



## **1.0 PURPOSE AND NEED**

### **1.1 Purpose of the Crenshaw/LAX Transit Corridor Project**

The purpose of the Crenshaw/Los Angeles International Airport (LAX) Transit Corridor Project is to provide an effective north-south transportation network within the Crenshaw Transit Corridor that is vital to alleviate current and projected connectivity and mobility problems.

### **1.2 Purpose of the Light Rail Maintenance Facility**

The purpose of the Light Rail Maintenance Facility Project (Project) is to select a light rail maintenance facility for the Crenshaw/LAX Transit Corridor Project. A maintenance facility must be constructed to support the line's light rail vehicle (LRV) maintenance and storage, and the operational needs of this extension of the Metro light rail transit (LRT) system.

The proposed Crenshaw/LAX Transit Corridor Project is an extension of the existing Metro LRT system. The existing system has maintenance facilities that potentially could be used for the proposed facilities; however, many are currently operating near or beyond their planned capacity. Therefore, additional capacity is required to operate the Crenshaw/LAX Transit Corridor Project. The Crenshaw/LAX Transit Corridor Project requires 33 LRVs operating on opening day in 2018, with anticipated operation of the maintenance facility beginning in 2015. In December 2010, the Metro Board adopted a consolidated development strategy for maintenance facilities associated with the expansions of the Metro Green Line and the three new transit extensions – the Crenshaw/LAX Transit Corridor, the South Bay Metro Green Line Extension, and the Metro Green Line Extension to LAX. Under the consolidated development strategy, the maintenance facility proposed as part of the Crenshaw/LAX Transit Corridor Project would service cars for the Crenshaw/LAX Transit Corridor and the Metro Green Line. In order to accommodate future growth of all these lines, consideration is being made for the maintenance facility to have a base capacity of 45 LRVs and to eventually expand the maintenance facility to accommodate up to 70 LRVs.

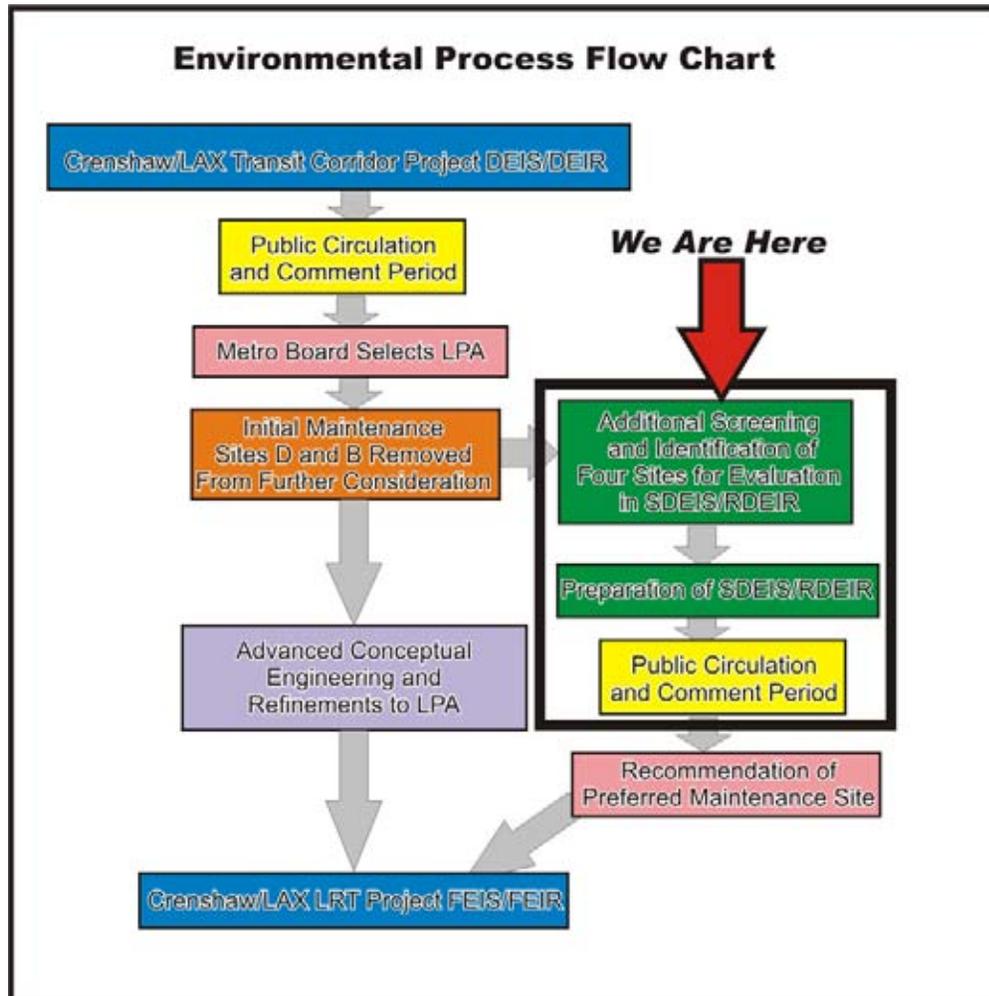
Routine maintenance activities are necessary to ensure the daily, reliable operation of the LRVs, including preventative, corrective, overhaul, and warranty maintenance activities. These services consist of regularly scheduled maintenance activities to maintain the performance level of the vehicle and its components. When an LRV becomes disabled, it must be moved to the closest maintenance facility to be serviced quickly. In order to provide LRV service that is reliable, cost effective, and does not adversely affect the remainder of the LRT system, it is important that the maintenance facility be located in close proximity to the proposed alignment for the light rail tracks.

