

## 4.0 Executive Summary

### Introduction

This Milestone Report is the fourth in a series of eleven. It discusses Stations, Right-of-Way and Urban Design issues and best practices as related to the high speed ground access system from Los Angeles International Airport (LAX) to Palmdale Regional Airport (PMD). The report describes land use and urban design guidance for planning for development around station areas. It also provides profiles of the existing land use for those stations remaining on the short list of alignments that was recommended in Milestone 3. Potential traffic and transportation issues related to stations are identified in this Milestone. Airport access and interconnection issues at LAX, PMD, VNY and Los Angeles Union Station are discussed in the report. Finally, the potential right-of-way and property requirement issues associated with the system are identified. It should be noted that traffic and right-of-way impacts will be studied more fully and reported on in Milestones 5, 6 and 7. The purpose of this Milestone is to identify potential issues and outline best practices for implementing the stations.

This study will culminate in a Project Deployment Plan (Milestone 10), which will bring together the various elements from the other milestones to recommend the most appropriate combined alignment and station locations for the LAX/PMD Ground Access System.

Milestone 4 is made up of five tasks:

- 4.1 Station Area Development
- 4.2 Station Area Profiles
- 4.3 Traffic Impacts and Intermodal Analysis
- 4.4 Airport Access and Interconnection
- 4.5 Potential Right-of-Way and Property Requirements Issues

### Station Area Development

The LAX-PMD high-speed ground transportation system will change the way that people travel in the Los Angeles basin and it can also help to shape urban development through a reorganization of land uses and built form within a focused area (approximately ¼ mile radius) around its stations.

Planning for this system must be considered in terms of a land use planning context in order to maximize the ridership potential for the system. If this major infrastructure investment is to be made, then serious consideration must be given towards the type of development that should occur within station areas. The areas close to the station would ideally be reshaped over time with concentrated, compact development. The reinforcement of station areas as activity hubs can help to play a major role in marketing the system and enhancing ridership.

Four guiding principles were developed for future LAX-PMD station area development efforts. These are the ideas to be kept in mind as SCAG moves forward with the project and begins more detailed discussions with the cities with respect to station planning. As cities have the jurisdiction over planning regulations, they will

determine how the guiding principles and other land use and urban design guidelines contained in this report will be implemented. This could occur through general plans, specific plans or station area plans, overlay zones or other mechanisms. The guiding principles are as follows:

***Guiding Principle 1: Encourage the use of the high speed ground transportation system.*** Implementing this system will require a massive investment of capital, time and labor. Station area development, including the station itself, must be located, designed and maintained to contribute to the use and efficiency of the high-speed system.

***Guiding Principle 2: Bridge the interaction gaps that dispersed patterns of development have created.*** Through physical design and the right mix of land uses in station areas, opportunities for increased interaction between human beings at a local, regional and global level can be realized. This will maximize the potential for achieving a competitive edge in the global marketplace.

***Guiding Principle 3: Plan the station area as a catalyst for Smart Growth.*** Improved accessibility through the high-speed system and its interface with other transit modes provides opportunities for renewed centralization of employment and housing through concentrated development within the areas surrounding stations. If growth is going to occur at the levels that are being projected, then it should be directed to areas that are best able to handle it through mixed, higher density development and high levels of transit service.

***Guiding Principles 4: Improve the function of the LAX and PMD airports “Humanize the travel experience”.*** The high-speed system will serve to extend the reach of Los Angeles International Airport and Palmdale Regional Airport. Its stations should be perceived by the users as secondary gateways to these airports and should thereby contribute to an improved overall travel experience from the time one arrives at a station through to arriving at the airport terminal and vice versa.

