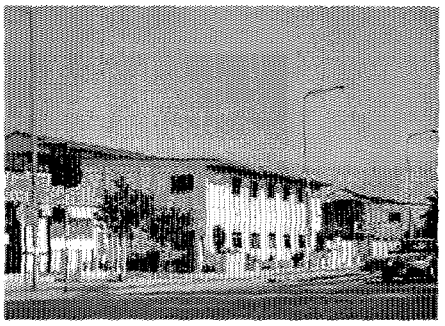




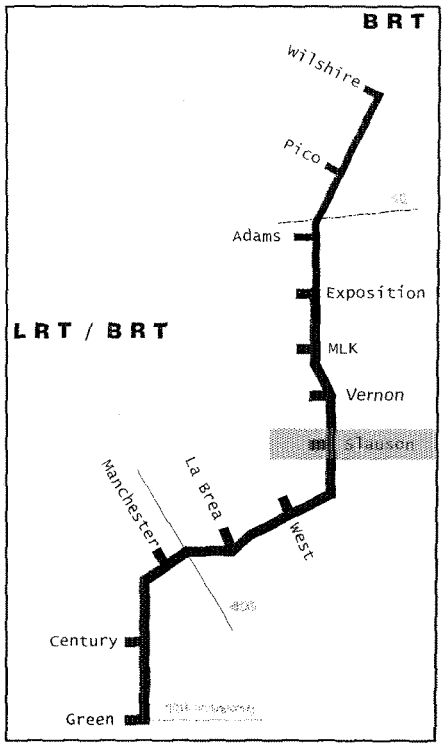
Crenshaw/Slauson Station
The Crenshaw/Slauson Station will service Crenshaw Boulevard, a major north-south gateway street. This station would provide access to east-west bus routes that service Slauson Avenue providing access to commercial neighborhoods, schools and government offices.



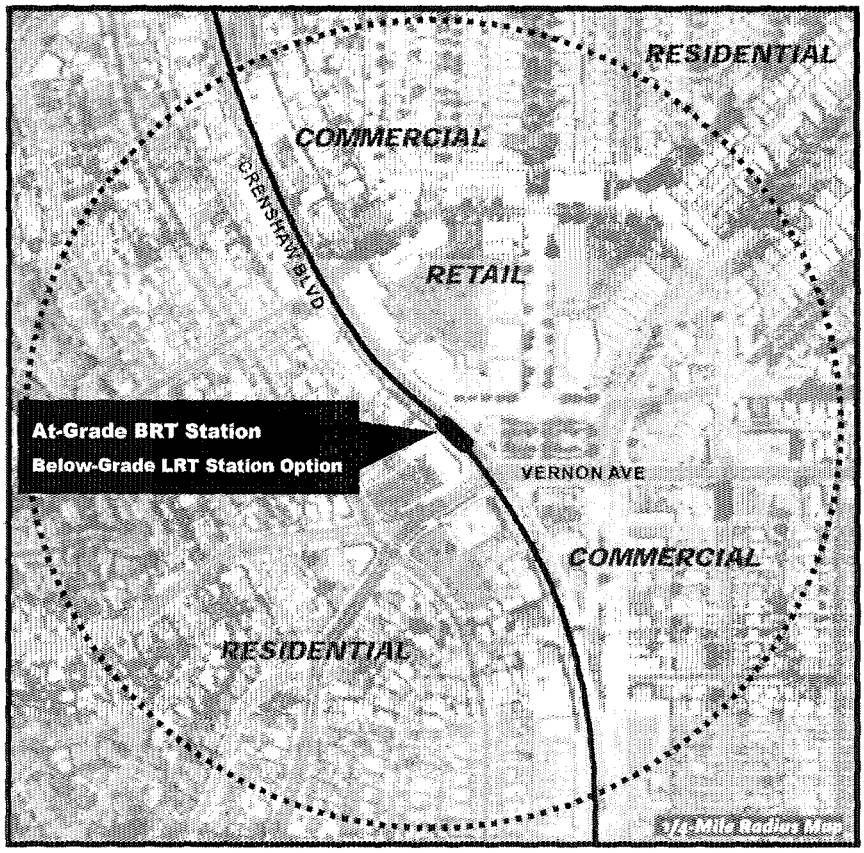
Crenshaw Plaza

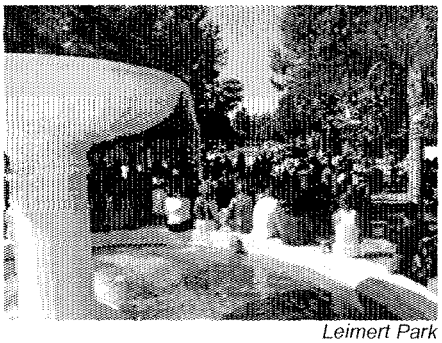


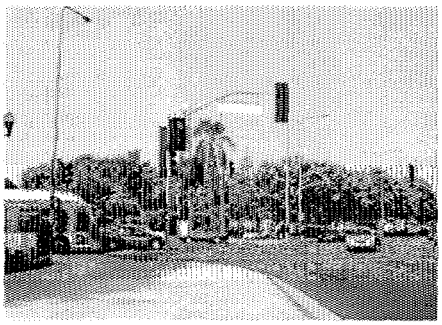
View Park Prep High school

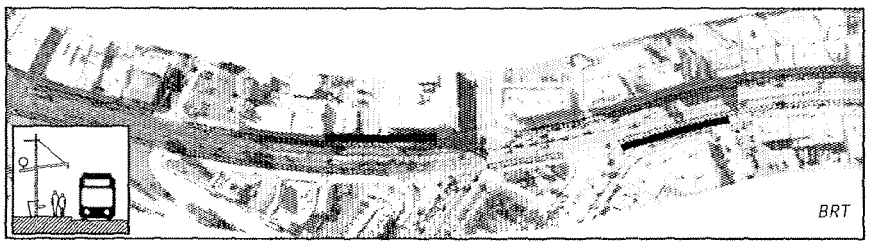


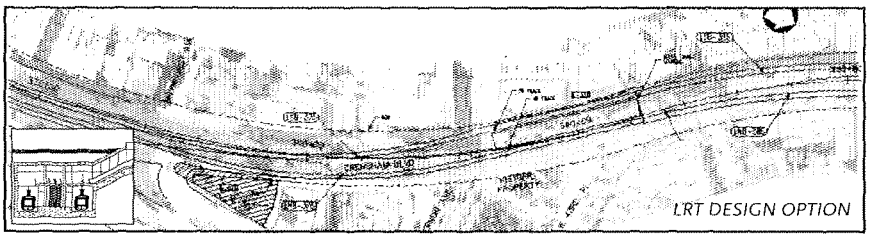
CRENSHAW/VERNON

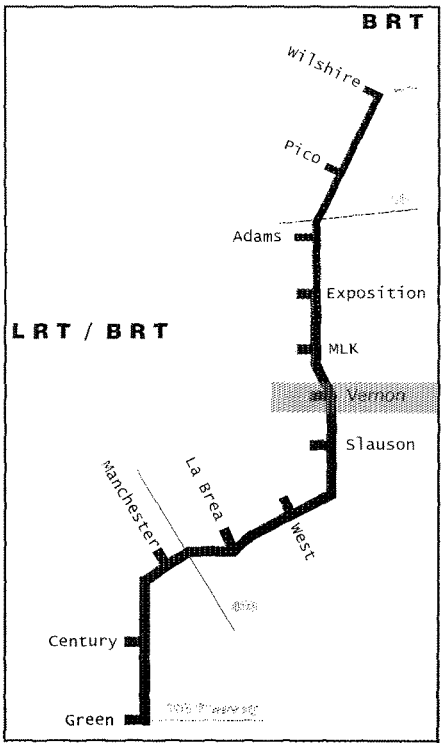



Leimert Park


Crenshaw and Vernon, Looking East

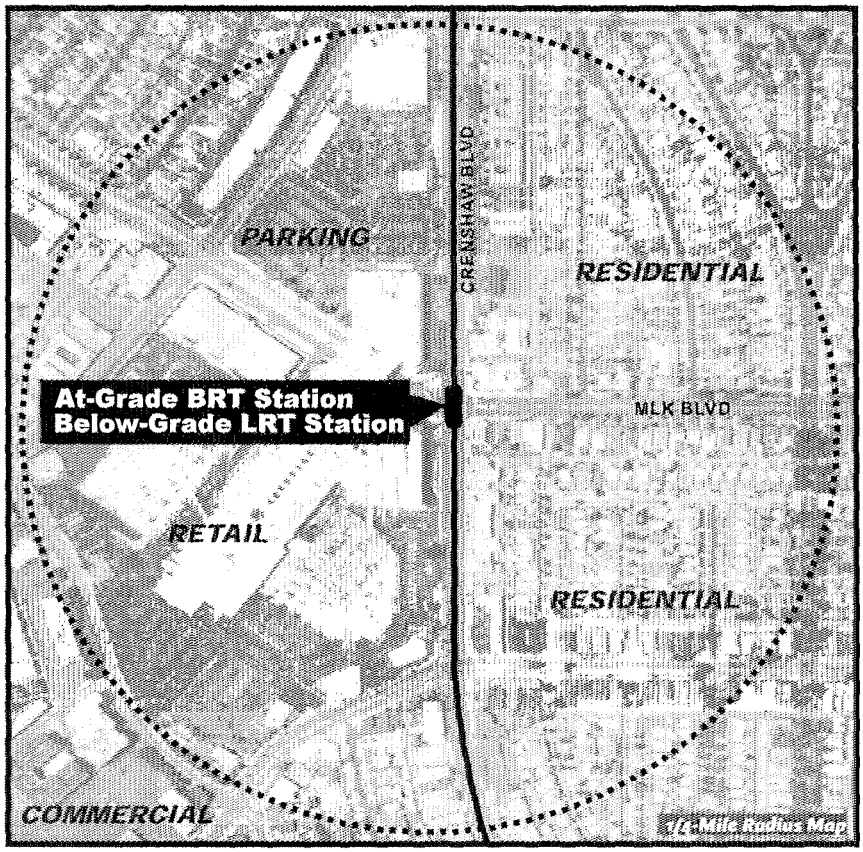






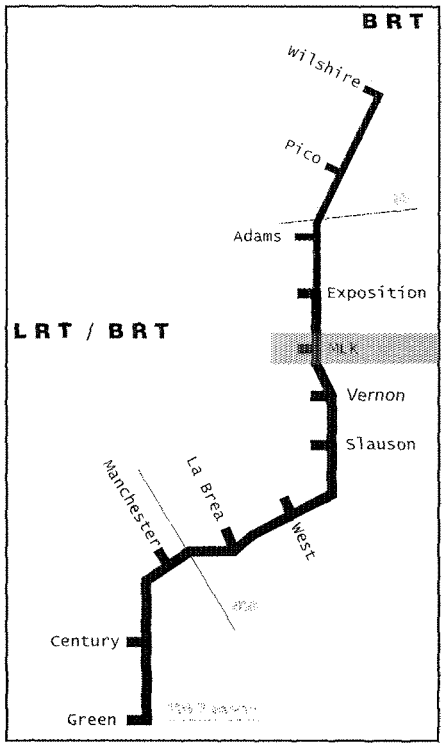
Crenshaw/Vernon Station (BRT only, optional for LRT)
The Crenshaw/Vernon Station will service the residential neighborhoods of Leimert Park and View Park and the culturally oriented business in Leimert Park Village. This is part of the BRT Alternative. An underground station at this location is an optional station for the LRT Alternative.

CRENSHAW/MLK



Baldwin Hills Plaza

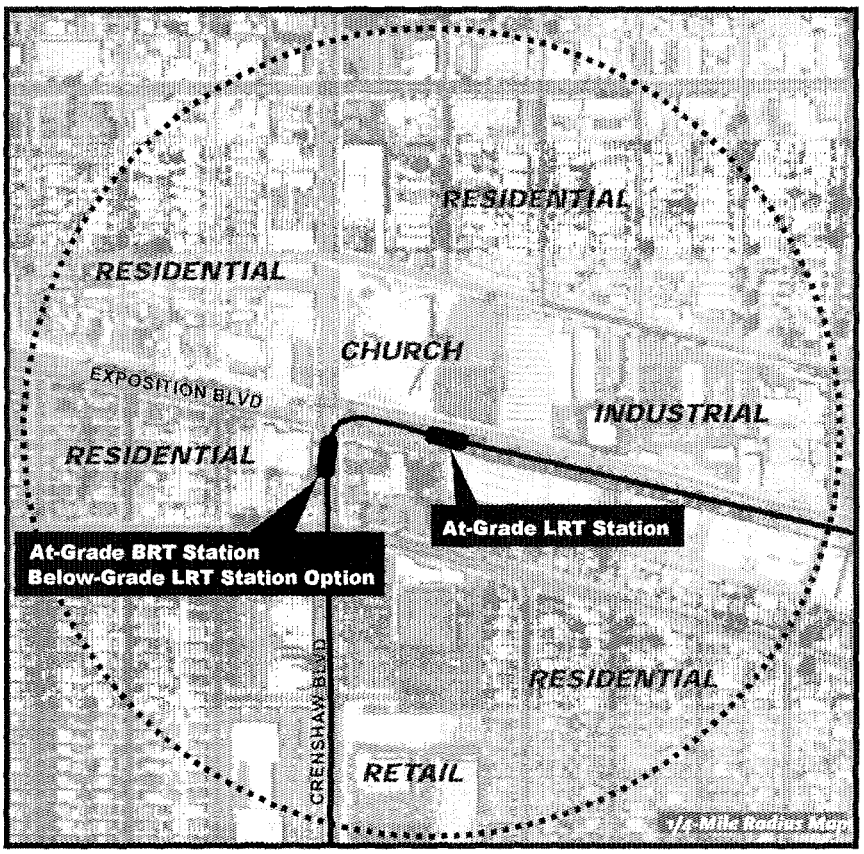
Crenshaw and King, Looking Southwest

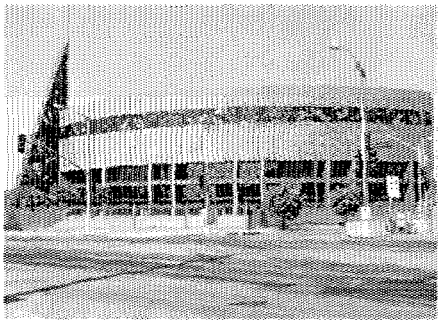


Crenshaw/King Station

The Crenhsaw/King Station will provide access to Martin Luther King Jr. Boulevard, a major east-west street which is well serviced by local buses. This station is in walking distance to the Baldwin Hills Crenshaw Plaza shopping center, the Marlton Square development, and surrounding residential and other commercial uses. This station is also to the northwest of the Leimert Park Village commercial district.