### **1.3 Environmental Process**

This document discloses to interested agencies, the public, and other interested parties the potential impacts of the maintenance facility site alternatives for the Crenshaw/LAX Transit Corridor Project. Following the public review and comment period, the Metro Board of Directors will review and consider the comments together with the outcome of

the technical analyses to determine the preferred maintenance facility site to be included as part of the Crenshaw/LAX Transit Corridor Project. Figure 1-1 shows the environmental process for the selection of a maintenance facility within the overall Crenshaw/LAX Transit Corridor Project.

Figure 1-1. Environmental Process



On December 10, 2009, Metro Board of Directors adopted the LRT Alternative as the Locally Preferred Alternative (LPA) for the project. Construction of the Crenshaw/LAX Transit Corridor Project is scheduled to begin in Fiscal Year 2012, with operation commencing in 2018, or earlier, depending on funding availability. A total of four potential maintenance facility sites (A-D) were evaluated in the Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/DEIR) for the project. These sites are shown in Figure 1-2.

These four sites were compared and contrasted using several factors including: size and proximity to the line; land use and zoning; land ownership; buffers; potential expansion; community disruption; and, most valuable and best use.



Based on the analysis, the four potential maintenance facility sites were ranked as follows: 1) Site D, 2) Site B, 3) Site C, and, 4) Site A. Site A and Site C were screened out based on the criteria and Site B and Site D were evaluated in the DEIS/DEIR. During circulation of the DEIS/DEIR, Site D and Site B elicited local opposition from some, including municipal officials, elected representatives, and abutting business and property owners.

To try to address and resolve these concerns, the Metro Board directed that Sites D and B be removed from further consideration and an additional alternative maintenance facility sites be evaluated. One site will ultimately be selected to be the maintenance facility for the Crenshaw/LAX Transit Corridor Project.

In the analysis of new alternative sites, a total of 18 sites were identified for consideration. These sites were screened using the same criteria that was used to evaluate the original four sites and was developed from public input at community outreach meetings. This evaluation and screening process resulted in the selection of four sites to be analyzed in this Supplemental Draft Environmental Impact Statement/Recirculated Draft Environmental Impact Report (SDEIS/RDEIR).

#### **1.4 Need**

The Crenshaw/LAX Transit Corridor Project requires a maintenance facility in order to operate and maintain the fleet. The need is based on the capacity constraints of the existing light rail transit system and lack of interchangeability of the existing light rail maintenance facilities.