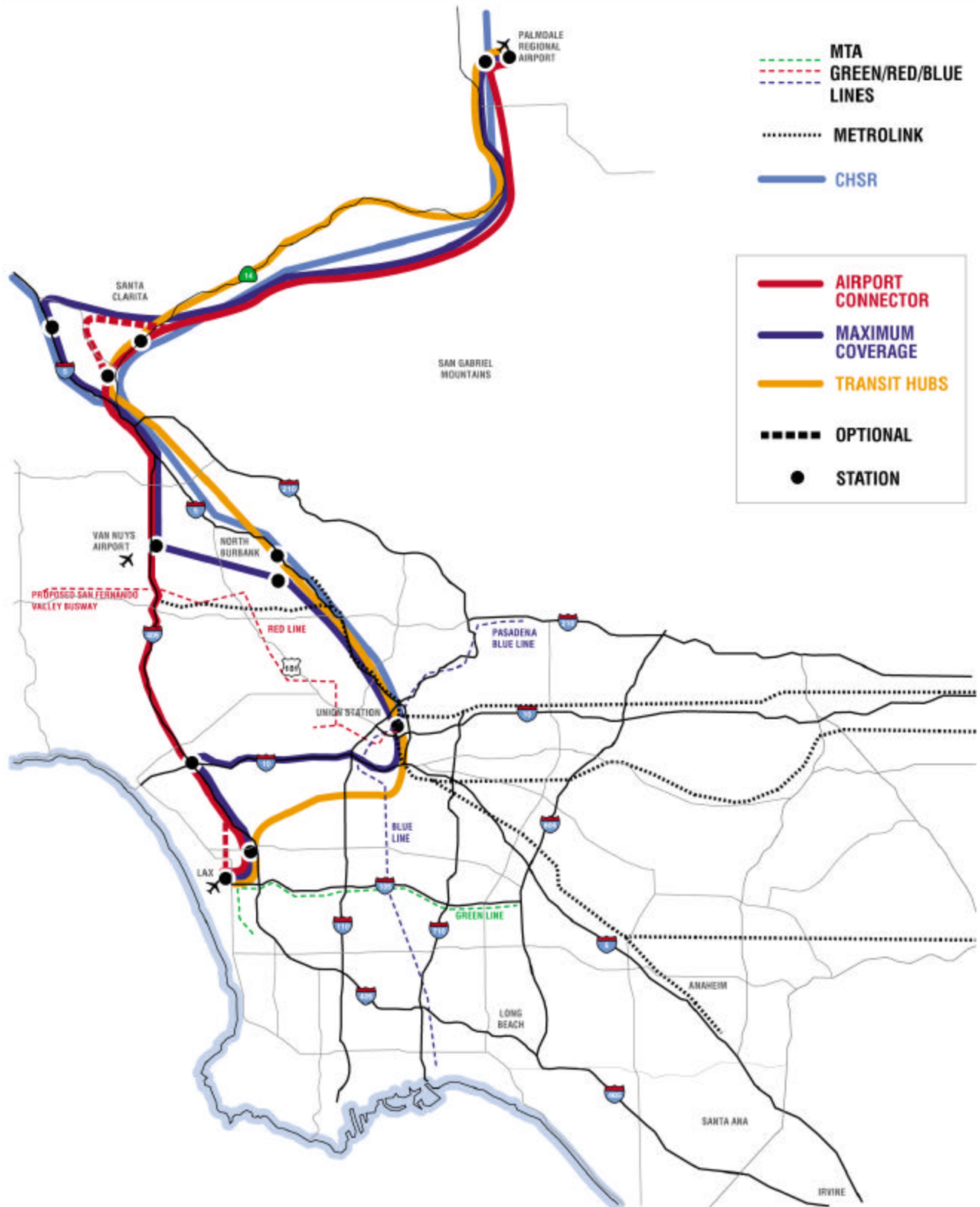
More specific guidelines and strategies related to land use, site planning and building design in station areas are included in the Section 4.1 report. In addition, station location criteria and prototypical station design are discussed.

### Station Area Profiles

The purpose of the Station Area Profiles report contained in Section 4.2 is to provide an illustrative summary of existing land uses within potential station areas along the LAX-PMD HSGA system. The profiles are provided for the three alignments that were short-listed in Milestone 3. The alignment alternatives are illustrated in Exhibit 4.0-1.

Each alignment alternative currently has five to six stations. The number of station locations associated with each alignment may be refined in subsequent milestones and more detailed studies. Certain stations may need to be dropped in the interest of maintaining the necessary speeds to connect the airports and attract sufficient levels of ridership to the system.

### Exhibit 4.2-1 ALIGNMENT OPTIONS



It is clear from this preliminary look at the potential station areas that many challenges present themselves. In built-up urban areas these challenges are primarily related to land availability. In more suburban locations, other constraints are present such as difficult terrain, environmental areas, and distances from supportive land uses. These preliminary locations have been chosen as a starting point and will be subject to further refinement including relocation, if necessary, as the project moves forward.

