

6.0 Executive Summary

Introduction

The LAX-PMD High-Speed Ground Access Study Environmental Assessment represents the sixth of eleven feasibility studies of a proposed high-speed ground access system between Los Angeles International Airport (LAX) and Palmdale Regional Airport (PMD). Ultimately, the findings of this assessment (Milestone 6), will be used in conjunction with other project milestones, in the preparation of the tenth project milestone, Project Deployment. Milestone 10 will recommend a combined alignment, technology, and implementation alternative for the LAX-PMD Ground Access System. A Public Involvement Plan (Milestone 11) will follow the Deployment Plan, and conclude the study.

The purpose of the Milestone 6 Environmental Assessment Report is to provide an overall assessment of environmental issues, and potential environmental impacts and mitigation strategies related to the implementation of high-speed technology options between Los Angeles International Airport (LAX) and Palmdale Regional Airport (PMD). This assessment will serve as the basis for a subsequent comprehensive environmental document that would address construction level impacts and associated mitigation measures, consistent with the requirements of the National Environmental Protection Act (NEPA) and the California Environmental Quality Act (CEQA). As a part of that process, it will also provide information to assist decision-makers and the general public in their evaluation and potential implementation of this proposal.

The assessment addressed four major areas of discussion:

- 6.1 Purpose and Need
- 6.2 Alternative Considered
- 6.3 Public Involvement
- 6.4 Probable Impacts

Each of these discussion areas provides detailed information relative to the topic area. The evolution of this project, including the basis of its genesis and design is described in the Purpose and Need section (6.1). The three proposed alternative alignments of the system (e.g., 1 – Airport Connector; 2 – Maximum Coverage; and 3 – Transit Hubs) are discussed under Alternatives Considered (6.2). A section detailing stakeholder opportunities and participation is outlined in the Public Involvement section of the report (6.3). Finally, some twenty-three potential issue areas, including their context, and potential consequences and mitigation strategies (if applicable), are discussed in detail in the Probable Impacts section of the document (6.3). A brief discussion of the findings and a summary matrix of this discussion are provided herein in Table 6.0-1.

It should be noted that several of these sections discuss differing impacts that may result from varying technologies (e.g., Very High-Speed Maglev – VHSM; and High-Speed/Very High-Speed Rail – HSR/VHSR). For the most part, however, the report findings suggest that the ultimate decision on technology must be made on a number of factors in addition to the potential beneficial or adverse impacts that could result from the implementation of either system technology.

Purpose and Need

The Southern California region is a vast area roughly the size of Ohio. The Southern California Association of Government (SCAG) area covers six counties with 184 cities, at 38,000 square miles. It is by far the largest and most populous metropolitan planning region in the United States. The 2000 Census has shown a population of 16.9 million people within the SCAG region. Almost half the population of California resides within the SCAG region and the explosive growth in population and employment is continuing with no expected leveling or drop-off in the future. This expansion is an indicator of the strong desire of people to come and live in Southern California.

However, the growth comes at a price. The region's infrastructure is showing signs of its limited capacity and ability to handle the increasing demands. Traffic congestion and air quality delays (and their economic consequences), and air quality concerns are a few of a number of problems, which are becoming increasingly intolerable and difficult to solve. It is in this context which SCAG is investigating the potential for a high-speed intra-regional ground access system. This study is the second phase of the proposed intra-regional system. The first phase is the East-West LAX-March AFB (Air Force Base) Maglev Deployment project.

Alternatives Considered

The three alignment alternatives and technologies considered in this environmental assessment have been discussed in detail in the Milestone 3 Report on Route Alignment and Technology Alternatives. These alternatives are:

1. Airport Connector
2. Maximum Coverage
3. Transit Hubs

For comparison purposes, a Baseline Alternative is also included in the assessment, and is used to identify the potential improvements and impacts associated with the LAX-PMD project. The Baseline Alternative assumes a "No-Build" condition for LAX-PMD, with the LAX-March AFB Maglev project in place.

The technologies of Very High-Speed Maglev and the High-Speed/Very High-Speed Rail are considered in this environmental assessment. It should be noted, however, that environmental assessment at this level of detail is more sensitive to alignment and station "envelopes" than technology differences. In general, most potential environmental improvements or impacts are relatively similar between technologies. The environmental aspects that show a difference between technologies are discussed in detail in the report.

Public Involvement

The objective of the Public Involvement Plan is to develop and implement a strategic and comprehensive approach for interfacing with key stakeholders. The purpose and intent is to provide information and, more importantly, to receive feedback on all aspects of the project. A secondary objective of the outreach effort is to create a clear understanding of the project so that key elected officials, impacted municipalities, opinion leaders and other influential stakeholders would subsequently support the

project into the next phase - in short, to empower the general public, businesses and community leaders to participate in decision and policy-making related to the LAX-PMD High-Speed Ground Access Study. The public involvement process will be ongoing throughout the project. Milestone 11 will summarize the results of the outreach effort in detail.

Probable Impacts

Twenty-four environmental aspects have been examined for potential impact from the construction and/or implementation of the proposed system. This assessment provides detailed information on each of these probable impacts. The context of the impact, which provides information regarding the setting of the discussion topic, often includes existing studies and first hand observations. Additionally, the Assessment includes, under some circumstances, information regarding the potential characteristics of the High Speed Rail, Impact Criteria and Analysis, Likely Environmental Consequences, and Potential Mitigation Strategies. Tables, maps, graphs and other tools are provided in the document, as well as a series of appendices, to assist the reader of this material assess the probable impacts of the project.