The new maintenance facility would need to be approximately 10 to 15 acres (3 to 4 cars per acre) in size to store, inspect, maintain, and repair LRVs and to provide a base for the maintenance and repair of the track, power, and signal systems for operation of the light rail service. A facility of this size would require approximately 200 employees with approximately 60 employees working 3 shifts, street access for employee and visitor parking and truck deliveries, a new wye track connection for rail access to the proposed light rail track alignment, and additional tracks to store and maintain the LRVs when they are not in service. The maintenance facility would require a traction power substation and an emergency generator to provide 24-hour lighting and power to the overhead catenary system that powers the LRVs.

#### **1.5 Existing Light Rail Maintenance Facilities**

Metro currently has a total of three light rail maintenance facilities, which are summarized in Table 1-1.

#### **1.6 Planned or Proposed Light Rail Maintenance Yards**

Metro is active in ongoing efforts to expand the light rail network and services. Currently, the Exposition light rail line is under construction. Another, the Gold Line Foothill Extension, is a new line with a two-phase construction and the Gold Line Eastside Extension is an extension of an existing line. Six additional new lines, or

**Table 1-1. Summary of Existing Light Rail Maintenance Facilities**

	<b>Long Beach Maintenance Facility (Division 11)</b>	<b>Hawthorne Maintenance Facility (Division 22)</b>	<b>Midway Maintenance Facility (Division 21)</b>
Function	Vehicle storage, inspection, cleaning, and all major light and running repair functions for LRVs assigned to the Metro Blue Line.	Vehicle storage, inspection, cleaning and light and running repair functions for LRVs assigned to the Metro Green Line.  The facility does not provide services for heavy repair, painting, overhauls, reconditioning, and structural repairs. When such repairs are necessary, Metro Green Line LRVs are moved via rail to the Metro Blue Line Maintenance Facility. A non-revenue track at the Imperial/Wilmington Station connects the Metro Green and Blue Lines.	Vehicle storage, inspection, cleaning, and light and running repair functions for LRVs assigned to the Metro Gold Line.  The facility does not provide services for heavy repair, painting, overhauls, reconditioning, and structural repairs. When necessary, Metro Gold Line LRVs are moved via surface transportation (truck/trailer) to the Metro Blue Line Maintenance Facility.
Location	15 miles south of Downtown Los Angeles, adjacent to the Metro Blue Line right-of-way between the Del Amo and Wardlow Stations in North Long Beach	Adjacent to the Metro Green Line right-of-way, between the Douglas and Redondo Beach Stations	1.5 miles north of Union Station, adjacent to the Los Angeles River and the Metro Gold Line right-of-way, between the Chinatown and Lincoln/Cypress Stations
Total Storage Capacity (LRVs)	86	39	50

extensions, are in various planning phases. However, not all are committed to becoming a rail project or being implemented prior to the planning horizon for the Crenshaw/LAX Transit Corridor Project. However, three maintenance facility expansions are planned to support routine vehicle maintenance needs for lines currently in the construction phase. Their purpose and a description of the Line are summarized in Table 1-2.

A new body shop is being constructed at the Midway Maintenance Facility to support increased exposure associated with extended street running sections on the Metro Gold Line Eastside Extension. This facility will give Division 21 adequate facilities to support Metro Gold Line LRVs. The new body shop will greatly reduce the need to move vehicles via truck or trailer to the Long Beach Maintenance Facility (Division 11) for major repairs. Total capacity at this expanded facility remains at 50 LRVs.

The Exposition Metro Line Construction Authority, a separate autonomous public agency from Metro, has proposed a new maintenance facility (storage only) for vehicles assigned to the Exposition Line in Santa Monica. With the addition of the Exposition Line and the trunked operation from the Washington and Flower junction to 7th Street/Metro Center, all operational facets of the Exposition Line and Blue Line will be combined, similar to