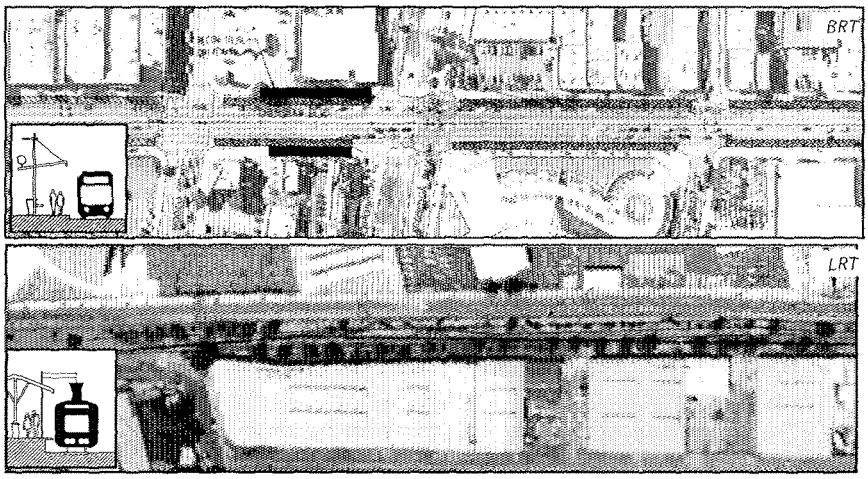
CRENSHAW/EXPOSITION

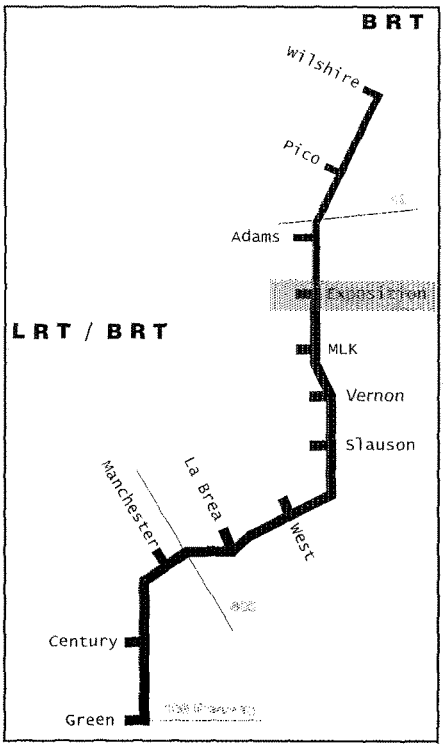




West Angeles Cathedral of God and Christ

Chili Factory

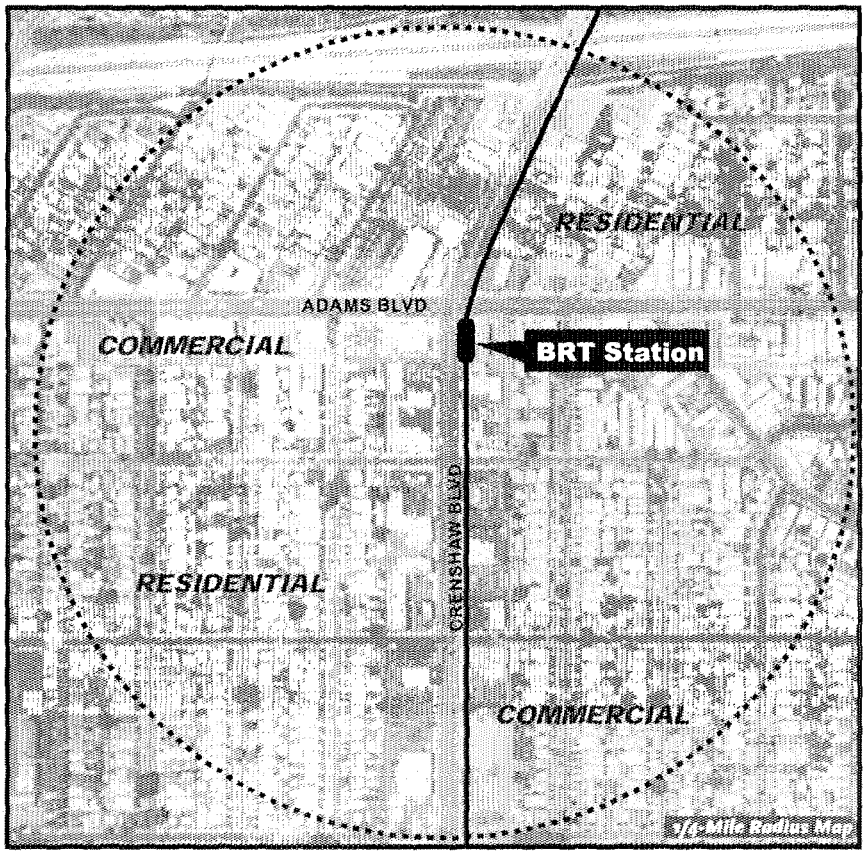




Crenshaw/Exposition Station

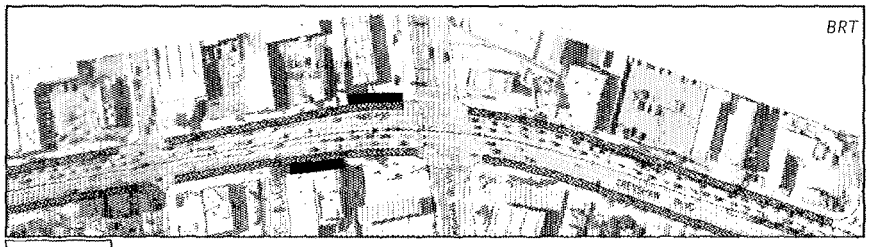
The Crenshaw/Exposition Station will provide access to Exposition Boulevard, a major east-west street which connects to the Exposition Line. This connection with the Exposition Line will provide a connection to Downtown Los Angeles and Exposition Park to the east and Santa Monica and Culver City to the west. This station is in walking to West Los Angeles Cathedral, which hosts social services in addition to religious services. The station is in close proximity to neighborhood shopping areas, as well as a potential development sites. Residences also surround the station area and Jefferson Boulevard is less than one-quarter mile to the north.

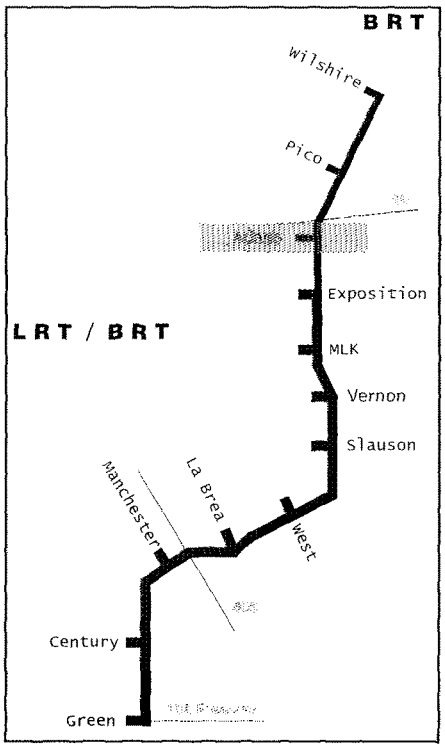
CRENSHAW/ADAMS



Adams, East of Crenshaw

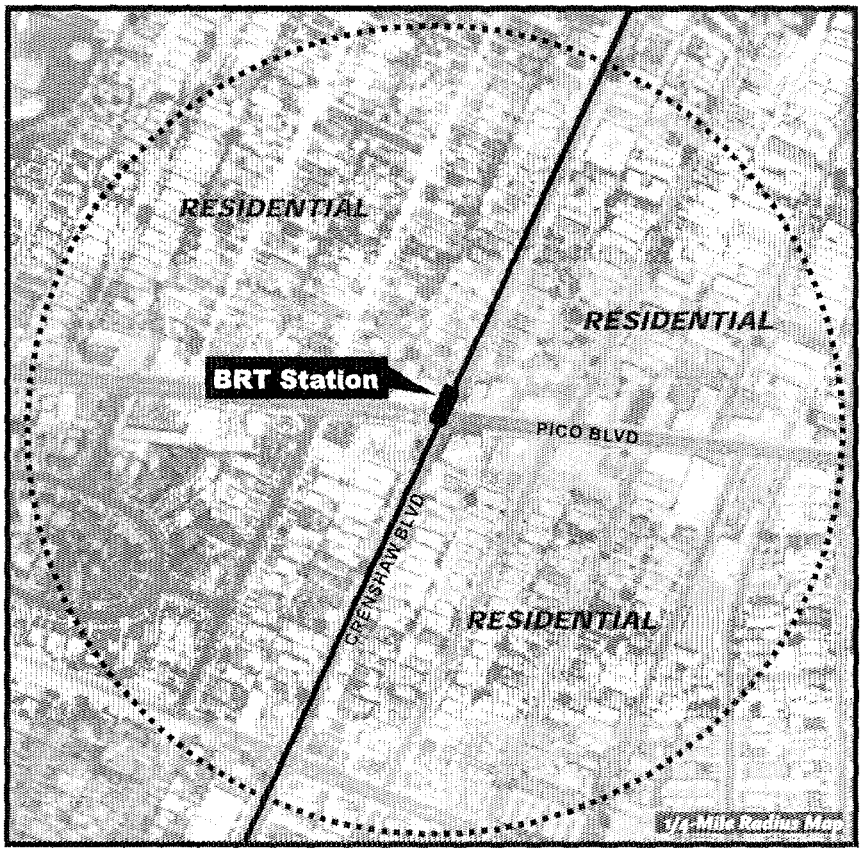
Iglesias de Restauracion

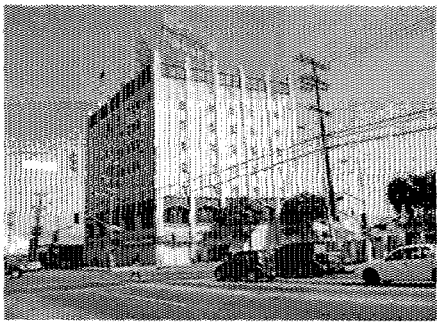




Crenshaw/Adams Station (BRT only)
The Crenshaw/Adams Station will provide access to Adams Boulevard, a major east-west street which is serviced by local buses. The station is in walking distance to residential neighborhoods and local retailers and close to the I-10 Freeway.

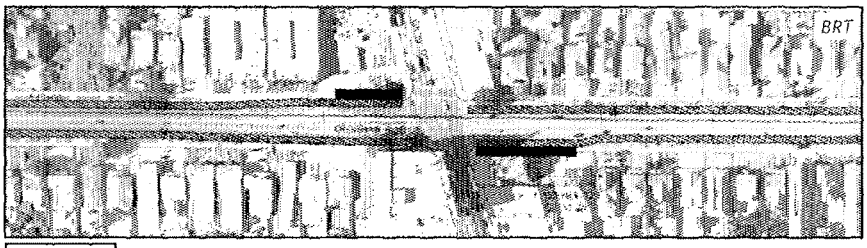
CRENSHAW/PICO

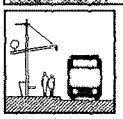


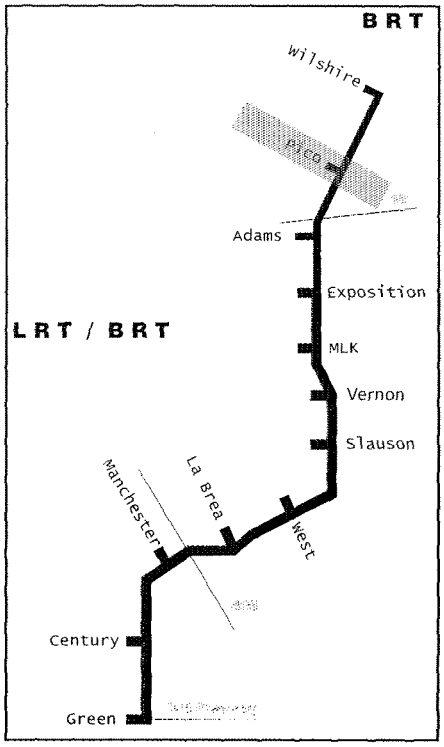


Crenshaw and Pico, Looking East

Victoria Park, Southeast of Crenshaw and Pico

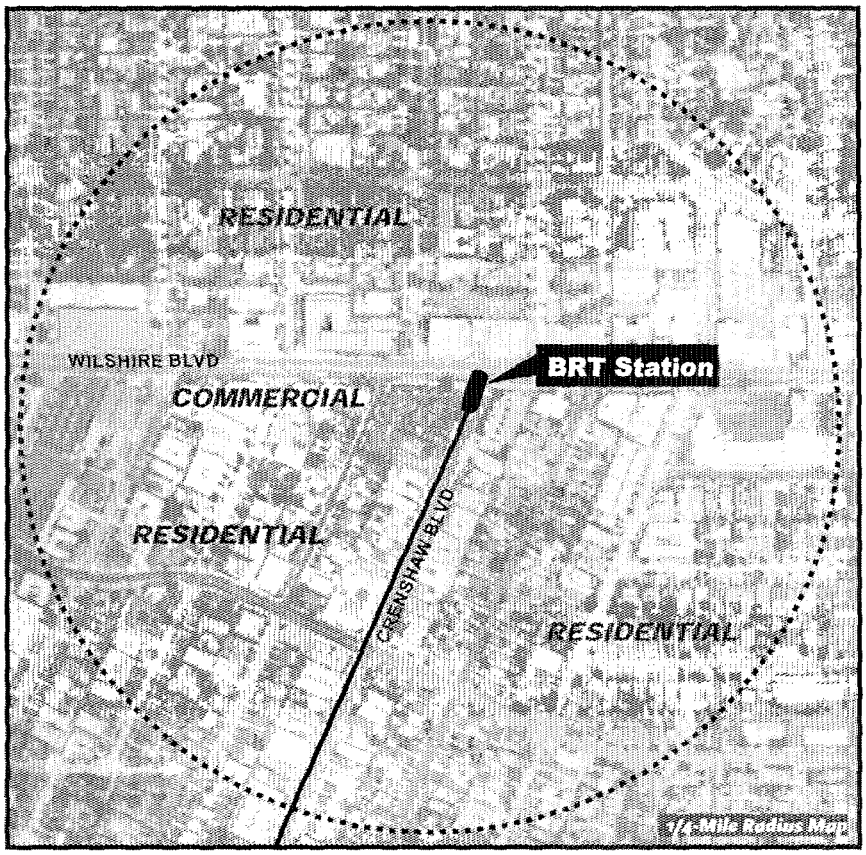






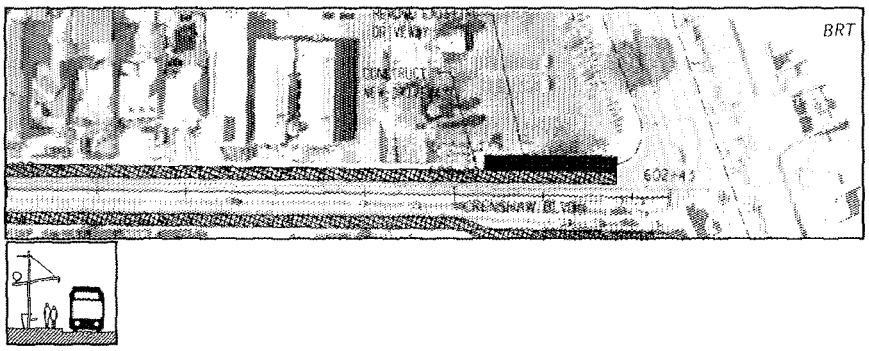
Crenshaw/Pico Station (BRT only)
The Crenshaw/Pico Station will provide access to Pico Boulevard, a major east-west street which is serviced by local buses with destinations to job centers located in Downtown Los Angeles to the east and West Los Angeles to the west. The station is in walking distance to the Victoria Park community to the southwest and additional surrounding residential neighborhoods and local retailers.

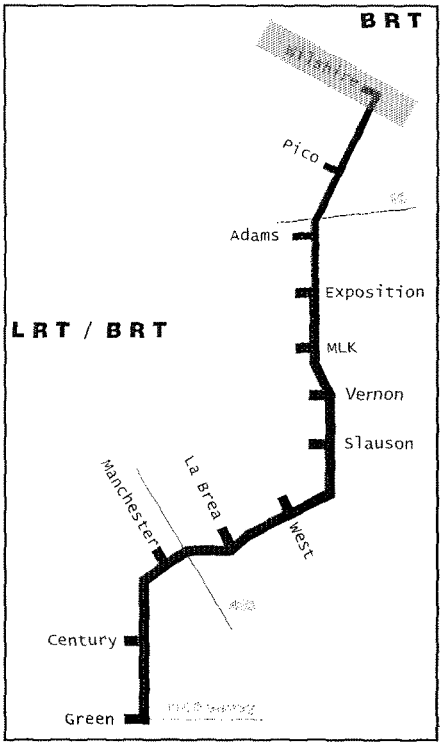
CRENSHAW/WILSHIRE



Crenshaw and Wilshire, Looking North

Wilshire Boulevard, Looking East





Crenshaw/Wilshire Station (BRT only)
The Crenshaw/Wilshire Station will provide access to Wilshire Boulevard, a major east-west gateway street leading to destinations such as Downtown Los Angeles to the east and cultural institutions to the west. Wilshire Boulevard is well-served from Metro Rapid buses and other local buses and provides connections to the Metro Red Line at Western Aveneue. Residential neighborhoods surround this station site to the north and south.