A summary discussion of each of the twenty-three Probable Impacts is provided herein:

Air Quality

The proposed system is designed so that no air pollutants would be emitted during its operations, and so that sensitive receptors located in the vicinity of each of the alignments would not likely be affected by the operation of the VHSM or HSR/VHSM systems. Regionally, this would be a beneficial effect of the proposal as Vehicle Miles Travels (VMT) are reduced by 581 million. This translates to removing approximately 33,000 daily auto trips from the highway system. Additionally, reductions in peak traffic conditions would be somewhat greater than the corresponding V/C reductions on the highway system. This is because ridership on the system will be highest during the peak hour

There is a potential for long term changes in air quality in the areas in and around the proposed stations, as well as those off-site parking facilities (e.g., park and ride) that will be associated with the various alignments. . The change in air quality would result from the increase in traffic going to and from the stations. In particular, those land uses that are considered “sensitive receptors” located within the vicinity of the stations would potentially be affected by the change in air quality (primarily CO) in the areas. Some land uses are considered more sensitive to changes in air quality than others, depending on the types of population groups and the activities involved, and are categorized as “sensitive receptors.” The California Air Resources Board has identified the following people as the most likely to be affected by air pollution: children under 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Land uses that may contain a high concentration of these sensitive population groups include: hospitals; day-care facilities; elder care facilities; elementary schools; and parks. These land uses are located within the corridor study areas. The report identifies the sensitive receptors that are located within a quarter-mile from the proposed stations.

Construction activities would have a short-term impact on air quality, along the alternative corridors as well as at and near stations. The proposed project would involve the construction of aerial structures, several short tunnels in the Soledad Canyon area, passenger stations, and park-and-ride facilities. Of the three alternatives being considered for the proposed project, the Maximum Coverage Alignment would require the most construction activity. Whereas the Airport Connector Alternative and the Transit Hubs Alternative would be approximately 72 miles and 96 miles in length, respectively, the Maximum Coverage Alignment would be approximately 108 miles in length.

Construction for the each alternative would generate short-term pollutant emissions from the following construction activities: the demolition of existing structures; mobile emissions related to construction worker travel to and from project sites, mobile emissions related to the delivery and hauling of construction supplies and debris to and from project sites; and, stationary emissions related to fuel consumption by on-site construction equipment. Air pollutants would be emitted primarily during demolition, grading, and excavation. Although grading and excavation is generally the shortest phase of construction, it generates substantially more air pollutant emissions than the any other construction phase. This is due to the heightened level of activity that generally occurs during the site preparation phase, which includes the use of construction vehicles on-site, earth movement that takes place on-site, and haul truck trips that are required to deliver materials to local landfills.

Among the five criteria pollutants (CO, NO_x, SO_x, PM₁₀, and ROG), NO_x and PM₁₀ would generate the most emissions during construction. NO_x emissions would primarily be generated by diesel fuel truck exhaust and diesel power generators, and PM₁₀ emissions during construction would primarily be generated by fugitive dust and combustion by-products. The effect of fugitive dust would vary depending on local weather conditions during periods of extensive earth moving activities. Fugitive dust would have the greatest impact on its surrounding areas during days with high winds.

It is too early in the project's development phase to produce meaningful and accurate emissions estimations from construction activities. Parameters, such as the exact size of passenger stations and park-and-ride facilities, length of tunnels, and of other required infrastructure has not been determined yet. Thus, data required to perform calculations, such as the number of pieces and estimated hours of operation for construction equipment, are not available at this time. There are potential mitigation strategies listed in the Air Quality section that would minimize the impacts construction activities would have on its surrounding areas. It should be noted, however, that emissions resulting from construction activities will be short-term and should not interfere with the region's PM₁₀ attainment plans.

Water Quality

All alternative alignments would traverse or be located near numerous waterways. These specified waterways have water quality objectives that are used to protect public health and welfare, and to maintain or enhance water quality in relationship to the designated existing and potential beneficial uses of the waterways.

This environmental assessment identifies each waterway occurring near each of the three alternative routes. The report describes existing surface waterways and

groundwater basins in the study area, and discusses project impacts introduced in construction and operation of the proposed project.

Construction material spills, improper release of wastewater, surface water runoff from construction areas, and dewatering practices would potentially impact water quality during project construction. Consultation with proper agencies and compliance with required permits will be required in future phases of the project.

The project also would not be expected to involve activities that would result in an altered direction or rate of flow of groundwater.

The only potential impact on water quality during project operation would be from the leakage of oils or lubricants from the train. These contaminants could be transported off-site by storm runoff into receiving waters. With adherence to the requirements specified in the Storm Water Pollution Prevention Plan (SWPPP) of the Clean Water Act, no impacts to water quality would be expected to occur during operation.

Noise & Vibration

Milestone 6 identifies noise and vibration sensitive areas that would potentially be affected by the project. Three categories of impact are identified in the report: construction, operation, and supporting facilities.

Noise impact from construction activity is a function of the noise generated by construction equipment, the location, the sensitivity of nearby land uses, and the timing and duration of the noise generating activities. The report summarizes some of the available data on noise emissions of construction equipment from the FRA "High-speed Ground Transportation Noise and Vibration Impact Assessment" (FRA,1998) and recent experience with major construction projects. In general, construction noise mitigation measures can be used to minimize potential impacts during construction.

The potential noise impacts for the operation of VHSM and HSR/VHSR are presented in the report. Noise profiles for operation at 50 mph and 150 mph are presented and show relative performance for all three technologies (HSR is not able to achieve speeds greater than 150 mph). Based on the analysis, VHSM offers a significant improvement over the HSR/VHSR technologies. In fact, VHSM at 150 mph operates at a lower noise level than HSR/VHSR at 50 mph. For comparison purposes, the ambient noise level for a freeway segment with four or more lanes is 75 dBA.