**Table 1-2. Summary of Planned Light Rail Maintenance Facility Expansions**

	<b>Exposition Line</b>	<b>Gold Line Foothill Extension</b>	<b>Gold Line Eastside Extension</b>
Function	Vehicle storage, inspection, cleaning and all major light and running repair functions for LRVs assigned to the Metro Exposition Line.	Vehicle storage, inspection, cleaning and light and running repair functions for LRVs assigned to the Metro Gold Line Foothill Extension.	Heavy repair, painting, overhauls, reconditioning, and structural repairs for LRVs assigned to the Metro Gold Line Eastside Extension.
Description of Line	Phase I extends Exposition Line from 7 <sup>th</sup> /Metro Center Station in downtown Los Angeles to Culver City via Exposition Park. Phase II extends from Culver City to Santa Monica	Phase I extends from downtown Los Angeles to Pasadena. Phase 2A extends from Sierra Madre Villa Station in Pasadena to Azusa	Extends Metro Gold Line from Union Station to Pomona/Atlantic Station (East Los Angeles).
Line Operation Date (LRTP)	Phase I – FY 2011-2012 Phase II - FY 2015	Phase I – In operation Phase IIA - FY 2017	In operation
Line Operation Date (30/10)	Phase I – FY 2011-2012 Phase II - FY 2015	Phase I – In operation Phase IIA - FY 2015	In operation

Note: LRTP – Metro Long Range Transportation Plan. 30/10 – Accelerated plan to build all 30-year planned transportation projects within ten years.

the Heavy Rail Red and Purple Lines. The lines will be operated as a combined service with extensive use of “interlining” or sharing trunks. It would include, at a minimum, the following functions: vehicle storage, inspection, cleaning, and light and running repair functions. The proposed facility will have storage capacity for up to 48 LRVs. However, at this time, the proposal for this facility does not include heavy repair, paint, or bodywork shops. Currently, the only light rail maintenance facility that can provide these services is the Long Beach Maintenance Facility (Division 11), which is near capacity for these specific activities. A proposed paint and body shop is currently proposed to be built at the Green Line Division 22 facility. Additional facilities are required to provide services for heavy repairs.

The Foothill Construction Authority, working in cooperation with Metro, will construct a new maintenance facility for Metro Gold Line LRVs. This facility is tentatively designated Division 14 and would be located adjacent to the proposed right-of-way (exact location to be determined). It would provide vehicle storage, inspection, cleaning, and all major, light, and running repair functions. The proposed facility would have storage capacity for at least 50 LRVs with future expansion up to 80 LRVs.

### 1.7 Maintenance Facility Demand and Capacity

The Metro light rail system does not have practical interchangeability between the Metro Gold, Green, Blue, and Exposition Lines for the following reasons:

- The Metro Gold Line is isolated from the remainder of the system;
- The Metro Green Line train control system is unique to the line and Metro does not possess vehicles capable of operating between lines in revenue service; and



- It is impractical for Metro to retain the equipment, parts and maintainer skill-set for all maintenance facilities to be able to maintain all rolling stock types, except in an emergency.

As a result, practical interchangeability can only occur between the Blue and Exposition Lines and the Green Line and Crenshaw/LAX Transit Corridor Project. In addition, the Crenshaw/LAX Transit Corridor Project will ultimately have service that operates on the Green Line South Bay Extension. Therefore, because the existing Green Line is near capacity, additional maintenance service capacity is needed to operate the Crenshaw/LAX Transit Corridor Project. Table 1-3 displays a summary of maintenance facility fleet demand and capacity for the existing rail lines in the year 2018, when the Crenshaw/LAX Transit Corridor Project is scheduled to be in operation. Fleet demand represents the number of vehicles required to operate a given service. It is determined based upon the planned frequency of service (the number of cars per train required for the forecasted ridership) and the end to end travel time associated with the service.

Table 1-3. Metro Light Rail System Maintenance Facility Demand and Capacity - 2018

	Metro Blue/ Exposition Line	Metro Green Line	Metro Gold Line	Metro Crenshaw Line
Fleet Demand (Required Vehicles)	146	33	93	33
Expected Fleet Size	146	33	125	33
Maintenance Facility Capacity	146	39	134	0
Maintenance Facility Excess	0	+6	+9	-33

Source: Metro Rail Fleet Management Plan Revision 2, 2010.