### Traffic Impacts and Intermodal Analysis

Section 4.3 summarizes the anticipated traffic/transportation and intermodal analysis efforts that will be required as part of the LAX-PMD study. It provides an overview discussion of traffic impacts and intermodal analysis. More detailed analysis will be included and quantified in Milestone 5 *Ridership Studies* as part of the travel demand forecasting and analysis.

Two primary traffic and transportation issue areas are defined as part of the Milestone 4 work effort. These include: station planning to provide for vehicular and pedestrian circulation; and traffic engineering to provide station access and to minimize impacts on surrounding roadways.

### *Station Planning*

While the high-speed system will result in overall enhancements in corridor and regional mobility via a reduction in automobile trips, its stations can act as magnets for traffic bringing potential impacts to local streets and intersections in the areas surrounding stations. A number of key traffic engineering issues will need to be addressed during the alternatives analysis and development of preliminary engineering phases in order to minimize station-related traffic impacts. The planning and design of stations will be critical to the overall passenger satisfaction with the high-speed service and also to promoting function, efficiency and safety in the surrounding area. A successful multimodal transportation environment will need to be created in the immediate station environment.

The station transportation and circulation design and sizing of parking facilities will be directly related to the patronage forecasts and the tendencies of those patrons. Milestone 5 will investigate this further but it is noteworthy that the *Phase I Maglev Deployment Study* conducted by Parsons Transportation Group anticipated a requirement of between 2,500 and 5,000 parking spaces at each station. This could occur through either surface parking or parking structures that will need to accommodate both short-term (15 minutes) and long-term parking stalls.

The location of driveways may significantly affect the movement of traffic on adjacent streets and should be located away from intersections, such that they do not interfere with intersection operations. Station circulation must also allow for easy and quick access/egress for kiss-and-ride passengers as close to the train platform/station entrance as possible.

Pedestrian access to the station will also be an important consideration as all passengers will be pedestrians at some point during their trip. The layout of the station and parking facilities will be designed to ease pedestrian flows. This should extend beyond the station to nearby businesses and other activity centers. At the

broader scale, pedestrian access means locating stations as close as possible to passenger destinations, particularly dense land use concentrations such as office buildings, shopping or entertainment centers.

### ***Potential Traffic Engineering Issues***

The traffic impacts generated by stations would be expected to most frequently occur in the form of traffic volumes impacting roadway capacities at mid-block and intersection locations. Additional impacts may occur on the freeway system including freeway on- and off-ramps and at freeway interchanges.

The primary traffic circulation analysis effort will be an evaluation of roadway and intersection characteristics to determine if the local traffic circulation system is capable of accommodating the increases in traffic volumes and changes in travel patterns that would be expected with the development of the high-speed stations.

The evaluation of potential traffic-related impacts will rely on the findings and analyses performed in Milestone 5 *Ridership Studies*. Data used to develop traffic- and parking-related forecasts will include an assessment of the land use, station location, and patronage forecast tasks, amongst others. A general field inventory will be conducted along the alternative alignments and station areas to establish a baseline street and highway inventory. This information along with patronage forecasts will be used to identify impacts associated with the implementation of the project, as well as identify the necessary traffic mitigation measures.

Milestone 5 will also identify site-specific traffic mitigation measures for each station area but in a planning-level context only. A qualitative assessment of the benefits will be provided. It should be noted that detailed traffic mitigation will be a critical and extensive component of the project engineering phase of the study, if the project is deemed feasible and moves forward.

### **Airport Access and Interconnection**

Section 4.4 *Airport Access and Interconnection* discusses general airport access issues in the context of airport stations and then discusses the possible locations of very high-speed rail and maglev stations at the three LAWA airports (LAX, PMD and VNY). It also includes a brief discussion of the station location and design issues at the Los Angeles Union Passenger Terminal (LAUPT), although like LAX, that station is being addressed primarily by the *Phase I Maglev Deployment Study*.