The vibration criterion identifies the potential vibration impacts of VHSM and HSR/VHSR. Vibrations of 71 dB or less are considered imperceptible. As with the noise profiles, VHSM operates with a significant advantage over the HSR/VHSR technologies due to the mechanics of the technology. Vibration impacts with VHSM are expected to be imperceptible at 50 feet from the guideway whereas HSR and VHSR are expected to be barely perceptible.

Noise and vibration impacts from support facilities such as stations, maintenance yards, electrical substations, central operations facility and small switching facilities are expected. The exact noise characteristics of these facilities are not clear at this time because data such as the type of equipment, usage frequency, and number of each equipment are not yet finalized. In general mitigation measures can be used to minimize the potential impacts.

Solid Waste

Solid wastes for the project will arise primarily during construction activities. Those candidate routes that follow rail lines for part of their length will have a higher probability that contaminated soils could be encountered in locations where foundation pilings would be bored. The design process has not advanced to a degree to allow record and site surveys of locations where borings would take place. This level of research would be conducted if the proposed project were advanced to the next phase.

During operation of the system, solid wastes would also be generated. The majority of such wastes, arising from daily operations, would be non-contaminated and handled through normal refuse collection and disposal processes. It is likely that a small amount of contaminated products, typically associated with maintenance activities, would also be generated and would require special handling and disposal in accordance with federal and state regulations.

Ecology

A wide variety of sensitive biological resources, including plant and animal species, are found in the project study area. The proposed high speed system has the potential to impact biological resources through the loss or destruction of individuals of a sensitive species or through degradation of sensitive habitat. Each alternative alignment would traverse, or be located near, natural areas that serve as habitat for wildlife. Most of this natural area is found in the northern sections of the alignments in the Santa Clarita and Antelope Valley areas.

In the northern segments of each of the proposed alternatives (Santa Clarita to Palmdale), the alignments would traverse many acres of vacant land. Vacant land comprises 48 percent of land use in Segment 2 of Alternative 1, 68 percent in Segment 3 of Alternative 2, and 74 percent of Alternative 3. Ownership of this land is divided among Los Angeles County, the City of Santa Clarita, the City of Palmdale, the State of California, the Federal Government, and private land owners. Aerial photography indicates that most of this vacant land is undisturbed, punctuated by the existing development in the aforementioned cities, and rural communities, that have long existed in the area (e.g., Agua Dulce, Acton), mining operations (?), and other activities. Surveys of critical habitat for any protected species in these vacant areas along the proposed alignment would be conducted in preparation of site-specific NEPA/CEQA documentation.

Los Angeles County Significant Ecological Areas (SEAs) would potentially be impacted by the proposed project, in addition to three other recognized natural habitat areas. A total of 16 different sensitive plant communities are present or reported in the study area. Each of these plant communities represents important native plant assemblages that have been designated as a sensitive ecological resource unique to the area. These resources are experiencing loss and degradation from development pressures that would potentially be compounded by the proposed project. A biological assessment of all potentially impacted sensitive biological resources identified in this document will be required in future phases of the project.

Wetlands

The section identifies all wetland areas that would potentially be impacted by the proposed project. These areas are considered sensitive habitat and should be avoided in order to minimize habitat loss. While there are no anticipated wetland impacts for the vast majority of each alternative route, nevertheless, four wetland areas have been identified that would potentially be impacted by the proposed project. The Airport Connector Alternative would potentially impact all four of these wetlands. The Maximum Coverage Alternative would potentially impact three of the four wetlands, and the Transit Hubs Alternative would potentially impact two. Incidental wetlands may also be associated with drainage ditches along the route, but these have not been surveyed or evaluated.

If the project is advanced to detailed design, the entire route would be carefully surveyed for potential wetland areas, following the procedures contained in the Corps of Engineers Wetlands Delineation Manual (Corps, 1987). The anticipated impacts would require consultation with the Corps of Engineers (COE), U.S. Fish and Wildlife Service (USFWS), and the California Department of Fish and Game (CDFG) early in the project planning stage. Consultation with the appropriate resource agencies regarding specific impacts will further refine the requirements for additional study and regulatory permitting requirements.

Threatened and Endangered Species

A wide variety of sensitive biological resources, including both plant and animal species, would potentially be impacted by the proposed project. Federal and state legislation protects sensitive species, and the habitat that supports them, to reduce the chance that existing and future development will seriously endanger the continued existence of native biological resources.

A total of 32 plants, 16 plant communities, and 28 animals have been reported in the study area, all of which either have federal or state listing as threatened or endangered, or are otherwise considered sensitive resources.

A summary of listed species potentially occurring within each alignment is provided in the milestone report. Among the three alternative, the Transit Hubs Alternative has the least number of listed species occurring in the alignment study area, and is least likely to be affected by the construction, use, and maintenance of the system..

Construction, operation, and maintenance of the system have the potential to impact biological resources through the loss or destruction of individuals of a sensitive species or through degradation of sensitive habitat. Habitat degradation may occur through increases in water or air pollutants, increased noise, light or vibrations, interruption of fresh or salt water supplies, reduction in food supplies or foraging areas, or interference with established wildlife movement patterns on or between habitat areas. Among its potential impacts, the elevated guideway of the proposed project could result in disruption of movement of migratory birds through sensitive habitat areas. Artificial lighting, noise and vibration impacts from the construction, operation, and maintenance of the system could also degrade the habitat value of communities with sensitive biological resources. Biological assessments of affected areas conducted during preparation of site-specific NEPA/CEQA documentation would be required to determine specific impacts introduced by the proposed project.