Table ES.6-. Summary of Impacts

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative
Description	I-405 HOV Lane Metro, LADOT, the Santa Monica Big Blue Bus, and the Culver City Bus transit services Expo Phase I, Metro Purple and Green Lines Metro Rapid Bus	The No-Build improvements plus a Metro Rapid Line on Crenshaw Blvd., La Brea Ave., and Hawthorne Blvd.	The No-Build improvements plus BRT operating in mixed-traffic and in exclusive curb lanes along Crenshaw Blvd, Harbor Subdivision, and Aviation Blvd. between the Metro Purple and Green Lines	The No-Build improvements plus LRT operating at-grade, below-grade, or above grade along Crenshaw Boulevard, Harbor Subdivision, and Aviation Blvd. between the Expo LRT Line and the Metro Green Line
New Stations	None	Aviation/Manchester Aviation/Century (both along a third Metro Rapid Line)	Wilshire / Crenshaw Crenshaw / Pico Crenshaw / Adams Crenshaw / Martin Luther King Jr. Crenshaw / Slauson Crenshaw / Leimert (Optional) Florence / West Florence / La Brea Aviation / Manchester Aviation / Century	Crenshaw / Exposition Crenshaw / Martin Luther King Jr. Crenshaw / Slauson Florence / West Florence / La Brea Aviation / Manchester Aviation / Century
Park-and-Rides	None	None	Crenshaw / Exposition Crenshaw / Martin Luther King Jr. Florence/West Florence / La Brea Aviation / Manchester	Crenshaw / Exposition Crenshaw / Martin Luther King Jr. Florence/West Florence / La Brea Aviation / Manchester

Table ES.6. *Summary of Impacts (continued)*

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative
Maintenance and Operations Facility	None	None	1	1
Length (Miles)	N/A	N/A	11.3	8.5
Cost Estimates				
Estimated Capital Costs (000s 2008 Dollars)		$25,404	$554,375	$1,305,598
2030 Metro Systemwide Estimated Operation and Maintenance Costs (000s 2008 Dollars)	$1,584,128	$1,595,141	$1,603,648	$1,627,831
Transportation				
2030 Daily System Linked Fixed Guideway Trips	331,994	332,247	333,141	336,425
2030 Daily Boardings		9,412	16,680	13,144
2030 Travel Time Savings (minutes) – Exposition Line to Metro Green Line	None	10.5 Peak 11.2 Off-peak	17.2	21.6
On-Street Parking Spaces Affected	None	None	4 Southbound permanently lost 118 existing Northbound peak period restrictions 129 existing Southbound peak period restrictions	163 Northbound permanently lost 132 Southbound permanently lost
Station Area Parking	None	None	Additional 500 (minimum) parking spaces (minimum of 100 spaces per park and ride)	Additional 500 (minimum) parking spaces (minimum of 100 spaces per park and ride)
Environmental				
Land Use and Development				
Regional Land Use	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect
Local Land Use and Development	Potential Adverse Effects, limited opportunity to infill development at stations, no alternative transportation mode, and increased congestion	No Adverse Effect, improves mobility and transportation options	No Adverse Effect, would improve mobility and transportation options and provide redevelopment and transportation oriented development opportunities	No Adverse Effect, would improve mobility and transportation options and provide redevelopment and transportation oriented development opportunities

Table ES.6. Summary of Impacts (continued)

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative
Division of Established Community	No Adverse Effect, would not divide an established community	No Adverse Effect, would not divide an established community	No Adverse Effect, would not divide an established community	No Adverse Effect, would not divide an established community
City of Los Angeles Transportation Policy	Not Consistent, would not result in station area development or increased redevelopment intensity	Not Consistent, would not result in station area development or increased redevelopment intensity	Consistent, would provide opportunity for low density redevelopment in residential areas and high density redevelopment along Crenshaw Blvd.	Consistent, would provide opportunity for low density redevelopment in residential areas and high density redevelopment along Crenshaw Blvd.
City of Los Angeles General Plan - Transportation and Land Use Elements	Not Consistent, would not expand access to neighborhoods or improve mobility	Not Consistent with the Transportation Element, would not use the Harbor Subdivision right-of-way Consistent with the Land Use Element, would improve public transit	Consistent with the Transportation and Land Use Elements, would use the Harbor Subdivision right-of-way, improve public transit, and would provide an alternative to the automobile	Consistent with the Transportation and Land Use Elements, would use the Harbor Subdivision right-of-way, improve public transit, and would provide an alternative to the automobile
County of Los Angeles General Plan	Not Consistent, would not stimulate transportation oriented development	Not Consistent, would not stimulate transportation oriented development	Consistent, would stimulate transportation oriented development in the station areas	Consistent, would stimulate transportation oriented development in the station areas
City of Ingelwood General Plan	Not Consistent, does not enhance transportation system	Consistent, would enhance transportation with minimum capital investment	Consistent, would provide connections to South Bay, LAX, and downtown Los Angeles	Consistent, would provide connections to South Bay, LAX, and downtown Los Angeles
City of El Segundo General Plan	Not Consistent, would not provide regional transit connectivity	Consistent, would provide opportunities for regional connectivity at the Metro Green Line Aviation Station	Consistent, would provide opportunities for regional connectivity at the Metro Green Line Aviation Station	Consistent, would provide opportunities for regional connectivity at the Metro Green Line Aviation Station
City of Hawthorne General Plan	Not Consistent, would not provide a transportation modal option	Moderately Consistent, would provide transportation improvements, but not a transportation modal option	Consistent, would provide transportation modal option	Consistent, would provide transportation modal option

Table ES.6. Summary of Impacts (continued)

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative
City of Los Angeles Municipal Code RAS and Density Bonus Ordinance	Not Consistent, does not provide opportunity for increased intensity of redevelopment	Not Consistent, does not provide opportunity for increased intensity of redevelopment	Consistent, would provide the foundation for increased intensity of commercial redevelopment and residential development along the Crenshaw Blvd.	Consistent, would provide the foundation for increased intensity of commercial redevelopment and residential development along the Crenshaw Blvd.
West Adams, Baldwin Hills, Leimert Park, Westchester Playa del Rey, and Wilshire Community Plans	Not Consistent, would not reduce trips, congestion, or air pollution or enhance job opportunities and quality of life	Not Consistent, would not reduce trips, congestion, or air pollution or enhance job opportunities and quality of life	Consistent, would reduce automobile trips, congestion, and air pollution and enhance job opportunities and quality of life	Consistent, would reduce automobile trips, congestion, and air pollution and enhance job opportunities and quality of life Is not within the Wilshire Community Plan area
Crenshaw Corridor Specific Plan	Not Consistent, would not enhance community through mobility	Consistent, would enhance community mobility	Consistent, would enhance the community through increased mobility while preserving the visual character	Consistent, would enhance the community through increased mobility while minimizing impacts on the visual character
Park Mile Specific Plan	Consistent, would maintain low density residential area and park-like setting	Consistent, would maintain low density residential area and park-like setting	Consistent, would maintain low density residential area and park-like setting	Is not within the Park Mile Specific Plan area
CRA/LA, Mid-City Corridors and Crenshaw and Crenshaw/ Slaughter Corridors Redevelopment Projects	Not Consistent with redevelopment policies related to transit and would not provide transit improvements along Crenshaw Blvd.	Consistent, would provide limited redevelopment opportunities and improve transit along Crenshaw Blvd.	Consistent, would improve pedestrian, automobile, minimal impacts on parking, and improve mass transit plus improve connectivity and plus adhere to the streetscape goals	Consistent, would improve pedestrian, automobile, minimal impacts on parking, and improve mass transit plus improve connectivity, streetscape goals would be affected, but mitigated
LAX Master Plan	Not Consistent, would not connect the airport to other mass transportation facilities, except the Metro Green Line	Not Consistent, would not connect the airport to other mass transportation facilities, except the Metro Green Line	Consistent, would provide connection from the airport to the Metro Green Line and other mass transportation facilities	Consistent, would provide connection from the airport to the Metro Green Line and other mass transportation facilities

Table ES.6. Summary of Impacts (continued)

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative
Displacements and Relocation	None	None	35 partial parcels 1 full parcel on West 71st Street, which is a residence	50 partial parcels, 15 on Crenshaw Blvd. 6 full parcels, one on Crenshaw Blvd. and one is a residence
Community Cohesion	No Adverse Effect	No Adverse Effect	No Adverse Effect	Less-than-Adverse Effect with mitigation resulting from aerial structure in Hyde Park
Visual	No Adverse Effect	No Adverse Effect	Potential Adverse Effect Mature palm trees removed at Edward Vincent Jr. Park Vegetation removed between a residential neighborhood and the rail right-of-way, exposing residences to new sources of light and glare.	Potential Adverse Effect Land uses near Exposition and Crenshaw Boulevards removed Fixed guideway in the middle of Crenshaw Boulevard with overhead wires and overhead contact system (OCS) poles Landscape, medians, and frontage roads removed. Portal structures added to the street median. Elevated structure added in the median of Crenshaw Boulevard between 59th Street and the Harbor Subdivision. Along the Harbor Subdivision, adjacent landscaping screening near residences along La Colina Drive removed increasing residences' exposure to light and glare.
Air Quality	No Adverse Effect	No Adverse Effect 2,275 tons per year reduction in Green House Gases	No Adverse Effect 23,053 tons per year reduction in Green House Gases	Adverse Effect, NO_x exceeds federal threshold 3,249 tons per year increase in Green House Gases

Table ES.6. Summary of Impacts (continued)

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative
Noise and Vibration	No Adverse Effect	No Adverse Effect	No Adverse Effect	Adverse Effect Moderate LRT pass by noise impact between 54th St. and Victoria Ave. Moderate at-grade signal noise impacts at Centinela Ave. and West Blvd. Moderate special traffic work noise impact at the Metro Expo Line station and at the Century Blvd. station
Ecosystems and Biological Resources	No Adverse Effect	No Adverse Effect	Less-than-Adverse Effect with mitigation Mature palm trees removed at Edward Vincent Jr. Park Native trees and vegetation removed	Less-than-Adverse Effect with mitigation Mature palm trees removed at Edward Vincent Jr. Park Native trees and vegetation removed
Geotechnical	Less-than Adverse Effect with mitigation Potential Adverse Effect for ground deformation from Newport-Inglewood fault	Less-than-Adverse Effect with mitigation Potential Adverse Effect for ground deformation from Newport-Inglewood fault	Less-than-Adverse Effect with mitigation Potential Adverse Effect if subsurface gases encountered and for ground deformation from Newport-Inglewood fault, from liquefaction, of seismically induced settlement	Less-than-Adverse Effect with mitigation Potential Adverse Effect if subsurface gases encountered and for ground deformation from Newport-Inglewood fault, from liquefaction, of seismically induced settlement
Water	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect
Energy	No Adverse Effect	No Adverse Effect, 44,006,374 less BTUs per year	No Adverse Effect, 560,523,312 less BTUs per year	No Adverse Effect, 52,599,515 less BTUs per year

Table ES.6. Summary of Impacts (continued)

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative
Historic, Archaeological, Paleontological	No Adverse Effect	No Adverse Effect	Adverse effect from partial take of Century Lounge	Adverse effect to Angelus Funeral Home from proposed TPSS site immediately north and from take of Century Lounge Potential Adverse Effects to Department of Water and Power, May Company Department Store (now Macy's Department Store), Broadway Department Store (now Wal-Mart), Maverick's Flat and Leimert Park and in the rare case of potential settlement and damage that may result during excavation
Parklands and Community Facilities	No Adverse Effect	No Adverse Effect	No Adverse Effect Edward Vincent Jr. Park – de minimis Section 4(f) effect for removing the mature palm trees, but not affecting the park features, uses, or attributes Increased accessibility from public transit to Edward Vincent Jr. (from West Station), Leimert Park (from Vernon Station, and Grevillea Park (from La Brea Station) Improves public transit access to 51 community facilities and public services located within 0.25 mile	No Adverse Effect Increased accessibility to Edward Vincent Jr. (from West Station), Leimert Park (from Vernon Station, and Grevillea Park (from La Brea Station) Improves public transit access to 33 community facilities and public services located within 0.25 mile

Table ES.6. Summary of Impacts (continued)

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative
Economic	No Adverse Effect	No Adverse Effect 250 additional jobs, 108 transit operations $20.9 million increase in economic output $12.1 million increase in household earnings	No Adverse Effect 240 additional jobs, 98 transit operations $20.3 million increase in economic output $11.7 million increase in household earnings $148,300 property tax loss	No Adverse Effect 880 additional jobs, 272 transit operations $73.2 million increase in economic output $42.4 million increase in household earnings $113,500 property tax loss
Safety and Security	No Adverse Effect	No Adverse Effect	No Adverse Effects with mitigation Harbor Subdivision 19 existing at-grade crossings would be signalized and have warning devices and fencing installed between crossings, near Faithful Central Bible Church Stations will include monitoring equipment and be lighted to avoid shadows Station pedestrian crossings near schools would be monitored and a crossing guard provided, if necessary during construction	No Adverse Effects with mitigation Train crossings would occur with traffic signals Pedestrian and motorist gates and visual and audible warning devices would be provided Stations will include monitoring equipment and be lighted to avoid shadows Station pedestrian crossings near schools would be monitored and a crossing guard provided, if necessary during construction

Table ES.6. Summary of Impacts (continued)

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative
Construction	No Adverse Effect	No Adverse Effect	No Adverse Effect with mitigation, except air quality. Temporary construction noise, vibration, street closures, cars using neighborhood streets to avoid construction, visible staging areas with equipment, stockpiles and concrete barriers, increased emissions, and pedestrian and motor vehicle access, safety, and security effects Temporary lighting may affect residential areas by exposing residents to glare from unshielded light sources or by increasing ambient nighttime light levels. 2,000 construction jobs	No Adverse Effects with mitigation, except air quality. Temporary construction noise, vibration, street closures, cars using neighborhood streets to avoid construction, visible staging areas with equipment, stockpiles and concrete barriers, increased emissions, and pedestrian and motor vehicle access, safety, and security effects Temporary lighting may affect residential areas by exposing residents to glare from unshielded light sources or by increasing ambient nighttime light levels. 4,400 construction jobs
Growth Inducing	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect
Cumulative Impacts	No Adverse Effect	No Adverse Effect Decrease in VMT enhances traffic circulation Decrease in energy consumption	No Adverse Effect Decrease in VMT enhances traffic circulation Displacement and relocation Decrease in energy consumption	No Adverse Effect, except air quality. Decrease in VMT enhances traffic circulation Displacement and relocation Division of Hyde Park Community Increase in green house gases Decrease in energy consumption

Table ES.6. Summary of Impacts (continued)

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative
Environmental Justice	Disproportionate Adverse Effects related to transit service equity and traffic congestion along Crenshaw Boulevard, Florence Avenue and Aviation Boulevard	Disproportionate Adverse Effects related to traffic congestion along Crenshaw Boulevard	Disproportionate Adverse Effects related to aesthetics and parklands adjacent to and along Edward Vincent Jr. Park	Disproportionate Adverse Effects related to community cohesion and aesthetics in Hyde park area on Crenshaw Boulevard

Source: Parsons Brinckerhoff, 2009

Table ES.7. LRT Alternative Design Options and Impacts Summary

Project Goal/Criteria/Measure	LRT Alternative Design Option 1	LRT Alternative Design Option 2	LRT Alternative Design Option 3	LRT Alternative Design Option 4	LRT Alternative Design Option 5	LRT Alternative Design Option 6
Description	An aerial station at Century Boulevard instead of an at-grade station at LAX.	An aerial crossing instead of an at-grade crossing at Manchester Avenue.	A cut and cover crossing instead of an at-grade crossing at Centinela Avenue.	A cut and cover alignment instead of an aerial alignment between Victoria Avenue and 60th Street.	A subway station at Vernon Avenue near Leimert Park.	A below-grade alignment between 39th Street and Exposition with a subway station instead of an at-grade alignment north of 39th Street with connection to Exposition and an at-grade station.
Estimated Capital Costs of Base LRT Alternative + Design Option (000s 2008 Dollars)	1,316,863	1,321,889	1,318,848	1,334,259	1,460,795	1,541,394
Net Incremental Costs of Design Option (000s 2008 Dollars)	11,265	16,291	13,250	28,661	155,197	235,796
Environmental						
Land Use and Development						
Regional Land Use	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect
Local Land Use and Development	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect	Potential Adverse Effect, intensification of high density development in the Leimert Park area may result in an adverse effect	No Adverse Effect
Division of Established Community	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect
City of Los Angeles Transportation Policy	Consistent	Consistent	Consistent	Consistent	Consistent	Consistent