The high-speed ground access (HSGA) stations must be located at each airport to provide a very high level of service and attract the ridership required to make the system financially viable. Station location, as well as station design, is very important to the success of any such system. Airport station locations have several fundamental requirements to achieve accessibility goals:

- reducing the impediment of a transfer;
- accessibility for passengers and baggage;
- walking distances of less than 300 meters (1,000 feet);
- train operations; and

- multiple stations in terminal areas.

These requirements are discussed further in Section 4.4.

### ***LAX Airport Access***

LAX presents the greatest challenge to locating a HSGA system out of all locations that would be served by such a system. The current LAX terminal layout includes seven unit terminals in a long “U” arrangement that spans about 0.7 miles in length.

The *Phase I Maglev Deployment Study* located the station near Terminal 1. An intermediate mode such as an automated people mover (APM) would be required to connect the station and the Central Terminal Area (CTA) and the proposed West Terminal. This system is being studied as part of the LAX Master Plan, but has not yet been fully defined. Further investigations of sites for an LAX station that are more convenient to the CTA, such as an elevated station near CTA parking structures is being investigated.

With just the existing terminal complex, it might be possible to locate a single high-speed station relatively centrally so that access between the terminals and the station is not too difficult for many passengers. A single station would raise many issues with respect to passenger transfer ease and time, and to baggage transfer on the airport. More detailed investigation is required for engineering and economic feasibility, but the optimum locations will be used for ridership and operations analyses. At LAX, there are two options that will be studied further:

- one station with the existing terminal station. This would be elevated between the terminals just east of the Theme Building with elevated connectors each terminal or pair of terminals; and
- LAX with both the existing and new West Terminal complex. This option would have two stations: 1) an underground station in the existing terminal area under or just east of the Theme Building with elevated or tunnel connections, and 2) a station under the new West Landside Terminal with access to that terminal at the normal landside of ticketing and baggage claim. The system would run in a tunnel the entire length of the airport. The tunnel to the new West Complex would be built in conjunction with those for the planned APM and baggage systems for that complex.

### ***VNY Airport Access***

Van Nuys is a general aviation airport owned by LAWA and is not expected to become a commercial airport. The Van Nuys location for a HSGA station is primarily to expand the current bus-based FlyAway system to act as a collector distributor point for the San Fernando Valley. The current FlyAway terminal and parking area is about 0.6 miles west of the I-405 freeway and is not that convenient to nearby freeways or other major access routes.

As I-405 is expected to be the primary alignment of the HSGA system in this area, the station location would need to be close to the I-405 right-of-way alignment. Requiring the system to leave this right-of-way to reach the current FlyAway would

result in operational impacts due to reduced speeds and would require considerable land acquisition. The preferred location would be west of the I-405 right-of-way near Roscoe Boulevard. A bus connection could be provided to the FlyAway parking area if it were kept in its current location on LAWA property.

### ***PMD Airport Access***

The proposed PMD International Airport property abuts the east side of Air Force Plant 42 and extends further east to approximately 105<sup>th</sup> Street East. The proposed terminal area is approximately on the same alignment as Avenue O, and would be located between 60<sup>th</sup> Street East and 80<sup>th</sup> Street East. Tentative parcel map 24419, City of Los Angeles, Department of Airports, shows the terminal area will be located between parallel runways, similar to the layout of Phoenix Sky Harbor International Airport. It is assumed that the terminal structure(s) will be oriented to allow gates facing either north or south, and would include automobile parking structures. Facilities would accommodate the following access and circulation modes:

- private automobiles, taxis and limousines
- buses and courtesy vehicles (including satellite parking lot shuttles)
- trucks
- a people mover system from the proposed Palmdale Multimodal Transportation Center
- the LAX-PMD high-speed ground access system.

Since the primary HSGA system purpose is to provide connections for passengers, the HSGA terminal location would most logically be at PMD. Any other location, such as the Palmdale Multimodal Transportation Center, would cause unacceptable delays in moving passengers and baggage by requiring an additional link in the system. The additional link would require passengers and baggage to embark and disembark on two separate systems prior to arrival at the airport. The complexity of such a system would maximize the difficulty and confusion of transferring between airports. The same problems would apply to any baggage and airfreight moving between airports. In order to minimize transfer problems, a single system is a necessity. Therefore, the HSGA station must be located at the airport, and preferably adjacent to or in the terminal building.