Floodplains

Floodplains are dispersed throughout the study area from LAX to the Palmdale Regional Airport. For the purpose of this assessment, only the 100-year floodplains are discussed. All three alternatives cross over floodplains associated with the Santa Clara River in the northern portion, and the Los Angeles River in the southern portion. Channelization of the Los Angeles River has limited the occurrence of floodplains in the southern segments of the alignment alternatives. Approximately 95 percent of the floodplain area lies in the northern half of the project area that is consistent among the three alternatives, and are associated with the Santa Clara River. The Airport Connector Alternative does not intersect any 100-year floodplain until it connects with the Antelope Valley Freeway (SR-14). Outside of the floodplains that are encountered in the northern segment for each of the alternatives, both the Maximum Coverage and Transit Hubs Alternatives do not encounter floodplains other than isolated areas along the Golden State Freeway (I-5) near the City of Glendale.

Placing structures within a floodplain can displace the floodwaters, altering the base flood elevations in the surrounding area. The exposure of people or structures to a significant risk or loss, injury or death involving flooding would not be expected to occur as a result of the implementation of any of the alternatives because the amount of impervious surface proposed to be constructed is insignificant compared to the amount of impervious surfaces already present in the study area. However, since the station locations and size and dimensions of the rail guideway have not yet been determined, further study would be required in later design phases. Construction that could potentially affect floodplains or require construction in the floodway would be coordinated with the appropriate federal, state, and local agencies. Where rail structures cross floodways, coordination with regulatory permit authorities would be conducted to ensure that impacts are avoided or minimized. Compliance with permit requirements and conditions will ensure that impacts to floodplains are avoided or minimized to the maximum extent possible.

Coastal Zone Management

The proposed rail system would not be expected to result in any direct impacts to the because construction and operation would not be located within the coastal zone. The proposed system would not be expected to result in any indirect effects on water quality or water resources, nor would it be expected to result in any detrimental effects on coastal habitat. No changes to drainage or the amount of impervious areas would be expected.

Energy

Approximately half of total statewide energy consumption in California is the result of transportation uses. Transportation consumptive energy uses include on-road motor vehicles, trains, aircraft, and ships, all of which use primarily non-renewable energy products derived from crude oil, as does the construction and maintenance of transportation infrastructure (such as highways, rail, runways, and berths).

Trends in transportation-related technology indicate that future energy requirements may be met increasingly through electricity and natural gas, as alternative fuel vehicles become more widely used. The California Energy Commission predicts that annual statewide consumption of natural gas for transportation purposes will increase

from approximately 12 million therms (in 1998) to between 40 and 90 million therms over the next 15 to 20 years. Electricity consumption for transportation is anticipated to increase from 470 million kWh (1998) to between 670 and 5,200 million kWh over the next 15 to 20 years.

In that context, the comparison of energy use by either High-Speed Rail or Maglev was undertaken as a means to analyze and evaluate whether a net benefit or adverse impact would result from implementation of any of the project alternatives. Standard benchmarks for judging impacts on energy use have been established in accordance with mandates of the California Environmental Quality Act. Those benchmarks, based upon whether adverse impacts would result from the proposed project include:

- A change in the rate of increase of gasoline and diesel consumption between 2001 and 2025 exceeding the projected rate of population in the same period;
- The use of large amounts of electricity and natural gas in a wasteful manner;
- The use of large amounts of electricity and natural gas, thereby requiring the construction of new facilities and sources of energy or major improvements to local infrastructure; or
- A substantially greater use of energy (3%) than conditions without the proposed project.

Both High-Speed Rail and Maglev would be powered by electricity. Due to its greater ridership based upon patronage, Maglev would offer the greatest energy savings by achieving a larger reduction in Vehicle Miles Traveled (VMT).

Among the three alignment alternatives, regardless of technology, the Maximum Coverage Alternative provides the greatest amount of VMT reduction, and therefore the greatest energy savings.

Recognizing the prominence and attention to electrical energy shortages presently being experienced in California and the rest of the West, a more fundamental issue addressed in the SCAG 2001 RTP Update Program EIR is the level of consumption of non-renewable gasoline and diesel fuel consumption for transportation uses. SCAG has estimated an increase in consumption of 23.7 per cent of gasoline and diesel fuel will occur between 1997 and 2025. The development of transportation systems utilizing alternative fuels, such as electricity and natural gas, such as HSR or Maglev, will benefit the region.

Natural Resources

For segments of the system that would be located along existing transportation rights-of-way where acquisition of farmlands is not required, no mitigation for direct impacts would be required. Design of rail alignments should avoid placement in existing farmland or grazing land wherever possible. Mitigation for the loss of farmlands that result from acquisition of additional rights-of-way would be the responsibilities of the Lead Agency in coordination with state and local governments. Mitigation measures would also need to be developed in accordance with any conditions set forth in applicable Williamson Act contracts. If future mitigation measures are needed, non-agricultural lands would have to be acquired for agricultural uses to compensate for

farmland conversion. Soils of a similar quality would be needed to replace the displaced farmland.

Visual Resources

The route of each alternative alignment would traverse a wide variety of visual settings. The range of settings includes areas of open space and commercial, industrial and residential areas that adjoin major thoroughfares, railroad corridors, and freeways. The route also passes through or near parks, recreation facilities and historic structures, all physical features that contribute to the visual environment of the corridor. Many sites near the route are locations from which the proposed project would be seen, as well as sites in which rail passengers would view from riding the system. Introduction of the proposed high-speed guideway and stations would introduce a change in the visual context of many areas. Local communities should be consulted during the design process, including consideration of station sites, guideway orientation, massing, and scale to minimize potential adverse effects to visual resources. This document includes discussion of visual impacts likely to be of concern to the public and potential strategies by which they can be mitigated.