Table ES.7. LRT Alternative Design Options and Impacts Summary

Project Goal/Criteria/Measure	LRT Alternative Design Option 1	LRT Alternative Design Option 2	LRT Alternative Design Option 3	LRT Alternative Design Option 4	LRT Alternative Design Option 5	LRT Alternative Design Option 6
City of Los Angeles General Plan, - Transportation and Land Use Elements	More Consistent than the Base LRT Alternative, the improved traffic flows on the surrounding streets would result in better mobility for the area	More Consistent than the Base LRT Alternative, the improved traffic flows on the surrounding streets would result in better mobility for the area	More Consistent than the Base LRT Alternative, the improved traffic flows on the surrounding streets would result in better mobility for the area	More Consistent than the Base LRT Alternative, the improved traffic flows on the surrounding streets would result in better mobility for the area	More Consistent than the Base LRT Alternative, the improved traffic flows on the surrounding streets would result in better mobility for the area	More Consistent than the Base LRT Alternative, the improved traffic flows on the surrounding streets would result in better mobility for the area
County of Los Angeles General Plan	Consistent	Consistent	Consistent	Consistent	Consistent	Consistent
City of Ingelwood General Plan	Consistent	Consistent	Consistent	Consistent	Consistent	Consistent
City of El Segundo General Plan	Consistent	Consistent	Consistent	Consistent	Consistent	Consistent
City of Hawthorne General Plan	Consistent	Consistent	Consistent	Consistent	Consistent	Consistent
City of Los Angeles Municipal Code RAS and Density Bonus Ordinance	Consistent	Consistent	Consistent	Consistent	Consistent	Consistent
West Adams, Baldwin Hills, Leimert Park, Westchester Playa del Rey and Wilshire Community Plans	Consistent	Consistent	Consistent	Consistent	Consistent	Consistent
Crenshaw Corridor Specific Plan	Consistent, would enhance the community through increased mobility while preserving the visual character	Consistent, would enhance the community through increased mobility while preserving the visual character	Not within the specific plan area	Consistent, would increase the mobility through the area and preserve the low-density residential character of the community more than the Base LRT Alternative.	Consistent, would preserve low-density residential community and not affect the character of the surrounding residential community.	Consistent, would preserve low-density residential community and not affect the character of the surrounding residential community.
Park Mile Specific Plan	Consistent, would maintain low density residential area and park-like setting	Consistent, would maintain low density residential area and park-like setting	Not within the specific plan area	Not within the specific plan area	Not within the specific plan area	Not within the specific plan area

Table ES.7. LRT Alternative Design Options and Impacts Summary

Project Goal/Criteria/Measure	LRT Alternative Design Option 1	LRT Alternative Design Option 2	LRT Alternative Design Option 3	LRT Alternative Design Option 4	LRT Alternative Design Option 5	LRT Alternative Design Option 6
CRA/LA, Mid-City Corridors and Crenshaw and Crenshaw/Slaughter Corridors Redevelopment Projects	More Consistent than the Base LRT Alternative because it would be located closer to Century Boulevard where the majority of pedestrian activity in the area occurs.	More Consistent than the Base LRT Alternative because it would better enhance automobile circulation, eliminating delay from light rail vehicle crossings	More Consistent than the Base LRT Alternative because it would better enhance automobile circulation, eliminating delay from light rail vehicle crossings	More Consistent than the Base LRT Alternative because it would better enhance automobile circulation, eliminating delay from light rail vehicle crossings	More Consistent than the Base LRT Alternative because it would better enhance automobile circulation, eliminating delay from light rail vehicle crossings	More Consistent than the Base LRT Alternative because it would better enhance automobile circulation, eliminating delay from light rail vehicle crossings
LAX Master Plan	More Consistent than the Base LRT Alternative, the LAX connection point would facilitate connections with passengers from transit services other than light rail traveling along the Harbor Subdivision right-of-way	Consistent, would develop a connection point to LAX	Consistent, would develop a connection point to LAX	Consistent, would develop a connection point to LAX	Consistent, would develop a connection point to LAX	Consistent, would develop a connection point to LAX
Displacements	None	None	1 partial parcel	• 3 partial parcels, 1 on Crenshaw Blvd. • 2 full parcels, 1 on Crenshaw Blvd.	1 partial parcel on Crenshaw Blvd.	None
Community Cohesion	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect

Table ES.7. LRT Alternative Design Options and Impacts Summary

Project Goal/Criteria/Measure	LRT Alternative Design Option 1	LRT Alternative Design Option 2	LRT Alternative Design Option 3	LRT Alternative Design Option 4	LRT Alternative Design Option 5	LRT Alternative Design Option 6
Visual	Less than Adverse Effect	Less than Adverse Effect	• Less than Adverse Effect with mitigation. • Mature palm trees removed along Crenshaw Blvd. at Edward Vincent Jr. Park	Less than Adverse Effect	Less than Adverse Effect	Less than Adverse Effect
Air Quality	• Adverse Effect • NO_x exceeds federal regional threshold • 3,249 tons per year increase in Green House Gases	• Adverse Effect • NO_x exceeds federal regional threshold • 3,249 tons per year increase in Green House Gases	• Adverse Effect • NO_x exceeds federal regional threshold • 3,249 tons per year increase in Green House Gases	• Adverse Effect • NO_x exceeds federal regional threshold • 3,249 tons per year increase in Green House Gases	• Adverse Effect, • NO_x exceeds federal regional threshold • 3,249 tons per year increase in Green House Gases	• Adverse Effect • NO_x exceeds federal regional threshold • 3,249 tons per year increase in Green House Gases

Table ES.7. LRT Alternative Design Options and Impacts Summary

Project Goal/Criteria/Measure	LRT Alternative Design Option 1	LRT Alternative Design Option 2	LRT Alternative Design Option 3	LRT Alternative Design Option 4	LRT Alternative Design Option 5	LRT Alternative Design Option 6
Noise and Vibration	• Adverse Effect • Moderate LRT pass by noise impact between 54th St. and Victoria Ave. • Moderate at-grade signal noise impacts at Centinela Ave. and West Blvd. • Moderate special traffic work noise impact at the Expo Line station and at the Century Blvd. station	• Adverse Effect • Moderate LRT pass by noise impact between 54th St. and Victoria Ave. • Moderate at-grade signal noise impacts at Centinela Ave. and West Blvd. • Moderate special traffic work noise impact at the Expo Line station and at the Century Blvd. station	• Adverse Effect • Moderate LRT pass by noise impact between 54th St. and Victoria Ave. • Moderate at-grade signal noise impacts at West Blvd. • Moderate special traffic work noise impact at the Expo Line station and at the Century Blvd. station	• Adverse Effect • Moderate LRT pass by noise impact between 54th St. and 60th St. • Moderate at-grade signal noise impacts at Centinela Ave. and West Blvd. • Moderate special traffic work noise impact at the Expo Line station and at the Century Blvd. station	• Adverse Effect • Moderate LRT pass by noise impact between 54th St. and Victoria Ave. • Moderate at-grade signal noise impacts at Centinela Ave. and West Blvd. • Moderate special traffic work noise impact at the Expo Line station and at the Century Blvd. station	• Adverse Effect • Moderate LRT pass by noise impact between 54th St. and Victoria Ave. • Moderate at-grade signal noise impacts at Centinela Ave. and West Blvd. • Moderate special traffic work noise impact at the Expo Line station and at the Century Blvd. station
Ecosystems and Biological Resources	• Less than Adverse Effect with mitigation • Mature palm trees removed at Edward Vincent Jr. Park • Native trees and vegetation removed	• Less than Adverse Effect with mitigation • Mature palm trees removed at Edward Vincent Jr. Park • Native trees and vegetation removed	• Less than Adverse Effect with mitigation • Mature palm trees removed at Edward Vincent Jr. Park • Native trees and vegetation removed	• Less than Adverse Effect with mitigation. • Mature palm trees removed at Edward Vincent Jr. Park • Native trees and vegetation removed	• Less than Adverse Effect with mitigation • Mature palm trees removed at Edward Vincent Jr. Park • Native trees and vegetation removed	• Less than Adverse Effect with mitigation • Mature palm trees removed at Edward Vincent Jr. Park • Native trees and vegetation removed

Table ES.7. LRT Alternative Design Options and Impacts Summary

Project Goal/Criteria/Measure	LRT Alternative Design Option 1	LRT Alternative Design Option 2	LRT Alternative Design Option 3	LRT Alternative Design Option 4	LRT Alternative Design Option 5	LRT Alternative Design Option 6
Geotechnical	• Less than Adverse Effect with mitigation. • Potential Adverse Effect • Discovery of subsurface gases • Ground deformation from Newport-Inglewood fault • Seismically induced settlement	• Less than Adverse Effect with mitigation. • Potential Adverse Effect • Discovery of subsurface gases • Ground deformation from Newport-Inglewood fault • Seismically induced settlement	• Less than Adverse Effect with mitigation. • Potential Adverse Effect • Discovery of subsurface gases • Ground deformation from Newport-Inglewood fault • Seismically induced settlement	• Less than Adverse Effect with mitigation. • Potential Adverse Effect • Discovery of subsurface gases • Ground deformation from Newport-Inglewood fault • Seismically induced settlement	• Less than Adverse Effect with mitigation. • Potential Adverse Effect • Discovery of subsurface gases • Ground deformation from Newport-Inglewood fault • Seismically induced settlement	• Less than Adverse Effect with mitigation. • Potential Adverse Effect • Discovery of subsurface gases • Ground deformation from Newport-Inglewood fault • Seismically induced settlement
Water	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect

Table ES.7. LRT Alternative Design Options and Impacts Summary

Project Goal/Criteria/Measure	LRT Alternative Design Option 1	LRT Alternative Design Option 2	LRT Alternative Design Option 3	LRT Alternative Design Option 4	LRT Alternative Design Option 5	LRT Alternative Design Option 6
Historic, Archaeological, Paleontological	• Adverse Effect to Angelus Funeral Home from proposed TPSS site immediately north and from partial take of Century Lounge • Potential Adverse Effects to Department of Water and Power, May Company Department Store (now Macy's Department Store), Broadway Department Store (now Wal-Mart), Maverick's Flat and Leimert Park and in the rare case of potential settlement and damage that may result during excavation.	• Adverse Effect to Angelus Funeral Home from proposed TPSS site immediately north and from partial take of Century Lounge Potential Adverse Effects to Department of Water and Power, May Company Department Store (now Macy's Department Store), Broadway Department Store (now Wal-Mart), Maverick's Flat and Leimert Park and in the rare case of potential settlement and damage that may result during excavation.	• Adverse Effect to Angelus Funeral Home from proposed TPSS site immediately north and from partial take of Century Lounge • Potential Adverse Effects to Department of Water and Power, May Company Department Store (now Macy's Department Store), Broadway Department Store (now Wal-Mart), Maverick's Flat and Leimert Park and in the rare case of potential settlement and damage that may result during excavation.	• Adverse Effect to Angelus Funeral Home from proposed TPSS site immediately north and from partial take of Century Lounge • Potential Adverse Effects to Department of Water and Power, May Company Department Store (now Macy's Department Store), Broadway Department Store (now Wal-Mart), Maverick's Flat and Leimert Park and in the rare case of potential settlement and damage that may result during excavation.	• Adverse Effect to Angelus Funeral Home from proposed TPSS site immediately north and from partial take of Century Lounge • Potential Adverse Effects to Department of Water and Power, May Company Department Store (now Macy's Department Store), Broadway Department Store (now Wal-Mart), Maverick's Flat and Leimert Park and in the rare case of potential settlement and damage that may result during excavation.	• Adverse Effect to Angelus Funeral Home from proposed TPSS site immediately north and from partial take of Century Lounge • Potential Adverse Effects to Department of Water and Power, May Company Department Store (now Macy's Department Store), Broadway Department Store (now Wal-Mart), Maverick's Flat and Leimert Park and in the rare case of potential settlement and damage that may result during excavation.

Table ES.7. LRT Alternative Design Options and Impacts Summary

Project Goal/Criteria/Measure	LRT Alternative Design Option 1	LRT Alternative Design Option 2	LRT Alternative Design Option 3	LRT Alternative Design Option 4	LRT Alternative Design Option 5	LRT Alternative Design Option 6
Parklands and Community Facilities	No Adverse Effect	No Adverse Effect	No Adverse Effect, Edward Vincent Jr. Park – *de minimis* Section 4(f) effect for removing the mature palm trees, but not affecting the park features, uses, or attributes	No Adverse Effect	No Adverse Effect	No Adverse Effect
Economic	• No Adverse Effect • 880 additional jobs, 272 transit operations • $73.2 million increase in economic output • $42.4 million increase in household earnings • $113,500 property tax loss	• No Adverse Effect • 880 additional jobs, 272 transit operations • $73.2 million increase in economic output • $42.4 million increase in household earnings • $113,500 property tax loss	• No Adverse Effect • 880 additional jobs, 272 transit operations • $73.2 million increase in economic output • $42.4 million increase in household earnings • $113,500 property tax loss	• No Adverse Effect • 880 additional jobs, 272 transit operations • $73.2 million increase in economic output • $42.4 million increase in household earnings • $113,500 property tax loss	• No Adverse Effect • 880 additional jobs, 272 transit operations • $73.2 million increase in economic output • $42.4 million increase in household earnings • $113,500 property tax loss	• No Adverse Effect • 880 additional jobs, 272 transit operations • $73.2 million increase in economic output • $42.4 million increase in household earnings • $113,500 property tax loss

Table ES.7. LRT Alternative Design Options and Impacts Summary

Project Goal/Criteria/Measure	LRT Alternative Design Option 1	LRT Alternative Design Option 2	LRT Alternative Design Option 3	LRT Alternative Design Option 4	LRT Alternative Design Option 5	LRT Alternative Design Option 6
Safety and Security	• No Adverse Effects with mitigation • Train crossings would occur with traffic signals • Pedestrian and motorist gates and visual and audible warning devices would be provided • Stations will include monitoring equipment and be lighted to avoid shadows	• No Adverse Effects with mitigation • Would enhance pedestrian safety, they can cross under aerial structure. • Train crossings would occur with traffic signals • Pedestrian and motorist gates and visual and audible warning devices would be provided Stations will include monitoring equipment and be lighted to avoid shadows	• No Adverse Effects with mitigation • Would eliminate collisions with trains, LRVs, pedestrians, or motorists at Centinela Ave. • Train crossings would occur with traffic signals • Pedestrian and motorist gates and visual and audible warning devices would be provided • Stations will include monitoring equipment and be lighted to avoid shadows	• No Adverse Effects with mitigation • Train crossings would occur with traffic signals • Pedestrian and motorist gates and visual and audible warning devices would be provided • Stations will include monitoring equipment and be lighted to avoid shadows	• No Adverse Effects with mitigation • Train crossings would occur with traffic signals • Pedestrian and motorist gates and visual and audible warning devices would be provided • Stations will include monitoring equipment and be lighted to avoid shadows	• No Adverse Effects with mitigation • Would eliminate collisions LRVs, and motorists • Train crossings would occur with traffic signals • Pedestrian and motorist gates and visual and audible warning devices would be provided • Stations will include monitoring equipment and be lighted to avoid shadows

Table ES.7. LRT Alternative Design Options and Impacts Summary

Project Goal/Criteria/Measure	LRT Alternative Design Option 1	LRT Alternative Design Option 2	LRT Alternative Design Option 3	LRT Alternative Design Option 4	LRT Alternative Design Option 5	LRT Alternative Design Option 6
Construction Impacts	• No Adverse Effects with mitigation, except air quality • Temporary construction noise, vibration, street closures, cars using neighborhood streets to avoid construction, visible staging areas with equipment, stockpiles and concrete barriers, increased emissions, and pedestrian and motor vehicle access, safety, and security effects	• No Adverse Effects with mitigation. except air quality • Temporary construction noise, vibration, street closures, cars using neighborhood streets to avoid construction, visible staging areas with equipment, stockpiles and concrete barriers, increased emissions, and pedestrian and motor vehicle access, safety, and security effects	• No Adverse Effects with mitigation, except air quality • Temporary construction noise, vibration, street closures, cars using neighborhood streets to avoid construction, visible staging areas with equipment, stockpiles and concrete barriers, increased emissions, and pedestrian and motor vehicle access, safety, and security effects • Potential nighttime glare may affect the residences located along La Colina Drive	• No Adverse Effects with mitigation, except air quality • Temporary construction noise, vibration, street closures, cars using neighborhood streets to avoid construction, visible staging areas with equipment, stockpiles and concrete barriers, increased emissions, and pedestrian and motor vehicle access, safety, and security effects	• No Adverse Effects with mitigation, except air quality • Temporary construction noise, vibration, street closures, cars using neighborhood streets to avoid construction. visible staging areas with equipment, stockpiles and concrete barriers, increased emissions, and pedestrian and motor vehicle access, safety, and security effects	• No Adverse Effects with mitigation, except air quality • Temporary construction noise, vibration, street closures, cars using neighborhood streets to avoid construction, visible staging areas with equipment, stockpiles and concrete barriers, increased emissions, and pedestrian and motor vehicle access, safety, and security effects • Potential nighttime glare may affect the multi-family residences and other sensitive uses along Crenshaw Boulevard

Table ES.7. LRT Alternative Design Options and Impacts Summary

Project Goal/Criteria/Measure	LRT Alternative Design Option 1	LRT Alternative Design Option 2	LRT Alternative Design Option 3	LRT Alternative Design Option 4	LRT Alternative Design Option 5	LRT Alternative Design Option 6
Construction Impacts (continued)	• Potential nighttime glare may affect a motel at Century and Aviation Boulevards • Increased construction period compared to the LRT Base Alternative	• There are no sensitive uses located at Manchester Avenue and the Harbor Subdivision right-of-way that would be affected by nighttime construction lighting • Increased construction period compared to the LRT Base Alternative	• Increased construction period compared to the LRT Base Alternative	• Potential nighttime glare may affect the multi-family residences and motel along Crenshaw Boulevard, south of 60th Street and West Angeles Villas, a senior living complex at Crenshaw Boulevard and 60th Street • Increased construction period compared to the LRT Base Alternative	• Potential nighttime glare may affect the residential and other sensitive uses east of the station • Increased construction period compared to the LRT Base Alternative	• Increased construction period compared to the LRT Base Alternative
Growth Inducing	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect	No Adverse Effect