### 1.8 Proposed Project Specific Maintenance Facility Requirements

The program for the proposed maintenance facility for the Crenshaw/LAX Transit Corridor Project was developed in consultation with Metro Operations and vehicle maintenance staff. Metro initially developed the *Rail Fleet Management Plan Revision 2* in October of 2010. This plan identified the need for additional maintenance facilities to be sited adjacent to the Metro rail system tracks to support future planned light rail lines. Metro Operations developed a detailed program of activities, equipment, and space requirements for a new maintenance facility to serve the proposed project. Metro has determined that the maintenance facility for the Crenshaw/LAX Transit Corridor Project should:

- Have a minimum operating capacity of 33 LRVs for opening day and a base capacity of 45 LRVs with potential to expand to an ultimate storage capacity for 70 LRVs, which would require approximately 125 to 200 employees working during three shifts over a 24-hour period;
- Be designed to allow for future expansion of additional services; and,

- Contain at least 40 parking spaces for employees, a transformer generator and traction power substation, a sheriff/security trailer, and buildings/shops to perform maintenance facility functions.

The specific maintenance activities that would be provided at the proposed maintenance facility are described in the following paragraphs.

### **Daily Maintenance**

*Interior Cleaning* – Interior cleaning is performed during non-revenue service hours or when the vehicles are out of service. Basic hand tools and indoor space, to store cleaning equipment and chemicals, are required. The spacing of the yard tracks needs to accommodate aisles for personnel to access the vehicles. A raised platform is necessary within the yard, as well as space to deposit trash removed from the vehicles into trash receptacles.

*Exterior Cleaning Car Wash* – Exterior cleaning is performed within a blow down facility and a wash area that houses a self-contained system that sprays cleaner onto the vehicle, allows for a dwell time for cleaner reaction, brushes the exterior of the vehicle after the cleaner application and dwell, then rinses the vehicle. Drip pans and drains are used to facilitate the recycling of water.

### **Service**

*Running Repairs.* Running repairs are those that can be easily accomplished by taking the vehicle off the line and out of revenue service, and into the facility, completing repairs in less than four hours. Examples of running repairs include broken window glass, indication light failure, and door system malfunctions. These tracks can be shared with inspection/preventive maintenance tasks.

*Component Replacement.* Component replacement can be required for either a repair or a periodic maintenance item. When a component fails, it requires removal and replacement. When a component has reached the end of its predictable service life, it needs to be removed, rebuilt, and replaced. This relates to the preventive maintenance program, as described above.

### **Inspections**

*Daily Inspections* – Inspection entails an exterior and interior examination to ensure the safe, clean, and timely operation of the vehicle. This inspection is performed by a mechanic and the operator of the vehicle prior to revenue service operation. The person conducting the inspection looks at lighting, door operations, mounted equipment, and conducts a terminal brake and horn test.

*Periodic Inspections* – Periodic inspections or a preventive maintenance program includes inspecting each vehicle based on mileage and vehicle operation time. The preventative maintenance program consists of regularly scheduled activities that are necessary to maintain the performance level of the vehicle and its components. Examples of typical activities include complete lubrication, calibration adjustments as required, and replacement of consumables such as air filters, brake pads/shoes, and pantograph carbon strips. Additionally, many items are subject to visual inspection and,



if necessary, repair and/or replacement. The space required to accomplish these tasks includes a track with a depressed pit and a track to perform trucking removal when required. A roof level platform (either fixed or mobile) will be required to access roof mounted equipment.

### **Support Shops**

These are areas designated for the repair of subcomponents removed from the vehicles for repair. Support shops for an electrified LRV fleet would include:

- **Electrical Shop** – To facilitate the repair and rebuild of components utilized within the electrical system and power supply system.
- **Electronic/Communications Shop** – To facilitate the repair of components and circuit boards utilized in the communications and train control of the vehicles.
- **Maintenance of Way (MOW)** – The staff and equipment that maintain the railroad, related equipment, and right-of-way. The MOW tracks and facilities denoted within the site designs define where the MOW staff shall be housed as well as the MOW specialized vehicles/equipment stored.
- **Mechanical Component Shop** – To facilitate the repair of couplers, draft gears, and related sub-components.
- **Wheel Truing and Axle Shop** – To facilitate the repair, rebuilding, and testing of the wheel-set assemblies utilized on the subject vehicle fleet.
- **Wash/Cleaning** – To facilitate the power washing of vehicles and cleaning of components prior to repair.
- **Stores/Storeroom** – To facilitate the shipping, receiving, and storage of related parts and materials required to maintain vehicles, the facility, and support equipment. A separate building is often required for this activity.

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