Traffic and Transportation

Passenger rail services generally result in overall enhancements in corridor and regional mobility via a reduction in work and other trips made in single occupant automobiles. However, rail stations act as “magnets” for traffic, and while there may be regional benefits associated with high-speed or Maglev train service, streets and intersections in the area surrounding a station can be expected to have increased traffic volumes during peak train activity times. In order to minimize, to the extent possible, the impacts associated with station-related traffic, a number of key traffic engineering issues must be addressed during the preliminary engineering phases. The report discusses in detail station area impacts of each of the alternatives.

Future freeway conditions (2025), without the project, are projected to worsen over current levels of delay and congestion. Travel speeds are projected to decrease by approximately 30 percent from a current average of 35 mile per hour to approximately 24 miles per hour in 2025. Perhaps more significant is the amount of time motorists will spend in the PM peak hour in delay. This will increase by approximately 70 percent from approximately 24 percent of each trip to approximately 41 percent of each trip. This means a trip between Palmdale and the LAX area, for example would take approximately 180 minutes by car during the peak hour. By comparison, the estimated travel time between Palmdale and LAX via the high-speed system is estimated to take approximately 50 minutes.

The ridership projections show that the high-speed system would eliminate approximately 33,000 daily auto trips from the highway system serving the SCAG region. Additionally, reductions in peak traffic conditions would be somewhat greater than the corresponding V/C reductions on the highway system because ridership on the system will be highest during the peak hour.

Generally, project impacts will vary by alternative based on the ultimate placement of each station and its parking facilities, rather than because of differences in trip generations associated with a specific alternative. At the proposed locations of the LAX, West Los Angeles and Palmdale Stations, project impacts are expected to be

similar regardless of the “Build” scenario selected. In Van Nuys, Burbank, and Santa Clarita, project impacts vary depending on the proposed station location. In addition, land use decisions surrounding each station site may further exacerbate circulation and congestion beyond that identified in this analysis.

Barriers to Aged and Handicapped

All federally assisted transportation projects are required to comply with the *Americans with Disabilities Act (ADA)*. In addition, local building codes require accommodation for those with disabilities. These requirements would focus on ensuring proper access and accommodations at stations and vehicles. In addition, other system elements such as maintenance facilities, yard and shop, and power substations would need to meet ADA standards.

Although stations have not yet been designed, it can be assumed that they will be designed and operated in accordance with ADA requirements. Vehicles will be custom-designed and will meet ADA requirements. System support facilities will also be designed to meet ADA requirements.

Land Use

This section describes the existing land uses potentially affected by the proposed high-speed ground access system. The land use region of influence considered in this report encompasses a 1,000-foot wide corridor on either side of the proposed alignments for each of the three alternatives evaluated. Primary, existing land uses within the 2,000-foot wide study corridor are described for each alternative alignment. Each alternative alignment is broken down into segments, and the dominant land use for each segment is provided, including a discussion of existing transportation rights-of-way. Land use analysis in this milestone is based on SCAG’s Regional Land Use Database. Significant impacts to land use include substantially unmitigated conflicts with existing, planned, or adjacent land uses, or with zoning, general plan designations and policies. Other cumulative impacts that would induce urban growth or disrupt the physical arrangement of an established community are also considered significant. This milestone evaluates potential impacts to land use incurred during construction and operation phases of the project. Mitigation measures to potential significant impacts to land use are also discussed.

The LAX-Palmdale Station Area Land Use Profiles in discussed in the Land Use portion of this document provide information on matters related to land use in potential station locations. At this time, the precise locations of all stations are not known, so the general areas of potential station sites are evaluated. Evaluation of potential station sites includes: analysis of city zoning plans, existing land use, planned land use to determine any land use conflicts that the proposed project would introduce to these areas. Opportunities for development in station areas are also discussed. The LAX-PMD high-speed ground transportation system will change the way that people travel within Los Angeles County, and reorganization of land uses in station areas could in some cases enhance station accessibility and ridership. Inter-modal regional connectivity and pedestrian and bicycle facilities within 1/2 mile of a potential station site are also presented

Socio-economics

Socio-economics is a term that describes the social and economic conditions typically characterized by population, housing, employment, and income in a given area. This document evaluates these conditions and the potential impacts of the proposed project. The baseline socio-economic condition of areas impacted by each alignment alternative is diverse. Each of the three alternative routes would be aligned with existing transportation rights-of-way for a majority of the route. The transportation rights-of-way are characterized by densely populated areas in the urbanized portions of Los Angeles and are contrasted by more sparsely populated areas from Santa Clarita to Palmdale. Residences and businesses are located within the corridor in each of the three alternatives. Although the proposed project is planned to be located within existing transportation rights-of-way; additional right-of-way will be needed at some locations. Each alignment alternative could potentially displace or relocate residences and businesses through acquisition of property necessary for construction and operation of the proposed system.

Acquisitions and displacements could also occur to accommodate the stations, electrical substations, maintenance centers, and other ancillary facilities along the route that would be needed to provide power to the rail system. The distance between stations, access to the power grid, availability of property, and environmental impacts of potential substation parcels would also influence the potential for land acquisition and potential displacement of residents within the corridor. Any displacement of substantial numbers of people or existing housing is considered a significant socio-economic impact

Environmental Justice

The analysis of environmental justice considers disproportionate impacts of an action upon low-income and minority populations. An environmental justice impact would occur if the project were to result in disproportionately high or adverse human health or environmental effects on minority and low-income populations. This document identifies potential impacts introduced by the proposed project to: geology and soils, water resources, air quality, noise, and biological and cultural resources that could disproportionately impact minority and low-income populations. No disproportionate numbers of minorities are located along the Airport Connector Alternative. There are disproportionate numbers of minority communities located along the both the Maximum Coverage and the Transit Hubs Alternatives, within Segments 1 and 2. Segment 3 for both alternatives has a lower minority percentage than Los Angeles County as a whole and therefore, no impacts to environmental justice are anticipated in Segment 3.