Table ES.7. LRT Alternative Design Options and Impacts Summary

Project Goal/Criteria/Measure	LRT Alternative Design Option 1	LRT Alternative Design Option 2	LRT Alternative Design Option 3	LRT Alternative Design Option 4	LRT Alternative Design Option 5	LRT Alternative Design Option 6
Cumulative Impacts	• No Adverse Effect, except air quality. • Decrease in VMT enhances traffic circulation • Displacement and relocation • Division of Hyde Park Community • Increase in green house gases • Decrease in energy consumption	• No Adverse Effect, except air quality. • Decrease in VMT enhances traffic circulation • Displacement and relocation • Division of Hyde Park Community • Increase in green house gases • Decrease in energy consumption	• No Adverse Effect, except air quality. • Decrease in VMT enhances traffic circulation • Displacement and relocation • Division of Hyde Park Community • Increase in green house gases • Decrease in energy consumption	• No Adverse Effect, except air quality. • Decrease in VMT enhances traffic circulation • Displacement and relocation • Division of Hyde Park Community • Increase in green house gases • Decrease in energy consumption	• No Adverse Effect, except air quality. • Decrease in VMT enhances traffic circulation • Displacement and relocation • Division of Hyde Park Community • Increase in green house gases • Decrease in energy consumption	• No Adverse Effect, except air quality. • Decrease in VMT enhances traffic circulation • Displacement and relocation • Division of Hyde Park Community • Increase in green house gases • Decrease in energy consumption
Environmental Justice	No Disproportionate Adverse Effects	No Disproportionate Adverse Effects	No Disproportionate Adverse Effects	No Disproportionate Adverse Effects	No Disproportionate Adverse Effects	No Disproportionate Adverse Effects

Source: *Parsons Brinckerhoff, 2009*

Table ES-8 Maintenance and Operations Facilities and Impacts Summary

Project Goal/Criteria/Measure	Maintenance and Operations Facility B	Maintenance and Operations Facility D
Description	Approximately 16.3 acres and bound by 83rd Street, Harbor Subdivision right-of-way, and Isis Avenue	Approximately 14.8 acres and in close proximity to the Metro Green Line and bound by the Harbor Subdivision, a Union Pacific Branch Line and Rosecrans Avenue
Environment		
Land Use and Development		
Regional Land Use	No Adverse Effect	No Adverse Effect
Local Land Use and Development	Consistent	Consistent
Division of Established Community	No Adverse Effect	No Adverse Effect
City of Los Angeles Transportation Policy	Consistent	Consistent
City of Los Angeles General Plan, - Transportation and Land Use Elements	Consistent	Consistent
County of Los Angeles General Plan	Consistent	Consistent
City of Inglewood General Plan	Consistent	Consistent
City of El Segundo General Plan	Consistent	Consistent
City of Hawthorne General Plan	Consistent	Consistent
City of Los Angeles Municipal Code RAS and Density Bonus Ordinance	Consistent	Consistent
West Adams, Baldwin Hills, Leimert Park, Westchester Playa Del Rey and Wilshire Community Plans	Consistent	Consistent
Crenshaw Corridor Specific Plan	Not Applicable	Not Applicable
Park Mile Specific Plan	Not Applicable	Not Applicable
CRA/LA, Mid-City Corridors and Crenshaw and Crenshaw/Slauson Corridors Redevelopment Projects	Consistent	Consistent
LAX Master Plan	Not Applicable	Not Applicable
Displacements	• 8 partial parcels • 9 full parcels	• 10 partial parcels • 3 full parcel
Community Cohesion	No Adverse Effect	No Adverse Effect
Visual Quality	No Adverse Effect	No Adverse Effect
Air Quality	Adverse Effect, no mitigation feasible	Adverse Effect, no mitigation feasible
Noise and Vibration	No Adverse Effect	No Adverse Effect
Ecosystems and Biological Resources	No Adverse Effect	• No Adverse effect with mitigation. Native trees and vegetation removed
Geotechnical/Hazardous Materials	No Adverse Effect with mitigation	No Adverse Effect with mitigation
Water	No Adverse Effect	No Adverse Effect

Table ES-8 Maintenance and Operations Facilities and Impacts Summary

Project Goal/Criteria/Measure	Maintenance and Operations Facility B	Maintenance and Operations Facility D
Historic, Archaeological, Paleontological	Potential Adverse Effect to Kaiser Homes' production plant from a partial take	No Adverse Effect
Parklands and Community Facilities	No Adverse Effect	No Adverse Effect
Economic	No Adverse Effect, 17 industrial/ commercial structures displaced and $113,500 property tax loss	No Adverse Effect, $72,100 property tax loss
Safety and Security	No Adverse Effect	No Adverse Effect
Construction	No Adverse Effect with mitigation	No Adverse Effect with mitigation
Environmental Justice	No Adverse Effect	No Adverse Effect

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
Traffic						
Intersection Analysis	No Impact	No Impact	Significant and Unavoidable Impact	Significant and Unavoidable Impact	Significant and Unavoidable Impact	No Impact
Parking	No Impact	No Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	No Impact	No Impact
Pedestrian/Bicycle Circulation	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Mitigation Measure(s)	**T1** Between 48th Street and 60th Street the existing frontage road would be narrowed to provide one travel lane and one parking lane (eliminating parking on the inside lane of the frontage road). Crenshaw Boulevard would be widened to provide a semi-exclusive curb lane for buses, without any loss in northbound and southbound through traffic capacity on Crenshaw Boulevard. **T2** Provide a southbound right turn overlap phase on Centinela Avenue or provide a second eastbound left turn lane in Florence Avenue. **T3** Extend the Florence Avenue southbound right turn bay by 415 feet, add a southbound right turn overlap phase, and add a protected phase for the westbound left turn movement on Manchester Boulevard. **T4** Prohibit northbound and southbound left turns from Crenshaw Boulevard to 54th Street. **T5** A combination of the following four basic control approaches shall be recommended by Metro to political jurisdictions along the alignment to reduce impacts of Metro patron parking in neighborhoods: ■ Prohibit on-street parking ■ Time-limited parking ■ Resident permit parking ■ Non-resident permits for registered carpools who work in the zone **T6** A combination of the following four basic control approaches shall be recommended by Metro to political jurisdictions along the alignment to reduce impacts of Metro patron parking in neighborhoods: ■ Prohibit on-street parking ■ Time-limited parking ■ Resident permit parking ■ Non-resident permits for registered carpools who work in the zone					
Land Use						
Division of Established Community	No Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact
Adopted Plan Consistency	Significant Impact	Significant Impact	No Impact	No Impact	No Impact	No Impact

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
Surrounding Land Use Compatibility	No Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact
Mitigation Measure(s)	None Required					
Displacements and Relocation	No Impact	No Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact
Mitigation Measure(s)	**DR1** Metro shall relocate or replace any of the mature palm trees adjacent to the Harbor Subdivision at Edward Vincent Park that require removal as a result of the proposed project. Relocation or replacement shall subject to the approval of the City of Inglewood Parks and Recreation Department. **DR2** Metro shall provide relocation assistance and compensation per the Uniform Relocation Assistance and Real Property Acquisition Policies Act and the California Relocation Act to those who are displaced or whose property is acquired as a result of the Crenshaw Transit Corridor Project.					
Community Cohesion	No Impact	No Impact	Less-Than-Significant Impact	Less-Than-Significant Impactt	No Impact	No Impact
Mitigation Measure(s)	**CN1** For the aerial LRT structure segment along Crenshaw Boulevard in the Hyde Park neighborhood, design guidelines shall be prepared prior to construction phase of the project. Metro, the City of Los Angeles, and the CRA/LA will coordinate guidelines to integrate the aerial structure with the existing community. These guidelines shall provide for convenient and safe pedestrian access to cross the aerial structure and be compatible with city land use plans and include specific visual features to ensure that the aerial structure would be more consistent with the urban environment. **CN2** For the aerial LRT structure segment along Crenshaw Boulevard in the Hyde Park neighborhood, Metro shall conduct community workshops, meetings or similar to obtain input from residents on this alignment segment for Metro's consideration. The public input needed would be regarding the potential visual, engineering, and/or art features of the aerial structure that may improve the visual quality of the area.					
Visual	No Impact	No Impact t	Significant and Unavoidable Impact	Significant and Unavoidable Impact	Significant and Unavoidable Impact	No Impact

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
Mitigation Measure(s)	**V1** To minimize visual clutter, integrate system components, and reduce the potential for conflicts between the transit system and adjacent communities, design of the system stations and components should follow the recommendations and guidance developed in the urban design analysis conducted for the proposed project (Parsons Brinckerhoff and RAW International, Inc., 2008). These guidelines include, but are not limited to: 1) preserve and enhance the unique cultural identity of each station area and its surrounding community by implementing art and landscaping; and 2) promote a sense of place, safety, and walkability by providing street trees, walkways or sidewalks, lighting, awnings, public art, and/or street furniture. **V2** At locations where existing land uses or vegetation is removed and neighboring uses are exposed to new views of the bus or transit system, additional landscaping will be provided within the right-of-way or in remnant acquisition parcels to create a buffer between the uses, but not necessarily to completely screen uses. **V3** Where mature trees are removed due to roadway widening and/or realignment and/or to accommodate system components, replacement with landscape amenities of equal value should be considered to enhance the visual integrity of the corridor. **V4** Where the flexibility in system component design is available, aesthetic treatments that reduce glare, enhance visual character, deter graffiti and vandalism, and create a human-scale and pedestrian friendly environment will be used. **V5** Source shielding in exterior lighting at stations and ancillary facilities, such as maintenance sites, will be used to ensure that light sources (such as bulbs) would not be directly visible from residences and streets, and to limit spillover light and glare in residential areas. **V6** In locations where project components are too large to apply minimizing techniques, appropriate and sensitive 'showcasing' of project components will be considered. Showcasing may include but is not limited to: decorative lighting/underlighting, installing texture onto project components, base relief designs, and contextual art features. **V7** Where practical and appropriate, additional landscaping and enhanced design features will be used to minimize the visual image of maintenance and other ancillary facilities. Redevelopment efforts should be directed towards locating these facilities where their visual impact will be minimized. **V8** Where appropriate, during preliminary engineering for the proposed project, the system design will be integrated with area redevelopment plans. **V9** For the Centinela Avenue cut and cover crossing design option, screening that is consistent with the existing area and Edward Vincent Jr. Park will be installed on the north side of the trench to reduce the adverse effects on the south-facing view of the trench. **V10** Visually obtrusive erosion control devices, such as silt fences, plastic ground cover, and straw bales should be removed as soon as the area is stabilized. **V11** Street trees and other vegetation removed to accommodate construction or project components should be replaced with appropriate sized vegetation. **V12** Stockpile areas should be located in less visibly sensitive areas and, whenever possible, not be visible from the road or to residents and businesses.					
Air Quality	No Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Significant and Unavoidable Impact	Significant and Unavoidable Impact	Less-Than-Significant Impact

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
Mitigation Measure(s)	No Feasible Mitigation					
Noise and Vibration	No Impact	No Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact
Mitigation Measure(s)	None Required					
Ecosystems and Biological Resources	No Impact	No Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact
Mitigation Measure(s)	**EB1** Two biological surveys shall be conducted, one 15 days prior and a second 72 hours prior to construction that would remove or disturb suitable nesting habitat. The surveys shall be performed by a biologist with experience conducting breeding bird surveys. The biologist shall prepare survey reports documenting the presence or absence of any protected native bird in the habitat to be removed and any other such habitat within 300 feet of the construction work area (within 500 feet for raptors). If a protected native bird is found, surveys will be continued in order to locate any nests. If an active nest is located, construction within 300 feet of the nest (500 feet for raptor nests) will be postponed until the nest is vacated and juveniles have fledged and when there is no evidence of a second attempt at nesting. **EB2** If construction of the project requires pruning of native tree species, the pruning shall be performed in a manner that does not cause permanent damage or adversely affect the health of the trees. If construction of the project requires the removal of a native tree species, the affected tree species shall be relocated or replaced at a minimum ratio of 2:1 and subject to the conditions of the Native Tree Protection Ordinance under Article 6 Chapter IV of the Los Angeles City Municipal Code.					
Geotechnical	No Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
Mitigation Measure(s)	**GEO1** A geotechnical study for proposed at-grade, aerial, and below-grade structures and improvements shall be required. This technical study shall identify design specifications for maintaining structural integrity under static and seismic loading and operational demands. The geotechnical study shall include a soil-gas investigation at planned below-grade structures and where deep excavations are anticipated to develop mitigation measures to be implemented during construction and incorporated in the design. Mitigation measures typically include installation of soil gas barriers, monitoring, venting, and purging. The study shall be performed before the commencement of Final Design. **GEO2** Conduct a limited Phase II ESA prior to construction in areas where construction workers may be exposed to impacted soil. A base line soil sampling protocol shall be established with special attention to those areas of potential environmental concern identified in the Phase I report. The soil shall be assessed for constituents likely to be present in the subsurface including, but not limited to, total petroleum hydrocarbons (TPH), VOCs, semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons (PAHs), pesticides, lead arsenates, and Title 22 metals. The depth of the sampling shall be based on the depth of grading or cut and fill activities. In addition, in areas where groundwater will be encountered, samples shall also be analyzed for suspected contaminants prior to dewatering. This will ensure that National Pollutant Discharge Elimination System (NPDES) discharge requirements are satisfied. **GEO3** A soil mitigation plan shall be prepared after final construction plans are prepared showing the lateral and vertical extent of soil excavation during construction. The soil mitigation plan shall establish soil reuse criteria, establish a sampling plan for stockpiled materials, describe the disposition of materials that do not satisfy the reuse criteria, and specify guidelines for imported materials. The soil mitigation plan shall include a provision that during grading or excavation activities, soil shall be screened for contamination by visual observations and field screening for volatile organic compounds with a photo ionization detector (PID). Soil samples that are suspected of contamination based on field observations and PID readings shall be analyzed for suspected chemicals by a California certified laboratory. If contaminated soil is found, it shall be removed, transported to an approved disposal location, and remediated or disposed according to State and federal laws. **GEO4** All hazardous materials, drums, trash, and debris shall be removed and disposed of in accordance with regulatory guidelines. **GEO5** A health and safety plan shall be developed for persons with potential exposure to the constituents of concern identified in the limited Phase II ESA. **GEO6** Historical and present site usage along the many areas of the proposed alignment included businesses that stored hazardous materials and/or waste and used USTs, from at least the 1920s to the present. It is possible that areas with soil and/or groundwater impacts may be present that were not identified in this report, or were considered a low potential to adversely impact the subject property. In general, observations should be made during any future development activities for features of concern or areas of possible contamination such as, but not limited to, the presence of underground facilities, buried debris, waste drums, tanks, soil staining or odorous soils. Further investigation and analysis may be necessary, should such materials be encountered.						

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
	GEO7 Best Management Practices (BMPs), required as part of the NPDES permit and application of SCAQMD Rule 403, shall be implemented for the proposed project to not only reduce potential soil erosion, but also to maintain soil stability and integrity during grading, excavation, below grade construction, and installation of foundations for aerial structures, and maintenance and operations facilities. BMPs would comply with applicable Uniform Building Codes and include, but are not limited to, scheduling excavation and grading activities during dry weather, covering stockpiles of excavated soils with tarps or plastic sheeting, and debris traps on drains.					
Water	No Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact
Mitigation Measure(s)	**WQ1** During project construction and operation, remediation should be required at maintenance facilities and vehicle storage areas, where a potential exists for grease and oil contamination to flow into storm drains. Various types of ditch structures, including grease traps, sediment traps, detention basins, and/or temporary dikes may be used to control possible pollutants. These facilities shall be constructed pursuant to guidance published in Section 402 of the Clean Water Act and shall follow the most current guidance within the NPDES program. **WQ2** The flood capacity of existing drainage or water conveyance features within the project study corridor shall not be reduced in a way that causes ponding or flooding during storm events. A drainage control plan shall be developed during project design to ensure that drainage is properly conveyed from the study area and does not induce ponding on adjacent properties. **WQ3** A dewatering permit shall be required if groundwater is encountered during tunneling operations. The proposed project is located in an urbanized area where potential groundwater contamination may exist. If contaminated groundwater is encountered during construction, the contractor shall stop work in the vicinity of the suspect find, cordon off the area, and contact the appropriate hazardous waste coordinator and maintenance hazardous spill coordinator at Metro and immediately notify the Certified Unified Program Agencies (City of Los Angeles Fire Department, County of Los Angeles Fire Department, and Los Angeles RWQCB) responsible for hazardous materials or waste incidents. Coordination with the Los Angeles RWQCB shall be initiated immediately to develop an investigation plan and remediation plan for expedited protection of public health and environment. Contaminated groundwater is prohibited from being discharged to the storm drain system. The contractor shall properly treat or dispose of any hazardous or toxic materials, according to local, state, and federal regulations (see Section 4.9 for details on potential groundwater contamination and remediation). **WQ4** The study area currently drains indirectly to Ballona Creek and Dominguez Creek through the MS4. Treatment control BMPs shall be incorporated into the project design. The project shall consider placing the treatment BMPs in series or in a complimentary system to increase the control of pollutants to the maximum extent practicable. The systems shall be designed to efficiently and effectively handle and treat dry and wet weather flows to the maximum extent practicable. A SUSMP and appropriate drainage control plan shall be implemented to select and place appropriate permanent treatment BMPs.					