### ***LAUPT Station Location***

Los Angeles Union Passenger Terminal is the primary mass transportation hub serving downtown Los Angeles. It would also be used for the LAX to March maglev alignment and would be the primary transfer station between the two high-speed lines. If they are the same technology, the combined headway on the two lines could be on the order of 10 minutes per direction (12 trains arriving at the station per hour) and they would probably have the same station platforms that would offer easy and direct cross-platform transfer. If they are different technologies, the locations and designs for both stations should still allow an easy transfer.

The Phase I Maglev Deployment Study showed an initial location of the downtown Los Angeles maglev station in an elevated platform at the second level over existing railroad tracks at Union Station. The station would have a center platform of 1,000 feet in length and a width of 20-24 feet. Passenger access would be up from the first

level Metrolink platforms and the LAUPT passenger tunnel would be used to get to the station building, the Metrorail Red Line subway station, and the MTA bus plaza.

The optimum location for the HSGA station would be above Tracks 7 and 8, in conjunction with the LAX to March maglev system, assuming it is built and the same technologies are used.

#### Potential Right-of-Way and Property Requirements Issues

The right-of-way (ROW) and property requirements for the LAX-PMD system is a composite of all the real property requirements associated with construction, maintenance, protection and operation of the system. Some requirements, such as ROW necessary for construction, will be temporary while others, such as the space needed for column placement of an elevated structure, will be permanent.

As discussed in Milestone 2, the goal of this study is not to create entirely new transit corridors but to follow existing routings, usually freeway or railway rights-of-way. This creates issues with respect to the interface with the freeway and the railways.

Alignments along freeways would involve either building elevated structures in the dividing strip between the opposing lanes of traffic. Most of the freeways in Greater Los Angeles have already had these areas occupied by additional travel lanes, including HOV lanes, so that the dividing barrier occupies the only area left. Building an elevated structure in the middle of a typical Los Angeles freeway, even where right-of-way exists, would cause major traffic disruptions and would best be done in conjunction with a major freeway improvement project. Alignments alongside freeways would be much easier to build because they would be much more accessible for construction.

Alignments along rail corridors would need to avoid conflicts with the existing track and its clearance envelope. In certain instances, the track is in the middle of the right-of-way and there is not enough room to place another line alongside without shifting the existing tracks over. In situations where the rail corridor ROW is constrained, an elevated guideway may be the only option available. Rail corridors can be further constrained by the presence of utilities such as fiber optics communications cables and oil pipelines. A detailed corridor study would need to look at all utilities very carefully.

Right-of-way requirements range between the type of section and the technology. Minimum right-of-way envelopes for high-speed rail, very high-speed rail, and very high-speed maglev are shown in the table below:

Type of Section	HS Rail	VHS Rail	VHS Maglev
At-Grade/Cut&Fill/Retained Fill	15.3 m (50.2 ft)	15.3 m (50.2 ft)	14.3 m (46.9 ft)
Elevated Structure	15.3 m (50.2 ft)	15.3 m (50.2 ft)	14.3 m (46.9 ft)
Tunnel (Double Track)	20.4 m (66.9 ft)	20.4 m (66.9 ft)	20.4 m (66.9 ft)
Tunnel (Two Single Track)	36.2 m (118.7 ft)	36.2 m (118.7 ft)	36.2 m (118.7 ft)
Trench/Box	21.3 m (69.8 ft)	21.3 m (69.8 ft)	22.3 m (73.2 ft)



Station right-of-way envelopes can vary from 7 to 14 acres depending on the station size and proposed parking capacity of the specific station location. Other right-of-way requirements for maintenance yards and shops, substations and other ancillary system requirements vary extensively and will be addressed in the Milestone 7 report.

#### Next Steps

The next steps will be to continue with a more detailed analysis of system alternatives and technology options in Milestones 5 through 7. Milestone 5 will develop a ridership assessment of the short-listed alternatives. Milestone 6 will conduct an environmental assessment. Milestone 7 will develop a detailed capital and operations & maintenance cost for the alignment alternatives. These milestones will culminate in a Project Deployment Plan, Milestone 10, which will recommend the most appropriate combined alignment, technology and implementation alternative for the LAX/PMD High Speed Ground Access System