Public Health and Public Safety

This section provides an evaluation of public health and safety issues associated with construction and operation of a new ground access system. While the protection of public health and welfare is typically evaluated for environmental conditions such as air quality and noise, the concern is also associated with the physical, mental and social well being of a population. Public health and safety also encompasses the exposure to, and effects from, hazardous substances that include: toxic materials and pesticides; and the handling and transportation of hazardous materials in a community. In this evaluation, analysis is focused on the potential for encountering contaminated

soil during construction of the proposed rail system. This evaluation includes, but is not limited to, known contaminated sites, hazardous waste generators, and other sites/facilities, which could affect the construction and operation of a high-speed system. Impacts to public health and safety would be considered significant if a potential public health hazard were created, or if the use, production, or disposal of materials from the project were to pose a hazard to people in the affected area.

Environmental sites of concern are typically expected to be located in areas where industrial and commercial sites are located. For example, construction of both the Maximum Coverage and the Transit Hubs Alternatives may encounter areas of concern since their routes traverse industrial and developed areas. The Airport Connector Alternative (particularly the segment from Santa Clarita to Palmdale) is expected to encounter the least number of sites having environmental concerns since a large portion of this alternative is located in an undeveloped portion of Los Angeles County.

In addition to possible hazardous and contaminated sites, both the Maximum Coverage and Transit Hubs Alternatives will be positioned near or along identified National Priority List (NPL) sites. The NPL listing, also known as the Superfund List, is a subset of the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) database. The NPL database identifies over 1,200 sites for priority cleanup under the Superfund Program. The report provides a listing of NPL sites, which are located near or along both the Maximum Coverage and the Transit Hubs Alternatives.

Construction of the proposed project could encounter contaminated soil or groundwater. For example, excavations for support structures, stations, and associated structures (including utility tie-ins) may encounter contaminated environmental media. The precise location of excavations for the construction of columns, pilings, and other structures will not be known until system design is completed. Once the system design has been finalized and the locations of excavations have been identified, a focused environmental database search and fieldwork (including limited soil testing, where necessary) would be conducted to ascertain the presence and types of hazardous substances, which may be encountered during the construction of the system.

Recreational Opportunities

Recreational opportunities located in the area of the proposed high-speed system are evaluated in this document. The construction, operation, and maintenance of the proposed system could potentially adversely impact parkland and recreational opportunities by taking land, conflicting with established park and recreation uses, creating substantial increases in ambient noise levels, and by introducing negative aesthetic effects. The various parklands included in this analysis consist of federal, state, county and city parks; cemeteries; and, golf courses. Parks are used by hikers, joggers, walkers, mountain bikers and equestrians, and are an important recreational resource.

Specific recreational opportunities evaluated in this document consist of campgrounds, bike paths, hiking and equestrian trails since these are the recreational uses most likely to be affected by the project within 1,000 feet of either side of the proposed alignments that could potentially be affected by the proposed project, and discussions of these potentially impacted recreational resources follows. In summary, the

Maximum Coverage Alternative would potentially impact the most existing and proposed path oriented recreational resources. In addition to biking, equestrian and hiking resources, both the Maximum Coverage and the Airport Connector Alternatives would potentially introduce adverse impacts to a series of privately owned campgrounds located along the south bank of the Santa Clara River in the Acton area. Operation of the system could adversely impact campgrounds by taking land, conflicting with established campground uses, creating substantial increases in ambient noise levels, and by introducing negative aesthetic effects.

In this analysis, all parks located within 1,000 feet of either side of the proposed rail alignments (a swath of land totalling 2,000 feet) are considered potentially impacted by the proposed project, either during construction, operation, or maintenance. The Maximum Coverage Alternative would potentially impact the most parkland. Twenty parks are located within the 2,000 foot-wide study corridor of the Maximum Coverage Alternative, and open space and recreation comprises 2.2 percent of total potentially impacted land use. The Airport Connector Alternative would potentially impact 13 parks, with land designated in the database as open space and recreation comprising 2.4 percent of total land use found within 1,000 feet of either side of the alignment. The Transit Hubs Alternative would potentially impact 17 parks, with open space and recreation comprising 1 percent of total potentially impacted land use.

Historical, Archeological, and Architectural Resources

Historic, archaeological, and architectural resources help define the community by uniting its past, present, and future culture. In the case of this proposed project, the proposed action would not be expected to result in the physical destruction, damage or alteration of any historic structures since the proposed system would be located primarily within existing transportation rights-of-way. For locations where the alignment does not follow an existing right-of-way that has previously been assessed for historic resources, a site-specific assessment for historic properties shall be conducted to determine if any properties eligible for listing on the National Register of Historic Places are located in the area of potential effect. In the event that historic structures are identified, efforts shall be made to avoid siting the alignment at this location or provide mitigation strategies to protect the resource.

Cultural or archaeological resources are prehistoric and historic sites, structures, districts, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, or religious reasons. The region of influence for this analysis of cultural resources includes a one-quarter mile (1,320-foot) wide corridor on either side of the alignment, or a total of 2,640-foot wide corridor that encompasses each of the three alignments. While the entire corridor would not necessarily be affected by the proposed project, cultural resources within this corridor have been evaluated on a comparative basis. Numerous cultural resource sites located within the quarter mile corridor could potentially be impacted by the proposed project. This document includes a summary of high probability sites, and sites with the potential for “Yielding Cultural Deposits” in the LAX-Palmdale high-speed rail study corridor.