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
Energy	No Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact
Mitigation Measure(s)	None Required					
Historic, Archaeological, Paleontological	No Impact	Less-Than-Significant Impact	Significant and Unavoidable Impact	Significant and Unavoidable Impact	Significant and Unavoidable Impact	Significant and Unavoidable Impact
Mitigation Measure(s)	**CR1** Archaeological Monitoring No new surficial archaeological resources were identified within the proposed project area. The locations of the pre-recorded sites within the proposed project boundaries have been developed and no surficial evidence of the sites were observed during the archaeological reconnaissance survey. The majority of the project area is developed (residential, retail, industrial) and disturbed from existing roads, railroad alignments and landscape vegetation. However, shallow archaeological deposits may exist beneath the disturbed land surface. Of the pre-recorded sites, one was identified eleven feet below the surface; therefore, even with the majority of the project area developed there is the potential for buried archaeological deposits beneath the developed land surface. Of the 19 previous cultural resource studies conducted within the proposed project area, only nine were conducted within the past eight years and of those nine studies only three cover portions of the linear project route. Due to the potential for buried archaeological deposits and the sporadic cover of cultural resource studies of the proposed project route, archaeological monitoring by a qualified archaeologist shall be conducted for the entire project area during all ground-disturbing activities. Archaeological monitoring by a qualified archaeologist is recommended during initial ground disturbance (a qualified archaeologist has at least a Bachelor's degree in anthropology and experience, and is supervised by is a registered professional archaeologist). If buried cultural resources—such as flaked or ground stone, historic debris, building foundations, or non-human bone—are inadvertently discovered during ground-disturbing activities, work will stop in that area and within 100 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures typically include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. If during cultural resources monitoring the qualified archaeologist determines that the sediments being excavated are previously disturbed or unlikely to contain significant cultural materials, the qualified archaeologist can specify that monitoring be reduced or eliminated. If cultural resources are discovered during construction activities, the construction contractor will verify that work is halted until appropriate site-specific treatment measures—such as those listed above—are implemented.					

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
	Due to the potential for buried archaeological deposits and the sporadic cover of cultural resource studies of the proposed project route, archaeological monitoring by a qualified archaeologist shall be conducted for the entire project area during all ground-disturbing activities. If buried cultural resources—such as flaked or ground stone, historic debris, building foundations, or non-human bone—are inadvertently discovered during ground-disturbing activities, work shall stop in that area and within 100 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures typically include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. If during cultural resources monitoring the qualified archaeologist determines that the sediments being excavated are previously disturbed or unlikely to contain significant cultural materials, the qualified archaeologist shall specify that monitoring be reduced or eliminated. Additionally, there remain two gated and locked vacant parcels to be surveyed that were inaccessible at the time of this current survey. Historic boundaries of the Inglewood Park Cemetery need to be researched and confirmed due to the potential for uncovering burial sites during construction activities. If human remains are exposed during construction, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC 5097.98. Construction must halt in the area of the discovery of human remains, the area must be protected, and consultation and treatment should occur as prescribed by law. If the coroner determines the remains to be Native American, the coroner must contact the NAHC. If Native American human remains are discovered during project construction, it will be necessary to comply with state laws relating to the disposition of Native American burials that are under the jurisdiction of the NAHC (PRC Section 5097). For remains of Native American origin, no further excavation or disturbance shall take place until: the most likely descendant of the deceased Native American(s) has made a recommendation to the landowner or the person responsible for the excavation work regarding means of treating or disposing of the human remains and any associated grave goods, with appropriate dignity, as provided in the PRC Section 5097.98; or the NAHC is unable to identify a most likely descendant or the descendant fails to make a recommendation within 24 hours after being notified by the Commission. In consultation with the most likely descendant, the project archaeologist and the project proponent will determine a course of action regarding preservation or excavation of Native American human remains, and this recommendation will be implemented expeditiously. If a most likely descendent cannot be located or does not make a recommendation, the project archaeologist and the project proponent will determine a course of action regarding preservation or excavation of Native American human remains, which will be submitted to the NAHC for review prior to implementation. **CR2** HABS/Historic American Engineering Record (HAER) Documentation-- Century Lounge (formerly Carolina Lanes Bowling Center) – 5601 West Century Boulevard Documentation of the building to Historic American Buildings Survey (HABS) archival standards shall be prepared, submitted to SHPO for review and approval, and donated to a suitable repository, such as the Los Angeles Public Library. The documentation would not mitigate the demolition of the buildings to less than adverse or less than significant.					

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
	CR3 Monitoring of Settlement During Construction Although settlement adjacent to cut-and-cover construction is not anticipated, monitoring of soil settlement shall be conducted where historic buildings are in close proximity to cut-and-cover construction. If settlement is detected, steps shall be taken to stop the settlement before damage to historic buildings occurs. If historic buildings are damaged, they shall be repaired in accordance with the Secretary of the Interior's Standards. Monitoring of potential settlement shall be undertaken at the following locations: ■ Department of Water and Power – 4030 Crenshaw Boulevard ■ May Company Department Store – 4005 Crenshaw Boulevard ■ Broadway Department Store – 4101 Crenshaw Boulevard ■ Maverick's Flat – 4225 Crenshaw Boulevard ■ Great Western Savings & Loan – 4401 Crenshaw Boulevard ■ Leimert Park – Commercial Buildings. CR4 Paleontological Monitoring A qualified paleontological monitor shall monitor all excavation in areas identified as likely to contain paleontological resources below 5 feet. These areas are defined as all areas within the Metro Crenshaw Transit Corridor where excavation would exceed 5 feet in depth (i.e., tunnel boring, cut-and-cover construction, deep footings). The qualified paleontological monitor shall retain the option to reduce monitoring if, in his or her professional opinion, the sediments being monitored were previously disturbed. Monitoring may also be reduced if the potentially fossiliferous units, previously described, are not present or, if present, are determined by qualified paleontological personnel to have a low potential to contain fossil resources. The monitor shall be equipped to salvage fossils and samples of sediments as they are unearthed to avoid construction delays and shall be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Recovered specimens shall be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Specimens shall be curated into a professional, accredited museum repository with permanent retrievable storage. A report of findings, with an appended itemized inventory of specimens, shall be prepared and will signify completion of the program to mitigate impacts on paleontological resources. CR5 TPSS Setback or Design The TPSS near the Angelus Funeral Home at 3886 Crenshaw Boulevard shall be designed and/or set back to minimize the visual effect on the historic building and its setting. Consultation with a qualified architectural historian or historic preservation architect shall be conducted and their comments implemented in the design or location of the TPSS site. SHPO will be given an opportunity for review, comment, and approval.					

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
	CR6 Design of LRT and BRT Elevated Section and Station at Carolina Lanes Site The LRT and BRT station(s) at the Century Lounge (formerly Carolina Lanes Bowling Center) at 5601 West Century Boulevard shall be designed to minimize the permanent visual effect on the historic building and its setting. Consultation with a qualified architectural historian or historic preservation architect shall be conducted and their comments implemented. SHPO will be given an opportunity for review, comment, and approval. **CR7** HABS/HAER Documentation and Adaptive Reuse–Kaiser Homes Production Plant The buildings that comprised the Kaiser Homes Production Plant shall be photographed and documented in their current location according to HABS standards, reviewed and approved by SHPO, and the resulting documentation shall be donated to a suitable repository, such as the Los Angeles Public Library. The National Park Service's website, www.nps.gov, defines the HABS standards as the following: The Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation define the products acceptable for inclusion in the Heritage Documentation Programs (HABS/Historic American Engineering Record [HAER]/Historic American Landscapes Survey [HALS]) collections in the Library of Congress as measured drawings, large-format black and white photographs, and written histories. They require that the documentation captures the significance of the site or structure, is accurate and verifiable, has archival stability, and is clear and concise. "The Guidelines provide advice and technical information on meeting the standards. Most importantly, they outline an approach to historic architecture, engineering and landscapes that helps ensure the documentation will meet the Secretary of the Interior's Standards while creating a comprehensive understanding of the site or structure. They also provide recommendations on research methods and report organization, line weight and sheet layout, photographic paper and negative preparation, and the disposition of field notes." A qualified architectural historian or historic preservation architect shall prepare an adaptive reuse plan for the extant significant buildings on the Kaiser Homes Production Plant site that would incorporate them into the proposed project re-use of the site. The adaptive reuse plan shall be submitted to SHPO for review and approval. If the significant extant buildings are adaptively reused in accordance with the Secretary of the Interior's Standards, then the project impacts will be mitigated to less than significant. Both Section 106 and CEQA allow buildings to be altered in accordance with the Secretary of the Interior's Standards without resulting in an adverse effect under Section 106 or a significant effect under CEQA. If an adaptive reuse plan cannot be developed to achieve the project objectives while mitigating the effects on historic properties, then the effect will be adverse under Section 106 and significant under CEQA. Documentation of the buildings to HABS standards without the adaptive reuse of the significant buildings would not mitigate the demolition of the buildings to less than adverse or less than significant.					
Parklands and Community Facilities	No Impact	No Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact
Mitigation Measure(s)	None Required					

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
Economic	No Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact
Mitigation Measure(s)	None Required					
Safety and Security	No Impact	No Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact
Mitigation Measure(s)	**SS1** All stations and parking facilities shall be equipped with monitoring equipment and/or be monitored by Metro security personnel on a regular basis. **SS2** Metro shall implement a security plan for BRT and LRT operations. The plan shall include both in-car and station surveillance by Metro security or other local jurisdiction security personnel. **SS3** All stations shall be lit to standards that minimize shadows and all pedestrian pathways leading to/from sidewalks and parking facilities shall be well illuminated. **SS4** Metro shall coordinate and consult with the LAPD, the LA County Sheriff's Department, the Inglewood Police Department, and the LAX Police to develop safety and security plans for the alignment, parking facilities, and station areas. **SS5** The station design shall not include design elements that obstruct visibility or observation nor provide discrete locations favorable to crime; pedestrian access to at-grade, below-grade, and above-grade station entrances/exits shall be accessible at ground-level with clear sight lines. **SS6** Metro shall monitor pedestrian crossing activity at all locations with adjacent schools and implement appropriate measures to ensure pedestrian crossing safety, as determined by the CPUC. **SS7** Metro shall conduct a Hazard Analysis before the start of Final Design, using current safety analysis as a reference. The Hazard Analysis shall determine a design basis for warning devices as required by the California Public Utilities Commission. **SS8** Traffic warning measures, such as signage, shall be provided along the length of the platforms of the BRT and LRT Stations. These markings will be provided to alert motorists to significant pedestrian activity in the area. **SS9** To discourage crossing the alignment at other locations near the Faithful Central Bible Church and enhance safety, Metro shall provide fencing along either side of the alignment, between the parking lot and church buildings.					
Construction (All Except AQ)	No Impact	No Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact
Air Quality	No Impact	No Impact	Significant and Unavoidable Impact	Significant and Unavoidable Impact	Significant and Unavoidable Impact	Significant and Unavoidable Impact

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
Mitigation Measure(s)	CON1 Visually obtrusive erosion control devices, such as silt fences, plastic ground cover, and straw bales should be removed as soon as the area is stabilized. CON2 Stockpile areas should be located in less visibly sensitive areas and, whenever possible, not be visible from the road or to residents and businesses. CON3 During nighttime construction activities, lighting shall be aimed at the downward and away from residential and other sensitive uses adjacent to the alignment and stations. CON4 Water or a stabilizing agent shall be applied to exposed surfaces in sufficient quantity to prevent generation of dust plumes. CON5 Track-out shall not extend 25 feet or more from an active operation and track-out shall be removed at the conclusion of each workday. CON6 Contractors shall be required to utilize at least one of the measures set forth in South Coast Air Quality Management District Rule 403 section (d)(5) to remove bulk material from tires and vehicle undercarriages before vehicles exit the project site. CON7 All haul trucks hauling soil, sand, and other loose materials shall maintain at least 6 inches of freeboard in accordance with California Vehicle Code Section 23114. CON8 All haul trucks hauling soil, sand, and other loose materials shall be covered (e.g., with tarps or other enclosures that would reduce fugitive dust emissions). CON9 Traffic speeds on unpaved roads shall be limited to 15 mph. CON10 Operations on unpaved surfaces shall be suspended when winds exceed 25 mph. CON11 Heavy equipment operations shall be suspended during first and second stage smog alerts. CON12 On-site stockpiles of debris, dirt, or rusty materials shall be covered or watered at least two times per day. CON13 Contractors shall maintain equipment and vehicle engines in good condition and in proper tune per manufacturers' specifications. CON14 Contractors shall utilize electricity from power poles rather than temporary diesel or gasoline generators, as feasible. CON15 Heavy-duty trucks shall be prohibited from idling in excess of five minutes, both on- and off-site. CON16 Construction parking shall be configured to minimize traffic interference. CON17 Construction activity that affects traffic flow on the arterial system shall be limited to off-peak hours, as feasible. CON18 During the early stages of construction plan development, natural and artificial barriers, such as ground elevation changes and existing buildings, shall be considered for use as shielding against construction noise. CON19 Noise barriers shall be constructed during the initial stages to reduce potential adverse construction noise effects along the right-of-way for traffic mitigation. CON20 The contractor shall comply with Standard Specifications and all local sound control and noise level rules, regulations, and ordinances that apply to any work performed pursuant to the contract. Each internal combustion engine used for any purpose on the job or related to the job shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated without a muffler. CON21 Noisier activities involving large machinery shall be limited to daytime hours when most people normally affected are either not present or engaged in less noise-sensitive activities. Nighttime construction shall require a variance.					

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
	CON22 Two biological surveys shall be conducted, one fifteen days prior and a second 72 hours prior to construction that would remove or disturb suitable nesting habitat. The surveys shall be performed by a biologist with experience conducting breeding bird surveys. The biologist shall prepare survey reports documenting the presence or absence of any protected native bird in the habitat to be removed and any other such habitat within 300 feet of the construction work area (within 500 feet for raptors). If a protected native bird is found, surveys will be continued in order to locate any nests. If an active nest is located, construction within 300 feet of the nest (500 feet for raptor nests) will be postponed until the nest is vacated and juveniles have fledged and when there is no evidence of a second attempt at nesting. **CON23** If construction of the project requires pruning of native tree species, the pruning shall be performed in a manner that does not cause permanent damage or adversely affect the health of the trees. **CON24** Phase II ESA - Conduct a limited Phase II ESA prior to construction in areas where construction workers may be exposed to impacted soil. A base line soil sampling protocol should be established with special attention to those areas of potential environmental concern identified in this report. The soil should be assessed for constituents likely to be present in the subsurface including, but not limited to, TPH, VOCs, SVOCs, PCBs, PAHs, pesticides, lead arsenates, and Title 22 metals. The depth of the sampling should be based on the depth of grading or cut and fill activities. In addition, in areas where groundwater will be encountered, samples should also be analyzed for suspected contaminants prior to dewatering. This will ensure that NPDES discharge requirements are satisfied. **CON25** Soil Mitigation Plan – A soil mitigation plan should be prepared after final construction plans are prepared showing the lateral and vertical extent of soil excavation during construction. The soil mitigation plan should establish soil reuse criteria, establish a sampling plan for stockpiled materials, describe the disposition of materials that do not satisfy the reuse criteria, and specify guidelines for imported materials. The soil mitigation plan should include a provision that during grading or excavation activities, soil should be screened for contamination by visual observations and field screening for volatile organic compounds with a PID. Soil samples that are suspected of contamination based on field observations and PID readings shall be analyzed for suspected chemicals by a California certified laboratory. If hazardous soil is found, it shall be removed, transported to an approved disposal location, and remediated or disposed according to state and federal laws. Other contaminated but nonhazardous soil may be reused on site applications such as bridge embankments or underneath paved areas provided the public is protected from coming into contact with the contaminated soils and the specific use is agreed to by the California Department of Toxic Substances Control (DTSC). **CON26** Hazardous Material and Debris Removal - All hazardous materials, drums, trash, and debris shall be removed and disposed of in accordance with regulatory guidelines. **CON27** Health and Safety Plan - A health and safety plan should be developed for persons with potential exposure to the constituents of concern identified in the limited Phase II ESA.					