Due to the numerous significant archaeological resources known in the Los Angeles area, including NRHP-listed districts, it is possible that undiscovered materials of the historic and prehistoric periods could be present in the vicinity. Construction of the system, supporting piers, stations, and associated structures could encounter buried

cultural materials. Construction of the system should be monitored by a qualified archaeologist in areas considered to have a potential to yield cultural materials.

Parklands

All parks located within 1,000 feet of either side of the proposed rail would be potentially impacted by the proposed project, either during construction or operation. A project would normally have a significant impact on parkland if it would result in any of the following:

- Any taking of parkland, or any other conflict with established uses of parkland;
- Any substantial, demonstrable, negative aesthetic effect that would substantially degrade the existing visual character or quality of the site and its surroundings; or
- A substantial increase in the ambient noise above existing levels for adjoining areas.

Taking of parkland or conflict with an established use of a park would be likely to occur in areas where the proposed rail would traverse parkland, or in areas where the proposed rail would be located adjacent to a park. A conflict with established uses of a park would include any interference in access to a park, conflicts with recreational uses of a park, disruption of a wildlife refuge within a park, or adverse impacts to the sacred quality of a cemetery.

A substantial, demonstrable, negative aesthetic effect would occur in an area in which the proposed rail would interrupt a scenic vista, or significantly degrade the overall scenic quality of a park. Parks located within 500 feet of the proposed rail would likely be affected by visual impacts during project operation, however parks located more than 500 feet from the proposed rail that offer scenic vistas could also be negatively impacted by the proposed rail. A more detailed discussion of visual impacts introduced by the proposed project is located in the Visual Resources section.

A substantial increase in ambient noise that would compromise the integrity of a park is considered a significant impact. Parks located within 500 feet of the proposed rail would likely be affected by noise impacts during project operation in those areas where the proposed rail would not be aligned with an existing freeway or railway. Analysis of noise impacts introduced by the proposed project is provided in the Noise and Vibration section.

Construction

Planning and design have not advanced to a degree to allow a complete identification of all affected utility lines or specific impacts. Based on conceptual level route planning, the following issues have been identified.

Underground utilities that cross the candidate route would be avoided wherever possible by shifting the location of the support columns. Underground utilities that parallel the candidate route in shared right-of-way would be avoided wherever possible by shifting the location of the support columns. The most common utilities in railroad right-of-way that would run parallel with the guideway are fiber optic lines. Where such underground utilities cannot be avoided, they would be relocated.

Of the aboveground utilities along the candidate route, relocation of electrical lines appears to be the most significant issue. The two basic options for relocation overhead lines are to raise their heights to allow sufficient clearance or to place portions of the line underground. As greater project definition is achieved in subsequent phases, the location and related costs for relocation will need to be evaluated.

Utility relocations needed for the construction of stations and associated parking, central and decentralized maintenance facilities, electrical substations, and other ancillary facilities have not yet been determined. If the project advances to the next phase, the level of detailed design needed to identify all utility locations and relocations needs would be conducted. Impacts would be assessed and reported in the EIS/EIR.

Electromagnetic Compatibility – VHSM

Concern about electromagnetic compatibility is based on the question of whether the electromagnetic fields generated by the vehicle would produce interference with nearby electrical or electronic equipment. EMF generated by the VHSM system is of less magnitude than an electric hairdryer. EMF is generated only when the VHSM vehicles are present; the guideway does not emit EMF at other times. Measured data for the guideway show that the maximum time-varying magnetic fields at a distance of 3 meters (10 feet) range from 65 mG to 95 mG and fall to about 20 mG at a distance of 10 meters (33 feet). By comparison, a microwave oven generates between 40 and 80 mG at a distance of 0.3 meter/1 foot. Due to the low strength of the VHSM EMF and its rapid decay over distance, no electromagnetic interference is anticipated.

EMF could also be generated by the power cables serving the VHSM system. Field measurement of the Transrapid TR07 vehicle cables indicated EMF of only 2 mG at a distance of less than 1 meter/3 feet. Such low levels are not likely to have an impact on electrical or electronic equipment.

Geology and Seismicity

The study area for this geologic review is within the central and northern Los Angeles County. The alignments extend from the LAX through the cities of Los Angeles, Burbank, Saugus, Santa Clarita, Newhall, Valencia, Acton and Palmdale to the Palmdale Regional Airport. All alternative alignments, namely, the *Airport Connector*, *Maximum Coverage* and *Transit Hubs* traverse through the Los Angeles, Eastern Ventura, Soledad basins. They also traverse the San Gabriel Mountains of the Transverse Range Geomorphic Province before crossing the San Andreas Fault where the alignments drop into the Mojave Geomorphic Province of California. In general, the Los Angeles, Ventura and Soledad basins are filled with Late Cretaceous through Quaternary marine and non-marine sedimentary rocks with some Tertiary volcanic rocks. These sedimentary and volcanic rock sequences are deposited on Mesozoic granitic rocks and Pre-Cambrian metamorphic and anorthosite complexes. The uppermost surficial sediments consist of gravelly, sandy to clayey alluvium, fluvial floodplain deposits and/or older alluvium and marine terrace deposits.