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
	CON28 Construction Observations - Historical and present site usage along the many areas of the proposed alignment included businesses that stored hazardous materials and/or waste and used USTs, from at least the 1920s to the present. It is possible that areas with soil and/or groundwater adverse effects may be present that were not identified in this report, or were considered a low potential to adversely impact the subject property. In general, observations should be made during any future development activities for features of concern or areas of possible contamination such as, but not limited to, the presence of underground facilities, buried debris, waste drums, tanks, soil staining or odorous soils. Further investigation and analysis may be necessary, should such materials be encountered. **CON29** Upon selection of a maintenance and operations facility site, a Phase I ESA shall be prepared to identify potential soil contamination, and if necessary, a Phase II ESA shall follow to determine the extent of the soil contamination. **CON30** During project construction, remediation should be required at maintenance facilities and vehicle storage areas, where a potential exists for grease and oil contamination to flow into storm drains. Various types of ditch structures, including grease traps, sediment traps, detention basins, and/or temporary dikes may be used to control possible pollutants. These facilities shall be constructed pursuant to guidance published in Section 402 of the CWA and shall follow the most current guidance within the NPDES program. **CON31** A dewatering permit is required due to the high groundwater table. The proposed project is located in an urbanized area where potential groundwater contamination may exist. If contaminated groundwater is encountered during construction, the contractor shall stop work in the vicinity of the suspect find, cordon off the area, and contact the appropriate hazardous waste coordinator and maintenance hazardous spill coordinator at Metro and immediately notify the Certified Unified Program Agencies (LAFD, County of Los Angeles Fire Department, and Los Angeles RWQCB) responsible for hazardous materials or waste incidents. Coordination with the appropriate regulatory agencies will be initiated immediately to develop an investigation plan and remediation plan for expedited protection of public health and environment. Contaminated groundwater is prohibited from being discharge to the storm drain system. The contractor shall properly treat or dispose of any hazardous or toxic materials, according to local, state, and federal regulations (see Section 4.9 for details on potential groundwater contamination and remediation) **CON32** The project site currently drains indirectly to Ballona Creek and Dominguez Creek through the MS4. Treatment control BMPs shall be incorporated into the project design. The project shall consider placing the treatment BMPs in series or in a complimentary system to increase the control of pollutants to the maximum extent practicable. The systems shall be designed to efficiently and effectively handle and treat dry and wet weather flows to the maximum extent practicable. A SUSMP and appropriate drainage control plan shall be implemented to select and place appropriate permanent treatment BMPs.					

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
	CON33 Archaeological monitoring by a qualified archaeologist shall be conducted during initial ground disturbance (a qualified archaeologist has at least a Bachelor's degree in anthropology and experience, and is supervised by is a registered professional archaeologist). If buried cultural resources—such as flaked or ground stone, historic debris, building foundations, or non-human bone—are inadvertently discovered during ground-disturbing activities, work shall stop in that area and within 100 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures typically include: development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. If during cultural resources monitoring the qualified archaeologist determines that the sediments being excavated are previously disturbed or unlikely to contain significant cultural materials, the qualified archaeologist can specify that monitoring be reduced or eliminated. If cultural resources are discovered during construction activities, the construction contractor shall verify that work is halted until appropriate site-specific treatment measures—such as those listed above—are implemented. If human remains of Native American origin are discovered during ground-disturbing activities, it is necessary to comply with state laws relating to the disposition of Native American burials that fall within the jurisdiction of the California Native American Heritage Commission (PRC Section 5097). According to California Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100), and disturbance of Native American cemeteries is a felony (Section 7052). Section 7050.5 requires that excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the California Native American Heritage Commission to determine the most likely living descendant(s). The most likely living descendant shall determine the most appropriate means of treating the human remains and any associated grave artifacts, and shall oversee disposition of the human remains and associated artifacts by the project archaeologists. **CON34** Documentation of the Century Lounge (formerly Carolina Lanes Bowling Center at 5601 West Century Boulevard to HABS archival standards shall be prepared, submitted to SHPO for review and approval, and donated to a suitable repository, such as the Los Angeles Public Library. The documentation would not mitigate the demolition of the buildings to less than adverse. **CON35** Although settlement adjacent to cut-and-cover construction is not anticipated, monitoring of soil settlement shall be conducted where historic buildings are in close proximity to cut-and-cover construction. If settlement is detected, steps shall be taken to stop the settlement before damage to historic buildings occurs. If historic buildings are damaged, they shall be repaired in accordance with the Secretary of the Interior's Standards. Monitoring of potential settlement shall be undertaken at the following locations: ▪ Department of Water and Power – 4030 Crenshaw Boulevard ▪ May Company Department Store (now Macy's) – 4005 Crenshaw Boulevard ▪ Broadway Department Store (now WalMart) – 4101 Crenshaw Boulevard ▪ Maverick's Flat - 4225 Crenshaw Boulevard ▪ Great Western Savings and Loan (now Chase Bank) – 4401 Crenshaw Boulevard ▪ Leimert Park-Commercial Buildings					

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

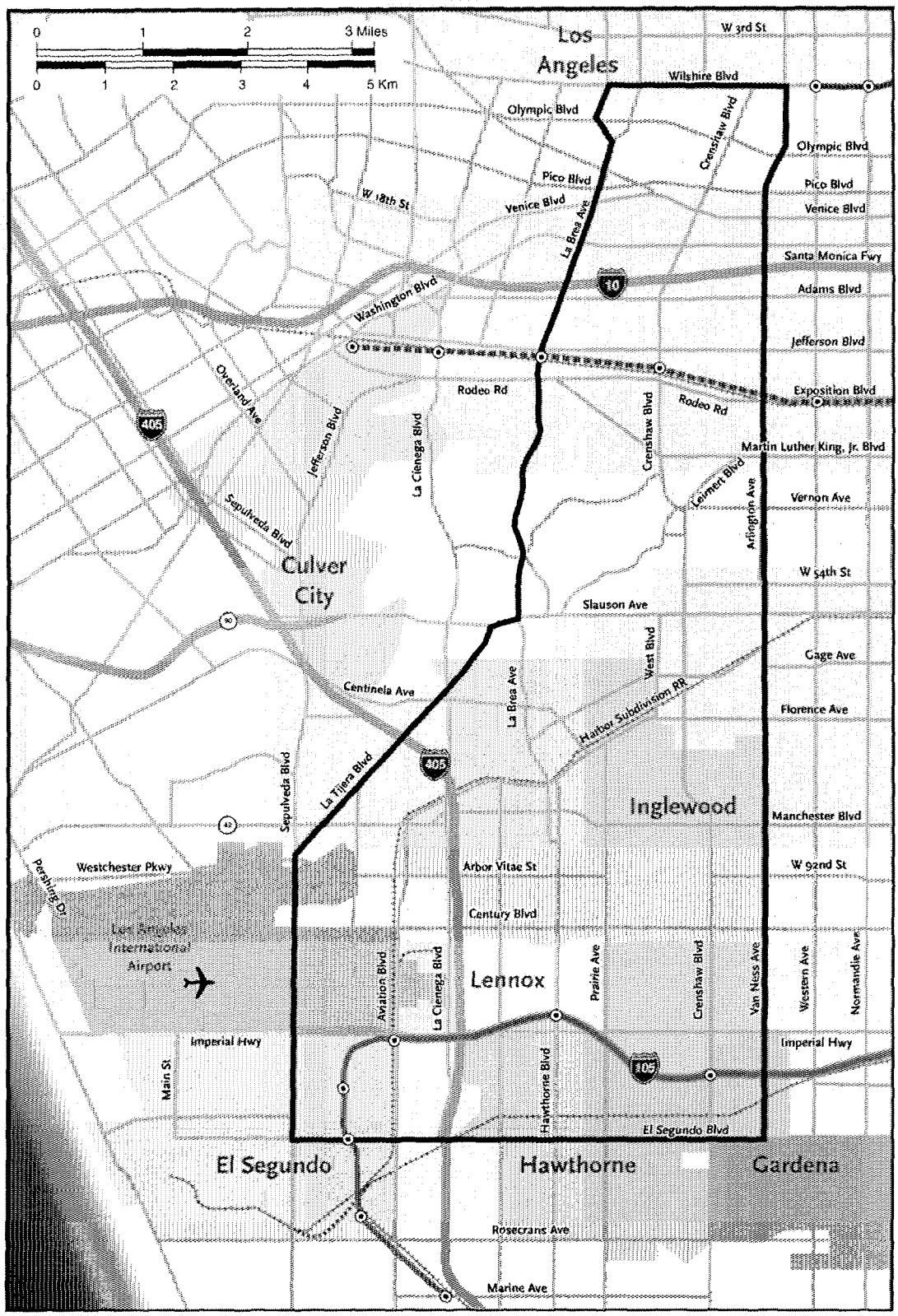
Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
	CON36 A qualified paleontological monitor shall monitor all excavation in areas identified as likely to contain paleontological resources below 5 feet. These areas are defined as all areas within the Crenshaw Transit Corridor where excavation would exceed 5 feet in depth (i.e., tunnel boring, cut-and-cover construction, deep footings.) The qualified paleontological monitor shall retain the option to reduce monitoring if, in his or her professional opinion, the sediments being monitored were previously disturbed. Monitoring may also be reduced if the potentially fossiliferous units, previously described, are not present or, if present, are determined by qualified paleontological personnel to have a low potential to contain fossil resources. The monitor shall be equipped to salvage fossils and samples of sediments as they are unearthed to avoid construction delays and shall be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Recovered specimens shall be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Specimens shall be curated into a professional, accredited museum repository with permanent retrievable operation. A report of findings, with an appended itemized inventory of specimens, shall be prepared and will signify completion of the program to mitigate impacts on paleontological resources. **CON37** The TPSS near the Angelus Funeral Home at 3886 Crenshaw Boulevard shall be designed and/or set back to minimize the visual effect on the historic building and its setting. Consultation with a qualified architectural historian or historic preservation architect shall be conducted and their comments implemented in the design or location of the TPSS site. SHPO will be given an opportunity for review, comment, and approval. **CON38** The LRT and BRT station(s) at the Century Lounge (formerly Carolina Lanes Bowling Center) at 5601 West Century Boulevard shall be designed to minimize the permanent visual effect on the historic building and its setting. Consultation with a qualified architectural historian or historic preservation architect shall be conducted and their comments implemented. SHPO will be given an opportunity for review, comment, and approval. **CON39** Nearby business owners and commercial property owners shall be notified of the schedule for specific planned construction activities, changes in traffic flow, and required short-term modifications to property access. **CON40** General notice shall be provided to local government, transit agencies, major institutions, and other organizations of the schedule for planned construction activities. **CON41** Methods shall be developed by which business owners can convey their concerns about construction activities and the effectiveness of mitigation measures during the construction period so activities can be modified to reduce adverse effects. **CON42** Advance notice shall be provided to affected property owners if utilities would be disrupted for short periods of time and scheduled major utility shut-offs during low-use periods of the day. **CON43** Construction activities shall be planned to minimize effects on community gatherings, special celebrations, or other similar events. **CON44** Public information campaigns shall be conducted to encourage patronage of corridor businesses during the construction period. **CON45** An Educational safety awareness program shall be instituted at schools adjacent to construction activity along the project alignment, which provide information to students about the threat to safety from entering construction sites.					

Table ES.9. CEQA Determination Impact Summary With Mitigation Measures

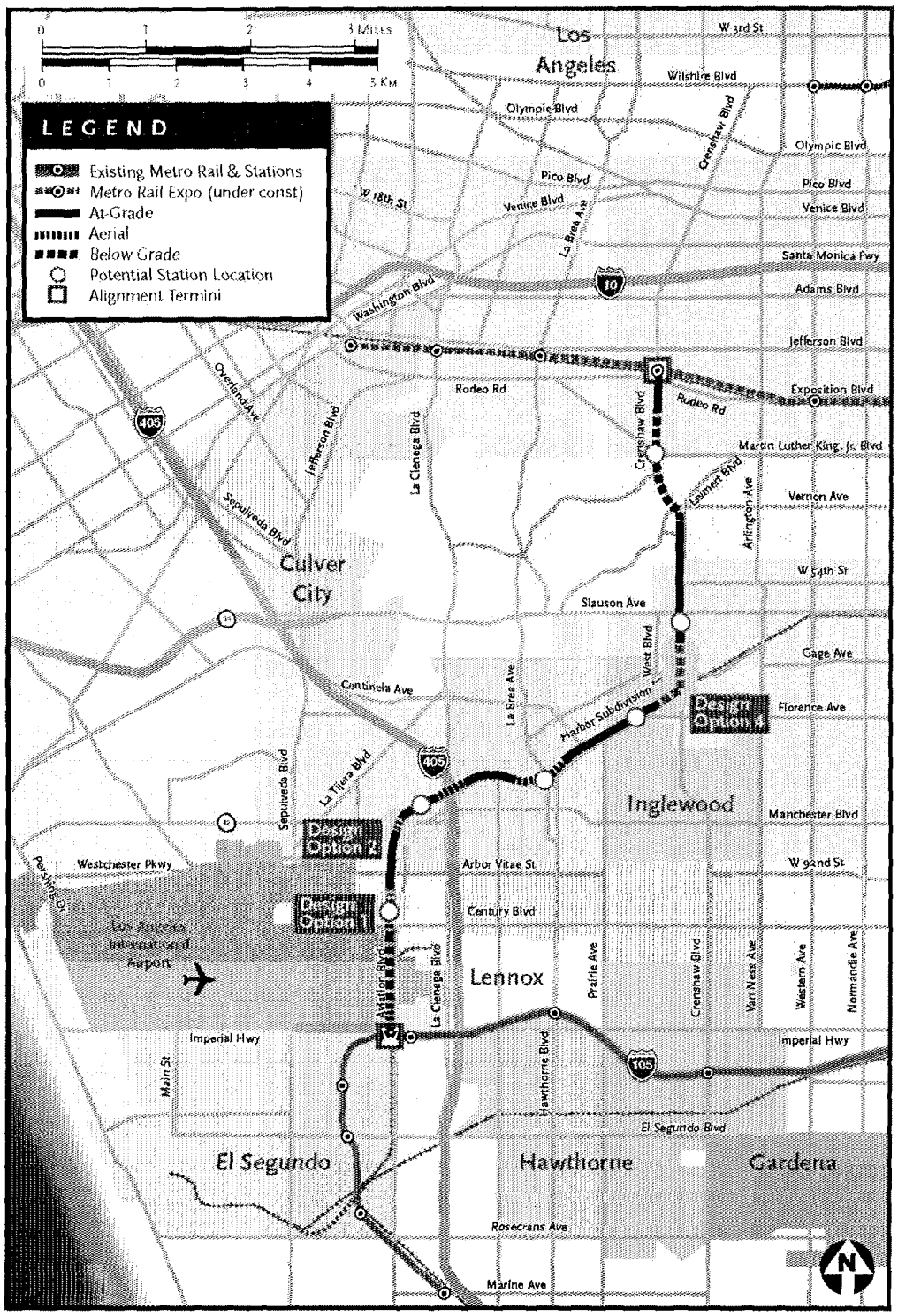
Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative	LRT with Design Options	Maintenance and Operations Facility
	CON46 Metro shall ensure that all businesses and service providers are provided with adequate access during construction. Where there is a significant LEP population, signage shall be provided in various languages (as appropriate). **CON47** Metro shall provide funding for temporary signage and advertising during construction to help businesses that are partially blocked or that have inconvenient access due to construction activity.					
Growth Inducing	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Mitigation Measure(s)	None Required					
Cumulative Impacts (All Except AQ)	No Impact	No Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact	Less-Than-Significant Impact
Air Quality	No Impact	No Impact	Less-Than-Significant Impact	Significant and Unavoidable Impact	Significant and Unavoidable Impact	Significant and Unavoidable Impact
Mitigation Measure(s)	No Feasible Mitigation					