The alignments cross at least five major faults. These faults include the San Andreas Fault, which is the boundary between the Transverse Range and Mojave Geomorphic Provinces; the San Gabriel Fault, which is a major structure in the Soledad Basin and San Gabriel Mountains; the Simi-Santa Rosa-Northridge Hills Fault and the Santa

Susana Fault in the Ventura Basin; and the Sierra Madre, Malibu Coast-Santa Monica-Hollywood-Raymond, Verdugo, Charnock faults and the Elysian Park Thrust which are major faults in the Los Angeles Basin. The Simi-Santa Rosa-Northridge Hills Fault and the Malibu Coast-Santa Monica-Hollywood-Raymond Fault are commonly referred to as separate fault segments, but in this evaluation, the segments are grouped together. The mentioned faults are capable of producing earthquakes that range in magnitude from 6.5 to 8.0.

A comprehensive geotechnical evaluation, including site-specific subsurface exploration and laboratory testing, will be performed during preliminary engineering and final engineering design and prior to construction of the project improvements. The purpose of the subsurface evaluation would be to assess the subsurface conditions beneath the proposed construction and provide specific data on potential geotechnical hazards and constraints, as well as information pertaining to the engineering characteristics of the soils underlying the alignment. From these data, specific recommendations for grading/earthwork, slope stability, surface and subsurface drainage, structure foundations, seismicity, and other geotechnical design considerations will be provided. All construction would follow or exceed the Uniform Building Code (UBC), Caltrans, or American Association of State Highway and Transportation Officials (AASHTO) requirements.

**Table 6.0-1
Summary of Potential Impacts**

Resource	Alignment Alternative		
	Airport Connector	Maximum Coverage	Transit Hubs
Air Quality	Potential benefits from the reduction of petroleum related emissions. Potential significant adverse impacts from project construction. No air emissions resulting from project operation.	Potential benefits from the reduction of petroleum related emissions. The most potential significant adverse impacts due to construction have been identified for this alternative. No air emissions resulting from project operation.	Potential benefits from the reduction of petroleum related emissions. Potential significant adverse impacts from project construction. No air emissions resulting from project operation.
Water Quality	Potential insignificant, adverse impacts.	Potential insignificant, adverse impacts.	Potential insignificant, adverse impacts.
Noise and Vibration	Potential significant, adverse impacts.	Potential significant, adverse impacts.	Potential significant, adverse impacts.
Solid Waste	Potential insignificant adverse impacts.	Potential insignificant adverse impacts.	Potential insignificant adverse impacts.
Ecology	Potential significant, adverse impacts.	Potential significant, adverse impacts.	Potential significant, adverse impacts.
Wetlands	Potential significant, adverse impacts to at least four known wetland areas.	Potential significant, adverse impacts to at least three known wetland areas.	Potential significant, adverse impacts to at least two known wetland areas.
Threatened and Endangered Species	At minimal, 21 state and federal listed species would potentially be significantly, adversely impacted.	At minimal, 21 state and federal listed species would potentially be significantly, adversely impacted.	At minimal, 13 state and federal listed species would potentially be significantly, adversely impacted.
Floodplains	13.24 miles of floodplain crossed, resulting in potential significant adverse impacts to floodplains.	19.40 miles of floodplain crossed, resulting in potential significant adverse impacts to floodplains.	7.08 miles of floodplain crossed, resulting in potential significant adverse impacts to floodplains.
Coastal Zone Management	No significant adverse impact.	No significant adverse impact.	No significant adverse impact.
Energy	Potential beneficial impact due to use of alternative fuel.	Potential beneficial impact due to use of alternative fuel.	Potential beneficial impact due to use of alternative fuel.
Natural Resources	Potential significant, adverse impacts to prime farmland, grazing farmland and unique farmland.	Potential significant, adverse impacts to prime farmland, grazing farmland and unique farmland.	Potential significant, adverse impacts to prime farmland and grazing farmland.
Visual Resources	Potential insignificant adverse impacts.	Potential insignificant adverse impacts.	Potential insignificant adverse impacts.

Resource	Alignment Alternative		
	Airport Connector	Maximum Coverage	Transit Hubs
Traffic and Transportation	Potential adverse impact to local traffic in station areas. Potential significant benefit to regional traffic and transportation.	Potential adverse impact to local traffic in station areas. Potential significant benefit to regional traffic and transportation.	Potential adverse impact to local traffic in station areas. Potential significant benefit to regional traffic and transportation.
Barriers to Aged and Handicapped	No significant adverse impact.	No significant adverse impact.	No significant adverse impact.
Land Use	Potential significant, adverse impacts.	Potential significant, adverse impacts.	Potential significant, adverse impacts.
Socioeconomics	Potential significant, adverse impacts.	Potential significant, adverse impacts.	Potential significant, adverse impacts.
Environmental Justice	Potential insignificant adverse impacts.	Potential significant, adverse impacts.	Potential significant, adverse impacts.
Public Health and Safety	Potential insignificant adverse impacts.	Potential insignificant adverse impacts.	Potential insignificant adverse impacts.
Recreational Opportunities	Potential significant, adverse impacts.	The most potentially significant adverse impacts have been identified for this alternative.	Potential significant, adverse impacts.
Historical, Archeological, and Architectural Resources	Potential significant, adverse impacts.	Potential significant, adverse impacts.	Potential significant, adverse impacts.
Parklands	Potential significant, adverse impacts.	Potential significant, adverse impacts.	Potential significant, adverse impacts.
Construction	Relocation of utilities may be necessary.	Relocation of utilities may be necessary.	Relocation of utilities may be necessary.
Electromagnetic Compatibility – Maglev Technology	No significant adverse impacts.	No significant adverse impacts.	No significant adverse impacts.
Geology and Seismicity	Potential insignificant adverse impacts. Alignments cross at least 5 major faults.	Potential insignificant adverse impacts. Alignments cross at least 5 major faults.	Potential insignificant adverse impacts. Alignments cross at least 5 major faults.