Source: TAHA, 2009

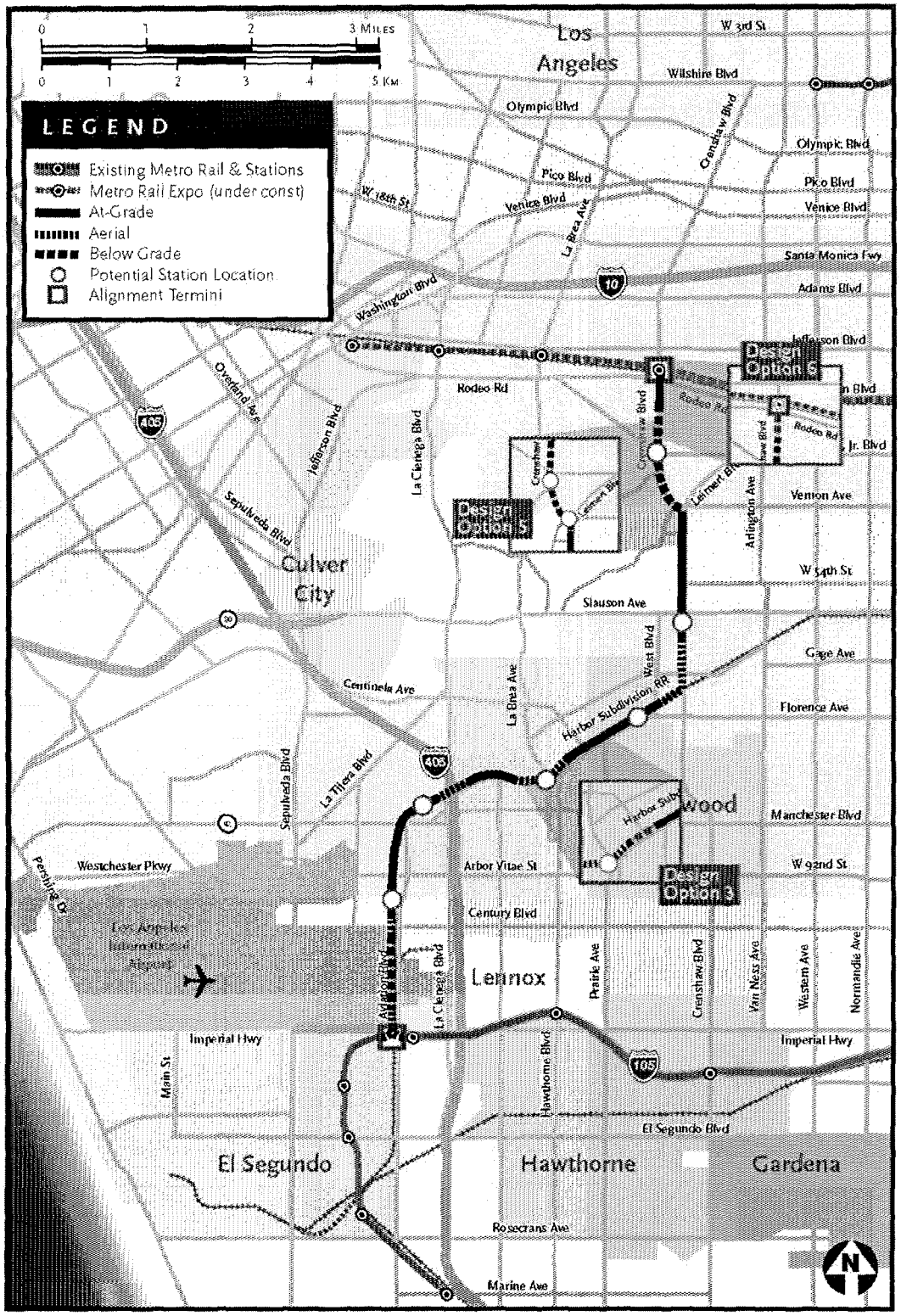
Crenshaw Transit Corridor Project Study Area



Crenshaw Transit Corridor Recommendation for a Locally Preferred Alternative – LRT Alternative



Design Options for Further Analysis



RESOLUTION AUTHORIZING CHIEF EXECUTIVE OFFICER TO EXECUTE FUNDING AGREEMENTS WITH THE STATE OF CALIFORNIA FOR THE CRENSHAW TRANSIT CORRIDOR PROJECT

WHEREAS, the California Department of Transportation ("Caltrans") administers, programs, allocates, and awards state transportation planning funds; and

WHEREAS, upon funding award, Caltrans requires grantees to execute funding agreements in order to receive the transportation planning funds; and

WHEREAS, all agreements for financial assistance from the State will impose certain obligations upon the Los Angeles County Metropolitan Transportation Authority ("LACMTA"), including, but not limited to, provisions of local match requirements and provisions that indemnify and hold harmless the funding agency on LACMTA activities; and

WHEREAS, LACMTA has been awarded transportation planning funds through Caltrans for the West Boulevard Station Area and Community Linkages Plan as part of the Crenshaw Transit Corridor Project.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Los Angeles County Metropolitan Transportation Authority:

1. That the Chief Executive Officer is authorized to execute a funding agreement, assurances, certifications, contracts, sub-contracts, extension, and/or amendments and other necessary documents on behalf of LACMTA, subject to legal counsel review and approval, which may be necessary to carry out the planning studies and administer all obligations, responsibilities and duties under this grant upon receipt of a full executed Fund Transfer Agreement or Memorandum of Understanding.

2. That the required local match will be provided in the form of staff time, printing and publication costs, in-kind or other form acceptable by the funding agency.

CERTIFICATION

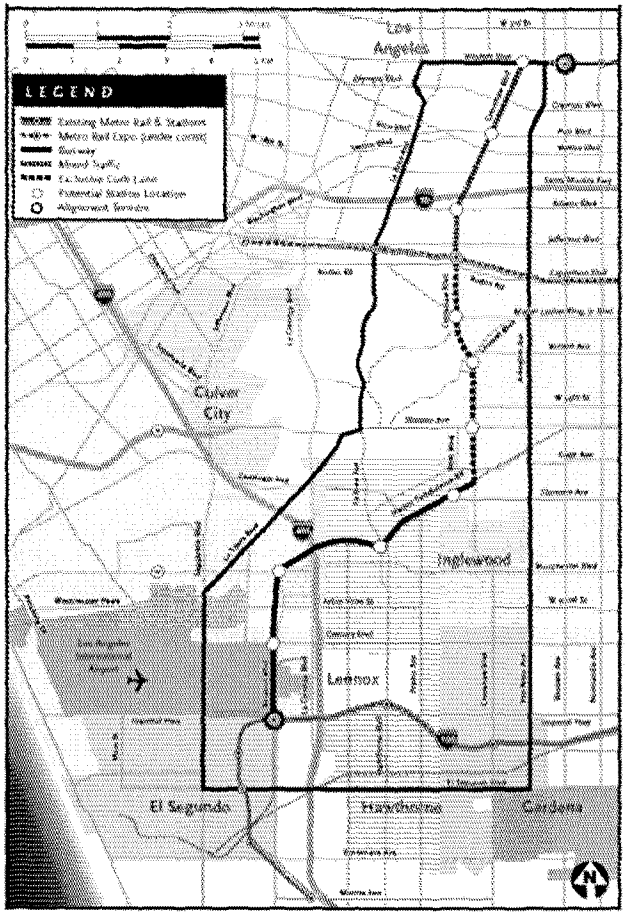
The undersigned, duly qualified and acting as the Board Secretary of the Los Angeles County Metropolitan Transportation Authority, certifies that the foregoing is a true and correct copy of the Resolution adopted at a legally convened meeting of the Board of Directors of Los Angeles County Metropolitan Transportation Authority held on December 10, 2009.

_____

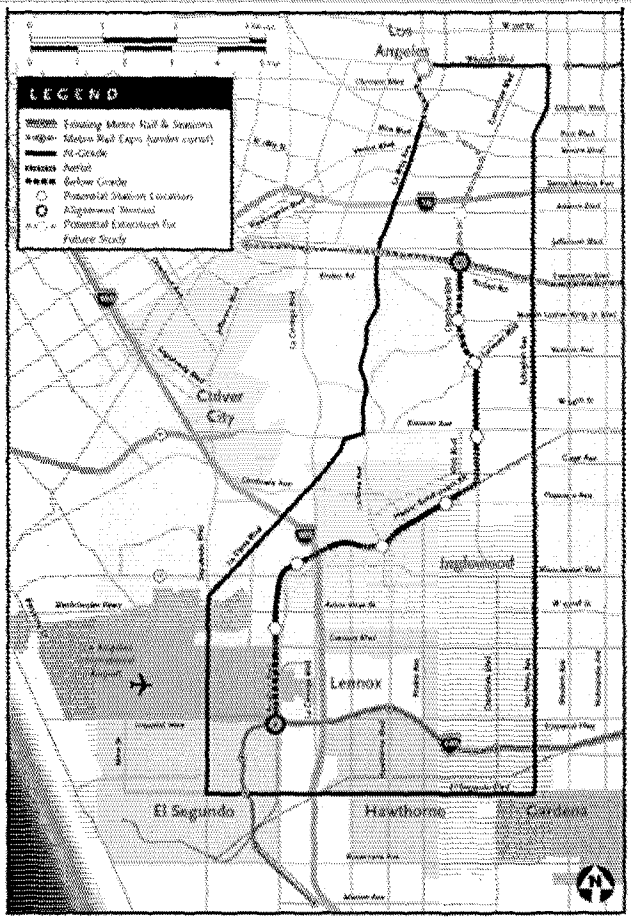
MICHELLE JACKSON
Board Secretary

DATED: _____

Comparison of BRT and LRT Alternatives



BRT – Wilshire / Western to Metro Green Line



LRT – Expo Line to Metro Green Line
(service continues to Metro Green Line Redondo Beach station)

Metro

Summary Comparison of Build Alternatives

	BRT Alternative	LRT Alternative
Travel Time		
Metro Green Line to Exposition Line	28-30 minutes (20% savings compared to equivalent Rapid Bus travel time of 35 minutes)	20 minutes (43% savings compared to equivalent Rapid Bus travel time of 35 minutes)
Metro Green Line to Wilshire Boulevard	39-41 minutes	-
Ridership (Daily) (As of October 2008, does not include ridership from other Measure R projects such as Expo Line Phase II, Westside Extension, and Regional Connector)		
Metro Green Line to Exposition Line	9,700 – 14,400	12,700 – 21,300
Metro Green Line to Wilshire Boulevard	16,700 – 24,100	-
Estimated Capital Cost (September 2008$)	$500 to $600 million (Costs rise if unable to secure City of LA approval of lane conversion along Crenshaw)	$1.3 billion (Includes shared infrastructure with Green Line North Extension to LAX (1 mile + 1 station), estimated at $325M (Sep 2008)) (Design Options may add additional $11 million to $255 million each)
Travel Time Reliability	- Dedicated Busway operation improves reliability - Operation in mixed flow sections may degrade reliability	- Operation in exclusive right-of-way and a high level of signal priority improve reliability
Aesthetics and Integration with Urban Design	- Busway stations create focal points for integration, but require more right-of-way along the Harbor Subdivision and sidewalks	- Station portals create opportunities for integration with adjacent development
Connectivity	- Allows transfers to Metro Green Line - Connects to Wilshire Boulevard - Connects to LAX	- Integrated service with existing Metro Green Line - Allows for future extension north to Wilshire Boulevard - Connects to LAX
Cost-Effectiveness (Long-Term)	- Lower capital cost per passenger in short-term - Future improvements may be required to sustain reliable travel times	- Higher capital cost per passenger in the short-term - Accommodates capacity and growth
Economic Development and Job Creation	- Strong potential for economic development at station sites	- Strong potential for economic development at station sites. Rail may have a stronger development impact
	3,500 jobs generated annually during construction	7,800 jobs generated annually during construction

	BRT Alternative	LRT Alternative
Environmental Justice	- Potential impacts to trees near Edward Vincent Jr. Park	- Potential Impacts due to an elevated grade separation in Hyde Park; impacts are mitigated through the adoption of the recommended Locally Preferred Alternative
Safety / Security	- Crossings along Harbor Subdivision are controlled by traffic signals	- Crossings along the entire line require additional safety treatments
Traffic Impacts	- Impacts in certain narrow sections of Crenshaw Boulevard (e.g., between King Bl and Vernon Av) due to lane conversions	- One remaining intersection with impacts

Summary of Environmental Impacts

Project Goal/Criteria/Measure	No-Build Alternative	TSM Alternative	BRT Alternative	LRT Alternative
Environmental				
Traffic (without Intersection Analysis)	○	○	◉	◉
Traffic (with Intersection Analysis)	○	○	●, ◗	●, ◗
Regional Land Use	○	○	○	○
Local Land Use and Development	●	○	○	○
Division of Established Community	○	○	○	○
Consistency with Local Plans/Policies	●	●	○	○
Displacements and Relocation	○	○	◉	◉
Community Cohesion	○	○	○	◉
Visual	○	○	●, ◗	●, ◗
Air Quality (Operational)	○	○	○	●, ◗
Noise and Vibration	○	○	○	●
Ecosystems and Biological Resources	○	○	◉	◉
Geotechnical	◉	◉	◉	◉
Water	○	○	○	○
Energy	○	○	○	○
Historic, Archaeological, Paleontological	○	○	●, ◗	●, ◗
Parklands and Community Facilities	○	○	○	○
Economic	○	○	○	○
Safety and Security	○	○	◉	◉
Construction (without Air Quality)	○	○	◉	◉
Construction (with Air Quality)	○	○	●, ◗	●, ◗
Growth Inducing	○	○	○	○
Cumulative (without Air Quality)	○	○	○	○
Cumulative (with Air Quality)	○	○	○	●, ◗
Environmental Justice	●	●	●	●

○ Less Than Adverse Effect, or No Adverse Effect
◉ Less Than Adverse Effect with Implementation of Mitigation Measure
● Potentially Adverse Effect or an Adverse Effect
◗ Significant Impact Under CEQA

Summary of LRT Design Options Impacts

Project Goal/Criteria/Measure	LRT Alternative Design Option 1	LRT Alternative Design Option 2	LRT Alternative Design Option 3	LRT Alternative Design Option 4	LRT Alternative Design Option 5	LRT Alternative Design Option 6
Environmental						
Traffic	◉	◉	◉	◉	◉	◉
Regional Land Use	○	○	○	○	○	○
Local Land Use and Development	○	○	○	○	●	○
Division of Established Community	○	○	○	○	○	○
Consistency with Local Plans/Policies	○	○	○	○	○	○
Displacements	○	○	◉	◉	◉	○
Community Cohesion	○	○	○	○	○	○
Visual	○	○	◉	○	○	○
Air Quality (Operational)	●,◗	●,◗	●,◗	●,◗	●,◗	●,◗
Noise and Vibration	●	●	●	●	●	●
Ecosystems and Biological Resources	◉	◉	◉	◉	◉	◉
Geotechnical	◉	◉	◉	◉	◉	◉
Water	○	○	○	○	○	○
Historic, Archaeological, Paleontological	●,◗	●,◗	●,◗	●,◗	●,◗	●,◗
Parklands and Community Facilities	○	○	○	○	○	○
Economic	○	○	○	○	○	○
Safety and Security	◉	◉	◉	◉	◉	◉
Construction (without Air Quality)	◉	◉	◉	◉	◉	◉
Construction (with Air Quality)	●,◗	●,◗	●,◗	●,◗	●,◗	●,◗
Growth Inducing	○	○	○	○	○	○
Cumulative (without Air Quality)	○	○	○	○	○	○
Cumulative (with Air Quality)	●,◗	●,◗	●,◗	●,◗	●,◗	●,◗
Environmental Justice	○	○	○	○	○	○

○ Less Than Adverse Effect, or No Adverse Effect
◉ Less Than Adverse Effect with Implementation of Mitigation Measure
● Potentially Adverse Effect or an Adverse Effect
◗ Significant Impact Under CEQA

Summary of Maintenance and Operations Facilities Impacts

Project Goal/Criteria/Measure	Maintenance and Operations Facility B	Maintenance and Operations Facility D
Environment		
Traffic	○	○
Regional Land Use	○	○
Local Land Use and Development	○	○
Division of Established Community	○	○
Consistency with Local Land Use Plans/Policies	○	○
Displacements	●	◉
Community Cohesion	○	○
Visual Quality	○	○
Air Quality (Operational)	●	●
Noise and Vibration	○	○
Ecosystems and Biological Resources	○	◉
Geotechnical	◉	◉
Water	○	○
Historic, Archaeological, Paleontological	●, ©	○
Parklands and Community Facilities	○	○
Economic	○	○
Safety and Security	○	○
Construction (Except Air Quality)	◉	◉
Air Quality	●,©	●,©
Growth Inducing	○	○
Cumulative Impacts	○	○
Environmental Justice	○	○

Source: Parsons Brinckerhoff, 2009

○ Less Than Adverse Effect, or No Adverse Effect

◉ Less Than Adverse Effect with Implementation of Mitigation Measure

● Potentially Adverse Effect or Adverse Effect

© Significant Impact under CEQA